# Appendix 17 : 2020 Aquatic Ecosystem Monitoring Program (AEMP) Report

# Aquatic Effects Monitoring Program 2020 Annual Report

## Meliadine Gold Project

Prepared for:

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# PLAIN LANGUAGE SUMMARY

## Introduction

This document summarizes the current state of knowledge about water quality in Meliadine Lake and small waterbodies surrounding the Meliadine Gold mine north of Rankin Inlet. Information presented in this report was collected as part of the Annual Aquatic Effects Monitoring Program (AEMP) and the Water Quality Management and Optimization Program (WQ-MOP). Below is an overview of each program.

**AEMP.** The AEMP is the monitoring program used to evaluate short-term and long-term effects of the mine on the aquatic environment. Other objectives of the AEMP include evaluating the accuracy of predictions in the Final Environmental Impact Statement (FEIS) and providing information to inform management decisions. The scope of the 2020 AEMP focused on water quality monitoring in Meliadine Lake and three smaller waterbodies in close proximity to the mine. In addition to the routine water quality monitoring in Meliadine Lake, a targeted phytoplankton study was completed in Meliadine Lake in August as an indicator of the overall health of the aquatic ecosystem in Meliadine Lake.

**WQ-MOP**. A separate water quality monitoring program was completed in Meliadine Lake in 2020 as a condition of the 2020 Emergency Amendment to discharge excess water that had accumulated in Collection Pond 1 (CP1) to critically high levels in 2019. The 2020 Emergency Amendment allowed Agnico Eagle to discharge water with higher concentrations of total dissolved solids (TDS). The WQ-MOP was implemented to verify that an increase in the TDS discharge limit from 1,400 mg/L to 3,500 mg/L in surface contact water discharged to Meliadine Lake is protective of aquatic life in the lake. Monitoring for the WQ-MOP happened concurrent to water quality monitoring for the AEMP, and, where appropriate, the results and conclusions presented in the WQ-MOP report (Golder 2020) were incorporated into the overall assessment of water quality in Meliadine Lake.

The water quality data collected under the AEMP and WQ-MOP in 2020 was evaluated to answer this question:

> *Has water quality changed as the result of activities at the mine, and if so, do those changes align with what was predicted and approved in the Project Certificate?*

The Nunavut Impact Review Board (NIRB) approved the project and the Nunavut Water Board (NWB) issued the Type A Water Licence with the understanding that some changes in water quality were likely, but that changes would be minor based on the proposed mine design, and that they would not impact the health of aquatic life, drinking water quality and human health, or the continued traditional and non-traditional use of fish (Agnico Eagle 2015).

*What does a "change in water quality" mean?*

Water quality is not a "fixed" concept. The characteristics and properties that define water quality fluctuate naturally between seasons and between years in response to a number of factors, and changes in water quality do not mean the water is unsafe for human consumption or unsafe for fish and other aquatic life. For example, spring runoff from snow melt can carry fine sediment with higher concentrations of dissolved solids into nearby lakes and rivers and result in "changes" in water quality compared to other times of the year. Similar changes can also happen after rain events. Over the longer-term, changes in regional climate patterns may lead to more subtle shifts in water quality. A change in water quality, in this context, refers to a noticeable difference relative to some other point of comparison in time (e.g., the baseline [pre-development] period) or space (e.g., reference areas).

## Summary of Activities on Site in 2020

Underground mining at Tiriganiaq continued in 2020. In late 2019/early 2020, mining in Tiriganiaq Pit 2 started and as of the end of 2020 was still on going. Waste rock from development of Tiriganiaq Pit 2 was transport to waste rock storage facility 3 (WRSF 3). Other major developments on site in 2020 included construction of Collection pond (CP6) which acts as the collection point for runoff from WRSF 3 and construction of Saline Pond 4 within the footprint of Tiriganiaq Pit 1.

Discharge of treated surface contact water from CP1 (the main Collection pond on site) to Meliadine Lake occurred continuously between June 5$^{th}$ and October 4$^{th}$. The 2020 discharge period occurred earlier than in 2018 and 2019 to draw down the level of water in CP1 to make room for runoff from spring freshet. In total, over 1 million cubic meters (mM) of water was discharged from CP1 to Meliadine Lake in 2020.

## Effluent Quality Discharged to Meliadine Lake

**Effluent Chemistry and Acute Toxicity Test Results**

Regular chemistry and toxicity testing of surface contact water was completed on treated surface contact water from CP1 while the mine was discharging effluent in 2020. Discharge of surface contact water to Meliadine Lake is allowed as long as 1) concentrations of certain parameters are below limits specified in the Water Licence and Metal and Diamond Mining Effluent Regulations (MDMER), and 2) effluent is not toxic to fish. Key findings from the 2020 effluent chemistry and acute toxicity tests were:

- Effluent discharged to Meliadine Lake was below the limits specified in the Water Licence and MDMER.
- Full strength (undiluted) effluent was non-toxic to fish as well as the aquatic invertebrate *Daphnia magna* in the 18 acute toxicity tests conducted on a weekly basis in 2020. The highest measured TDS concentration in effluent tested in 2020 was 3,090 mg/L TDS.

**Chronic Toxicity Test Results**

Chronic toxicity testing is conducted monthly when the mine is discharging water to Meliadine Lake as per requirements for monitoring effluent quality under MDMER. The updated regulations require monthly testing on the most sensitive species based on previous test results. In 2018, the aquatic plant *Lemna minor* was more sensitive to surface contact water than fish (Fathead Minnow), aquatic invertebrates (*Ceriodaphnia dubia* [water flea]), or algae. In 2019 and 2020, *L. minor* was selected as the surrogate species for chronic toxicity testing. Four tests were completed in 2020, and in all but one, there were no effects to *L. minor* growth or biomass. A slight reduction in *L. minor* growth (i.e., the number of fronds that grow in 7-days) occurred in the test where the concentration of TDS was 3,100 mg/L.

A comprehensive chronic toxicity testing program was conducted as part of the WQ-MOP in 2020 to validate that the in-lake benchmark of 1,000 mg/L TDS protects against chronic effects to fish (Fathead Minnow), invertebrates (*D. magna* and *Hyalella azteca*), or aquatic plants (*L. minor*). In multiple rounds of tests, the results verified that the proposed increase of the effluent discharge limit from 1,400 mg/L to 3,500 mg/L TDS in the Water Licence, and corresponding in-lake TDS benchmark of 1,000 mg/L, conservatively protects the health of fish, invertebrates, and primary producers in Meliadine Lake.

**Summary of Effluent Quality in 2020**

Effluent quality and toxicity testing in 2020 validated that a TDS discharge limit of 3,500 mg/L in treated effluent discharged to Meliadine Lake is safe for aquatic life. Considering the treated effluent is (a) non-toxic at full strength, and (b) rapidly diluted within a short-distance from the point of release in Meliadine Lake, the risk of mine-related effects to aquatic life (algae, invertebrates, and fish) in Meliadine Lake are low.

No follow-up actions or mitigation are recommended for 2021 other than routine effluent chemistry and toxicity testing in accordance with regulatory requirements for the project.

## Water Quality in Meliadine Lake

The objective of the Meliadine Lake water quality monitoring program is to assess whether there are mine-related changes in water quality, and if the answer is yes, provide recommendations to ensure long-term protection of the aquatic environment.

The scope and frequency of monitoring for the 2020 AEMP was similar to previous years, and included water quality monitoring at a near-field area around where effluent is released from the diffuser in the east basin, at a mid-field area to track spatial changes in water quality downstream from the mine, and at three reference areas far away in other sheltered basins of Meliadine Lake. The study areas within Meliadine Lake were selected specifically to distinguish between changes in water that are related to activities at the mine versus changes that are natural. The overall assessment of water quality in Meliadine Lake in 2020 was informed by answering the following questions:

- Were there any exceedances of water quality guidelines for the protection of human health and aquatic life?
- Is water in the east basin of Meliadine Lake different compared to baseline/reference conditions, and if so, are the changes more extreme that what was predicted in the approved Project?
- Are there any actions that need to be taken as part of the adaptive management plan?

The answer to these questions is provided below.

**Water is safe to drink**

Water collected in close proximity to where effluent was released in Meliadine Lake was safe for human consumption, with no exceedances of *Guidelines for Canadian Drinking Water Quality* published by Health Canada. The concentrations of some parameters have increased in the east basin, but the magnitude of the change is well below levels of concern for people's health. In 2020, the maximum TDS concentration in the east basin near the mine was 90 mg/L, which is over 5-times lower than the Health Canada drinking water guideline of 500 mg/L meant to protect "good tasting" water.

**Water is safe for fish and other aquatic life**

Water samples collected throughout 2020 were measured at concentrations below what are conservatively associated with effects to fish, invertebrates, and algae. Federal water quality guidelines and site-specific water quality objectives (in the case of fluoride, arsenic, and iron at Meliadine) are conservative, meaning the guidelines are set at concentrations meant to protect the most sensitive aquatic species. If, as was observed in 2020, concentrations are well below aquatic life guidelines, there is a high degree of confidence that water in Meliadine Lake is safe for fish and other aquatic organisms living in the lake.

**Has water quality changed over time?**

As part of the original assessment for the Mine, it was expected that water quality in the lake would change as a result of discharge; however, the context of that change in terms of the magnitude of change (i.e., above a normal range) and the spatial extent of that change (i.e., limited to the mixing zone, east basin, or to the lake outlet) is examined.

The normal range describes water quality before construction, and also includes recent information on water quality in reference areas sampled further away in Meliadine Lake each year. In 2020, some water quality parameters like total dissolved solids and chloride were above their normal range, indicating concentrations have increased slightly over time, but changes are small, consistent with FEIS predictions, and well below guidelines.

Plume delineation studies were conducted to evaluate the spatial extent of change. The discharge was dispersed within a short distance of the diffuser, and beyond 100 m, the plume was largely not detectable compared to background conditions. Furthermore, when discharge ceased, or flows were reduced (as was the case during most of August), the concentration of effluent was less than 1% within 100 m of the diffuser.

**Are management actions required beyond routine monitoring under AEMP?**

Decisions pertaining to water quality are made within the Response Framework that links monitoring results with appropriate management actions to implement changes before effects to aquatic life or drinking water quality occur. The Response Framework uses action levels to define the level of response associated with each action level (negligible, low, medium, or high).

The Low Action Level was not exceeded at Meliadine Lake in 2020 based on the following information from the effluent quality monitoring program and the surface water monitoring program:

1) The Low Action Level for chronic toxicity is defined as a persistent effect measured in three consecutive monthly tests. Monthly chronic toxicity tests from June through September showed effluent was not causing effects to growth or development for aquatic species.
2) Some minor changes in water quality in the near-field area (MEL-01; more than 100 m from the diffuser) of Meliadine Lake have occurred due to mining-related activities, but current concentrations are well below the lowest water quality guidelines for the protection of aquatic life or human health.

In conclusion, while some parameters have increased over time in the east basin of Meliadine Lake relative to baseline / reference conditions, the difference between areas constitutes a *minor change* as described in the FEIS, as concentrations remain well below guidelines meant to protect aquatic life and drinking water quality.

**Recommendations for 2021**

Spatial and temporal changes in water quality will continue to be monitored as part of the AEMP in 2021. Other monitoring scheduled for 2021 in Meliadine includes biological monitoring for fish and benthic invertebrate community health on the 3-year cycle under the Environmental Effects Monitoring (EEM) program. This will be the second EEM study conducted at Meliadine. Additional fish and benthic invertebrate monitoring is planned for the same time under the AEMP, and as was the case in 2018, the intention is to coordinate sampling between the AEMP and EEM program as outlined in the AEMP Design Plan.

## Water Quality in the Peninsula Lakes

Water quality monitoring at the Peninsula Lakes (Lake A8, Lake B7, and Lake D7) was completed twice in July and August to evaluate whether non-point source discharges (i.e., dust, or alteration of watersheds) is affecting water quality beyond the minor changes that were predicted in the approved project. Based on their location relative to mine infrastructure, *minor* changes in water quality were predicted as part of the FEIS, meaning some parameters would increase relative to baseline levels, but that water quality guidelines for aquatic life and drinking water quality would be met. Lake B7, which is close to the tailings storage facility (TSF), and Lake A8, which is adjacent to the Tiriganiaq open pits, are more susceptible to mine-related changes in water quality than Lake D7, which is located east of Lake B7.

**Conclusions**

Results from 2020 demonstrate that changes in water quality at the Peninsula Lakes align with predictions in the FEIS: some parameters have increased relative to the baseline period, but current conditions support freshwater aquatic life and human uses, although current human use of both Lake B7 and Lake A8 are limited due to their location relative to mine infrastructure. Importantly, the spatial extent of potential non-point source mine-related changes to water quality in lakes on the peninsula appears to be localized to the lakes in close proximity to mine, and do not extend farther out to Lake D7.

Overall, the year-over-year changes in water quality that were detected in Lake B7 and Lake A8 for some parameters do not warrant management actions or mitigation based on the adaptative management strategy in the Response Framework. Continuation of the waste management and water management strategy, coupled with on-going efforts to control off-site dust migration, will help keep water quality within the range of minor changes predicted in the FEIS. Key findings from this year's assessment are presented below.

**Water is safe for aquatic life and human health**

There were no exceedances of water quality guidelines for the protection of aquatic life, human health drinking water quality, or site-specific water quality objectives (in the case of fluoride, arsenic and iron) for water samples collected from Lake A8, Lake B7, and Lake D7 in 2020. People are not permitted to source drinking water from Lake A8 or Lake B7 during operations given safety concerns with accessing these lakes, nonetheless, the fact water quality met guidelines for safe consumption in 2020 provides an additional level of assurance with which to assess water quality in the other lakes further away from the site, on the peninsula.

**Has water quality changed over time?**

In alignment with the original assessment (Agnico Eagle 2014), some parameters have increased relative to the baseline period, most notably arsenic in Lake A8 and Lake B7 and lithium in Lake B7. For the majority of other parameters, concentrations have either plateaued or decreased as the mine has transitioned from peak construction to operations. Although water quality has changed, the absolute concentrations remain below guidelines or SSWQO for the protection of aquatic life.

**Recommendations for 2021**

On-going monitoring of temporal trends in water quality at the Peninsula Lakes will continue in 2021 as outlined in the AEMP Design Plan.

## Phytoplankton Health in Meliadine Lake

Phytoplankton (algae) monitoring has been conducted annually as a targeted study in Meliadine Lake since 2015, rather than a core component of the AEMP. To date, monitoring data from the phytoplankton study has been used as a line of evidence, along with chlorophyll-a and nutrient concentration data, to determine if activities at the mine have contributed to increased primary productivity in Meliadine Lake.

Of the biological studies included in the AEMP, phytoplankton monitoring is the only program conducted annually (fish and benthic invertebrate studies are conducted every 3-years coinciding with the EEM cycle). In this respect, the information on the health of the phytoplankton community is valuable for linking annual changes in water quality to an indicator of the ecological health of Meliadine Lake.

The first step in the assessment of the health of the phytoplankton community involves looking for differences among stations (near-field, mid-field and reference) and across years (before mine discharges began vs after). If changes are noticed, the next step is to determine if the changes are part of the natural variability in phytoplankton or if activities at the mine are contributing to the change. Patterns in nutrient levels at each station are used to help determine whether differences in the phytoplankton community are related to the mine. Even if the change is attributed to the mine, other biological communities may not be impacted if the magnitude of the change is not too severe.

The following conclusions are based on findings of the 2020 phytoplankton study, taking into consideration the full range of available nutrient data and phytoplankton community results collected under the AEMP.

**The phytoplankton community is healthy**

The phytoplankton community had noticeably lower biomass and richness (number of taxa) across all 5 study areas in 2020, which was attributed to natural variability. Prior to 2020, there was some plausible evidence supporting the notion that nutrient loading (phosphorus in particular) during the pre-construction period had contributed to an increase in biomass in 2015 relative to the results from 2013. Results from 2020 show nutrients released to Meliadine Lake are not contributing to year-over-year increases in primary productivity as evidenced by higher total biomass in the near-field area of Meliadine Lake.

Quantitative analysis of the structure of the community using multivariate analysis provided an additional line of evidence to support the conclusion that lake-wide reductions in biomass and richness in 2020 were natural. The phytoplankton community has been different than the mid-field exposure area and reference areas dating back to the baseline period, but in 2020, the phytoplankton communities in the near-field and mid-field areas became more similar to one another compared to previous years. Results to date indicate that the phytoplankton community in the near-field area is diverse and healthy.

**No evidence of wide-spread nutrient enrichment in Meliadine Lake**

During the pre-construction and early construction phase of the project, loading of phosphorus to Meliadine Lake from the sewage treatment plant (STP) at the exploration camp was suspected of contributing to the increase in phytoplankton biomass observed in 2015. Concerns regarding potential for nutrient enrichment led to changes in how sewage is managed on site in late 2017, with all sewage treated at the main camp STP. The effect of this change was a reduction in phosphorus loading to the lake in recent years, even with the substantial increase in the volume of water discharged each year from CP1. Recent water quality data from 2018 through 2020 shows water and waste management has been effective at reducing total phosphorus loading to Meliadine Lake.

Nitrogen loading has increased since 2018, coinciding with discharge of surface contact water that when in contact with waste rock, picks up residual blasting material containing nitrogen parameters. In 2020, approximately 5-times as much nitrogen was discharged to Meliadine Lake compared to 2019. The substantial increase in the volume of water discharged from CP1 was the main reason for the increased loading. Despite the increased loadings, the magnitude of changing nitrogen concentrations in the east basin of Meliadine Lake were relatively low compared to baseline and more recent monitoring results from 2018 and 2019. Furthermore, some nitrogen parameters that appear to be increasing in the east basin also trended higher at the reference areas in 2020 due to natural variability regional patterns of change. Overall, any minor change in nutrient concentrations in the near-field area aligns with predicted changes in the Water Licence Application that stated nutrient concentrations would increase relative to baseline, but there would be no effect on aquatic life. Six years of phytoplankton monitoring support this conclusion.

**Recommendations for 2021**

Collectively, the phytoplankton community and nutrient data provide useful information to help detect potential effects to primary productivity resulting from nutrient enrichment in Meliadine Lake. Phytoplankton monitoring will be continued in 2021 to supplement water quality monitoring and to monitor for mine-related effects.

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# USE & LIMITATIONS OF THIS REPORT

This report has been prepared by Azimuth Consulting Group Inc. for the use of Agnico Eagle Mines Ltd., who has been party to the development of the scope of work for this project and understands its limitations. The extent to which previous investigations were relied on is detailed in the report.

In providing this report and performing the services in preparation of this report Azimuth accepts no responsibility in respect of the site described in this report or for any business decisions relating to the site, including decisions in respect of the management, purchase, sale or investment in the site.

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The findings contained in this report are based, in part, upon information provided by others. In preparing this report, Azimuth has assumed that the data or other information provided by others is factual and accurate. If any of the information is inaccurate, site conditions change, new information is discovered, and/or unexpected conditions are encountered in future work, then modifications by Azimuth to the findings, conclusions and recommendations of this report may be necessary.

In addition, the conclusions and recommendations of this report are based upon applicable legislation existing at the time the report was drafted. Changes to legislation, such as an alteration in acceptable limits of contamination, may alter conclusions and recommendations.

This report is time-sensitive and pertains to a specific site and a specific scope of work. It is not applicable to any other site, development or remediation other than that to which it specifically refers. Any change in the site, remediation or proposed development may necessitate a supplementary investigation and assessment.

# ACRONYMS & GLOSSARY OF TERMS

| Acronym / Term | Definition |
|---|---|
| AEMP | Aquatic Effects Monitoring Program is the primary instrument for determining if the mine is causing changes in the aquatic environment. |
| AEMP Benchmark | The AEMP Benchmarks are screening guidelines that are protective of aquatic life and human drinking water quality for the project. |
| AEMP Action Level | The AEMP Action Level is an early warning trigger equal to 75% of the AEMP Benchmark. |
| AWAR | All-weather Access Road connecting the mine site to Rankin Inlet. |
| Benthic Invertebrates | Benthic invertebrates refer to the diverse community of small animals that live in these lake bottom sediments (benthic means bottom, and invertebrates are small animals without bones). |
| Biomass | Biomass is the amount or weight of phytoplankton in a given amount of lake water. |
| Blanks (for quality control) | TB = these samples are analyzed to assess cross contamination occurring during the transport of samples. These samples comprise analyte-free deionized water prepared in the lab by ALS, and travel to the site and back to the lab without being opened.<br>DB = Deionized blanks (or field blanks) are analyzed to verify the “analyte-free” status of the deionized water to help interpret the equipment blank results. These samples are comprised of deionized water poured directly into the sampling containers.<br>EB= Equipment blanks are analyzed to assess cross contamination in the sampling equipment that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free deionized water passed through the sampling equipment. |
| CCME | Canadian Council of Ministers of the Environment |
| CIRNAC | Crown Indigenous Relations and Northern Affairs Canada |
| CP | Containment pond / collection pond / control pond: Pond constructed for the collection and temporary storage of surface contact water that is eventually treated and discharged to Meliadine Lake. |
| DF | Dilution Factor: the amount by which the effluent is diluted at a given sample location within Meliadine Lake (e.g., a dilution factor of 50:1 corresponds to 2% effluent). |

| Acronym / Term | Definition |
|---|---|
| DIN | Depth-integrated nutrients (DIN) refers to the composite water sample collected for nutrient analyses for the phytoplankton study. The "depth-integrated" sample is a composite water sample taken from various depths in the water column. Chlorophyll-a and phytoplankton taxonomy samples are collected using the depth-integrated sampling method. |
| DO | Dissolved oxygen |
| DOC | Dissolved organic carbon: a measure of the amount of organic matter present in water that passes through a 0.45 µm filter. |
| DQO | Data quality objective: are statements that define the degree of confidence in conclusions from data produced from a sampling program. |
| ECCC | Environment and Climate Change Canada |
| EEM | Environmental Effects Monitoring is a science-based monitoring program developed by Environment and Climate Change Canada. EEM describes monitoring that mining companies must undertake to detect and measure changes in aquatic ecosystems (i.e., receiving environments). |
| EWTP | Effluent Water Treatment Plant treats surface contact water from Collection Pond 1 (CP1) to lower TSS prior to discharge to Meliadine Lake. |
| FEIS | Final Environmental Impact Statement |
| FEQG | Federal Environmental Quality Guidelines are water quality guidelines developed by Environment and Climate Change Canada. |
| IQ | Inuit Qaujimaningit and Inuit Qaujimajatuqangit:<br>-> Inuit Qaujimaningit encompasses Inuit traditional knowledge (and variations thereof or Inuit Qaujimajatuqangit), local and community-based knowledge, as well as Inuit epistemology as it relates to Inuit Societal Values and Inuit Knowledge.<br>-> Inuit Qaujimajatuqangit are the guiding principles of Inuit social values (NIRB 2018). |
| KivIA | Kivalliq Inuit Association |
| MDMER | Metal and Diamond Mining Effluent Regulations |
| MF | Mid-field area in Meliadine Lake (MEL-02) |
| NF | Near-field in Meliadine Lake (MEL-01) |
| nMDS | Non-Metric Multidimensional Scaling: a multivariate statistical method used to condense information with multiple variables into a two-dimensional representation of the data. Used here to visually assess differences in benthic invertebrate community structure over space. |

| Acronym / Term | Definition |
|---|---|
| NPAG | Non-potentially acid generating refers to rock that is not expected to contribute to low pH conditions in runoff (i.e., surface contact water) that is eventually collected, treated and discharged to Meliadine Lake. |
| NML | Non-metals leaching refers to rock that is not expected to contribute to metals concentrations in runoff (i.e., surface contact water) that is eventually collected, treated and discharged to Meliadine Lake. |
| NIRB | Nunavut Impact Review Board: The government agency responsible for reviewing and assessing the potential ecosystemic and socio-economic effects of the Meliadine Gold Mine Project presented in the Final Environmental Impact Statement. |
| Normal Range | The normal range refers to the range of baseline/reference conditions within the study area lakes. For the water quality monitoring program, the normal range is use to identify parameters that may have increased in concentration due to activities at the Mine. |
| NWB | Nunavut Water Board: The government agency responsible for regulating water use and management in the Nunavut Settlement Area. Terms and Conditions regarding water use for the Meliadine Gold Project are outlined in Water Licence No: 2AM-MEL1631. |
| Overburden | Overburden is soil and till that need to be removed prior to developing the open pits. |
| Parameters | The term used to describe what gets measured in samples of surface water, sediment, and fish tissue collected in the various monitoring programs. Calcium, magnesium, iron, and aluminum are examples of parameters. |
| Phytoplankton | Phytoplankton are a diverse group of aquatic plant species (algae) that form the base of the food web in Meliadine Lake. Like other plants, they use sunlight, nutrients, and carbon sources to grow. |
| QA/QC | Quality Assurance are the practices employed (e.g., use of experienced field staff, standard operating procedures (SOPs), field data sheets, and certified laboratories) to collect scientifically defensible samples meeting pre-defined data quality objectives (DQOs).<br>Quality control (QC) refers to samples that are used to evaluate whether field sampling methods and laboratory analytical procedures are producing data that meet DQOs. |
| REF | Reference areas in Meliadine Lake (MEL-03, MEL-04, and MEL-05) |
| Safe drinking water | In the context of the AEMP, water is considered safe for drinking if measured concentrations of parameters are below guidelines published by Health Canada. |
| SETP | Saline Effluent Treatment Plant: treats excess saline groundwater stored in SP1 and SP4 prior to discharge to Melvin Bay. Treated effluent from the SETP is temporarily stored in SP3 before being trucked to Itivia Harbour and discharged to Melvin Bay. |

| Acronym / Term | Definition |
|---|---|
| Significance threshold | Significance thresholds are narrative statements that represent attributes of the aquatic environment that must be preserved as the Project develops. |
| SP | Saline pond: pond constructed for the collection and temporary storage of saline groundwater prior to treatment at the Saline Water Treatment Plant or the Saline Effluent Treatment Plant. |
| Species richness | Species richness refers to the number of different (distinct) species in a sample. Use to describe the diversity of the phytoplankton and benthic invertebrate communities in Meliadine Lake. |
| SSWQO | Site-specific water quality objectives are guidelines developed specifically for the lakes around Meliadine that take into consideration background water quality in the region. SSWQOs were developed for fluoride, arsenic, and iron as part of the AEMP (Golder 2014). |
| Surface contact water | Runoff from rain and snow melt that is collected on site. This water is collected, treated, and discharged to Meliadine Lake. |
| SWTP | Saline Water Treatment Plant: treatment of saline groundwater to remove excess TSS, salts ($CaCl_2$, NaCl), metals, phosphorus, and nitrogenous compounds. |
| Tailings | Residual particulate waste left over after ore is processed to extract gold |
| TDS | Total Dissolved Solids: the total concentration of dissolved substances in water, including inorganic salts and small organic matter (e.g., calcium, magnesium, potassium, carbonates, chlorides). |
| TGD | Metal Mining Technical Guidance Document for Environmental Effects Monitoring |
| TKN | Total Kjeldahl nitrogen is the sum of organic nitrogen in water and total ammonia ($NH_3$) |
| TN | Total nitrogen is the sum of organic and inorganic nitrogen in water. Total nitrogen = TKN + nitrate + nitrite |
| TOC | Total Organic Carbon: a measure of the amount of organic matter present |
| TP | Total phosphorus is the sum of all forms of phosphorus in aquatic systems: inorganic phosphorus, particulate organic phosphorus, and dissolved (soluble) organic phosphorus. |
| TSF | Tailings Storage Facility is the engineered structure used to store and contain tailings produced during the milling of ore |
| TSS | Total Suspended Solids: the total concentration of suspended solids that are undissolved in water, including silt, clay, metals, and other organic and inorganic materials. |
| Waste rock | Waste rock is fragment rock with no economic value that is initially removed during development of the open pit and underground mine workings |

| Acronym / Term | Definition |
|---|---|
| WQG | Water quality guideline; generic term referring to guidelines developed by various agencies for protection of aquatic life |
| WL | Type A Water Licence (2AM-MEL1631) authorizes Agnico Eagle to use waters and deposit waste in support of mining operations at Meliadine |
| WMWG | Water Management Working Group: a technical advisory group comprised of regulatory agencies, Agnico Eagle representatives, and consultants that was formed in 2020 as part of the Emergency Amendment to discharge surface contact water with higher concentrations of TDS |
| WQ-MOP | Water Quality Monitoring and Optimization Plan: a 3-phase plan to develop TDS Benchmarks for end of pipe effluent quality and surface water quality at the edge of the mixing zone in Meliadine Lake. |
| WRSF | Waste rock and overburden storage facilities |

# REPORT ORGANIZATION

The 2020 Aquatic Effects Monitoring Program (AEMP) report is organized into a main document and 9 appendices. While last year was the first year Azimuth reported on the AEMP water quality results, the report structure remains largely the same as in previous years (Golder 2018, 2019).

The document is organized into the following sections. Figures and tables are included at the end of each chapter.

**Plain Language Summary** – a high-level summary of the 2020 monitoring results for each component of the AEMP (effluent characterization, Meliadine Lake water quality, Peninsula Lakes water quality, and the phytoplankton study in Meliadine Lake).

**Section 1** (Introduction) provides an overview of the AEMP and outlines the scope and objectives of the 2020 program according to the *AEMP Design Document* (Golder 2016).

**Section 2** (AEMP Study Design) summarizes the core elements of the water quality component of the AEMP study design including sampling areas, sampling methods, and data analysis. This section also provides an overview of the decision-making framework for evaluating whether changes in water quality have occurred, and whether those changes are plausibly related to activities at the mine.

**Section 3** (Quality Assurance / Quality Control): a high-level summary of the quality assurance and quality control assessment (QA/QC) presented in **Appendix A**.

**Section 4** (Effluent Characterization): This section summarizes results from the effluent monitoring program (i.e., effluent chemistry, toxicity test results, and loadings assessment).

**Section 5** (Meliadine Water Quality): Summary of the 2020 water quality results from the Meliadine Lake component of the AEMP.

**Section 6** (Meliadine Phytoplankton): Summary of the 2020 phytoplankton study in Meliadine Lake. Figures and Tables specific to each component of the program are included at the end of each section.

**Section 7** (Peninsula Lake Water Quality): Summary of the 2020 water quality results from the Peninsula Lakes component of the AEMP.

# 1 INTRODUCTION

This document presents findings of the 2020 Aquatic Effects Monitoring Program (AEMP) at Agnico Eagle Mines Ltd (Agnico Eagle) Meliadine Gold Project (the mine). The mine is located approximately 25 km north of Rankin Inlet, Nunavut on the southeast shore of Meliadine Lake (**Figure 1-1**). The property is approximately 111,000 ha, and there are currently five deposits in the mine plan: Tiriganiaq, Discovery, Pump, Fzone, and Wesmeg (Agnico Eagle 2015). The Project was approved by the Nunavut Impact Review Board (NIRB) on February 26, 2015, subject to terms and conditions stated in Project Certificate No. 006 (NIRB 2019) and the Type A Water Licence (2AM-MEL-1631) granted by the Nunavut Water Board (NWB) on April 1, 2016.

In April 2020, the NWB granted an emergency amendment to the Type A Water Licence to allow discharge of effluent to Meliadine Lake with higher concentrations of total dissolved solids (TDS). The emergency amendment was in effect for the 2020 discharge season. Details regarding the emergency amendment are discussed in **Section 1.4**.

## 1.1 Mine Site and Environmental Setting

### Mine Site

The Meliadine mine consists of the following infrastructure: a plant site (mill), an emulsion plant, underground workings, open pits, a permanent camp to house staff, an exploration camp, ore stock piles, waste rock storage facilities (WRSF 1&3), a tailings storage facility (TSF), a water management system comprised of collection ponds (CPs[1]), dikes, channels, water treatment plants, discharge locations, and other infrastructure to support mining operations. An All-Weather-Access-Road (AWAR) connects the mine to Rankin Inlet.

The mine entered commercial production in 2019 with ore coming from underground mining of the Tiriganiaq deposit. Two open pits (Tiriganiaq Pit 1 & 2) are also part of the approved project. The current extent of the mine development, as of late 2020, is shown in **Figure 1-2**.

### Meliadine Lake Watershed

The mine is located within the Meliadine Lake watershed, on the southwest shore of Meliadine Lake. In total, the Meliadine Lake watershed encompasses an area of approximately 560 km$^2$. Meliadine Lake is somewhat unique in that it has two outlets, both of which ultimately drain into Hudson Bay. The largest

[1] The terms Containment pond, Collection pond, and Control pond are synonymous.

outflow is the Meliadine River, located in the south basin of the lake, which flows through a series of small water bodies and Little Meliadine Lake before draining into Hudson Bay, just north of Rankin Inlet (**Figure 1-1**). The second outflow is a smaller tributary in the northwest basin of the lake that flows into Peter Lake, which ultimately drains into Melvin Bay via the Diana River system.

Meliadine Lake is one of the larger lakes in the region with a surface area of approximately 107 $km^2$ and a maximum length of 31 km (southeast to northwest). The morphology of the lake is characterized by a highly convoluted shoreline, numerous islands, and shallow reefs. More than one third of Meliadine Lake volume is contributed by lake areas that are less than 2 m in depth, which indicates a considerable reduction in lake volume and overwintering potential during winter (Golder 2019). Maximum ice thickness is about 2 m and occurs in March/April, increasing the concentration of some ions, such as chloride, in the water near the ice-water interface. This occurs due to cryo-concentration, where ice formation excludes certain ions and increases their concentration in the water column (Wetzel 1983). This phenomenon is well documented at reference lakes and exposure areas sampled as part of the water quality monitoring program for the Meadowbank Mine, situated north of Baker Lake, Nunavut.

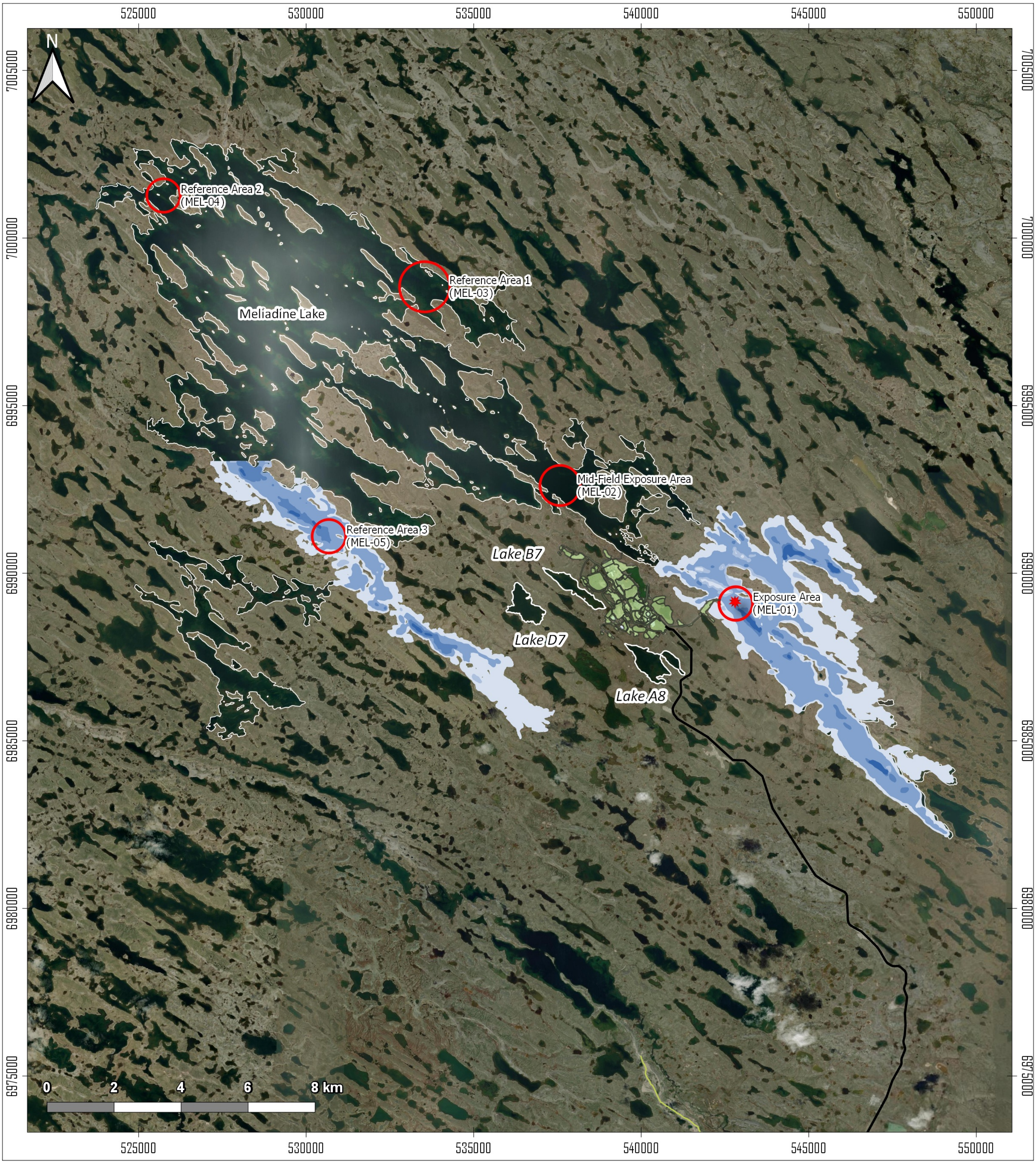
Meliadine Lake is broadly split into three basins based on its morphology. Descriptions of each basin (summarized below) are taken from the 2019 interpretive report (Golder 2019) based on information collected during the baseline period (Agnico Eagle 2014).

- The **east basin** is 2,212 ha and contributes approximately 21% to the entire area of Meliadine Lake. It is separated from the rest of the lake by a shallow and narrow area (up to 2.3 m deep, 100 to 300 m wide, and 800 m long) that features numerous rocky islands and reefs. Golder noted in the FEIS (Agnico Eagle 2014) that the east basin may be isolated from the west basin during the winter months, preventing fish passage.
- The **west basin** is the largest basin in Meliadine Lake. At approximately 7,100 ha, the west basin makes up approximately 68% of the surface area of the entire Lake. The outlet to Peter Lake is located at the northwest end of the west basin. Water depth throughout the west basin tends to be deeper than other areas of Meliadine Lake, with water depths greater than 8 m more common than the east and south basins.
- The **south basin** is 1,135 ha and contributes approximately 11% to the entire lake area. The outlet to the Meliadine River located at the southeast end of the basin is generally shallow (less than 4 m deep).

### Peninsula Lakes Watersheds

Several small watersheds are located on the Meliadine peninsula between the south and east basins of the lake. These peninsula watersheds comprise an extensive network of lakes, ponds, and interconnecting streams that ultimately drain into Meliadine Lake (**Figure 1-3**). The lakes within the

Peninsula are generally small (<90 ha in area) and shallow (<5 m in maximum depth). They are connected to each other (and to Meliadine Lake) through short stream sections; however, they can often be isolated by limited flow during summer/fall and frozen stream conditions during winter (Golder 2012).




**Legend**

- Meliadine Mine Site
- All-weather access road
- Diffuser
- Meliadine Lake sampling areas

Water Depth Intervals (m)

- 0 - 2
- 2 - 4
- 4 - 8
- 8 - 12
- 12 - 22

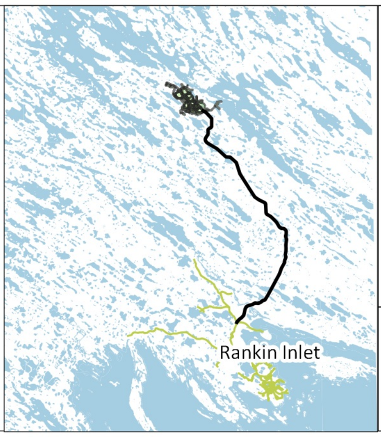



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Figure 1-1
Overview of the Study Area for the Meliadine AEMP

2020 Aquatic Effects Monitoring Program Annual Report

REFERENCES:
1. Waterbody and watercourse data from Natural Resources Canada (NRC)
2. Mine Plan provided by Agnico Eagle
3. Bathymetry data provide by Golder

| | |
|---|---|
| Date: | March 25, 2021 |
| Datum: | NAD 83 UTM Zone 15N |
| Scale: | 1:150,000; overview(1:650,000) |
| Software: | QGIS version 3.16.0-Hannover |
| Produced by: | E. Franz; J. Ellenor |

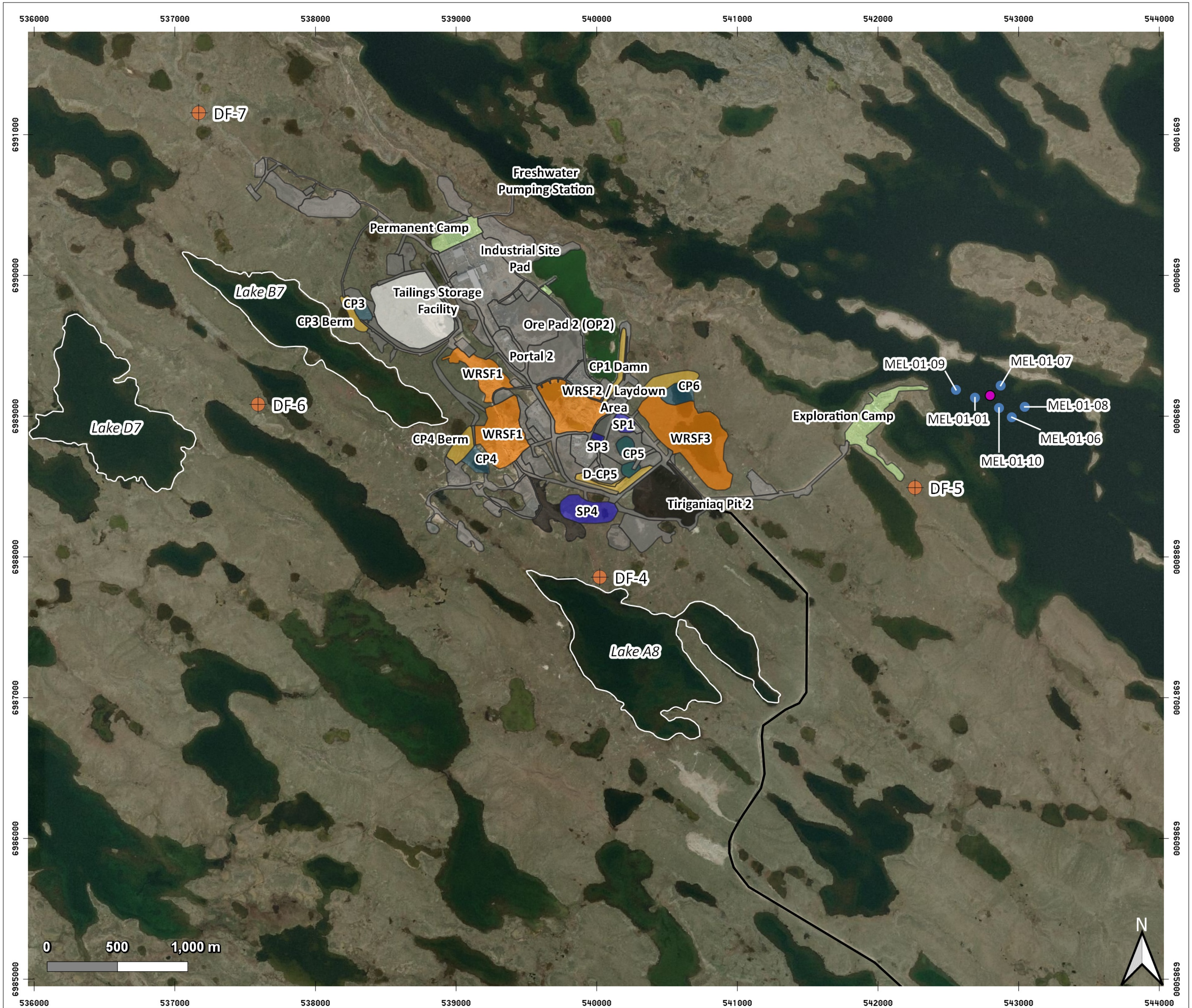


Figure 1-2.
Surface Features at the Meliadine Gold Mine (as of 2020)

2020 Aquatic Effects Monitoring Program Annual Report

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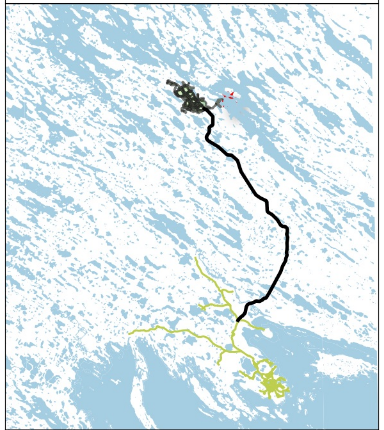
| | |
|---|---|
| Date: | February 14, 2021 |
| Datum: | NAD 83 UTM Zone 15N |
| Scale: | 1:35,000 |
| Software: | QGIS version 3.16.0-Hannover |
| Produced by: | E. Franz; J. Ellenor |

REFERENCES:
1. Basemap imagery from Google
2. Mine Plan provided by Agnico Eagle



**Legend**
- Berm
- Open Pit
- Containment Pond
- Saline Pond
- Tailings Storage Facility
- Waste Rock Storage Facility
- Diffuser
- MEL-01 Monitoring Stations
- Dustfall Stations

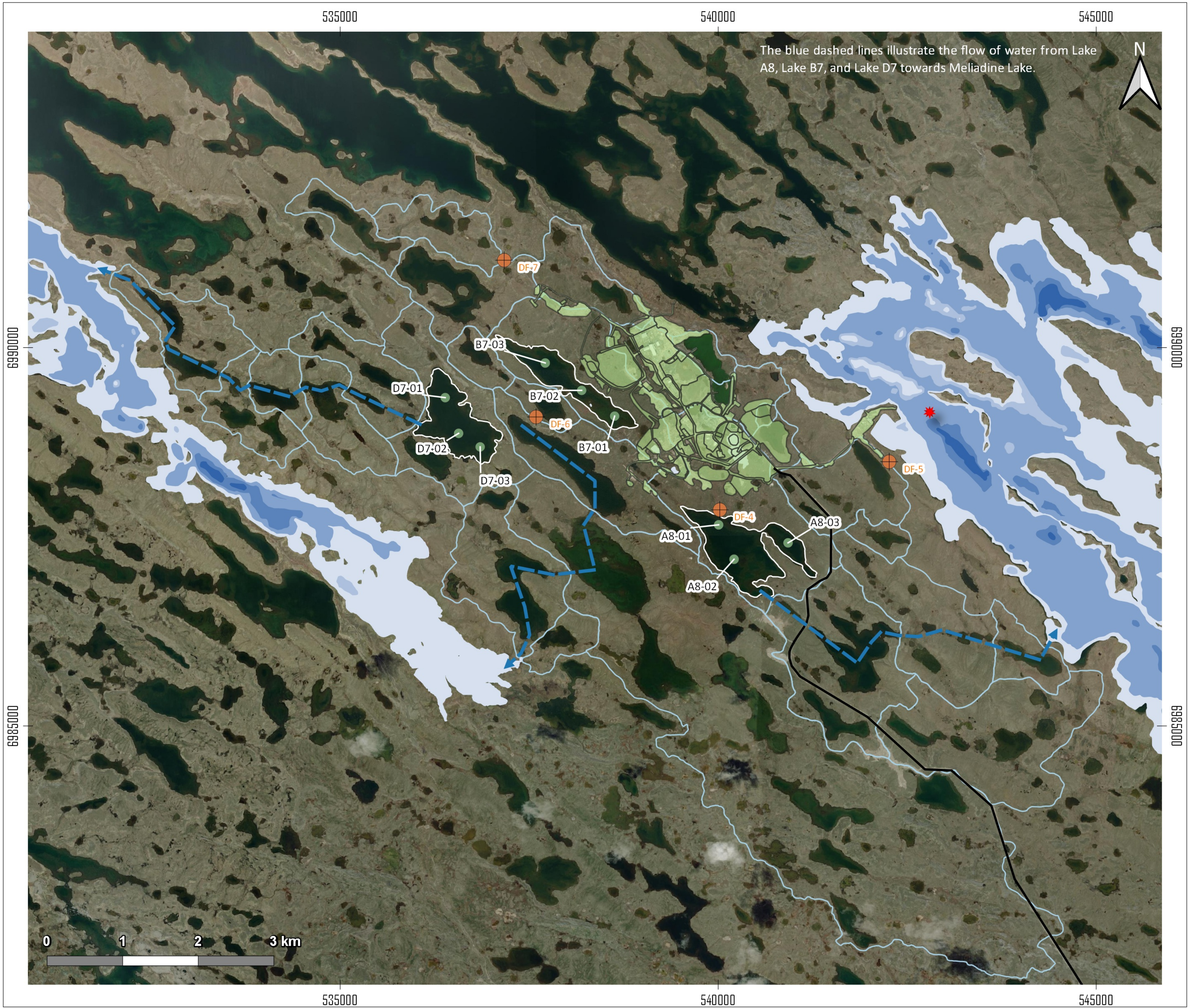



Figure 1-3
Water Quality Monitoring Stations for the Peninsula Lakes Study

2020 Aquatic Effects Monitoring Program Annual Report

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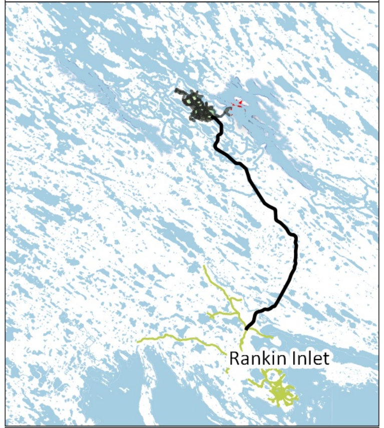
| | |
|---|---|
| Date: | March 25, 2021 |
| Datum: | NAD 83 UTM Zone 15N |
| Scale: | 1:65,000 |
| Software: | QGIS version 3.16.0-Hannover |
| Produced by: | E. Franz; J. Ellenor |

REFERENCES:
1. Basemap imagery from Google
2. Mine Plan provided by Agnico Eagle
3. Roads and waterbodies from NRC
4. Bathymetry data provided by Golder




**Legend**

- Peninsula Lakes watersheds
- Water Sampling Stations
- Meliadine Mine Site
- All-Weather Access Road
- Dustfall Stations
- Diffuser

Water Depth Intervals (m)

- 0 - 2
- 2 - 4
- 4 - 8
- 8 - 12
- 12 - 22

## 1.2 Overview of the Aquatic Effects Monitoring Program

Under the Terms and Conditions of the Project Certificate and the Type A Water Licence[2] (2AM-MEL-1631; Part I), Agnico Eagle must undertake routine monitoring in lakes that may be impacted by activities at the mine. The Aquatic Effects Monitoring Program, or AEMP for short, is the integrated monitoring program used to determine whether discharge of treated effluent, changes in water flow near the site, and aerial emissions are causing changes in water quality and impacts to aquatic life beyond what was predicted in the Final Environmental Impact Statement (FEIS; Agnico Eagle 2014). All project phases, from construction to operations to closure were considered when the AEMP was developed in consultation with communities, stakeholders, and regulators. Inuit Qaujimajatuqangit (Traditional Knowledge) helped define and improve the scope of the AEMP, as stated in Section 1.5.1: *Summary of Inuit Qaujimajatuqangit Knowledge, Traditional Land Use, and Concerns of Inuit regarding the Project* in the Main Application for the Type A Water Licence (Agnico Eagle 2015).

The AEMP is currently focused on assessing potential changes related to on-going construction and early operations, but the design also considers later phases of the Project (i.e., late operations to closure), and potential development of other deposits. The *AEMP Design Plan* (Golder 2016) outlines how the monitoring program is conducted, and applies to aquatic monitoring in Meliadine Lake and three lakes located close to the mine (referred to collectively as the Peninsula Lakes). The Meliadine Lake study and the Peninsula Lakes study are similar in their mandate, but differ with respect to the frequency and scope monitoring. An overview of each study is provided below.

### Meliadine Lake Study

The Meliadine Lake study is the more expansive of the two studies because Meliadine Lake is the receiving environment for discharge of treated surface contact water collected on site[3]. Surface contact water refers to precipitation and runoff that occurs within the footprint of the mine. The general strategy for managing surface contact water is to intercept water that comes in contact with mine infrastructure and direct it towards Collection Ponds (CPs) through a network of dikes, channels, and culverts, thereby mitigating the uncontrolled release of contact water to the aquatic environment[4]. In accordance with the *Metal and Diamond Mining Effluent Regulations* (MDMER), biological monitoring studies are completed on a 3-year cycle in Meliadine Lake to assess whether discharge of effluent is causing an effect to fish and benthic invertebrate communities. To improve efficiency and reduce

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[2] The Water Licence broadly outlines the terms of water use and disposal of waste, including the conditions for discharging water into Meliadine Lake. The Nunavut Water Board approved on May 19th, 2016 (NWB 2016).

[3] None of the water used in the milling circuit is discharge to aquatic receiving environments.

[4] The updated Water Management Plan was submitted as Appendix C in the Type A Water Licence Amendment (Agnico Eagle 2020).

redundancy, the scope of biological monitoring under the AEMP was harmonized with the Environmental Effects Monitoring (EEM) program required under MDMER. There are however, certain aspects of the AEMP that go beyond what is required under EEM (e.g., fish tissue chemistry monitoring and additional study areas). The expanded monitoring under the AEMP compared to the EEM program reflects commitments made during the regulatory approval process. Biological studies on the health of fish and benthic invertebrate communities and fish tissue chemistry are aligned with the 3-year cycle for EEM under MDMER. The next biological monitoring studies are planned for 2021.

### Peninsula Lakes Study

Three lakes located near the mine, Lake A8, Lake B7, and Lake D7 are included in the AEMP to monitor changes caused by non-point source discharges such as aerial emissions and dust deposition and erosion caused by alteration of the natural drainages as part of construction of the mine (Golder 2016). The letters A, B, and D correspond to subdrainages (watersheds) on the peninsula, and the lake numbers within each drainage basin indicate where the lake is located along the flow path. For example, Lake D7 flows into Lake D6 and so on, eventually draining into the last lake in the D watershed (Lake D1), which flows into Meliadine Lake near outlet to the Meliadine River. **Figure 1-3** shows the location of the Peninsula Lakes and the subdrainages on the peninsula.

None of the small lakes in the vicinity of the mine receive treated effluent, which means there is no requirement for biological monitoring under MDMER. Water quality monitoring in the Peninsula Lakes is conducted annually as an early indicator of potential mine-related changes. This approach received support from intervenors during the consultation phase, with understanding that biological monitoring may be required in the future, if project-related changes to water quality exceed changes predicted in the FEIS.

## 1.3 Scope and Objectives of the 2020 AEMP

In “off-years”, years when EEM sampling is not completed, the AEMP focuses specifically on assessing changes in water quality in Meliadine Lake and the Peninsula Lakes. The scope of the 2020 monitoring program focused on assessing potential changes in water quality and primary productivity in Meliadine Lake and changes in water quality in the Peninsula Lakes (Lake A8, Lake B7, and Lake D7). A supplemental “targeted” phytoplankton study has also been conducted annually as a part of the Meliadine Lake study since 2015 to help determine if the mine is causing changes in primary productivity. The study was considered “targeted” rather part of the core monitoring program because in the early years of monitoring there was uncertainty about whether the data generated from the phytoplankton study would provide insights to help distinguish between natural *vs* mine-related changes the phytoplankton community assemblage and biomass. Based on 5+ years of data, the phytoplankton monitoring program has shown promise as a monitoring tool for directly evaluating whether nutrients (e.g., nitrogen and phosphorus) discharged to Meliadine Lake are causing increases in primary productivity. Phytoplankton community results (i.e., biomass), along with the chlorophyll-a and nutrient data, will still be evaluated in a weight-of-evidence assessment to help determine whether nutrient enrichment is occurring in Meliadine Lake due to mine-related activities.

The 2020 AEMP was conducted to fulfill the objectives as stated in the *AEMP Design Plan* (Golder 2016):

- Determine the short-term and long-term effects of the Project on the aquatic receiving environment,
- Evaluate the accuracy of the predictions in the Final Environmental Impact Statement,
- Assess whether mitigation measures are effective at reducing impacts to the aquatic environment, and
- Provide recommendations (as required) for follow-up monitoring or mitigation as part of the Response Framework which links monitoring results to management actions.

An overview of the AEMP study design as it pertains to Meliadine Lake and the Peninsula Lakes is presented in **Section 2.**

## 1.4 Activities on Site in 2020

Mining operations have the potential to affect water quality in the aquatic receiving environment through discharge of treated effluent (surface contact water to Meliadine Lake), accidental spills, altered hydrology due to construction activities, and aerial emissions and dust deposition. A summary of major construction activities, spills, and effluent discharge is provided below as context for assessing potential mining-related changes in water quality in Meliadine Lake and the Peninsula Lakes.

### Construction and Operations

The following major site related activities that occurred in 2020.

- Collection Pond 6 (CP6) was constructed over the winter of 2019/2020 and was completed prior to freshet. The thermal berm on the north of the pond divides the H watershed in two, with the north portion flowing out to Meliadine Lake and the south flowing to CP6. The material used for the berm construction was clean waste rock (non-potentially acid generating [NPAG] and no saline groundwater contamination) from the surface blasts.
- Mining of Tiriganiaq Pit 2 began winter 2019/2020 and is still on-going. Construction also includes the placement of waste rock in WRSF3, which is within the CP6 catchment.
- Saline Pond 4 (SP4) was constructed over the winter of 2019/2020 within the footprint of Tiriganiaq Pit 1. Overburden was placed in WRSF1, while waste rock material was placed in a temporary storage area between the Tiriganiaq 1 and Tiriganiaq 2 footprints.

Details regarding construction activities and normal operations are provided in the Annual Report prepared by Agnico Eagle.

### Effluent Discharge to Meliadine Lake

Precipitation and runoff are intercepted and diverted to CPs to prevent uncontrolled off-site migration of surface contact water. Five CPs are currently in operation (**Table 1-1**); CP3 through CP6 are located adjacent to major infrastructure (**Figure 1-2** [map] and **Figure 1-4** [schematic]). Water from these peripheral CPs is ultimately pumped to CP1 (formerly Lake H17[5]). Other sources of water to CP1 include direct runoff from the CP1 catchment and treated wastewater from the Sewage Treatment Plant (STP). Water collected in CP5 is either pumped directly to CP1 or diverted to the reverse osmosis treatment plant if the total dissolved solids (TDS) concentration exceeds the Water Licence limit for TDS (3,500 mg/L in 2020). Most of the surface contact water in CP1 is discharged to Meliadine Lake after treatment at the Effluent Water Treatment Plant (EWTP). The purpose of the EWTP is to reduce total suspended solids (TSS) to below 15 mg/L (Actiflo® model ACP-700R). The EWTP also removes some phosphorus[6].

**Table 1-1. Surface Contact Water Management Plan**

| Source | Collection Pond |
|---|---|
| Industrial Site Pad, Ore Stockpile (OP2), Landfill | CP1 |
| WRSF1 | CP1, CP4, CP5 |
| WRSF3 | CP2* and CP6 |
| Tiriganiaq Pits 1* and 2 | CP5 (2020), CP4 (2021) |
| TSF | CP1 and CP3 |

Adapted from Table 9 in Appendix C of the Type A Water Licence Amendment (Agnico Eagle 2020a)
* Construction planned for 2021.

In April 2020, Agnico Eagle was granted an emergency amendment of the Type A water licence to temporarily discharge surface contact water from CP1 with a maximum average concentration of TDS of 3,500 mg/L. The increase in the limit for TDS from 1,400 mg/L to 3,500 mg/L was granted for the 2020 discharge season to address critically high-water levels in CP1 caused by the combination of an unusually wet year in 2019 and an overly conservative limit for TDS (Agnico Eagle 2020). The emergency amendment was granted by the NWB subject to the following terms and conditions:

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[5] This lake was dewatered between August 21 and October 1, 2016 and converted into CP1 for managing surface contact water on site. Water was discharged via a temporary diffuser located north of CP1, in the narrows connecting the east basin of Meliadine Lake with the west basin. The volume of water released was greater than 50 $m^3$, which triggered the mine falling under MDMER.

[6] Personal communication from the Meliadine Environment Department (March 15, 2021).

- Effluent quality will meet existing limits in the water licence and MDMER,
- Agnico Eagle will establish a scientifically-defensible in-lake benchmark for TDS that is protective of the environment (1,000 mg/L),
- Conduct water quality monitoring and toxicity testing to validate the interim TDS targets and a plume delineation study to provide information about the assimilation capacity of the lake, and
- Develop an adaptive management strategy for discharge of water from CP1 to Meliadine Lake.

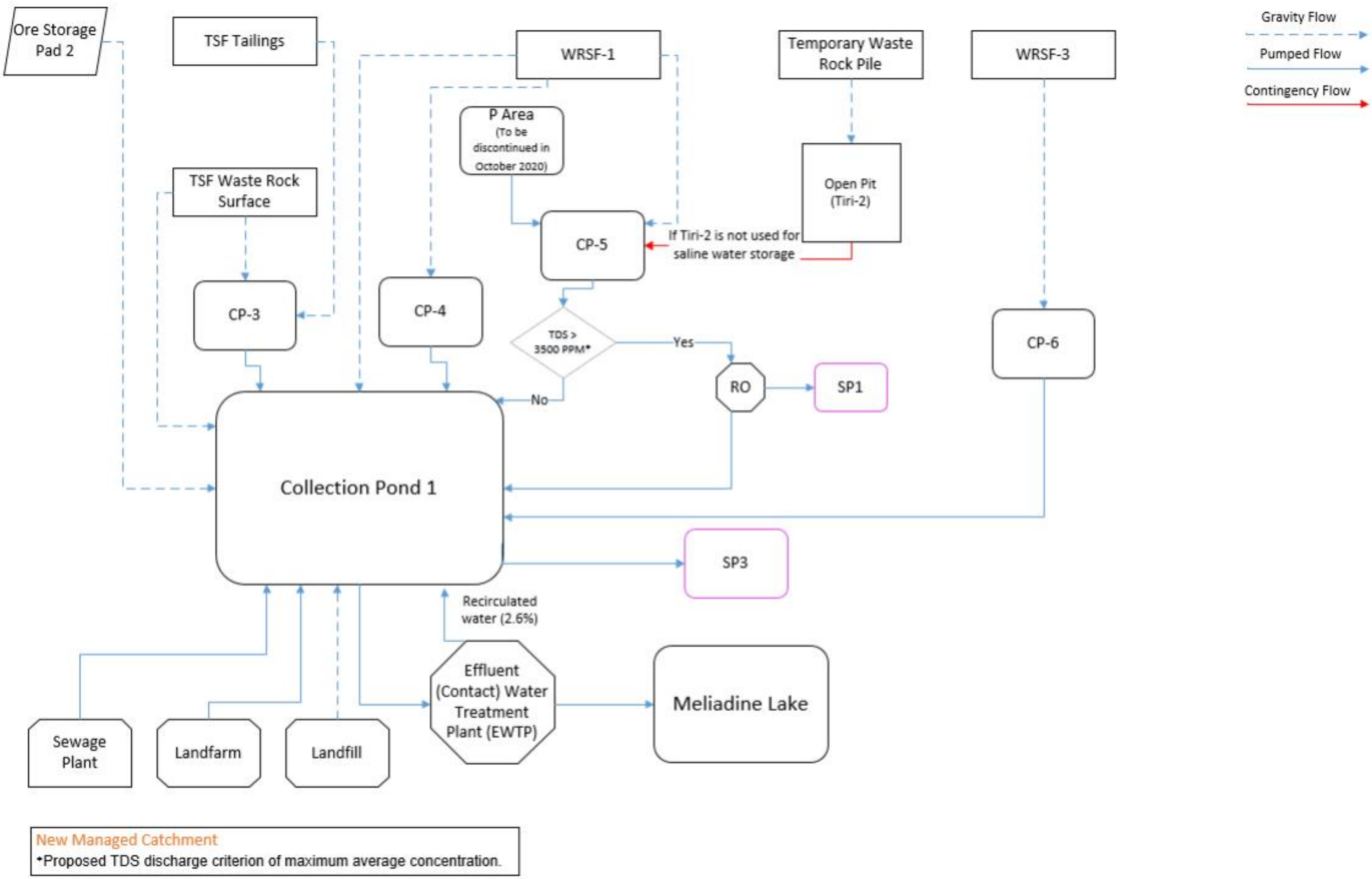
The conditions of the Emergency Amendment were implemented through the *Water Quality Monitoring and Optimization Plan* (WQ-MOP). The WQ-MOP was split into 3 phases:

1. Development of interim TDS targets for the effluent and surface water at the edge of the mixing zone in Meliadine Lake (100 m). Interim effluent (3,500 mg/L) and edge of mixing zone (1,000 mg/L) targets were developed. Golder concluded that the interim guidelines would be protective of aquatic life in Meliadine Lake.
2. Validation studies on effluent and receiving environment water quality were carried out throughout the discharge period (June 5$^{th}$ to October 4$^{th}$). Water quality was monitored by collecting samples for chemistry and toxicity testing. In addition, two plume delineation surveys were conducted to track the vertical and horizontal dispersion of the effluent during the discharge period.
3. Finalization of the TDS Benchmarks for end of pipe effluent quality and surface water quality at the edge of the mixing zone.

A Water Management Working Group (WMWG) was formed with representatives from the Nunavut Water Board (NWB), Environment and Climate Change Canada (ECCC), Crown Indigenous Relations and Northern Affairs Canada (CIRNAC), Kivalliq Inuit Association (KivIA), Agnico Eagle, and their technical lead on the project (Golder). The WMWG met regularly through the summer and fall to receive updates on the WQ-MOP results.

Monitoring for the WQ-MOP happened concurrent to water quality monitoring for the AEMP, and the conclusions stemming from the WQ-MOP (Golder 2020) were incorporated into the overall assessment of effluent quality and water quality in Meliadine Lake for the 2020 AEMP. Details pertaining to the toxicity testing and water quality monitoring for the WQ-MOP are discussed in **Section 4** (Effluent Characterization) and **Section 5** (Meliadine Lake Water Quality).

**Figure 1-4. Surface Contact Water Management in 2020**




Note: This figure was taken from *Meliadine Site Water Balance and Water Quality Model* (Golder 2020b) prepared in support of the Water Licence Amendment.

### Table 1-2. Summary of Major Development Activities Since the Start of Construction in 2015

| Mine Year | Mine Development Activities and Sequence[a] |
|---|---|
| Q4 of Yr -5 (2015) | • Started construction of industrial pad<br>• Developed ramp to Tiriganiaq underground mine<br>• Constructed portion of rock pad for stockpiles to store ore from Tiriganiaq underground ramp development |
| Yr -4 (2016) | • Continued construction of industrial pad<br>• Constructed and operated the temporary landfill<br>• Started temporary storage of waste rock in the future WRSF2 footprint for construction purposes<br>• **Continuous dewatering of Lake H17 between August 21 and October 1 via a temporary diffuser located between MEL-01 and MEL-02 study areas (Golder 2017)** |
| Yr -3 (2017) | • Constructed and utilized Type A landfarm<br>• Constructed and began operation of Type A landfill<br>• Erected and closed all main buildings except crusher, paste plant, and crushed ore storage<br>• Erected incinerator<br>• Erected and operated effluent water treatment plant (EWTP)<br>• Installed fuel tanks 3 ML and 250 kL at Portal1<br>• Erected fuel tank 13.5 ML in Rankin Inlet<br>• **Discharge from CP1 planned for September to October 2017 did not occur due to exceedance of the maximum average concentration (MAC) for TDS of 1,400 mg/L**<br>• **Sewage effluent from the exploration camp STP transported to main camp STP for treatment beginning in November (Golder 2019)** |
| Yr -2 (2018) | • Started construction of Ore Storage Pad 2 (OP2)<br>• Erected and closed crusher, paste plant, and crushed ore storage buildings<br>• Erected fuel tank 20 ML in Rankin Inlet<br>• Erected fuel tanks 6 ML and 250 kL at industrial pad<br>• Started process commissioning at end of Q4<br>• **Discharge of treated surface contact water from CP1 from June 21 to September 3** |
| Yr -1 (2019) | • Completed industrial pad<br>• Completed construction of OP2<br>• Started to place filtered tailings in Cell 1 of TSF at end of Q1<br>• Started full capacity ore processing early Q2<br>• Created temporary waste rock storage area within footprint of Tiriganiaq Pit 2 from construction of Saline Pond 2 (SP2)<br>• Began placement of waste materials from Saline Pond 4 (SP4) in WRSF1<br>• **Discharge of treated surface contact water from CP1 from July 9 to October 5** |
| Yr 1 (2020) | • Place waste rock from temporary storage within footprint of Tiriganiaq Pit 2 to construct haul roads for open pits and to WRSFs<br>• Create temporary waste rock storage area between footprints of Tiriganiaq Pits 1 and 2 from construction of SP4<br>• Start to mine Tiriganiaq Pit 2<br>• Begin placement of waste materials from Tiriganiaq Pit 2 within WRSF3<br>• **Discharge of treated surface contact water from CP1 from June 5 to October 4** |

Notes:
Key water management activities are **bolded**.
[a] This table was adapted from the Mine Waste Management Plan (Agnico Eagle 2020).

# 2 AEMP STUDY DESIGN

This chapter provides an overview of the AEMP study design with respect to the water quality component of the program. Information on study design considerations for fish (health and chemistry), benthic invertebrate community health, and sediment quality are discussed in detail in the *AEMP Design Plan* (Golder 2016).

## 2.1 Study Areas

As mentioned previously, the AEMP is comprised of two related, yet distinct monitoring programs: the Meliadine Lake study and the Peninsula Lakes study. The two programs share common field methods, analytical methods, quality assurance and quality control protocols, and similar strategies for evaluating the water quality data, but there are some notable differences. An overview of study design for Meliadine Lake and the Peninsula Lakes is provided below.

### 2.1.1 Meliadine Lake

The Meliadine Lake study was designed to detect mine-related changes and define the spatial and temporal extent of those changes. The study design uses multiple control-impact study design with two exposure areas (near-field [NF], mid-field [MF]) and three reference areas to provide spatial context when interpreting potential changes within and between years. Conceptually, NF areas provide an early-warning for introductions of stressors into the receiving environment and are situated in close proximity to the primary sources of exposure at a site (i.e., the edge of the mixing zone for effluent). MF areas are located farther downstream from the NF monitoring areas and help define the spatial extent of potential changes observed at NF area(s). Finally, reference areas provide insights into regional trends (e.g., climatic events) that would be expected to influence all sampling areas (i.e., natural temporal changes).

There are five water quality sampling *areas* in Meliadine Lake, and each area has five spatially-distinct replicate *stations* located at least 100 m apart to characterize variability within each area. The targeted lake depth at each station is 8 to 10 m, with water samples collected at a depth of 4 m from the surface. These stations are also where benthic invertebrates and sediment are collected for the EEM program every 3 years.

- **Near-field (MEL-01)** – The entire NF area is approximately 500 m in diameter (**Figure 1-2**). Two of the fixed sampling stations are located 100 m from the diffuser to provide greater likelihood of detecting changes in water quality during the open-water discharge period. The other three stations are located at between 200 and 250 m from the diffuser. An additional monitoring station was established at 100 m from the diffuser in 2020 as part of the study design for the WQ-MOP undertaken specifically for the emergency amendment. Details of the WQ-MOP are discussed in **Section 5.1.2** of the Meliadine Lake water quality study.

- **Mid-field (MEL-02)** – the *mid-field* monitoring area (MEL-02) is located approximately 3 km northwest from MEL-01, northwest of the constriction separating the east and west basins. The general flow direction at MEL-01 is from southeast to northwest; water quality data from MEL-02 provide a spatial context for any changes observed at MEL-01 that may be mine-related as opposed to natural.
- **Reference Areas 1, 2, and 3 (MEL-03, MEL-04 and MEL-05)** – Three *reference areas* in Meliadine Lake are sampled annually to assess whether there are spatial differences in water quality at the NF and MF stations relative to far-field locations in Meliadine Lake. Reference Area 1 (MEL-03) is located in the northeast area of the west basin[7] of Meliadine Lake and is sampled concurrently with the NF and MF areas in July, August, and September. Reference Area 2 (MEL-04; northwest part of the west basin) and Reference Area 3 (MEL-05; south basin near the outlet to Meliadine River) are sampled in August as part of the expanded monitoring program that includes phytoplankton monitoring.

The Meliadine Lake water sampling program is designed primarily to detect changes in water quality during the open-water season, coinciding when effluent is discharged to Meliadine Lake. The open-water season in the region is short, typically from early to mid-June until the end of October. Sampling in June and October is not recommended due to safety concerns related to ice stability in the spring and inclement weather in October.

Given the short-window to complete open-water sampling, one winter (through-ice) sampling event is completed at the NF and MF areas to provide a *snap-shot* of conditions in Meliadine Lake and assess the spatial extent of water quality changes in areas closest to the mine. Water samples are not collected from reference areas in the winter due to the distance from site and ensuing health and safety considerations for safe sampling, which precludes a more formal assessment of mine-related vs natural changes in water quality during the prolonged ice-covered season.

### 2.1.2 Peninsula Lakes

The water quality component of the Peninsula Lakes AEMP is designed to detect changes in water quality related primarily to the deposition of aerial emissions and alteration of watersheds (i.e., changes

[7] Use of east, west and south basins for Meliadine Lake as per Golder (2019).

to natural drainage paths or hydrologic balance) (Agnico Eagle 2014). Importantly, changes in water quality in the Peninsula Lakes area were predicted to be local and to not extend to Meliadine Lake.

- **Watershed A** – Lakes in watershed A are located mainly to the south and east of the mine. Lake A8 is the largest of the lakes in the subdrainage. The outlet to Lake A8 is located at the southeast end of the lake. Water from Lake A8 ultimately flows into Meliadine Lake, approximately 2 km south of sampling area MEL-01.
- **Watershed B** – Lakes in watershed B are located west and south of the mine site. Lake B7, located adjacent to the TSF, is the largest lake in the subdrainage and represents the lake that is most suitable for monitoring changes in water quality related to dust from the TSF. Surface water flows from north to south, eventually emptying into Meliadine Lake south east of MEL-05.
- **Watershed D** – Lakes in watershed D are located west of watershed B. The direction of flow is from east to west, with Lake D1 emptying into Meliadine Lake across from where Meliadine Lake drains into the Meliadine River.

Water quality monitoring at three headwater lakes (Lake A8, Lake B7 and Lake D7; **Figure 1-2**) is conducted twice during the open water season in July and August to assess whether the mine is indirectly causing changes in water quality. As outlined in the *AEMP Study Design* (Golder 2016), the scope of the Peninsula Lakes AEMP focuses solely on assessing changes in water quality. If changes in water quality are detected, follow-up investigations may be implemented as part of the AEMP Response Framework (Figure 8.1 in Golder 2016).

## 2.2 Field and Laboratory Methods

Field methods for the Meliadine Lake and the Peninsula Lakes program follow the same standard operating procedure (SOP), with a few slight modifications when sampling at the shallower Peninsula Lakes.

### *In-situ* Field Measurements

Field sampling is completed by boat without anchoring if wind and wave conditions are light to moderate. In inclement weather, the boat is anchored to stay within close proximity to the fixed sampling location. At each sampling station, field measurements (water depth and physicochemical measurements) are collected prior to surface water quality samples for chemistry analysis. Total depth of the water column is measured either by using a sounding line or a boat-mounted sonar unit; during the ice-cover program a sounding line is used to measure total depth. *In-situ* physicochemical measurements are taken just below the surface (or below the ice during ice-covered conditions), at 0.5 m below the surface, at 1.0 m below the surface and every 1 m thereafter throughout the water column ending at approximately 0.5 m above the sediment. Multiprobes (e.g., YSI, or Eureka Manta) with sensors for measuring dissolved oxygen (DO) as mg/L and %, temperature as °C, pH, and specific conductivity as µS/cm are used for limnology measurements. During ice-covered conditions at Meliadine Lake, ice thickness is also measured.

### Surface Water Sampling – AEMP

Surface water samples are collected using a Kemmerer grab sampler from mid-depth in the water column during the open-water sampling events. Meliadine Lake stations are sampled at 4 m. The shallower Peninsula Lakes are sampled at 1 m below the surface. The Kemmerer is triple rinsed prior to sampling at each area. For the winter sampling event at Meliadine Lake, water samples are collected mid-depth using an electric submersible pump connected to a length of C-Flex (Cole Parmer) silicon tubing. Prior to filling the bottles, water is pumped through the tubing for at least two minutes to flush the entire system.

Bottles for chemistry analysis are pre-labelled before going into the field and handled (i.e., preserved and filtered) according to specifications provided by ALS Environmental. Filtered samples for dissolved organic carbon, dissolved nutrients, and dissolved metals are collected using a syringe and 0.45 µm disc filter provided by ALS (see **Table 2-1**). A checklist is included with the field data sheet to verify the samples requiring filtration and to ensure preservation is handled correctly.

Water quality samples for the AEMP are sent to ALS Environmental in Winnipeg, MB. The lab in Winnipeg arranges sample shipping to Edmonton, Vancouver, and Fort Collins, Colorado based on the analytical capabilities at these locations and the detection limits for the project. ALS is an analytical laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA).

**Table 2-1. Water quality parameters collected for the AEMP.**

| List of AEMP Water Quality Parameters |
|---|
| **Field Measurements.** Depth, pH, specific conductivity, dissolved oxygen, temperature, Secchi depth (open-water), ice thickness |
| **Conventional Parameters and Major Ions.** Bicarbonate alkalinity, chloride, carbonate alkalinity, turbidity, conductivity, hardness, calcium, potassium, magnesium, sodium, sulphate, pH, total alkalinity, total dissolved solids (TDS) and total suspended solids (TSS). |
| **Nutrients and Organic Carbon.** Ammonia-nitrogen, total Kjeldahl nitrogen, nitrate-nitrogen, nitrite-nitrogen, orthophosphate, total phosphorus, total organic carbon, dissolved organic carbon, reactive silica. |
| **Total and Dissolved metals.** Aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, and zinc. |
| **Other Parameters.** Total cyanide, free cyanide, and weak acid dissociable (WAD) cyanide radium-226 |

## Water Sampling – Phytoplankton Study

The phytoplankton study in Meliadine Lake is undertaken in the August AEMP event and includes the following monitoring components:

1. Phytoplankton taxonomy (biomass [mg/m$^3$], density [cells/L], and richness [number of taxa])
2. Chlorophyll-a
3. Nutrients

Water samples are collected as composite samples collected from discrete depth intervals through the water column (aka depth-integrated samples). Depth-integrated, rather than discrete sampling, considers potential heterogeneity in the vertical distribution of the phytoplankton community top to bottom in the water column. Sampling followed the same methods as in previous years (e.g., Golder 2019). First, Secchi depth (20-cm disk) was measured at each location to determine the depth of the euphotic zone[8], defined as 2-times the Secchi depth. After defining the depth of the euphotic zone, water samples were collected (using the Kemmerer) from just below the surface and every two meters through the euphotic zone (or to 2 m off the lake bed if the estimated euphotic zone extended right to the bottom[9]). An equal volume of water from each discrete sample was combined in a clean bucket to create the composite depth-integrated sample. Subsamples of the composite depth integrated water sample were collected for 1) nutrients, 2) chlorophyll-a, and 3) phytoplankton taxonomy. One sample at each station was collected for nutrients and phytoplankton; triplicate samples were collected for chlorophyll-a.

- Each sample for nutrient analysis was collected from the depth-integrated composite and processed according to instructions from ALS. Samples were processed (i.e., filtered and/or preserved as required by analyte or analyte group) and refrigerated. Samples were shipped cold to ALS (Edmonton) for analysis of total nitrogen (TN), dissolved nitrogen, total Kjeldahl nitrogen (TKN), dissolved Kjeldahl nitrogen, total ammonia, nitrate, nitrite, total phosphorus (TP), dissolved phosphorus, dissolved orthophosphate, and soluble reactive silica (SRSi).
- Triplicate subsamples of the depth-integrated composite were collected for chlorophyll-a. Each triplicate sample was collected by filtering 500 mL of water through a Whatman glass fiber type C filter with a nominal pore size of 1.2 µm using a vacuum pump. Individual filters were folded in half, placed in pre-labelled containers, and shipped frozen to the Biogeochemical Analytical

[8] The euphotic zone is the vertical extent of water column where sufficient light is present for photosynthesis; typically, depth where 1% of surface irradiance is measured (see Koenings and Edmundson 1991, Alberta Environment 2006; both as cited in Golder 2019).

[9] The total water depth at all of the stations in Meliadine is less than 2-times the Secchi depth.

Service Laboratory at the University of Alberta (Edmonton), for spectrophotometric analysis of chlorophyll-a.

- Each sample for phytoplankton analysis was collected from the depth-integrated composite in a 250-ml amber Nalgene bottle. Samples were preserved with 4 ml of Lugol's solution, sealed, and stored in the dark for transportation to Plankton-R-Us (Winnipeg) for taxonomic identification to the lowest practical level and for density and biomass (based on biovolumes).

### 2.2.1 Data Management

Water quality data for the Meliadine project are managed within an EQuIS database. Water quality data are uploaded directly to EQuIS by the different laboratories. Data analysis, including summary statistics, plotting, and statistical analyses were completed using open-source software (R; version 3.6.1).

Descriptive summary statistics were calculated for the list of AEMP water chemistry parameters listed in **Table 2-1**. Summary statistics (mean, standard deviation (SD), median, minimum and maximum values) are calculated on the pooled annual results for each area (in the case of Meliadine Lake) or individual lakes (for the Peninsula Lakes). Summary statistics were calculated separately for the winter and open-water sampling events in Meliadine Lake. In cases when the reported concentration from the lab was less than the detection limit (DL), half the value of the DL was used to calculate the mean and SD. If more than 50% of the values were <DL, the mean and SD were not calculated and other statistics (e.g., median or maximum) were used to interpret the results. Parameters with more than 50% of the samples below the DL were not carried forward for further analysis. This approach to handling non-detect (or censored data) was adopted from previous reports (e.g., Golder 2019).

## 2.3 Approach to Evaluating Water Quality Results

### 2.3.1 Key Questions for Evaluating Changes in Water Quality

To help focus the decision-making process, a series of *key questions* were proposed for each component of the AEMP as a way of evaluating mine-related changes to water quality, fish health, the health of benthic invertebrate communities, and the opportunity for traditional and non-traditional use of the fishery. The key questions for each component of the AEMP are outlined in the AEMP Design Plan (2016), but for the purpose of the 2020 AEMP Report, only questions pertaining to water quality assessment are discussed herein.

Each year, three key questions are evaluated for the water quality component of the AEMP:

1. *Are concentrations of parameters in the effluent less than limits specified in the Water Licence?*
2. *Has water quality in the exposure areas changed over time, relative to reference/baseline areas (in the case of Meliadine Lake) or baseline conditions (in the case of the Peninsula Lakes)?*

- If the answer is “no”, then water quality in Meliadine Lake or the Peninsula Lakes is similar to conditions measured in the baseline period, and the conclusion is that activities at the mine are not causing changes in water quality.
- If the answer is “yes”, then a more thorough examination of the data is required to verify that the changes in water quality are consistent with the FEIS predictions and that water quality is safe for aquatic life and human consumption.

3. *Is water quality consistent with predictions outlined in the Final Environmental Impact Statement (FEIS) and less than AEMP Action Levels[10]?*

The first question applies specifically to the Meliadine Lake study. Simply put, under terms of the Water Licence (and MDMER), certain parameters (e.g., TDS, some metals) in treated contact water cannot exceed authorized limits. Questions 2 and 3 broadly apply to both the Meliadine Lake and the Peninsula Lakes studies, with some differences specific to each study design. For example, as of August 2020, there are updated predictions for how water quality in the east basin of Meliadine will change between 2020 and 2028 (based on total dissolved solids). These model results provide a point of comparison to accurately assess whether changes observed in Meliadine Lake match the magnitude and extent of changes based on the current mine plan (Tetra Tech 2020). In the case of the Peninsula Lakes, the predictions from the 2014 FEIS remain the point of comparison (discussed further below).

The following sections discuss how water quality data is evaluated relative to the key questions above and how the data are ultimately interpreted within the Aquatic Monitoring Response Framework in the AEMP Design Plan (Golder 2016).

### 2.3.2 Comparison to Baseline / Reference Conditions

Spatial and temporal comparisons are an important aspect of the water quality monitoring program for both Meliadine Lake and the Peninsula Lakes. In previous AEMP reporting cycles, the *normal range* has been the default method for evaluating current water quality at the exposure areas relative to baseline and reference conditions. The normal range represents the range of natural variability in data based on data collected during the baseline period and supplemented with additional reference area chemistry data that may be collected each year. Use of the normal range concept can be effective in situations where water quality is expected to remain relatively consistent compared to reference areas or baseline conditions. However, in situations where water quality is predicted to change, as is the case with the east basin of Meliadine Lake and various waterbodies on the peninsula, these comparisons become less

[10] AEMP Action Levels refer to 75% of the AEMP Benchmark for a given parameter. The AEMP Benchmarks correspond to the lowest water quality guideline for protection of aquatic life and human health, or site-specific water quality objectives in the case of fluoride, arsenic, and iron. AEMP Action Levels are discussed in detail in **Section 2.3.4**.

insightful after analytes have moved beyond the upper limit of the normal range. In the case of Meliadine Lake for example, both the FEIS (Agnico Eagle 2014) and recently updated water quality modeling completed by Tetra Tech (2020) predict TDS concentrations in the east basin to increase beyond the normal range to approximately 170 mg/L by 2028. TDS concentrations in the NF area exceeded the normal range in 2019 and are expected to do so for another decade or more (see **Section 5.3.4** for more details). Thus, when clear mining-related changes have been identified, tracking trends should also focus on both quantitative and qualitative comparisons to the FEIS (or more recent) predictions and on comparisons to project-specific action levels and benchmarks.

Notwithstanding, each year, water quality results for each lake (Meliadine, Lake A8, Lake B7, and Lake D7) are screened against their respective normal ranges of baseline / reference conditions[11]. The baseline period for the Peninsula Lakes ended in 2017; meaning no new data are included in normal range calculations for Lake A8, Lake B7, and Lake D7. In the case of Meliadine Lake, normal ranges are updated each year with the addition of new reference data from MEL-03, MEL-04, and MEL-05. The nuances of the normal range assessment for the Meliadine Lake and Peninsula Lakes studies are discussed in more detail within their respective chapters.

### 2.3.3 Comparison to FEIS Predictions

In the context of the AEMP, the term "FEIS predictions" refers to the *expected* change in surface water quality in response to development of the mine (Agnico Eagle 2014). FEIS predictions were based on the results of water quality modelling that was done for Meliadine Lake and some of the waterbodies on the peninsula that may be affected by mining development. The extent, timing, and certain aspects of the mine development in the Project Certificate No.006 are no longer relevant to the current life of mine. Consequently, the *specific* numerical water quality predictions for Meliadine Lake and the waterbodies on the peninsula are also outdated for most parameters except for TDS, chloride, and sodium (discussed in **Section 5.3.5**). However, the broad *narrative* statements about changes in water quality related to mining activities are still a relevant point of comparison for evaluating whether the mine is operating within the approved scope of the Project. Changes in water quality in the FEIS were defined as either *negligible* or *minor* based on the predicted increase relative to baseline data for a given parameter and lake and water quality guidelines (e.g., aquatic life or human drinking water guidelines) or site-specific water quality objectives (SSWQO):

- A *negligible* change was defined as an increase of 10% or less relative to baseline conditions. As stated in Volume 10 of the FEIS (Agnico Eagle 2014), a 10% increase relative to baseline

[11] Normal ranges were not derived for the ice-covered sampling events due to insufficient reference and baseline data for the winter months.

concentrations accounts for variability in spatial and temporal concentrations, variability in field and laboratory methods, and conservatism incorporated into predictive models.

- A *minor* change in water quality is defined as an increase in concentration relative to baseline or reference conditions, but less than water quality guidelines or SSWQOs.

### 2.3.4 AEMP Benchmarks

The term *AEMP Benchmark* refers to the various water quality guidelines for protection of aquatic life, guidelines for the protection of human drinking water quality, or site-specific water quality objectives (SSWQO) developed for the Project (**Table 2-2**). The AEMP Benchmarks are the effects thresholds protective of aquatic life and human drinking water quality for the project. To provide an added level of protection, the *AEMP Action Level* is set at 75% of the AEMP Benchmark (i.e., the lowest water quality guideline or SSWQO) for each parameter. The AEMP Action Levels are early warning 'triggers' meant to signal changes in water quality that may be of concern prior to exceedances of effect-based thresholds for the protection of aquatic life and human health.

#### AEMP Benchmarks for Toxicological Impairment (Harmonized List)

In previous AEMP reporting cycles, separate screening assessments for aquatic life and human health were undertaken using separate sets of AEMP Benchmarks. To simplify the screening assessment, the lowest of the freshwater aquatic life and drinking water guidelines for each parameter were adopted as the AEMP Benchmark (and corresponding AEMP Action Level) in 2020. With the exception of fluoride, arsenic, and iron, which have SSWQO, and antimony which has a lower health-based drinking water quality guideline, the water quality guidelines for protection of aquatic life are more conservative (i.e., lower). Therefore, if the concentration of a given parameter is below the AEMP Benchmark for aquatic life, the benchmark for drinking water quality is also met. An exception was made in the case of arsenic, and the drinking water quality guideline of 10 µg/L was adopted as the AEMP Benchmark rather than the SSWQO of 25 µg/L. To date, arsenic concentrations remain well below the drinking water quality guideline.

AEMP Benchmarks for toxicological effects to aquatic life were adopted from the most recent guidelines published by the following sources:

- Canadian Council of Ministers of the Environment (CCME) – The freshwater aquatic life guidelines published by CCME were adopted as the AEMP Benchmarks for protection of aquatic life unless other jurisdictions published more recent guidelines.
- Federal Environmental Quality Guidelines (FEQG) – As stated on the ECCC website, the FEQGs are being 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

near future. FEQGs are similar to CCME WQGs in that they are based solely on toxicological effects data using the same methods of derivation, where adequate data exists. Parameters with more recent FEQG include vanadium (2016), cobalt (2017), copper (2019 [under revision])[12], lead (2020), and strontium (2020).

- Guidelines published by the British Columbia Ministry of Environment and Climate Change Strategy (BC ENV) for parameters not covered under either CCME or FEQGs (e.g., sulphate).
- Guidelines from other jurisdictions (e.g., TDS guideline for Alaska of 500 mg/L [ADEC 2012]).
- Canadian drinking water quality guidelines (Health Canada 2020).

Some parameters, such as aluminum, lead, cadmium, and zinc have calculated guidelines that are dependent on other parameters known to affect their toxicity (e.g., hardness, pH, DOC). For simplicity, the AEMP Benchmarks for these parameters were conservatively defined as the lowest sample-specific aquatic life guideline calculated for the NF samples in 2020. In the case of sulphate, which has a hardness-dependent aquatic life guideline in BC, the AEMP benchmark was set to 128 mg/L for Meliadine Lake (hardness < 30 mg $CaCO_3$/L) compared to 218 for the Peninsula Lakes (hardness between 31 to 75 mg $CaCO_3$/L) to account for natural differences in hardness among the lakes.

### AEMP Benchmarks for Nutrient Enrichment

Total phosphorus (i.e., the limiting nutrient in Meliadine Lake) and chlorophyll-a (i.e., a direct indicator of primary productivity used in trophic status assessment) are the parameters included in the nutrient enrichment action level assessment. The AEMP benchmarks for nutrient enrichment were selected to protect the oligotrophic status of Meliadine Lake and represent the commonly accepted upper limits of the oligotrophic ranges for total phosphorus and chlorophyll-a (Golder 2019).

- Total phosphorus: 0.01 mg/L based on CCME (2004) trigger ranges for evaluating trophic status in lakes.
- Chlorophyll-a: 4.5 µg/L, based on an evaluation by DDMI (2013) of chlorophyll-a concentrations compared to trophic status. Their assessment concluded that 4.5 µg/L represents a reasonable and conservative upper boundary for classifying northern lakes as oligotrophic (Golder 2019).

[12] The FEQG for copper is based on the biotic ligand model.

### Table 2-2. AEMP Benchmarks (current to 2020)

| Parameter | Units | Aquatic Life Water Quality Guidelines | | | | AEMP Benchmarks | | | AEMP Action Level (75% of Lowest Benchmark) | Notes on the AEMP Benchmark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | SSWQO | CCME | FEQG | Other Sources | Aquatic Life | Drinking Water Quality | Nutrient Enrichment | | |
| **Conventional Parameters** | | | | | | | | | | |
| pH | - | - | 6.5 -9.0 | - | - | 6.5 to 9.0 | - | - | 6.5 to 9.0 | CCME (1987). |
| Dissolved oxygen | mg/L | - | 6.5 | - | - | 6.5 | - | - | 6.5 | CCME (1987). Lower limit for protecting cold water species. |
| **TDS and Major Ions** | | | | | | | | | | |
| Total Dissolved Solids | mg/L | 1,000 | - | - | 500 | 500 | 500 | - | 375 | Alaska DEC 2012. Guideline is protective of salmon spawning habitat downstream of Red Dog Mine in Alaska. The ionic composition of TDS is primarily calcium sulphate. At Meliadine, Cl, Na, and Ca are the dominant ions in surface contact water discharged to Meliadine Lake (Golder 2020a). TDS guidelines are dependent on relative proportion of the constituent ions. The ADEC guideline for TDS is carried forward as the AEMP Benchmark rather than the proposed in-lake edge benchmark of 1,000 mg/L at the edge of the mixing zone (Golder 2020a). |
| Chloride | mg/L | - | 120 | - | - | 120 | - | - | 90 | CCME (2011). Derived with mostly no- and some low-effect data and are intended to protect against negative effects to aquatic ecosystem structure and function during indefinite exposures (e.g. abide by the guiding principle as per CCME 2007). |
| Sulphate | mg/L | - | - | - | 128-218 | 128-218 | - | - | Meliadine Lake = 96<br>Peninsula Lakes = 163 | BC ENV (2018). The sulphate guideline is hardness dependent. 128 mg/L applies to Meliadine Lake (hardness < 30 mg $CaCO_3$/L); 218 mg/L applies to the Peninsula Lakes (hardness = 31 to 75 mg $CaCO_3$/L) |
| Fluoride | mg/L | 2.8 | 0.12 | - | - | 2.8 | 1.5 | - | 2.1 | Golder (2014). The Health Canada guideline for fluoride is not health based. SSWQO adopted as the AEMP Benchmark |
| **Nutrients** | | | | | | | | | | |
| Nitrate | mg-N/L | - | 2.93 | - | - | 2.93 | 10 | - | 2.18 | CCME (2012). Protection against direct toxic effects. 2.93 mg/L based on the conversion factor in the factsheet. |
| Nitrite | mg-N/L | - | 0.06 | - | - | 0.06 | 1.0 | - | 0.045 | CCME (1987) |
| Total ammonia | mg-N/L | - | 0.58 | - | - | 0.58 | - | - | 0.44 | CCME (2001). The guideline for total ammonia is temperature and pH dependent. For the purpose of this assessment, the guideline was conservatively set for water with pH = 7.5 and a temperature of 15 °C. This guideline for $NH_3$ is converted to total ammonia as N by multiplying 0.715 mg/L x 0.8224. |
| Total phosphorus | mg/L | - | 0.01 | - | - | - | - | 0.01 | 0.0075 | CCME (2004). The total phosphorus guideline applies to Meliadine Lake only. The CCME guideline of 0.01 mg/L is defined as the transition between oligotrophic and mesotrophic status. |
| Chlorophyll-a | µg/L | - | - | - | 4.5 | - | - | 4.5 | 3.38 | Diavik Diamond Mines Inc (DDMI 2013). “Reasonable” upper limit for classifying northern lakes as oligotrophic |
| **Metals (Total Fraction)** | | | | | | | | | | |
| Aluminum | µg/L | - | Variable | - | - | 100 | - | - | 75 | CCME (1987). pH dependent; 100 µg/L when pH > 6.5 |
| Antimony | µg/L | - | - | 9.0 | - | 9.0 | 6.0 | - | 4.5 | Health Canada (1997) |
| Arsenic | µg/L | 25 | 5 | - | - | 25 | 10 | - | 7.5 | Health Canada (2006). Health Canada drinking water quality guideline is lower than the SSWQO and was adopted as the Benchmark for preliminary screening purposes. |
| Barium | µg/L | - | - | - | 1,000 | 1,000 | 2,000 | - | 750 | BC ENV (2018) |
| Boron | µg/L | - | 1,500 | - | - | 1,500 | 5,000 | - | 1,125 | CCME (2009) |
| Cadmium | µg/L | - | Variable | - | - | MEL= 0.043<br>A8= 0.14<br>B7=0.13<br>D7=0.076 | 7 | - | MEL= 0.032<br>A8=0.1<br>B7=0.096<br>D7=0.057 | CCME (2014). The guideline applies to total Cd and is hardness dependent:<br>*WQG (µg/L) = 10{0.83(log[hardness]) – 2.46 }* |
| Chromium (VI) | µg/L | - | 1 | 5 | - | 5 | 50 | - | 3.75 | FEQG 2018. The guideline applies to hexavalent chromium (CrVI) which is more toxic than Cr(III). The FEQG replaces the CCME guideline from 1997. |
| Cobalt | µg/L | - | - | Variable | - | MEL=0.78<br>A8=0.95<br>B7=0.92<br>D7=0.78 | - | - | MEL=0.78<br>A8=0.71<br>B7=0.69<br>D7= | FEQG 2017. Hardness-dependent guideline:<br>*WQG = exp{(0.414[ln(hardness)] - 1.887}* |
| Copper | µg/L | - | Variable | - | - | MEL=2.0<br>A8=2.1<br>B7=2.0<br>D7=2.0 | - | - | MEL=1.75<br>A8=1.5<br>B7=1.5<br>D7=1.5 | CCME 1987. The existing AEMP Benchmark from CCME only considers hardness as a modifying factor on the bioavailability and toxicity of Cu for aquatic organisms. A new FEQG for dissolved Cu is under review based on the biotic ligand model (BLM) which considers a broad suite of water quality parameters that influence Cu bioavailability. This new FEQG will likely replace the existing CCME guideline once approved by |

| Parameter | Units | Aquatic Life Water Quality Guidelines | | | | AEMP Benchmarks | | | AEMP Action Level (75% of Lowest Benchmark) | Notes on the AEMP Benchmark |
|---|---|---|---|---|---|---|---|---|---|---|
| | | SSWQO | CCME | FEQG | Other Sources | Aquatic Life | Drinking Water Quality | Nutrient Enrichment | | |
| Iron | µg/L | 1,060 | 300 | variable | - | 1,060 | 300 | - | 225 | The Health Canada guideline for iron is an aesthetic objective based on taste and other considerations. The concentrations of iron are well below the 300 µg/L aesthetic guideline, so for screening purposes, this value was adopted rather than the SSWQO as an early indicator of increasing iron concentrations.<br>The draft FEQG (2019) is hardness and pH dependent:<br>*WQG = exp(0.671[ln(DOC)] + 0.171[pH] + 5.586)* |
| Lead | µg/L | - | 1 | Variable dissolved | - | MEL= 3.31<br>A8=7.9<br>B7=8.6<br>D7=7.4 | 5 | - | MEL= 2.48<br>PEN = 3.75 | FEQG 2019. The FEQG for lead is based on the dissolved fraction and is hardness and DOC dependent:<br>*WQG = exp(0.514[ln(DOC)] + 0.214[ln(Hardness)] + 0.4152)*<br>The lowest FEQG for Meliadine Lake is below the Health Canada drinking water guideline. Therefore, the AEMP Benchmark for protection of aquatic life is also protective of drinking water quality in Meliadine Lake.<br>For the Peninsula Lakes, the Health Canada drinking water guideline of 5 µg/L is lower than the FEQG for Lake A8, B7, and D7. |
| Manganese | µg/L | - | Variable dissolved | - | - | MEL= 210<br>A8=350<br>B7=440<br>D7=320 | 120 | - | 90 | Health Canada (2020). The health-based drinking water quality guideline is lower than the CCME guideline and is used as the AEMP Benchmark.<br>CCME (2019). The aquatic life water quality guideline for Mn applies to the dissolved fraction and is hardness and pH dependent (refer to calculator in the factsheet). |
| Mercury | µg/L | - | 0.026 | - | - | 0.026 | 1 | - | 0.0195 | CCME (2003) |
| Molybdenum | µg/L | - | 73 | - | - | 73 | - | - | 54.8 | CCME (1999) |
| Nickel | µg/L | - | variable | - | - | 25 | - | - | 18.8 | CCME 1987. Hardness-dependent guideline. At hardness less than 60 mg/L, the guideline is 25 µg/L. At other hardness levels, the guideline is:<br>*WQG (µg/L) = e{0.76[ln(Hardness)]+1.06}* |
| Selenium | µg/L | - | 1 | - | - | 1 | 50 | - | 0.75 | CCME (1987). |
| Silver | µg/L | - | 0.25 | - | - | 0.25 | - | - | 0.188 | CCME (2015). |
| Strontium | µg/L | - | - | 2,500 dissolved | - | 2,500 | 7,000 | - | 1,875 | FEQG (2020). The guideline for dissolved Sr was conservatively set as the AEMP Benchmark for total Sr. |
| Thallium | µg/L | - | 0.8 | - | - | 0.8 | - | - | 0.6 | CCME (1999). |
| Uranium | µg/L | - | 15 | - | - | 15 | 20 | - | 11.25 | CCME (2011). |
| Vanadium | µg/L | - | - | 120 | - | 120 | - | - | 90 | FEQG (2016). |
| Zinc | µg/L | | Variable dissolved | | | MEL=3.91<br>A8=21.9<br>B7=23.0<br>D7=11.6 | - | - | MEL=2.93<br>A8=16.4<br>B7=17.3<br>D7=8.7 | CCME (2018). The chronic WQG for Zn applies to the dissolved fraction and is hardness, DOC, and pH dependent:<br>*WQG = exp(0.947[ln(Hardness mg/L)] - 0.815[pH] + 0.398[ln(DOC mg/L)] + 4.625)*<br>The guideline for dissolved Zn was conservatively set as the AEMP Benchmark for total Zn. |

Notes:
MEL = Meliadine Lake; PEN = Peninsula Lakes (A8, B7, and D7)
The AEMP Benchmarks for metals apply to the total fraction. In the case of Lead, Strontium, and Zinc, the freshwater aquatic life guidelines derived for the dissolved fraction have been adopted as the AEMP Benchmarks. For parameters that vary with hardness, pH, DOC, etc, the lowest guideline calculated at MEL-01 in 2020 was adopted as the AEMP Benchmark for Aquatic Life.
Sources:
- CCME = Canadian Environmental Guidelines for the Protection of Aquatic Life (current to February, 2020). Benchmarks for parameters that are pH or hardness-dependent were conservatively set at the lowest guidelines calculated for the 2020 samples in the NF area in Meliadine Lake.
- FEQG = Federal Environmental Quality Guidelines, Environment and Climate Change Canada. Note: benchmarks for parameters that are pH or hardness-dependent were conservatively set at the lowest guidelines calculated for the 2020 samples in Meliadine Lake.
- ADEC (Alaska Department of Environmental Conservation). 2012. Water Quality Standards. 18 AAC 70. Amended as of April 8, 2012. Juneau, AK, USA. Available at: Link. Accessed March 2014.
- British Columbia Ministry of Environment (BC ENV). 2020. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Summary Report. Water Protection & Sustainability Branch, BC Ministry of Environment & Climate Change Strategy. August 2019.
- Site Specific Water Quality Objectives (Golder 2014)
- Health Canada. 2020. Guidelines for Canadian Drinking Water Quality—Summary Table. Water and Air Quality Bureau, Health Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

## 2.4 Response Framework and Action Levels

The Response Framework links monitoring results with appropriate management actions to implement changes before effects occur[13]. The Response Framework for Meliadine was developed based on *Draft Guidelines for Adaptive Management – a Response Framework for Aquatic Effects Monitoring* (WLWB 2010) and experience gained at Meadowbank (Azimuth 2012).

The Response Framework uses action levels to define the level of response associated with each action level (negligible, low, medium, or high). Action levels were developed for each monitoring component (e.g., water, benthic invertebrate community endpoints, etc.) based on comparison to the baseline data (e.g., normal range assessment), by adopting water quality guidelines as *AEMP Benchmarks*, or statistical tests. The managed response is dependent on what changed in the environment (e.g., higher concentration of X parameter) and the action level that is exceeded (low, moderate, or high). Furthermore, the specific management action that would be appropriate in a given case depends on the underlying cause. For example, if a metal becomes elevated in the aquatic receiving environment, the identification of options for further assessment and/or mitigation would be different if the source of the metal is groundwater versus effluent versus dust (Azimuth 2012).

Low Action Levels, which were updated in 2018, provide an early warning indicator (aka 'trigger') that changes in water quality have occurred before concentrations increase to levels associated with effects to aquatic life or drinking water quality. An overview of the Low Action Levels for toxicological impairment and nutrient enrichment and their corresponding evaluation criteria are provided below.

### 2.4.1 Assessment of Toxicological Impairment

Mining activities have the potential to increase concentrations of parameters that could exert toxic effects on primary producers (algae), aquatic invertebrates, and fish and impact the quality of drinking water for human consumption. Toxicological impairment from changes in water quality are evaluated using information from sublethal toxicity testing on effluent from MEL-14 and comparing water quality to the AEMP Benchmarks described above in **Section 2.3.4**. Parameters carried forward in this assessment have toxicologically-based thresholds for the protection of aquatic life, such as pH, dissolved oxygen, certain major ions and nutrients (e.g., chloride and nitrate), and metals. Parameters of concern published by Health Canada for the protection of drinking water quality are also included in the assessment.

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[13] Terminology for *effect* and *change* is taken from the AEMP Design Document (Golder 2016). *Effects* are defined as *changes* that are linked to activities at the mine. For example, a particular water quality parameter may increase from one year to the next due to inherent natural temporal variability or a regional trend that caused changes in water quality over a wide area. In this respect, the increase constitutes a *change*, but not an *effect* that is plausibly linked to activities at the mine.

A summary of the questions and approach to assessing toxicological impairment for effluent quality and water quality are summarized below in **Table 2-3**.

### 2.4.2 Assessment of Nutrient Enrichment

Discharge of treated effluent containing nutrients to Meliadine Lake has the potential to cause an increase in primary productivity, which under certain conditions, can lead to changes in the overall health of freshwater aquatic communities. Two metrics are used to evaluate nutrient enrichment: chlorophyll-a and total phosphorus concentrations. The Low Action Level assessment for nutrient enrichment follows the same approach described above for aquatic life: (1) an increase or change relative to baseline, (2) exceedance of the Low Action Levels, and (3) divergent trends between the NF and reference areas (**Table 2-4**). All three conditions must be met for an exceedance of the low action level for nutrient enrichment.

As part of the nutrient enrichment assessment, phytoplankton community data are also assessed to validate or refute the determination of nutrient enrichment based on total phosphorus and chlorophyll-a data. Phytoplankton indices such as community structure and biomass provide a direct estimate of whether activities at the mine are contributing resulting in changes in the primary productivity of the lake. To date, measurement endpoints for the phytoplankton community have not been formally incorporated in the Low Action Level assessment. Which metrics are best suited to include in the Low Action Level assessment are discussed in **Section 6.6**.

### Table 2-3. Low Action Level Assessment Criteria for Water Quality – Toxicological Impairment

| Conditions | Criteria |
|---|---|
| **End-of-Pipe Toxicity** | |
| Is effluent from MEL-14 causing a persistent toxic effect to aquatic species other than fish? | The low action level is exceeded if exposure to full-strength effluent causes an IC25 or EC50 response in three consecutive tests for test species other than fish. |
| **Aquatic Life** | |
| Has water quality at the near-field area changed relative to baseline/reference conditions? | Compare current water quality against the normal range of baseline/reference conditions. |
| Does current water quality exceed the AEMP Action Level of 75% of the AEMP benchmark? | AEMP benchmarks are based on water quality guidelines published by CCME, FEQG, or site-specific water quality objectives (SSWQO) in the case of fluoride, arsenic, and iron. As an "early warning trigger" the AEMP benchmark is set equal to 75% of the respective guideline. |
| Is there a divergent trend in water quality at the NF area in Meliadine Lake compared to the reference areas?[14] | Water quality plots are used to visually assess whether the pattern of change in water quality over time at the NF area is divergent from the pattern at the reference areas. The normal range assessment is used to short-list parameters that warrant more scrutiny in the temporal assessment. |
| **Drinking Water Quality** | |
| Are parameters in drinking water below guidelines protective of human health? | The low action level assessment for safe drinking water follows the same approach described above for aquatic life. 75% of the GCDWQ are the AEMP benchmarks for evaluating whether drinking water quality is being impacted by mining activities. |

### Table 2-4. Low Action Level Assessment Criteria for Water Quality – Nutrient Enrichment

| Questions for Nutrient Enrichment | Evaluation |
|---|---|
| Are concentrations of chlorophyll-a and total phosphorous (TP) elevated relative to baseline / reference? | Compare current water quality against the normal range of baseline/reference conditions. |
| Does current water quality exceed 75% of the AEMP benchmark? | Compare current water quality results against AEMP benchmarks. |
| Is there a divergent temporal trend between NF and reference areas? | Rely primarily on water quality plots to determine the different between areas and over time. |

[14] There are no reference areas used in the assessment of the Peninsula Lakes. Temporal trends are evaluated as part of normal range assessment (i.e., comparison of current water quality to baseline conditions).

# 3 QUALITY ASSURANCE / QUALITY CONTROL

The framework of the 2020 quality assurance quality control QA/QC program is outlined in the *AEMP Design Document* (Golder, 2016). The Design Document is the foundation for assessing data quality for each component of the AEMP (e.g., water, phytoplankton). Detailed analysis of the data quality for each component is provided in **Appendix A**. A summary of the key messages from the 2020 QA/QC program is provided in the subsections below.

## 3.1 Limnology and Water Chemistry QA/QC

Field QC procedures included the collection and/or analysis of field duplicates and blanks (travel, equipment, and deionized water blanks). The laboratory QC program included duplicate analysis, blanks, and analysis of spike samples and reference material to verify the accuracy and precision of the analytical method. The QA/QC objectives and methods for water chemistry are provided in **Appendix A**.

### 3.1.1 Field Data and Sample Collection

For specific field QA procedures, see **Appendix A**. Briefly, field QA methods were applied to prevent cross-contamination between locations and from the equipment itself. These methods included wearing nitrile gloves and rinsing the sample equipment with surface water prior to collecting samples.

#### QA Summary: AEMP Field Data and Sample Collection

- The 2020 AEMP water quality sampling plan for Meliadine Lake and the Peninsula Lakes was completed in full, as per the recommended schedule and timing of sampling in the *AEMP Design Document* (Golder 2016) and recommendations in the 2019 interpretive report (Azimuth 2020).
- Sample integrity related to shipping and hold times is briefly discussed in **Section 3.3** and in further detail in **Appendix A**. Analytical results from the travel blanks (TB), deionized water blanks (DB) and equipment blanks (EB) indicated reliable sample handling and that the potential for cross-contamination to bias interpretation of the 2020 water quality data is unlikely..
- The laboratory QC assessment completed by ALS indicated the 2020 water quality data were typically within the established DQOs. In the few instances where a DQO was exceeded, the lab concluded the results were reliable and fit for use in the water quality assessment.

### 3.1.2 Field Duplicates

#### QC Summary: Field Duplicate Results

There were only a few sample/parameter combinations where the field duplicate RPDs did not meet lab-specified DQOs in 2020. Furthermore, most of the deviations noted in 2020 occurred for parameters that were within 10-times the analytical detection limit (DL). The high degree of precision between field duplicate samples indicate consistency in sample collection and sample handling in 2020. For more information about field duplicate results refer to **Appendix A**.

### 3.1.1 Blank Samples

Three different types of *blank* samples are included in the AEMP, travel blanks (TB), deionized water blanks (DB) and equipment blanks (EB). For detailed information about each type of blank sample collected refer to **Appendix A**.

#### QA Summary: Blank Results

Results from the DB blanks and travel blanks did not warrant flagging any parameters as cautionary or unreliable in the 2020 analyses.

**Travel Blanks** – Travel blanks were submitted for the March, August and September sampling events. In March and August, ammonia was detected in the travel blanks, and for the August sample, the concentration in the blank was more than 10-fold higher than the detection limit. Ammonia was also detected in the deionized water blank and equipment blank from the same sampling events. Discussions are ongoing with ALS to determine what caused the ammonia exceedances in the travel blanks, as well as the overall quality of the deionized water provided by the laboratory for QC purposes.

**De-ionized Blanks (DB) and Equipment Blanks (EB)** – There were a few parameters detected in the DB and EB for all four sampling events in 2020. March and August were the months with the greatest number of parameters that were detected in the DB and EB. In most cases, the measured concentration in the blank was only marginally above the DL (< 5-times). There were, however, 6 parameters in the March DB blank and 8 parameters in the March EB where concentrations exceeded 10-times the DL. In August, only 2 parameters were measured in the EB (total antimony and dissolved strontium). The fact that parameters were measured in both the DB and EB suggests there may have been issues with the deionized water provided by the laboratory for use in collecting blanks. The quality of deionized water and steps taken to collect the blanks are being evaluated with the goal of reducing the number of detected parameters in the blanks for the 2021 AEMP.

The lake water samples were evaluated for potential cross-contamination, and the detected concentrations in the blanks were considered to have negligible impact on the results. No measurements were flagged as unreliable in 2020 based on the DB and EB results. The water quality data passed the QA/QC assessment and are reliable for data analysis and interpretation of spatial trends.

### 3.1.2 Laboratory QC

The following laboratory QC measures were implemented for the water chemistry analyses; laboratory duplicates, method blanks, matrix spikes and laboratory reference materials. For detailed information about the laboratory QC measures refer to **Appendix A**.

#### QA Summary: Laboratory QC Program

Laboratory QA/QC for water chemistry was very good in 2020 with very few laboratory data quality qualifiers and none that were likely to impact data interpretation.

**Laboratory Duplicates** – All the laboratory duplicates met the DQOs for water chemistry in 2020. The laboratory duplicate results indicate good analytical precision.

**Matrix Spike** – There were a few major cations and metals detected at concentrations above the DL in March. These analytes are typically flagged in the matrix spiked recovery and do not affect the interpretation of the 2020 water quality data.

**Laboratory Control Samples** – Reference material analysis met the ALS DQOs for all samples analyzed as part of the 2020 except for; boron in March and bismuth in July. The results do not affect the interpretation of the 2020 water quality data.

### 3.1.3 QA/QC Summary – Water Quality

The 2020 AEMP water quality data collected from Meliadine Lake and the Peninsula Lakes was considered reliable and fit for interpretation in the AEMP based on the QA/QC assessment.

## 3.2 Phytoplankton QA/QC

The approaches to field QA described above for the water chemistry QA/QC program apply equally to the phytoplankton, chlorophyll-a, and depth-integrated nutrient (DIN) samples. The phytoplankton sampling plan for Meliadine Lake was completed in full, as per recommendations in the 2019 interpretive report (Azimuth 2020). Sampling was completed by the Agnico Eagle Environment Department concurrent with the August AEMP sampling event. Detailed analysis of the phytoplankton data quality is included in **Appendix A**.

The phytoplankton, chlorophyll-a and DIN QA/QC assessment results are summarized as follows:

**Sample Integrity** – Samples were reported at ambient temperatures upon receipt at the laboratory and reflect the challenges with shipping from a remote mine site. Likewise, hold time exceedances for parameters and analytes with short hold times are unavoidable but are not considered likely to impact data analysis and interpretation.

**Blanks** – The chlorophyll-a laboratory blanks results were equal to or slightly higher (0.06 µg/L) than the reported detection limit (0.04 µg/L). Blank results for 2020 indicated reliable sample handling and that cross-contamination related to sampling equipment is unlikely.

**Field Duplicates** – The 2020 field duplicate results for phytoplankton and chlorophyll-a were very good. All of the field duplicate RPDs for chlorophyll-a and phytoplankton total biomass and density were within the established DQOs indicating very good replicability in sample collection. For DIN samples, there were a few cases where RPDs did not meet DQOs. On one occasion, the RPD for total phosphorus did not meet the DQO and the reported concentration was higher than 10-times the DL. While all the cases where RPDs did not meet DQOs were flagged for assessment, total phosphorus was weighted more heavily when reviewing the implications on sampling protocol and data interpretation since the reported concentrations were higher than 10-times the DL. The duplicate QAQC results were considered to have negligible impact on the results. No measurements were flagged as unreliable in 2020 based on the duplicate results.

**Laboratory QC Assessment** – The laboratory QC assessment passed (i.e., data were within the established DQOs) for samples submitted to Plankton R Us Inc. (taxonomy laboratory duplicates) and the University of Alberta (chlorophyll-a blanks) in 2020. The laboratory QC assessment completed by ALS indicated the 2020 data were typically within the established DQOs. In the one instance where a DQO was exceeded, the lab concluded the results were reliable and fit for use.

Data collected as part of the phytoplankton program were deemed reliable for analysis and interpretation.

## 3.3 Data Entry & Sample Shipping

Careful documentation and handling of all samples and data is a key component of QA/QC in a field program. Field QA/QC procedures pertaining to data collection and entry were adhered to in 2020 and are described in **Appendix A**. Sample shipments to the analytical laboratories were accompanied by chain-of-custody (CoC) forms detailing sample identification, reporting requirements, and sample handling information.

Overall, sample temperatures received at the laboratory were variable depending on season and reflect the challenges with shipping from a remote mine site. Likewise, hold-time exceedances for parameters and analytes with short hold-times are unavoidable but are not considered likely to impact data analysis and interpretation.

# 4 MELIADINE LAKE – EFFLUENT CHARACTERIZATION

## 4.1 Overview

Agnico Eagle is permitted to discharge treated contact water to Meliadine Lake as long as concentrations are below effluent quality limits specified in the Water Licence (**Table 4-2**) and effluent is not acutely toxic to aquatic life. Discharge volumes, effluent chemistry data, toxicity test results, and loadings are reported quarterly by the Agnico Eagle Environment Department to the Minister of the Environment as per MDMER (Section 21 and Section 22; Government of Canada 2020).

The purpose of effluent characterization program is to ensure that surface contact water discharged to Meliadine Lake is not harmful to aquatic life. The following topics are discussed in this section of the report:

- Effluent Chemistry at the final discharge point (MEL-14),
- Acute toxicity testing with rainbow trout (*Oncorhynchus mykiss*) and zooplankton (*Daphnia magna*), and
- Chronic toxicity testing using representative freshwater species
- Discharge volume and loading estimates
- Effluent mixing in the near-field (NF) area

Together, the results of the effluent characterization program provide foundational information for interpreting water quality in Meliadine Lake. Some of the results of the effluent chemistry and effluent toxicity testing, as well as the most recent plume delineation surveys, were reported in detail as part of the WQ-MOP (Golder 2020a); key findings from that report are summarized herein.

## 4.2 Effluent Chemistry

Effluent was sampled at MEL-14 approximately weekly from June 5$^{th}$ to October 2$^{nd}$. In total, 22 samples were submitted for chemistry and screened against effluent limits the Water Licence and MDMER. Tabulated screening results, raw data, and plots showing the concentrations of key parameters in the effluent are presented in **Appendix B1**.

Key findings from the 2020 effluent chemistry data are:

- No exceedances of effluent limits in Schedule 4 of the MDMER and the Type A Water Licence were reported in the 2020.
- Total dissolved solids concentrations were below the authorized limit of 3,500 mg/L in 2020. The highest measured TDS concentrations coincided with peak discharge periods in June (2,500 to

3,090 mg/L) and mid-to-late September (2,300 to 2,600 mg/L) (**Table 4-4**). The temporal pattern of concentrations changes for constituent analytes such as chloride, sulphate, and hardness followed a predictably similar pattern as TDS.

- Concentrations of key parameters of concern (i.e., some metals and nutrients) were typically higher at the onset of discharge in June compared to late-season sampling. For some parameters, there was a noticeable increase in 2020 relative to 2018 and 2019, but the pattern wasn't consistent throughout the year. By August, concentrations in MEL-14 samples were more in line with results from 2018 and 2019.

## 4.3 Effluent Toxicity

### 4.3.1 Acute Toxicity Testing

#### Background

Monthly acute toxicity testing is a requirement for mines authorized to discharge effluent to the aquatic receiving environment (Subsection 36[3] of the *Fisheries Act*). When the mine is discharging to Meliadine Lake, monthly toxicity testing is conducted on rainbow trout to verify that treated effluent released to Meliadine Lake is not acutely lethal[15]. Acute toxicity testing is also conducted using the aquatic invertebrate *D. magna* at the same time as the rainbow trout toxicity tests as per Subsection 17(2) of the MDMER.

#### Acute Toxicity Test Results from 2020

More frequent acute toxicity tests were conducted in 2020 as a requirement of the emergency amendment to dewater CP1. In total, 18 rounds of acute toxicity tests were conducted. Golder summarized the results of the 2020 acute toxicity tests in the final report for the WQ-MOP (Golder 2020a). The results of the toxicity tests are provided in **Table 4-4** and summarized below.

- Full strength, undiluted effluent was not acutely toxic to rainbow trout or *D. magna* in any of the tests conducted in 2020.
- Survival was 100% in 17 of the 18 tests. One test for each species had survival of 90%. There was no evidence of poor effluent quality in either of the tests as indicated by TDS concentrations in the mid-range of values reported in 2020 (1,340 mg/L to 3,090 mg/L).

**Summary Statement**: The results from 2020 are consistent with results from 2018 and 2019 that showed effluent discharge to Meliadine Lake is not acutely toxic to aquatic life. These data validate that

[15] Acute lethality means full-strength undiluted effluent kills more than 50% of the rainbow trout during the 96-hr test period.

the proposed increase in the maximum allowable concentration of TDS from 1,400 mg/L to 3,500 mg/L will comply with discharge criteria that states effluent released to Meliadine Lake must be non-toxic to fish.

### 4.3.2 Sublethal Toxicity Testing (Action Level Assessment – End of Pipe Toxicity)

#### Background

Sublethal (chronic) toxicity testing is a requirement under MDMER (Schedule 5 subsections 5&6; Government of Canada, 2020). The purpose of sublethal toxicity testing is to provide an estimate of the potential effects on biological components (phytoplankton, zooplankton, benthic invertebrates, fish, macrophytes) in aquatic environments receiving mine effluent regardless of whether these receptor groups are being directly monitored in the field (EC 2012). Details of sublethal toxicity testing are outlined in Schedule 5, subsection 6 of the MDMER. Meliadine became subject to the MDMER *prior* to June 1, 2018, and under transitional provision 39(b), quarterly testing is required on one species as per subsection 6(3) [16]:

- Subsection 5(1): Conduct testing according to standard methods listed in the MDMER, which includes sublethal testing on a fish species (either Fathead Minnow [*Pimephales promelas*] or Rainbow Trout), *Ceriodaphnia dubia*, an algal species (e.g., *Pseudokirchneriella subcapitata*), and Duckweed (*Lemna minor*).
- Subsection 6(1): Conduct two rounds of testing each year, with at least one month between the two tests for three years.
- Subsection 6(3): After three years, the frequency of sublethal testing can be reduced to once per calendar quarter using the most sensitive species listed in subsection 5(1). The most sensitive species is the species that shows an effect (e.g., growth, survival) at the lowest effluent concentration.

Prior to the 2019 AEMP, representatives with Environment Canada were consulted on their interpretation of the most sensitive species for sublethal testing for effluent discharged to Meliadine Lake. Sublethal toxicity tests performed in 2018 indicated the freshwater macrophyte *L. minor* was more sensitive to effluent from MEL-14 than fish (Fathead Minnow), invertebrates (*C. dubia*) or algae (*P. subcapitata*). Environment Canada agreed to this interpretation of the data, and since 2019 *L. minor* was selected as the species for sublethal toxicity testing. Additional sublethal testing with other species was undertaken in 2020 as a requirement under the WQ-MOP (discussed below).

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[16] Email from Erik Allen with Environment Canada on June 19, 2019 confirmed this interpretation of sublethal toxicity testing requirements under MDMER.

### Expanded Sublethal Toxicity Testing Program in 2020

An expanded sublethal (chronic) toxicity testing program was completed in 2020 to verify that the interim benchmark of 1,000 mg/L TDS at the edge of the mixing zone is protective of aquatic life in Meliadine Lake beyond the mixing zone, 100 m from the diffuser. Four species were chosen for sublethal toxicity testing: Fathead Minnow (7-d survival and growth) and *L. minor* (7-d growth inhibition) as per the 2018 AEMP/EEM program and *Hyalella azteca* (amphipod invertebrate; 14-d survival and growth) and *D. magna* (21-d survival and reproduction). For each species, a series of tests were conducted to examine the chronic response of the test species when exposed to water from Meliadine Lake (edge of the mixing zone) compared to different types of controls (i.e., laboratory control water, soft water control, and reference area controls). Different control treatments were tested to account for possible effects to the test organisms from exposure to low hardness water in Meliadine Lake. The rationale for designing the sublethal toxicity tests with multiple control treatments is provided in the WQ-MOP report (Golder 2020a). Suffice to say, the scope of the program was rigorous to provide a high level of confidence when interpreting whether water quality at the edge of the mixing zone is protective of aquatic life.

Although the purpose of the sublethal toxicity testing program for the WQ-MOP was to validate the interim benchmark of 1,000 mg/L TDS, ECCC and the KIA requested that sublethal toxicity testing also be completed using full strength effluent from MEL-14 on all four test species. Full strength tests on effluent samples from MEL-14 were added to the sublethal toxicity testing program starting with the July sampling event. In total, three rounds of sublethal toxicity tests were conducted under the WQ-MOP in addition to the one early-June sampling event conducted for compliance purposes under MDMER (**Table 4-1**). The tests completed under the WQ-MOP were included the overall assessment of effluent toxicity under the AEMP in 2020.

**Table 4-1. Sublethal Toxicity Testing on MEL-14 Effluent Samples in 2020**

| Test Species | Type | June 7 | July 19 | August 23 | Sept 13 |
|---|---|---|---|---|---|
| *Lemna minor* | Aquatic plant | ● | ● | ● | ● |
| Fathead Minnow | Fish | | ● | ● | ● |
| *Daphnia magna* | Zooplankton | | ● | ● | ● |
| *Hyallela azteca* | Benthic Invertebrate | | ● | ● | ● |

## Sublethal Toxicity Test Results from 2020

The results of the sublethal toxicity tests on *L. minor* for all years (2018 to 2020) are provided in **Table 4-5**. The complete sublethal toxicity dataset for all species tested since the onset of discharge from CP1 in 2018 is provided in **Table 4-6**. A summary of the results from 2020 based on information summarized in Golder (2020a) are provided below for each test species.

***L. minor*** – The June 15$^{th}$ test resulted in a reduction in the yield (number of fronds) relative to the control treatment. Effluent from MEL-14 at a concentration of approximately 67% resulted in a 25% reduction in the number of fronds. Biomass, or the weight of *L. minor*, was not affected. The concentration of TDS in effluent taken on June 15$^{th}$ was 3,100 mg/L, the highest concentration measured among the sample collected to date (**Table 4-5**)

**Fathead Minnow** – There were no impacts to survival or growth endpoints in the first 7-d test on July 7$^{th}$, 2020. In August and September, reduction in survival and growth were observed in full-strength effluent tests as well as some of the replicate treatments from the receiving environment samples. The cause of lower survival was attributed to a bacterial or fungal infection as evidenced by a “fuzzy” appearance on the specimens that deceased. The August and September test results were not considered representative of chronic effects to fish from exposure to the effluent or receiving environment water in Meliadine Lake.

***H. azteca*** – There were no effects to survival or growth in any of the three tests on full-strength effluent in 2020.

***D. magna*** – The July 19$^{th}$ test showed no effect to survival, growth, or reproduction when *D. magna* were exposed to effluent with a TDS concentration of 1,430 mg/L. In August, a reduction in reproduction (# of neonates) was observed relative to the laboratory control treatment. The IC25 for this test was 37% effluent (v/v). The concentration of TDS was 1,850 mg/L. The 95% confidence interval for effects to reproduction was highly variable, ranging from 4% effluent to full-strength. Similarly, variable responses were observed in the receiving environment samples from Meliadine Lake, implying that effluent was not the primary cause of lower reproduction (Golder 2020a). In the subsequent round of testing on September 13$^{th}$, the IC25 for both reproduction and survival endpoints was approximately 90% effluent (v/v). The concentration of TDS in this batch of effluent was 1,780 mg/L. While some minor impairment to reproduction was event across two rounds of testing on full-strength effluent, three rounds of 21-d test indicate high survival and minimal impacts to growth when pelagic aquatic invertebrates are exposed to nearly full-strength effluent.

## Assessment of End-of-Pipe Toxicity

The low Action Level for end-of-pipe toxicity is classified as a persistent sublethal toxic effect observed in the same test organism in three consecutive monthly samples collected from MEL-14 for compliance purposes. Sublethal effects are defined as an effluent concentration less than the highest test concentration that causes a 25% effect to growth or reproduction relative to the control treatment (also known as the IC25). If the low Action Level for end-of-pipe toxicity is reached, additional investigations may be undertaken, such as increased frequency of testing to confirm the effect, assessing the spatial extent of the effect within the mixing zone in MEL-01, or other targeted investigations to identify the underlying cause of the effect (e.g., toxicity identification evaluation testing).

### Low Action Level Assessment of End-of-Pipe Toxicity

In the context of the low Action Level Assessment for end-of-pipe toxicity, the sublethal toxicity test results from 2020 indicate that fish, invertebrates, and aquatic plants are not at risk of acute or chronic effects from exposure to effluent discharged to Meliadine Lake**.** This conclusion is supported by three rounds of sublethal toxicity testing of water from the edge of the mixing zone in Meliadine Lake. No follow-up actions or mitigation are recommended for 2021 other than routine acute and sublethal testing as per requirements of the Water Licence (WL) and MDMER.

## 4.4 Discharge from CP1 to Meliadine Lake

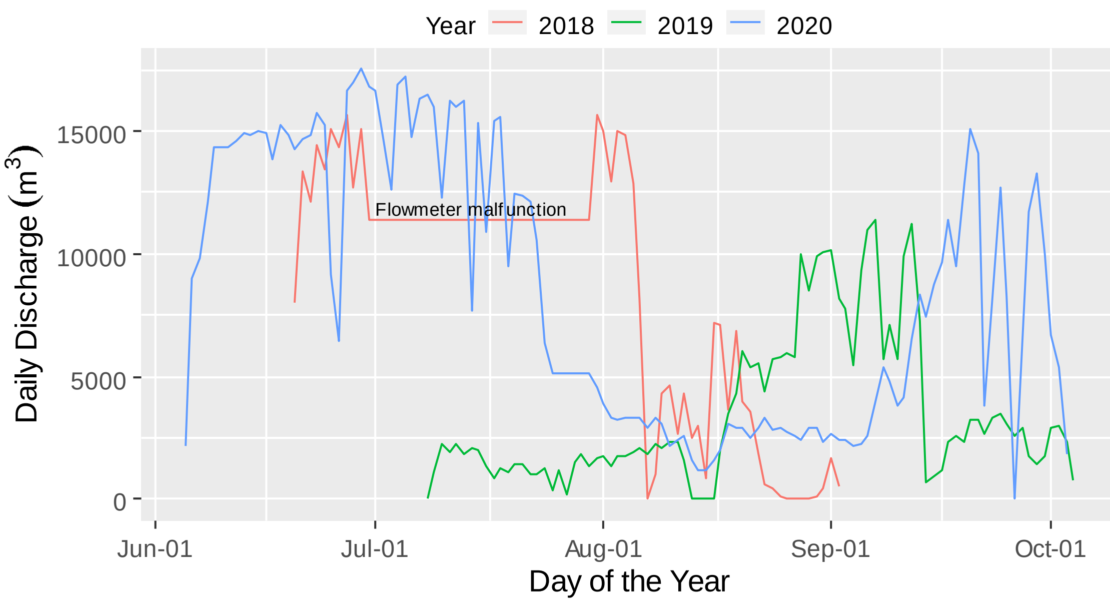
The volume of water ($m^3$) discharged from CP1 to Meliadine Lake is recorded daily. Daily discharge volume from CP1 to Meliadine Lake since 2018 is shown in **Figure 4-1**. Monthly discharge volumes to Meliadine through the permanent diffuser from 2018 through 2020 are presented in **Table 4-3**. The EWTP is capable processing 22,000 $m^3$/day.

In 2020, a significant draw down of CP1[17] occurred in June and July to create extra storage capacity in CP1 prior to freshet. The largest daily discharge in 2020 was 17,520 $m^3$ on June 29th, and between the June 5th and the end of July, more than 700,000 $m^3$ of water from CP1 was discharged to Meliadine Lake. By the end of the season, over 1 million $m^3$ of effluent water was discharged over a 121-day period between June 5th and October 4th. By comparison, the total volume of water discharged to Meliadine Lake in 2019 was only 306,773 $m^3$ (less than half of what was discharged in 2018) due to post-treatment effluent quality exceeding the limit for TDS of 1,400 mg/L.

Through the entire month of August, the volume of water discharged daily to Meliadine Lake was significantly reduced, at approximately 2,700 $m^3$/day due to less precipitation falling on site and repurposing of water from CP1 for use at the process plant. The rate of discharge increased in September to draw down the water level in CP1 before freeze-up and create storage capacity for runoff from snowmelt for spring 2021 freshet.

[17] According to the Water Management Plan (Agnico Eagle 2020), the maximum operating level for CP1 under normal conditions is approximately 742,000 $m^3$ (mean precipitation years).

**Figure 4-1. Daily Discharge from CP1 to Meliadine Lake in 2018 through 2020**




## 4.5 Loadings to Meliadine Lake

The loadings of deleterious substances in the effluent deposited to Meliadine Lake are recorded monthly (during discharge months) from the final discharge point (i.e., MEL-14) as per Part 2, Division 2, Section 20 of the MDMER (Government of Canada, 2020). Monthly loadings are calculated using Equation 1:

$$ML = C \times V / 1{,}000 \qquad \text{(Equation 1)}$$

Where *ML* is the monthly loading in kg, *C* is the monthly mean concentration of the deleterious substances in mg/L, and *V* is the total monthly volume of effluent deposited from the final discharge point (i.e., MEL-14) in $m^3$. Daily discharge volumes were provided to Azimuth by Agnico Eagle and are presented in a table in **Appendix B2**.

Monthly loadings for parameters included in effluent characterization are presented in **Table 4-7**. The comparatively large volume of water discharged in 2020 (1 million $m^3$) compared to 2018 and 2019 resulted in predictably higher mass loading to Meliadine Lake for some parameters, notably, the constituent ions that make up TDS (e.g., sodium, chloride, calcium, and sulphate) and some nitrogen species[18]. Loadings were highest in the month of June when the rate of dewatering at CP1 was at its peak and parameter concentrations in CP1 were at their highest. Ice was on CP1 throughout the month of June, and the effect of cryo-concentration likely contributed, at least in part, to higher concentrations

[18] Ionic composition of TDS in effluent (MEL-14) presented in the WQ-MOP (Golder 2020).

of TDS and other parameters. Cryo-concentration refers to the process whereby major ions (e.g., sodium, magnesium, chloride) and other parameters such as metal and nutrients become concentrated as ice forms. The average TDS in June when ice was on CP1 was 2,840 mg/L (**Table 4-7**). Winter sampling in CP1 conducted for the WQ-MOP between November and March showed even higher concentrations of TDS (~4,400 mg/L) confirming the effect that ice cover has on the concentration of parameters in CP1.

Cryo-concentration likely played a role in the early-season peak concentrations in MEL-14 samples, but the updated water balance and water quality model (Golder 2020b) showed that contact water on site from 2019 had higher TDS concentrations to begin with. However, the updated model predicts future TDS concentrations in the CPs, which ultimately report to CP1, will decline gradually in response to changes in waste rock management on site (Golder 2020b).

The loadings estimate for selected nutrient parameters (i.e., total phosphorus and TKN) are discussed in **Section 6** to inform the nutrient enrichment discussion.

## 4.6 Effluent Mixing

Two plume delineation surveys were completed as part of the WQ-MOP in 2020 using specific conductivity and calculated TDS data to provide an estimate of effluent mixing at the edge of the dilution zone (Golder 2020a)[19]. The study design followed the same methods as the survey that was completed during the Cycle 1 biological monitoring study in 2018 (Golder 2019):

- Twenty-two (22) stations were established in a radial pattern at 50 m, 100 m, 175 m and 250 m from the diffuser.
- Dilution factors (DFs) were calculated using specific conductivity and calculated TDS. DFs were conservatively calculated according to Equation 2:

$$DF = \frac{C_{eff} - C_{amb}}{MC_{dif} - C_{amb}} \qquad \text{(Equation 2)}$$

$C_{eff}$ = average conductivity in effluent from MEL-14 on the same day as the plume delineation survey

$C_{amb}$ = maximum conductivity (or calculated TDS) at a given sampling station

$MC_{dif}$ = average conductivity (or calculated TDS) in the mid-field area MEL-02 (used to characterize ambient open water conditions in Meliadine Lake in 2020

Golder concluded that field measured specific conductivity was an accurate method for tracing TDS concentrations; therefore, for the purpose of the study design, the results for specific conductivity were

[19] Golder investigated the relationship between field measured conductivity and calculated TDS to verify that conductivity is a suitable tracer for TDS.

used to describe effluent mixing behavior. For ease of interpretation, DFs were converted to percent effluent by taking the reciprocal of the DF (i.e., % effluent = 1/DF). Results from the two surveys are summarized below.

### July Plume Delineation Survey

The first survey in 2020 was conducted on July 21st at the tail-end of the highest discharge period in 2020. Approximately 12,400 $m^3$ were discharged to Meliadine Lake on July 21st, which ranked as the 41st highest volume out of the 121 days. **Figure 4-2** shows the effluent concentration at the various monitoring locations. The percent effluent measured at the edge of the mixing zone (100 m) ranged from 0.68 to 1.75 %.

Depth profiling at the stations indicated the plume was more evident at depth than closer to the surface. At surface, the plume traveled more to the north, whereas closer to the bottom, the plume showed an east to west direction of travel, which is consistent with the general direction of flow from southeast to northwest.

### August Plume Delineation Survey

The second survey was conducted on August 13th during a period of low discharge (i.e., 1,600 $m^3$ was discharged on August 13th, corresponding to the 5th lowest volume discharged in 2020 [rank 117 out of 121 days]). *In-situ* specific conductivity was between 102 to 106 µS/cm among the various plume delineation monitoring stations in August. Based on these results, it's evident that during periods of lower daily discharge, the plume is well dispersed a short distance from the diffuser. **Figure 4-3** shows the concentration of effluent is less than 1% within 50 m of the diffuser.

### Summary of Effluent Mixing in the Near-Field Area

Based on the data collected in 2020, taking into consideration effluent quality and daily discharge volumes, the concentration of effluent may periodically exceed 1% at 250 m from the diffuser during the open water period, but the extent of the detectable plume is highly dependent on the volume of the water discharged. The design of the diffuser, and mixing characteristics within the NF area of the east basin, result in effective mixing of the effluent (Golder 2020a).

## 4.7 Figures and Tables – Effluent Characterization

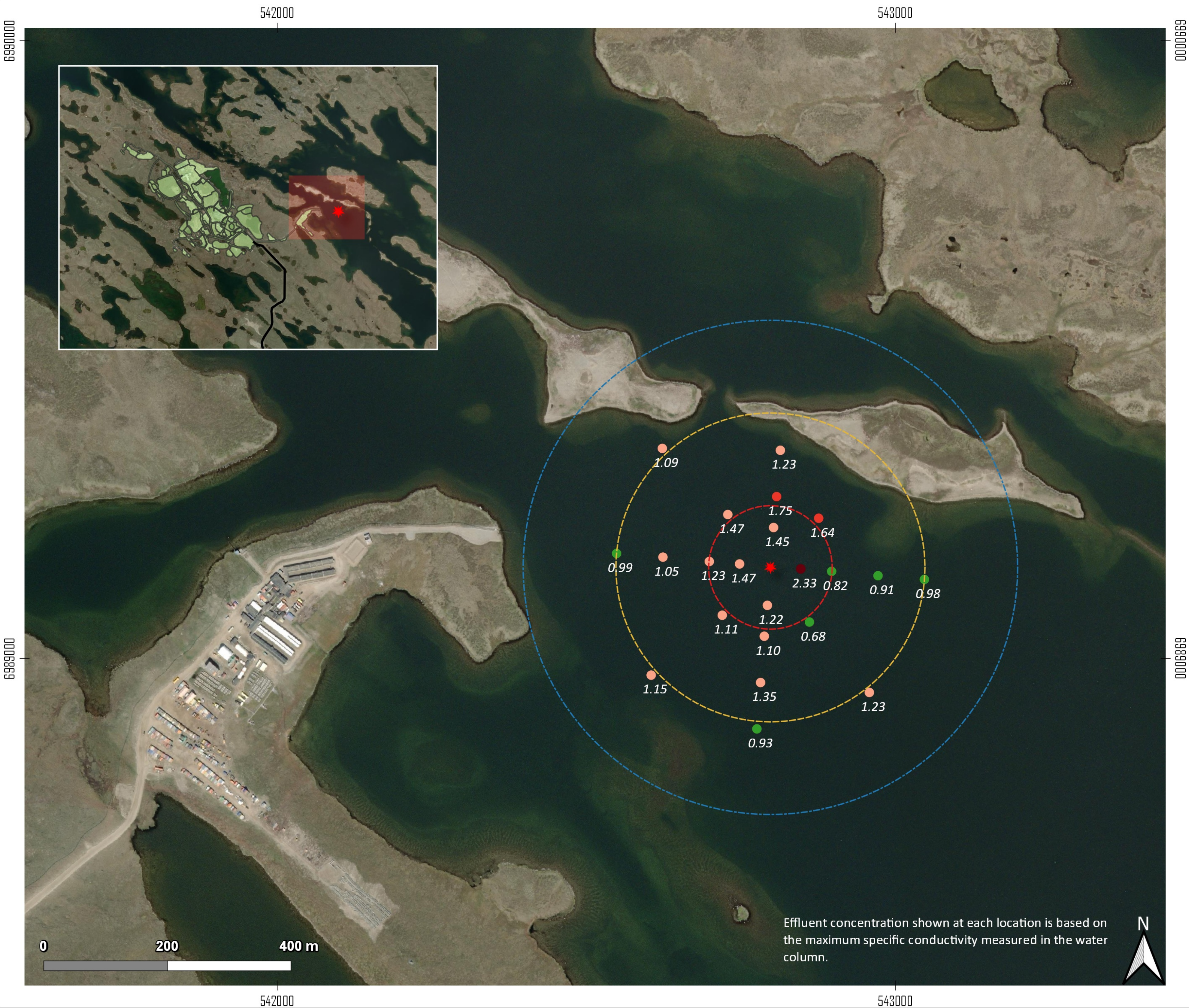



Figure 4-2.
Percent Effluent Concentration Relative to the Distance from the Diffuser, July 21, 2020

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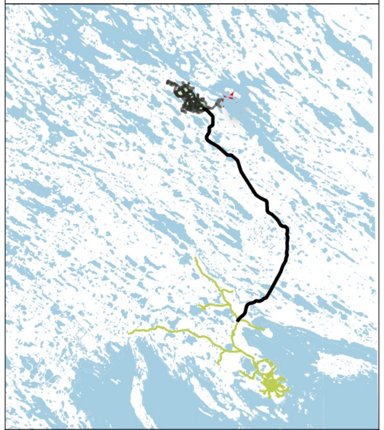
| | |
|---|---|
| Date: | February 14, 2021 |
| Datum: | NAD 83 UTM Zone 15N |
| Scale: | 1:8,000 (inset 1:120,000) |
| Software: | QGIS version 3.16.0-Hannover |
| Produced by: | E. Franz; J. Ellenor |

REFERENCES:
1. Basemap imagery from Google
2. Mine Plan provided by Agnico Eagle
3. Plume delineation data from Golder (2020)



**Legend**

Diffuser

Effluent Concentration
- < 1%
- 1 - 1.5
- 1.5 - 2
- >2%

Distance from the diffuser
- 100 m
- 250 m
- 400 m

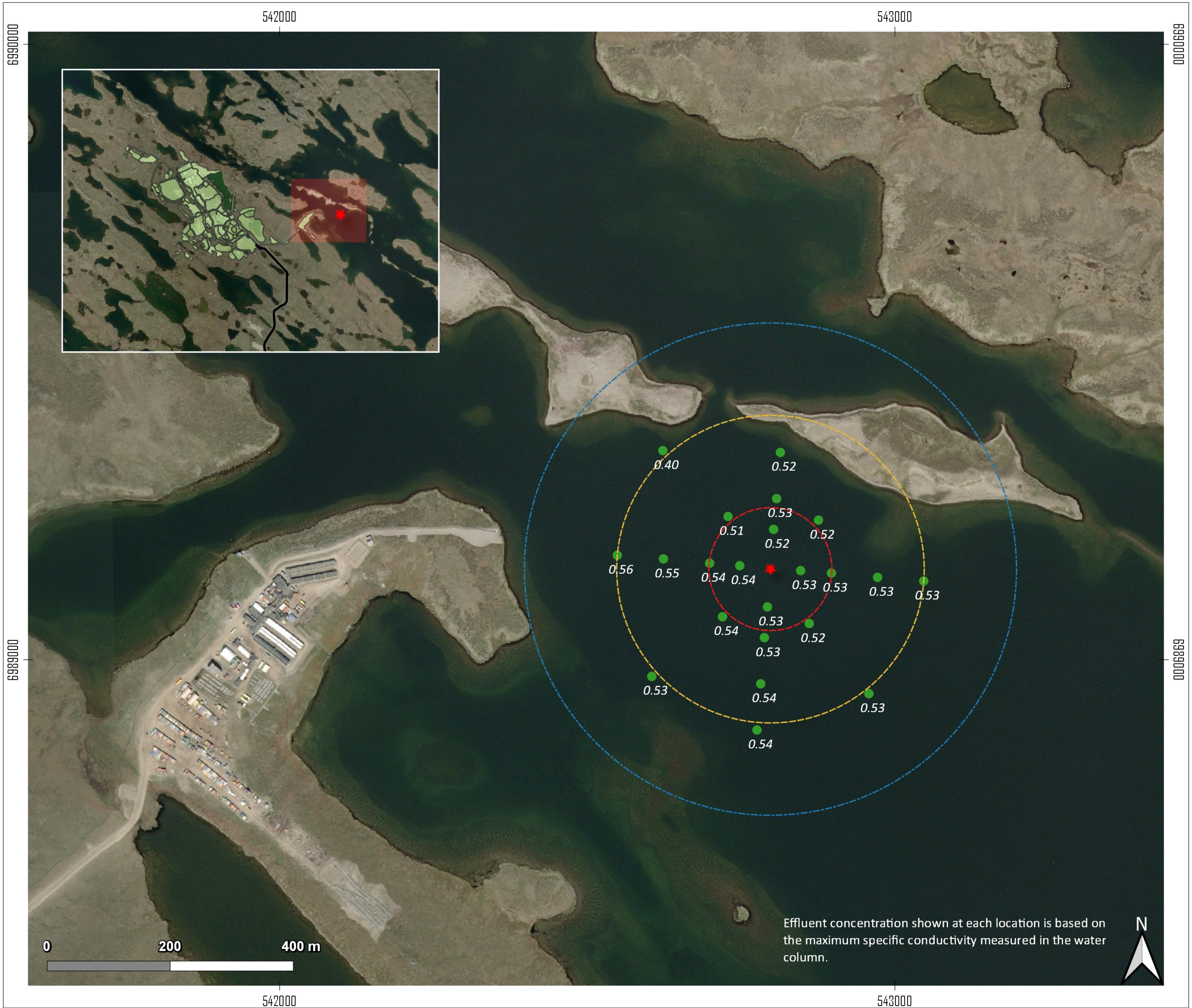


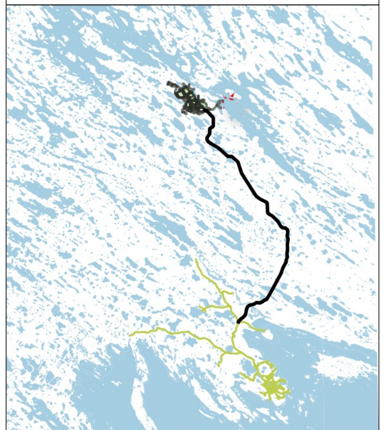

Figure 4-3.
Percent Effluent Concentration Relative to the Distance from the Diffuser, August 13, 2020

2020 Aquatic Effects Monitoring Program Annual Report

AZIMUTH

| | |
|---|---|
| Date: | February 14, 2021 |
| Datum: | NAD 83 UTM Zone 15N |
| Scale: | 1:8,000 (inset 1:120,000) |
| Software: | QGIS version 3.16.0-Hannover |
| Produced by: | E. Franz; J. Ellenor |

REFERENCES:
1. Basemap imagery from Google
2. Mine Plan provided by Agnico Eagle
3. Plume delineation data from Golder (2020)



**Legend**

Diffuser

Effluent Concentration
- < 1%
- 1 - 1.5
- 1.5 - 2
- >2%

Distance from the diffuser
- 100 m
- 250 m
- 400 m

## Table 4-2 Effluent quality limits for the effluent discharge from MEL-14

| Parameter | Units | Maximum Average Concentration | Maximum Concentration in a Grab Sample |
|---|---|---|---|
| **Conventional Parameters** | | | |
| pH [a] | - | 6.0 \| 9.5 | 6.0 \| 9.5 |
| Total Dissolved Solids (measured) [b] | mg/L | 3,500 | - |
| Total Suspended Solids [a] | mg/L | 15 | 30 |
| **Nutrients** | | | |
| Total Phosphorus [c] | mg/L | 2 | 4 |
| Total Ammonia [c] | mg/L | 14 | 18 |
| **Metals** | | | |
| Total Aluminum [c] | mg/L | 2 | 3 |
| Total Arsenic [d] | mg/L | 0.3 | 0.6 |
| Total Copper [d] | mg/L | 0.2 | 0.4 |
| Total Nickel [a] | mg/L | 0.5 | 1 |
| Total Lead [a] | mg/L | 0.2 | 0.4 |
| Total Zinc [d] | mg/L | 0.4 | 0.8 |
| **Other Parameters** | | | |
| Total Cyanide [d] | mg/L | 0.5 | 1 |
| Total Petroleum Hydrocarbons [c] | mg/L | 5 | 5 |

Notes:
All concentrations are total values (i.e., unfiltered)
[a] Adopted from Metal and Diamond Mining Effluent Regulations (Government of Canada 2018).
[b] Increased limits for TDS in 2020 as per the Emergency Amendment (NWB 2020)
[c] Not a parameter included in MDMER Schedule 4 (authorized limits of deleterious substances)
[d] Limit for the Water Licence is lower than authorized limits in MDMER

### Table 4-3 Monthly Discharge Volumes from CP1 to Meliadine Lake since 2018

| Year | Month | Days | Discharge ($m^3$) |
|---|---|---|---|
| 2018 | June | 10 | 134,272 |
| | July | na* | 352,551 |
| | August | 26 | 153,066 |
| | September | 3 | 2,632 |
| | October | 0 | 0 |
| | *Totals for 2018* | *70* | *642,521* |
| 2019 | June | 0 | 0 |
| | July | 24 | 30,614 |
| | August | 31 | 107,540 |
| | September | 30 | 157,912 |
| | October | 5 | 10,707 |
| | *Totals for 2019* | *89* | *306,773* |
| 2020 | June | 26 | 352,954 |
| | July | 31 | 366,094 |
| | August | 31 | 83,454 |
| | September | 30 | 214,845 |
| | October | 3 | 13,836 |
| | *Totals for 2020* | *121* | *1,031,177* |

Notes:
* The flowmeter malfunctioned in July 2018. Daily discharge volumes and the number of days were unavailable for July 2018. Assumed discharge occurred each day in July. Daily discharge data for July 2018 was taken from Appendix 2A in Golder (2019). Agnico Eagle provided the raw discharge data in 2019 and 2020.

### Table 4-4 Acute Toxicity Test Results on Effluent Samples from MEL-14 in 2020

| Date | Measured TDS (mg/L) | Rainbow Trout | | *Daphnia Magna* | |
|---|---|---|---|---|---|
| | | LC50 | Survival in Full Strength Effluent | LC50 | Survival in Full Strength Effluent |
| 7-Jun-20 | 2,570 | >100 | 100 | >100 | 100 |
| 14-Jun-20 | 3,090 | >100 | 100 | >100 | 100 |
| 21-Jun-20 | 2,790 | >100 | 100 | >100 | 100 |
| 28-Jun-20 | 2,910 | >100 | 100 | >100 | 100 |
| 5-Jul-20 | 1,510 | >100 | 100 | >100 | 100 |
| 12-Jul-20 | 1,370 | >100 | 100 | >100 | 100 |
| 19-Jul-20 | 1,430 | >100 | 100 | >100 | 100 |
| 26-Jul-20 | 1,340 | >100 | 100 | >100 | 100 |
| 2-Aug-20 | 1,550 | >100 | 100 | >100 | 100 |
| 9-Aug-20 | 1,650 | >100 | 100 | >100 | 100 |
| 16-Aug-20 | 1,660 | >100 | 100 | >100 | 100 |
| 23-Aug-20 | 1,850 | >100 | 100 | >100 | 90 |
| 30-Aug-20 | 1,620 | >100 | 90 | >100 | 100 |
| 6-Sep-20 | 1,910 | >100 | 100 | >100 | 100 |
| 13-Sep-20 | 1,780 | >100 | 100 | >100 | 100 |
| 20-Sep-20 | 2,410 | >100 | 100 | >100 | 100 |
| 27-Sep-20 | 2,300 | >100 | 100 | >100 | 100 |
| 2-Oct-20 | 2,630 | >100 | 100 | >100 | 100 |

Notes:
This table was adapted from Table B-4 in Golder (2020a)
LC50 = concentration that causes a 50% reduction in survival

### Table 4-5 Sublethal Toxicity Test Results for *Lemna minor* (Duckweed) Since 2018

| Year | Date | Measured TDS (mg/L) | Effluent Concentration (%) Causing Inhibition (IC25) to *Lemna minor* Frond Number or Biomass | |
|---|---|---|---|---|
| | | | Test Endpoint = Frond Number | Test Endpoint = Frond Weight (Biomass) |
| 2018 | 7-Aug-18 | 1,140* | 72.3 (36.4 to 86.5) | >97 |
| | 13-Aug-18 | 1,260 | 42.0 (26.5 to 63.2) | 38.2 (26.6 to 52.1) |
| | 3-Sep-18 | 1,360 | >97 | >97 |
| 2019 | 9-Jul-19 | 1,190 | >97 | >97 |
| | 13-Aug-19 | 1,130 | >97 | >97 |
| | 1-Oct-19 | 860 | >97 | >97 |
| 2020 | 15-Jun-20 | 3,100 | 67.2 (58.9 to 76.4) | >97 |
| | 19-Jul-20 | 1,430 | >97 | >97 |
| | 23-Aug-20 | 1,850 | >97 | >97 |
| | 13-Sep-20 | 1,780 | >97 | >97 |

Notes:
* Total dissolved solids were measured in effluent on August 5$^{th}$ for the August 7$^{th}$, 2018 chronic toxicity test.
IC25 = concentration that causes a 25% effect to frond number or frond yield. 95% confidence intervals shown in parentheses

### Table 4-6. Sublethal Toxicity Test Results on Effluent Discharged to Meliadine Lake Since 2018

| | | | | Species | Fathead Minnow | | *Ceriodaphnia dubia* | | *P. subcapitata* | *Lemna minor* | | | *Hyalella azteca* | | *Daphnia magna* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Test Type | Sublethal | | Sublethal | | Sublethal | Sublethal | | | Sublethal | | Sublethal | | |
| | | | | Test Duration | 7-d | | 14-d | | 72 h | 7-d | | | 14-d | | 21-d | | |
| | | | | Endpoint | IC-25 (growth) | LC-50 (survival) | IC-25 (reproduction) | LC-50 (survival) | IC-25 (growth) | IC-25 (biomass) | IC-25 (frond #) | IC-50 (frond #) | IC-25 (growth) | LC-50 (survival) | LC-50 (survival) | IC-25 (reproduction) | IC-25 (growth) |
| Sample date | Sample date | Sample name | Chloride (mg/L) | Measured TDS (mg/L) | % | % | % | % | % | % | % | % | % | % | % | % | % |
| 2018 | 7-Aug-18 | MEL-14 | 530 [e] | 1140 [e] | > 100 | > 100 | > 100 | > 100 | >90.9 | > 97.0 | 72.3 (36.4-86.5) | - | - | - | - | - | - |
| | 13-Aug-18 | MEL-14 | 590 | 1,260 | > 100 | > 100 | see note [a] | see note [a] | >90.9 | 42.0 (26.5-63.2) | 38.2 (26.6-52.1) | - | - | - | - | - | - |
| | 3-Sep-18 | MEL-14 | 660 | 1,360 | > 100 | > 100 | 90.1 (23.3-96.3) | > 100 | >90.9 | > 97.0 | > 97.0 | - | - | - | - | - | - |
| 2019 | 9-Jul-19 | MEL-14 | 500 | 1,190 | - | - | - | - | - | > 97.0 | > 97.0 | - | - | - | - | - | - |
| | 13-Aug-19 | MEL-14 | 410 | 1,130 | - | - | - | - | - | > 97.0 | > 97.0 | - | - | - | - | - | - |
| | 24-Sep-19 | MEL-12[b] | 1,100 | 2,490 | > 100 | > 100 | 24.3 | > 100 | 60.8 | > 97.0 | 26.3 | - | - | - | - | - | - |
| | 1-Oct-19 | MEL-14 & -12[b] | 530 | 860 | > 100 | > 100 | 58.8 | > 100 | 88.2 | > 97.0 | > 97.0 | - | - | - | - | - | - |
| 2020 | 15-Jun-20 | MEL-14 | 1,300 | 3,100 | - | - | - | - | - | > 97.0 | 67.2 (58.9 to 76.4) | - | - | - | - | - | - |
| | 19-Jul-20 | MEL-14 | 530 | 1,430 | > 100 | > 100 | - | - | - | > 97 | - | > 97 | > 100 | > 100 | > 100 | > 100 | > 100 |
| | 23-Aug-20 | MEL-14 [d] | 700 | 1,850 | ~~8.7 (2.2-21.9)~~ | ~~13.5 (8.9-20.5)~~ | - | - | - | > 97 | - | > 97 | > 100 | > 100 | > 100 | 37.6 (4.9-N/A) | > 100 |
| | 13-Sep-20 | MEL-14 [d] | 900 | 1,780 | ~~24.2 (13.7-36.4)~~ | ~~43.2 (30.1-62)~~ | - | - | - | > 97 | - | > 97 | > 100 | > 100 | 90.3 (30.0->100) | 93.8 (4.6-N/A) | > 100 |

Notes:
Green = no effect in 100% (full strength) effluent; Yellow = effect measured in effluent at concentrations >50% effluent concentration; Orange = effect measured in effluent at concentrations <50% effluent concentration.
IC/ECxx concentrations in parentheses are the 95% confidence intervals.
[a] The *C. dubia* test on Aug 13, 2018 failed laboratory control criteria. Results from this test were invalid.
[b] The toxicity tests on September 24, 2019 were conducted on water taken with water from MEL-12 prior to treatment at EWTP.
[c] Sublethal tests on *C. dubia, P. subcapitata*, and Fathead Minnow on October 1, 2019 were conducted on water taken with water from MEL-12 prior to treatment at EWTP.
[d] Reduced growth and survival in the August and September Fathead Minnow tests was attributed to pathogens caused by the test conditions, not the chemistry of the effluent. These data are not considered representative of effects to fish.

### Table 4-7. Loadings estimate to Meliadine Lake from CP1 in 2020

| Month | June | | | July | | | August | | | September | | | October | | | Yearly |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total volume (m³) | 352,954 | | | 366,094 | | | 83,454 | | | 214,845 | | | 13,829 | | | 1,031,176 |
| Parameter | N<DL | Mean Conc. (n=6) | Loadings (kg) | N<DL | Mean Conc. (n=5-6) | Loadings (kg) | N<DL | Mean Conc. (n=5-6) | Loadings (kg) | n<DL | Mean Conc. (n=5) | Loadings (kg) | n<DL | Conc. (n=1) | Loadings (kg) | Annual Loadings to Meliadine Lake |
| **Conventional Parameters** | | | | | | | | | | | | | | | | |
| Total Dissolved Solids | 0 | 2840 | 1003566 | 0 | 1470 | 538158 | 0 | 1680 | 140322 | 0 | 2070 | 444299 | 0 | 2630 | 36370 | 2162716 |
| Total Suspended Solids | 0 | 6.33 | 2235 | 0 | 4.8 | 1757 | 0 | 3.86 | 322 | 0 | 5.4 | 1160 | 0 | 5 | 69 | 5544 |
| Total Dissolved Solids (Calculated) | 0 | 2600 | 917680 | 0 | 1150 | 421008 | 0 | 1440 | 120412 | 0 | 1860 | 399612 | 0 | 2300 | 31807 | 1890519 |
| **Nutrients and Organic Carbon** | | | | | | | | | | | | | | | | |
| Ammonia (as N) | 0 | 10.6 | 3730 | 0 | 1.47 | 537 | 0 | 0.385 | 32 | 0 | 1.34 | 288 | 0 | 2.3 | 32 | 4619 |
| Total Phosphorus | 0 | 0.0475 | 17 | 0 | 0.034 | 12 | 3 | 0.0218 | 2 | 3 | 0.0208 | 4 | 0 | 0.029 | 0 | 36 |
| Nitrate (as N) | 0 | 27.5 | 9700 | 0 | 11.9 | 4349 | 0 | 11 | 922 | 0 | 13.9 | 2982 | 0 | 16.1 | 223 | 18176 |
| Nitrate + Nitrite (as N) | 0 | 27.6 | 9730 | 0 | 12.2 | 4459 | 0 | 11.3 | 945 | 0 | 14.3 | 3064 | 0 | 16.4 | 227 | 18425 |
| Nitrite (as N) | 0 | 0.09 | 32 | 0 | 0.319 | 117 | 0 | 0.297 | 25 | 0 | 0.392 | 84 | 0 | 0.35 | 5 | 263 |
| Total Kjeldahl Nitrogen | 0 | 11.7 | 4141 | 0 | 2.48 | 906 | 1 | 0.953 | 80 | 0 | 1.9 | 408 | 0 | 3.4 | 47 | 5582 |
| **Total Metals** | | | | | | | | | | | | | | | | |
| Aluminum (T) | 0 | 0.622 | 220 | 0 | 0.594 | 218 | 0 | 0.476 | 40 | 0 | 0.643 | 138 | 0 | 0.585 | 8 | 623 |
| Arsenic (T) | 0 | 0.0473 | 17 | 0 | 0.00444 | 2 | 0 | 0.00442 | 0 | 0 | 0.00352 | 1 | 0 | 0.00243 | 0 | 19 |
| Copper (T) | 1 | 0.00338 | 1 | 0 | 0.00128 | 0 | 0 | 0.00157 | 0 | 0 | 0.00153 | 0 | 0 | 0.0019 | 0 | 2.15 |
| Lead (T) | 4 | 0.00105 | 0 | 3 | 0.000302 | 0 | 6 | 0.000267 | 0 | 5 | 0.0002 | 0 | 1 | 0.0004 | 0 | 0.55 |
| Nickel (T) | 1 | 0.00947 | 3 | 0 | 0.00378 | 1 | 0 | 0.00447 | 0 | 0 | 0.0061 | 1 | 0 | 0.0102 | 0 | 6.55 |
| Zinc (T) | 4 | 0.0282 | 10 | 4 | 0.00625 | 2 | 6 | 0.00667 | 1 | 5 | 0.005 | 1 | 1 | 0.01 | 0 | 14 |
| **Other Parameters** | | | | | | | | | | | | | | | | |
| Cyanide (Total) | 0 | 0.00863 | 3 | 3 | 0.0065 | 2 | 6 | 0.005 | 0 | 5 | 0.005 | 1 | 1 | 0.005 | 0 | 7 |

Notes:
Effluent was discharged from June 5th to October 4, 2020.
Concentrations <DL were conservatively set = DL when calculating the monthly loadings to Meliadine Lake.
Monthly loadings = average concentration (mg/L) x total volume/1,000.

# 5 MELIADINE LAKE – WATER QUALITY

## 5.1 Overview of the 2020 Water Quality Monitoring Program

As discussed earlier in this report, an expanded water quality monitoring program was completed in 2020 as a condition of the emergency amendment to discharge water with higher TDS concentrations from CP1. An overview of water quality monitoring under the AEMP and monitoring completed under the *Water Quality Monitoring and Optimization Plan* (WQ-MOP) is provided below. Although the two programs were conducted as separate scopes of work, results and conclusions from the WQ-MOP factor heavily in the overall assessment of water quality in Meliadine Lake in 2020.

### 5.1.1 AEMP

Sampling areas and stations within each area are shown in **Figure 5-1**. Station-specific information (coordinates and depths) are provided in **Table 5-2**. Field sample collections and analyses followed methods outlined in the AEMP Design Document (Golder, 2016) and in recent AEMP interpretive reports (Golder 2019). Water samples were collected from approximately mid-depth at each station (~4 to 5 m below the surface). Limnology measurements (temperature, dissolved oxygen, pH, and specific conductivity) were taken at 1 m depth intervals from the surface to within approximately 1 m of the sediment.

Details of the water quality study design, including field and lab methods are provided in **Section 2.2**. QA/QC methods and results are summarized in **Section 3** and fully detailed in **Appendix A**.

### 5.1.2 WQ-MOP

The purpose of the water quality monitoring program for the WQ-MOP was to validate the interim science-based benchmark for TDS of 1,000 mg/L at the edge of the mixing zone and provide information on the assimilation of effluent in the mixing zone of Meliadine Lake. To meet these objectives, a water quality monitoring program was designed to characterize water chemistry and chronic toxicity at NF, with supplemental sampling at the MF, and reference areas to help inform spatial patterns in the lake and provide control data for the analyses. The monitoring program ran from the onset of discharge in early June until late September. At the NF area (MEL-01), water samples were collected on a weekly basis from three stations located at the edge of the mixing zone and submitted for chemistry analysis (Maxxam Analytics). Samples were taken from the depths in the water column where specific conductivity readings were the highest, in an attempt to characterize the highest concentrations of parameters associated with the effluent. This study design consideration is important to keep in mind when comparing water quality data from the WQ-MOP and the AEMP. The standardized approach to sampling at mid-depth for the AEMP, may in some cases, under-estimate the concentrations of certain parameters if the negatively buoyant plume remains stratified below 4-5 m at the NF AEMP stations, as was evident in some of the limnology profiles taken at the edge of the mixing zone during the WQ-MOP.

Two of the three NF monitoring stations sampled under the WQ-MOP were located at existing AEMP stations (MEL-01-01 and MEL-01-07) given their proximity to the diffuser (~100 m). A third location (MEL-01-10) was sampled for the WQ-MOP because the other three established AEMP stations are located beyond the 100 m mixing zone boundary. Water samples were collected monthly for chronic toxicity testing, the results of which are summarized in **Section 4.3**. Mid-field (MF) and reference areas were sampled on a monthly basis. In addition to water sampling for chemistry and toxicity testing, two plume delineation studies were conducted in July and August to determine the spatial extent of effluent mixing in the NF area. A summary of the plume delineation surveys was provided in **Section 4.6**.

There was considerable overlap in water quality done under the AEMP and the WQ-MOP in 2020, and results and conclusions presented in the WQ-MOP report (Golder 2020a) are referred to extensively in this section of the AEMP. **Table 5-3** summarizes the scope of the WQ-MOP and linkages with the AEMP.

## 5.2 Objectives and Approach to Assessing Water Quality

The objectives of the Meliadine Lake water quality program are to:

- Determine whether the mine is causing changes to water quality in Meliadine Lake,
- Evaluate the accuracy of predicted changes in water quality,
- Assess whether mitigation measures are effective at reduce impacts to aquatic environment, and
- Provide recommendations (as required) for follow-up monitoring or mitigation to lower the impact of mining-related activities on changes in water quality.

The approach to meeting these objectives centered around answering these two key questions:

1. *Has water quality in the exposure areas changed over time, relative to reference/baseline areas?*

   **Approach** – This question was answered using information from the normal range screening assessment and scatter plots showing spatial and temporal trends between and within the exposure and reference areas.

2. *Is water quality consistent with predictions outlined in the Final Environmental Impact Statement (FEIS) and less than AEMP Action Levels[20]?*

[20] AEMP Action Levels refer to 75% of the AEMP Benchmark for a given parameter. The AEMP Benchmarks correspond to the lowest water quality guideline for protection of aquatic life and human health, or site-specific water quality objectives in the case of fluoride, arsenic, and iron. AEMP Action Levels are discussed in detail in **Section 2.3.4**.

**Approach** – This two-part question relies on information presented in the normal range assessment (i.e., is water quality similar to or different from baseline) and water quality screening against the AEMP Action Levels (aka trigger values).

A brief overview of each element of the data analysis framework is discussed below.

### Normal Range Assessment

Normal range, as defined in the AEMP, refers to the range of baseline/reference conditions for the various components of the AEMP. In simple terms, the normal range is the instrument used to assess whether current conditions (e.g., the measured concentration of a particular metal) have changed relative to baseline/reference conditions. Parameters measured in water from the NF and MF areas (MEL-01 and MEL-02) were considered outside the normal range if the median concentration of samples collected during the open water period exceeded the 90$^{th}$ percentile of reference/baseline concentrations.

A slight modification of the approach to calculating the normal ranges for water quality was put forward as part of the 2019 AEMP (Azimuth 2020). Previously, estimates of the normal range in concentrations was calculated using prediction intervals for data that were normally distributed, or the 90$^{th}$ percentile for parameters with highly skewed distributions (i.e., non-normal). In 2018, the majority of the parameters failed assumptions of normality, and the estimate of the normal range of concentrations in Meliadine Lake was based on the percentile method. In the few instances where results followed a normal distribution, and the prediction interval method (PI) and percentile method produced similar results. Given the two methods produced similar results, the percentile method was adopted as the default for calculating the upper limit (and lower in the case of pH) range of baseline/reference concentrations in Meliadine Lake. Key assumptions were as follows:

- The normal range applies to samples collected in the open water period.
- Pooled reference area (MEL-03, MEL-04, and MEL-05) data collected during the AEMP Monitoring Program between 2016 and 2020 and baseline data collected in Meliadine Lake between 1995 and 2013 (Agnico Eagle 2014) were included in the calculations. Results for metals and nitrogen parameters collected prior to 2016 were not retained in the normal range calculations because detection limits were typically 10-fold higher than current DLs[21].

[21] Refer to Golder 2019; Appendix 6B for information pertaining to data that were deemed “unreliable” for estimating baseline/reference conditions.

- The upper limit of the normal range was set equal to the 90th percentile of the baseline/reference area data (*Method A*) or equal to the current detection limit (*Method B*) for parameters with greater than 85% of the values less than the DL.

For parameters that exceeded the normal range, the relative percent increase in the median concentration compared to the upper limit of the baseline/reference conditions was calculated. For ease of interpretation, parameters with a median concentration less than 10% of the normal range were shaded yellow in **Table 5-12**. In cases where the median concentration in 2020 was greater than 10% of the normal range, orange shading was used. Lastly, **Figure 5-5** to **Figure 5-10** are point plots showing the concentration of selected major ions, nutrients, and metals in samples collected during the open water period since 2013. The green line on each plot represents the normal range of concentrations in Meliadine Lake including data collected from the reference areas in 2020.

### Water Quality Guideline Screening

Individual samples were screened against the various WQGs presented in **Table 2-2** to determine if there were any individual samples that exceed aquatic life, human drinking water guidelines, or the SSWQO for fluoride, arsenic and iron in 2020. For most parameters, the lowest value of the aforementioned guidelines was adopted as the AEMP Benchmark as the point of comparison for informing management actions within the Low Action Level assessment and Response Framework.

### Comparison to FEIS Predictions and Updated Water Quality Model Results

An important aspect of the water quality assessment for Meliadine Lake is determining if the pattern, timing, and magnitude of changes in water quality match the predicted changes based on the approved design plan for the mine. Predicted future changes in water quality provide a point of comparison with which to evaluate how effectively the mine is managing water quality on site. Water quality in the NF area MEL-01 in the east basin were evaluated against the following statement: *water quality in the east basin of Meliadine Lake is predicted to change relative to baseline conditions, but aquatic life and health-based guidelines would be met at 100 m from the diffuser.*

The narrative statement of "water quality meeting guidelines at the edge of the mixing zone" was based on modelling of effluent mixing and dilution estimates completed as part of the FEIS in 2014. Predicted concentrations were developed for several parameters at the edge of the mixing zone, as well as for TDS, chloride and sodium beyond the mixing zone in the east basin of Meliadine Lake. The model was based on the extent of the approved mine plan in the 2014 FEIS, conservative assumptions regarding effluent quality, and the preliminary diffuser design. The "far-field" effluent mixing model in Volume 7 of the FEIS predicted TDS, chloride, and sodium would increase gradually over time in the east basin to maximum concentrations of 176 mg/L for TDS, 66 mg/L for chloride, and 19 mg/L for sodium in the last year of operations. The major inputs to the 2014 model (e.g., mine plan and effluent quality) are no longer valid, and in 2020, Agnico Eagle commissioned Tetra Tech to complete a multi-year simulation of effluent mixing in the sub-basin of the east basin (termed the "model domain" in Tetra Tech's report) that included the final diffuser design, updated bathymetry in the model domain, and the conservative assumption that effluent discharged to Meliadine Lake would have a MAC of TDS of 3,500 mg/L, equal to the proposed limit in the Water Licence Amendment application. Two multi-year scenarios were modelled, a base case "normal" precipitation scenario, in which TDS concentrations were predicted to increase to 170 mg/L, and a wet-year scenario, in which where TDS concentrations were predicted to increase to 183 mg/L, to provide a more accurate prediction of changes in TDS between 2020 and 2028 (current life-of-mine) for the east basin. The prediction for TDS and chloride in the 2014 FEIS and the updated Tetra Tech model are shown in **Figure 5-11** and **Figure 5-12**, respectively. Current TDS and chloride concentrations in the NF area were compared against both sets of predictions as another point of comparison for how well surface contact water is managed on site.

### Temporal and Spatial Trends

Temporal and spatial trends in water quality in Meliadine Lake were evaluated primarily using plots showing the difference in concentration for indicator parameters among the monitoring areas in Meliadine Lake and over time. Last year, parameters exceeding their respective normal ranges were carried forward for statistical comparisons of the differences *among* exposure and pooled reference areas using the non-parametric Kruskal-Wallis (K-W) test[22]. This step provided little insight into changes in water quality between areas that weren't already evident in the normal range assessment or through visual examination of scatterplots and boxplots. The NF vs reference area comparisons were statistically significantly different for all the parameters that exceeded the normal range in 2019, and in the case of NF vs MF comparisons, only three parameters exceeded the normal range but were not statistically significantly different. Given the rather limited value that K-W and post-hoc statistical comparisons added to the decision-making process in 2019, this procedure was not completed in 2020. Rather, the 2020 results were taken at face value and median concentrations for the open water period that exceeded the normal range were carried forward in the process (described below).

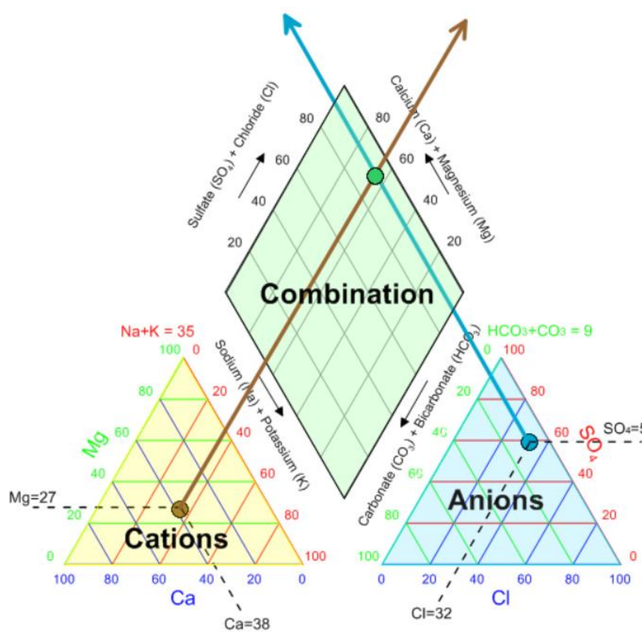
A generalized workflow was developed to short-list the number of parameters that get carried forward in the discussion:

[22] Parameters carried forward in the spatial assessment were first evaluated for normality and homoscedasticity (i.e., equal variance). All of the parameters carried forward in the spatial assessment failed the assumption of normality; analyses were conducted using non-parametric methods.

- Parameters with fewer than 50% detected concentrations in 2020 were excluded from the spatial and temporal trend assessment. The monthly water quality results were examined to verify that the frequency of non-detects was generally consistent in each month (**Appendix C2**).
- Parameters exceeding the normal range at the NF or MF areas were retained for further analysis. Where a number of parameters were identified for a given parameter class (e.g., major ions, nutrients, metals), a short list of "surrogate" parameters were identified to carry forward for more detailed analysis using various plots. For example, with the exception of chloride, temporal and spatial changes in the constituent ions that make up TDS are not discussed in detail given the similar pattern of change observed among areas and between years. The intent of this step was to streamline the analyses by minimizing repetition.

In addition to the more traditional scatterplots and boxplots used in previous reporting cycles, Piper plots were incorporated into the spatial and temporal analysis in 2020 as a tool to investigate potential changes in ion composition in Meliadine Lake before and after effluent discharge from CP1 began in 2018. Piper plots are trilinear plots that depict the relative percentage (in milliequivalents) of major cations (Na, Mg, Ca) and anions (Cl, $SO_4$, $HCO_3$) present in a water sample (Piper 1944). They are used primarily to visualize similarities or differences among water samples based on their ionic composition and are particularly useful for distinguishing among water sources. While the specifics can be modified, the general approach involves looking at the percent composition of 3 cation and 3 anion groups. The cation groups used for Meliadine Lake were calcium, magnesium and sodium + potassium; the anion groups are sulfate, chloride and carbonate ($CO_3$) + bicarbonate ($HCO_3$). The relative percentages of each cation and anion group are shown on separate trilinear plots, and then projected onto a combination plot.

The figure to the right shows how the proportions of the cations and anions in the trilinear plots on the bottom left and right, respectively, are used to characterize the ionic composition of the water sample. In the Piper plot example below, calcium (38%) and magnesium (27%) are the dominant cations in the water sample, while sulphate $SO_4$ (59%), is the dominant anion. Samples with similar ionic signatures will cluster more closely together on the plots.



## 5.3 2020 Water Quality Results

The 2020 water quality data are discussed in the following sections:

- *In-situ* Water Quality – Limnology plots
- Water chemistry compared to normal ranges, guidelines (i.e., AEMP benchmarks)
- Spatial and temporal assessments

Conclusions derived from each of these sets of analyses were factored into the Low Action Level assessment (**Section 5.4**).

Figures and tables specific to the data evaluation are included in **Section 5.6** and **Section 5.7**, respectively.

Supplemental boxplots and point plots showing the concentration of key water quality parameters are provided in **Appendix C**.

### 5.3.1 *In-situ* Water Quality

Field measured water quality parameters provide important "real-time" information on potential changes water quality and are an important tool for assessing water quality in Meliadine Lake. Limnology profiles were taken concurrently with water sampling at the NF, MF, and reference areas in 2020.

Expanded *in-situ* monitoring in the NF area was conducted as part of the WQ-MOP from June through September. Through-ice sampling was completed once in June, coinciding with the start of discharge from CP1 to Meliadine Lake. When the ice came off the lake in July, profiles were taken at the NF mixing zone stations on an approximately weekly basis. The MF and reference area stations were sampled on a monthly basis. Lastly, remote continuous monitoring of temperature and specific conductivity was conducted from early June to early October at the NF stations located at the edge of the mixing zone. At each station, the probe was positioned 2 m above the sediment and set to record values every hour. The continuous remote monitoring data are discussed in detail in Appendix B of the WQ-MOP (Golder 2020a).

**Figure 5-2** shows the average dissolved oxygen (DO), temperature, and pH readings for each area in the ice-covered (March and June) and open water (July, August, and September) sampling events. **Figure 5-3** shows the average specific conductivity for the replicate profiles taken in each area, for each sampling even. A more detailed look at the spatial and temporal patterns in specific conductivity profiles are shown for the NF area MEL-01 in **Figure 5-4.**

## Temperature

Water temperatures in March and June were near 0°C below the ice, increasing to approximately 2.5°C near the bottom of the lake. Variability in water temperature among NF and MF areas was low during the ice-covered season. Water temperatures increase rapidly in Meliadine Lake during the month of July when the ice comes off the lake. By the 3rd week of July when sampling was completed in 2020, water temperatures were between 11°C and 14°C. By mid-August, the water temperature at the NF had peaked at 16°C at the NF area and between 12°C and 14°C at the reference areas. The maximum temperature recorded at the remote continuous monitoring stations at the edge of the mixing zone was 16.5°C (Golder 2020a). In early September, water temperatures had decreased to between 8°C and 10°C.

## Dissolved Oxygen

Dissolved oxygen (DO) exceeded 16 mg/L at most stations and depth intervals in March. Reliable dissolved oxygen measurements are often difficult to obtain during winter sampling events as multi-probe meters are not designed to function in sub-zero temperatures. Winter dissolved oxygen readings have periodically been flagged for reliability (Golder 2018), and the 2020 results were similarly flagged. At standard temperature and atmospheric pressure (0°C and 1 Atm or 760 mmHg), the theoretical limit of DO in freshwater is approximately 14 mg/L.

During the open water period, the lake was well-oxygenated (~10 to 12 mg/L) with DO concentrations relatively uniform both vertically in the water column and horizontally among the five monitoring areas (**Figure 5-2**).

## pH

pH, much like DO, can be difficult to measure accurately in the winter. For the winter sampling events in 2020, pH was generally more variable and lower than compared to the open water sampling events. Most of the pH readings from March and June fell between 6.75 and 7.5, which is consistent with recent monitoring and in the range of values recorded in Meliadine Lake prior to the onset of effluent discharge. In 2017, for example, pH measured under-ice in January and February was between 7 and 8 for most profiles taken at MEL-01 and MEL-02, with the occasional depth reading measuring in the range of 6.5 and 7 (Golder 2018). Throughout the open water period, pH was consistently on the slightly basic side of circumneutral at approximately 7.5 with no evidence of vertical stratification within areas or spatial differences among the NF, MF, and reference areas.

## Specific Conductivity

Conductivity is a measure of the electrical conductivity in water, and as the amount of salt (ionic parameters) increases, conductivity also rises. As a monitoring tool, *in-situ* conductivity readings are an effective way of assessing changes in water quality related to mining effluent. Throughout this section, NF monitoring stations MEL-01-01, MEL-01-07, and MEL-01-10 are referred to as the “mixing zone stations” based on their location at the edge of the 100 m mixing zone. These three stations were also monitored under the WQ-MOP, and together with monitoring done at the AEMP stations MEL-01-06, MEL-01-08, and MEL-01-09, provide a spatial context to evaluate changes in conductivity stepping out from the diffuser.

The following conclusions regarding water quality in Meliadine Lake in 2020 integrate findings presented in the WQ-MOP report (Golder 2020a), supplemented with additional monitoring conducted specifically under the AEMP.

**Pre-Discharge Period (March)** – In March when no discharge occurred, specific conductivity at the NF and MF areas measured between 100 µS/cm and 130 µS/cm (black line on **Figure 5-3**). The effect of cryo-concentration was evident in the March and June profile results at the MF and reference areas (**Figure 5-3**).

**Early Spring Monitoring** – Conductivity increased in the NF coinciding with the start of discharge to Meliadine Lake on June 5$^{th}$. Soon after discharge started, the plume was detected on June 7$^{th}$ during the first sampling event for the WQ-MOP. At the mixing zone stations MEL-01-01 and MEL-01-07, conductive increased from less than 120 µS/cm at the surface to approximately 200 µS/cm near the bottom of the lake (**Figure 5-4**). The June event was conducted through the ice when conditions are less conducive to effluent mixing, and the noticeable increase and vertical stratification of specific conductivity at MEL-01-01 and MEL-01-07 is consistent with more stagnant conditions under ice. Evidence of stratification persisted at the mixing zone stations into early July when ice was receding.

**Transition to Open Water (end of July)** – Ice came off the NF area around July 22$^{nd}$. In July and August, conductivity in the NF areas was largely well mixed, with no obvious pattern of vertically stratification or horizontally among the stations. For the majority of the samples collected during July and August, specific conductivity measurements fell within a relatively narrow range between 100 µS/cm to 125 µS/cm. Generally lower conductivity in August is directly related to less water discharged from CP1. For most of August, daily discharge was below 3,000 $m^3$, as less precipitation fell during the peak of summer and some of the surface contact water in CP1 was pumped to the process plant.

**Late Season Monitoring (Sept 1 – Oct 4)** – Limnology profiles taken in September (pink and purple shaded lines in **Figure 5-4**) showed more evidence of vertical stratification, coinciding with the increase in effluent discharge from CP1 beginning on September 12$^{th}$. The spatial extent of vertical stratification evident in the profiles taken on September 13$^{th}$ extends from the diffuser to the three stations at the edge of the mixing zone. The MEL-01 stations located approximately 250 m from the diffuser were not sampled on the same day, but two days prior, on September 11$^{th}$, the conductivity measurements were uniform top to bottom in the water column at just under 110 µS/cm. Approximately ½ the volume of water was discharged on September 11th (4,000 $m^3$) compared to two days later on September 13th (8,300 $m^3$). These findings broadly agree with the results of the plume delineation surveys in July and August that showed the plume was detectable at concentrations greater than 1% at 100 m from the diffuser during periods of high discharge (July plume survey [**Figure 4-2**]), but during periods of reduced flow from CP1 to Meliadine Lake, the effluent is thoroughly mixed within 100 m of the diffuser (August plume delineation survey [**Figure 4-3**]).

**Lake-Wide Conductivity** – Seasonal variability was evident in conductivity readings at the MF and reference areas. Based on the data from the NF areas, combined with the plume delineation surveys conducted in July and August, the spatial extent of changes in conductivity attributed to effluent discharge are confined to a relatively small area within 250 m of the point of discharge.

### 5.3.2 Snow Pack Chemistry Results (February and April 2020)

Snow pack monitoring was completed at five areas around the site on February 24th and April 20th, 2020. Results of the survey are presented in **Appendix G**. Two of the locations, DF-5, located south of the exploration camp, and DF-7, northwest of the site, are upgradient from Meliadine Lake and represent the most suitable monitoring areas for assessing off-site migration of dust (**Figure 1-2**). The snow pack monitoring program provides high-level information about off-site dust migration during the winter months, but drawing any conclusions between detectable concentrations in snow and potential changes in water quality would require a more detailed estimate of loadings that is beyond the intent of this monitoring program.

Around half of the parameters measured in the snow samples from DF-5 and DF-7 were less than the analytical DLs. The reported DLs in 2020 were considerably lower than in 2019, which limited the comparison of snow chemistry data between the two years. Of the parameters that were detected in February 2020, most were less than 5-times the analytical DL except for, aluminum, arsenic, barium, cadmium, copper, iron, lead and manganese. At concentrations close to the DL, the analytical precision is reduced. In April, around half the parameters detected were greater than 5-times the DL including molybdenum, nickel, silver, thallium, uranium and zinc in addition to the parameters detected at concentrations higher than 5 times the DL in February. There were no far-field or reference areas sampled. The farthest location, DF-6, is located west of the site between Lake B7 and Lake D7; chemistry data from this station was consistent with stations DF-5 and DF-7 monitoring locations, both in terms of the parameters detected and the magnitude of concentrations compared to DLs. The prevalence of parameters that were detected at concentrations greater than 5 times the DLs in snow samples at the four monitoring stations suggests off-site dust migration to the tundra may be occurring during the winter months. However, the relative contribution from dust in snow melt during freshet is likely negligible compared to water quality changes associated with the discharge of treated effluent in early spring/summer.

### 5.3.3 Current Water Quality Compared to Guidelines

Water quality results from the winter and open water sampling events were screened against water quality guidelines and site-specific water quality objectives (SSWQOs). The screening summary for the March sampling event are provided in **Table 5-4** (MEL-01) and **Table 5-5** (MEL-02). The screening summary for the open water samples collected from MEL-01, MEL-02, and Reference Areas are provided in **Table 5-6** to **Table 5-11**.

One water quality exceedance was recorded at the NF area for total copper in March. The single copper exceedance (2.21 µg/L) marginally exceeded the CCME water quality guideline of 2 µg/L. On average, copper concentrations were 1.34 µg/L at the NF area for that event; total copper concentrations averaged 0.85 mg/L across the open water season and no other exceedances of aquatic life or health-based drinking water guidelines were documented in the NF and MF areas during that period (**Table 5-6**).

Drinking water for the camp is sourced from Meliadine Lake in the narrows between MEL-01 and MEL-02. The intake (station MEL-11) lies in the direct path of flow for water exiting the east basin (**Figure 5-1**). Routine testing is done on camp water sourced from Meliadine Lake to ensure a safe drinking water supply for people on site. Since construction of the main camp, there have been no instances of water exceeding health-based standards for safe consumption. Data from this station are reported in the Annual Report.

### 5.3.4 Normal Range Assessment

Results of the normal range screening assessment comparing the median water chemistry concentrations for the open-water sampling events[23] at the NF and MF are presented in **Table 5-12**. In total, there were twenty-two (22) parameters that exceeded the upper limit of baseline/reference conditions at MEL-01 based on the median concentration from the AEMP water sampling events in July, August, and September. As expected, the list of parameters that exceeded the normal range of baseline/reference concentrations in 2020 included TDS (calculated) [24] and constituent major ions (e.g., chloride, sodium, calcium, and sulphate). Total phosphorus and total organic carbon (TOC) also

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[23] Normal range concentrations are not calculated for samples collected in the winter because adequate reference and baseline data were not available for the calculation.

[24] TDS results are provided as *measured* and *calculated* concentrations for the AEMP water quality samples. Calculated TDS, rather than measured TDS, was selected for the normal range assessment to remain consistent with existing methods. Golder provided a detailed review of calculated vs measured TDS results in a Technical Memorandum for the Snap Lake Project (Golder 2013b). From their review, they noted that "measured TDS is subject to laboratory interferences that can reduce the accuracy of the measurement. Calculated TDS assumes the analytes exist in the sample in the forms analyzed, so are not influenced by any changes that may occur when taken out of solution. Using this method is likely more accurate given the practical limitations in handling and measuring TDS."

exceeded the normal range in 2020, as did the following metals: arsenic, barium, boron, cobalt, iron, lithium, manganese, nickel, strontium, and uranium. Reactive silica, which wasn't measured in 2019, exceeded the normal range in 2020 and in 2018.

Most of the parameters that were above their respective normal ranges in the NF area exceeded by at least 10%. In 2020, the median concentrations of chloride and sodium were 60% and 47% above baseline/reference concentrations, respectively. The median concentration of chloride in the NF area in 2020 was 17.8 mg/L, compared to the normal range of 9.6 mg/L. Given the predominance of chloride and sodium in the effluent, this observation is not surprising. Other parameters that have increased relative to baseline conditions included arsenic, cobalt, lithium, manganese, nickel, and strontium. Relative to baseline/reference conditions in the lake, the median annual concentration of these metals has at least doubled (>50% increase).

Farther downstream, at the MF area, there were fewer parameters that exceeded their respective normal ranges in 2020, and those that did exceed were more often within 10% of the upper limit of baseline/reference conditions (**Table 5-12**). Chloride and sodium, as well as magnesium and sulphate and selected metals (e.g., arsenic) increased at the MF area relative to baseline/reference conditions in Meliadine Lake, but the magnitude of increase was consistently lower than that observed at the NF area.

Some metals such arsenic, cobalt, iron, and strontium have exceeded the normal range of baseline/reference concentrations since the normal range concept was first introduced in the AEMP. Exceedance are expected to continue based on observations collected since 2015. In the case of metals and nitrogen parameters, the normal range calculation is heavily weighted towards samples collected in the west and south basins between 2016 and 2020[25], and because there are no baseline data from the east basin in the normal range assessment, natural variability between basins is not accounted for in the estimate of the normal range for metals and nitrogen parameters. **Figure C2-28** shows the concentration of arsenic in the NF area has increased very gradually dating back to the baseline phase in 2013, a pattern that is also evident at the reference areas. Spatial and temporal patterns will be discussed in more detail below, but the example of arsenic demonstrates that an exceedance of the normal range does not necessarily imply the observed changes are related to the mine. For this reason, it's important to scrutinize normal range exceedances to determine if the exceedance represents an actual year-over-year increase or simply a continuation of a long-term lake-wide trend.

[25] Refer to **Section** Error! Reference source not found. for a discussion on reference data included in the normal range calculations. A screening assessment completed as part of the 2018 AEMP concluded the 2013 baseline metals data from the east basin of Meliadine Lake were not suitable for use in the normal range calculations (see Appendix 6B in Golder 2019 for the underlying rationale).

### 5.3.5 Comparison to FEIS Predictions

**Figure 5-11** illustrates the predicted concentration of TDS in the model domain for the 2014 FEIS and the updated 2020 mixing model compared to observed TDS (calculated) concentrations in the east basin (MEL-01) up to and including results from 2020. The following points stand out when looking at the observed increase in calculated TDS compared to predicted changes in the FEIS and more recent 2020 model update:

- The updated water quality model predicts TDS concentrations will increase more rapidly compared to the original far-field mixing model for the east basin presented in the 2014 FEIS. By 2021, the Tetra Tech base case model predicts maximum TDS concentrations at the edge of the mixing zone will increase from 89 mg/L in 2020 to 150 mg/L in 2021. Between 2021 and 2028 (the last year in the model), a more gradual further increase of 20 mg/L is predicted, for a maximum concentration of 170 mg/L.
- The 2014 FEIS predicted a more gradual increase in TDS from early through late operations, with peak TDS of 176 mg/L occurring around 2030-31, before gradually decreasing as the mine transitions from operations to closure. The timing of mine development in the 2014 FEIS is slightly different than the current life of mine that is based solely on development of the Tiriganiaq deposit.
- During the early operations period (2018-2020), TDS concentrations at the MEL-01 stations have tracked similar to the predicted increase in the 2014 FEIS when looking specifically at calculated TDS (**Figure 5-11**). Measured TDS is slightly higher, but follows a similar overall pattern. The Tetra Tech model predicted TDS concentrations of 83 mg/L at the edge of the mixing zone in 2020. The observed results from 2020 are in broad agreement with this prediction. At 100 m from the diffuser, measured TDS concentrations in the 2020 collected under the WQ-MOP were between 30 mg/L and 115 mg/L. These samples were taken from the water depth with the highest specific conductivity, and are an accurate estimate of the worst-case TDS concentrations at 100 m from the diffuser. The average measured TDS concentration at the edge of the mixing zone in 2020 was approximately 70 mg/L.

The 2014 FEIS predicted *minor changes* in water quality at the edge of the mixing zone and no residual impacts from effluent discharge in Meliadine Lake outside the mixing zone (e.g., at the NF area)[26]. *Minor changes* were defined as a measurable increase in a parameter that is outside the range of baseline values (e.g., above the normal range) but within water quality guidelines for the protection of aquatic life and drinking water quality. Information presented in the water quality screening assessment and the

[26] See Section 7.4.7 (Residual Impact Summary) in the FEIS for more information (Volume 7; Agnico Eagle 2014)

normal range assessment confirm that although water quality in the east basin has changed compared to baseline conditions (> normal range), these changes are in line with the FEIS predictions and the current concentrations of all parameters are well below water guidelines meant to protect aquatic life and drinking water quality for human consumption.

### 5.3.6 Spatial and Temporal Trends

The following section provides an overview of spatial and temporal patterns of changes in water quality for TDS (and constituent ions) as well as selected metals. Water quality data for key parameters within Meliadine Lake were qualitatively examined for temporal patterns on condensed time series plots of open-water conditions between 2015 and 2019 presented in **Figure 5-5** through **Figure 5-10**. Plots for all parameters in the winter and open-water sampling events are presented in **Appendix C1** (boxplots) and **Appendix C2** (scatter plots) to illustrate general trends in parameter concentrations during open water and ice cover conditions in Meliadine Lake. The detailed assessment of changes in nutrients are discussed in the phytoplankton study (**Section 6.4.2**) as part of the broader discussion regarding nutrient enrichment.

#### TDS and Major Ions

Based on the characteristics of the effluent discharged to Meliadine Lake, total dissolved solids (either calculated or measured), and chloride in particular, are among the parameters best suited to assess changes in water quality between areas and across years. As shown in the table below, chloride concentrations have increased over time (yearly % increase) at NF, MF, and reference areas, but the rate of change has been higher in the NF area compared to the MF area and Reference Area 1, where open water sampling has been conducted at the same frequency since 2016. The two years that saw the largest yearly % increase, as well the biggest relative percent difference between areas, were 2018 and 2020, which match the expected pattern of change associated with discharge of water from CP1 to Meliadine Lake. Of note, is that in 2019, when discharge from CP1 was curtailed, chloride concentrations decreased in the NF area relative to 2018, suggesting the east basin is not only effective at assimilating effluent, as suggested by Golder (2020a) and Tetra Tech (2020), but that changes in water quality are reversible when less water is discharged from CP1. This is an important consideration as Agnico Eagle looks to implement an adaptive management strategy involving the option of transporting water from CP1 to Melvin Bay via the proposed waterline.

**Table 5-1. Percent Increase in Chloride Concentrations (mg/L) Between Areas and Years Since 2015**

| Year | NF MEL-01 | | MF MEL-02 | | REF1 MEL-03 | | Relative Percent Difference in Chloride Between Areas | | |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | Yearly % Increase | Mean | Yearly % Increase | Mean | Yearly % Increase | NF vs MF | NF vs FF | MF vs FF |
| 2015 | 8.6 | - | 8.8 | - | - | - | -2% | - | - |
| 2016 | 9.4 | 8% | 8.4 | -5% | 7.8 | - | 11% | 19% | 8% |
| 2017 | 10.6 | 13% | 9.4 | 11% | 8.2 | 6% | 13% | 25% | 13% |
| 2018 | 12.7 | 18% | 9.4 | 0% | 8.3 | 1% | 30% | 41% | 12% |
| 2019 | 11.9 | -7% | 10.9 | 15% | 9.4 | 12% | 9% | 23% | 14% |
| 2020 | 17.8 | 40% | 11.9 | 9% | 9.4 | -1% | 40% | 62% | 24% |

As shown in **Figure 5-5**, TDS concentrations have been trending higher in the east basin of Meliadine Lake dating back to 2013 before the start of construction. The reference area data is sparse, but there is some evidence of a subtle lake-wide changes in water quality going back to the baseline period in the late 1990's (**Figures C2-6** [measured TDS]; **Figure C2-16** [chloride]). The calculated TDS data set goes as far back as 2008; (**Figure C2-7**), and in general there is compelling evidence when looking at calculated TDS. Adding to the uncertainty regarding long-term temporal trends is the conclusion Golder arrived at as part of the normal range screening assessment for the 2018 AEMP. In their analysis of the 2015 to 2017 water quality data, Golder concluded based on box and whisker plots that the 2015 to 2017 NF water quality data differed from the pre-2015 dataset for several major ions, and suggested that some aspects of water quality in the NF area were affected by pre-construction exploration activities[27]. Prior to dewatering of Lake H17 in late 2016, the only documented discharge to Meliadine Lake was gray water and sewage from the exploration camp STP, neither of which seem like plausible sources to influence TDS in the NF area over time (**Figure 5-13**). No other exploration activities that could have contributed to changes in water quality at this spatial and temporal scale were identified.

To support the discussion regarding the spatial and temporal extent of mine-related vs natural changes in TDS, Piper plots were constructed to illustrate the ionic composition of water samples from recent monitoring in 2018 through 2020 compared to the baseline period. Piper plots provide a visual way of assessing the ionic signature or "fingerprint" surface water in Meliadine Lake. During the baseline period, water samples collected throughout Meliadine Lake were predominantly comprised of calcium or sodium + potassium as the cations and bicarbonate and chloride as the anions (**Figure 5-17**). In contrast, surface contact water has a distinct signature of high chloride and a mix of calcium and sodium (**Figure 5-18**), owing to the fact that some of the waste on site is from underground where TDS concentration in groundwater is naturally elevated. Therefore, a shift in the ionic composition of water

[27] Refer to Appendix 6B in Golder (2019)

from Meliadine Lake towards higher proportion of chloride, in particular, would suggest effluent is the cause of the change (Golder 2020a).

Recent results for the reference areas from 2018 to 2020 (**Figure 5-19**) are consistent with the baseline results (**Figure 5-17**), with bicarbonate/carbonate the dominant anions, suggesting that the subtle trends in TDS observed at the reference areas are unrelated to effluent inputs to the lake. Results for the NF area, MF area and edge of the mixing zone since 2018 (**Figure 5-20**) show higher chloride at the NF area relative to the MF area. The important take home message here is that the increase in chloride is subtle, meaning effluent is rapidly mixed with surface water a short distance from the diffuser.

### Metals

Increases in TDS and constituent ions is consistent with the expected change in water quality caused by effluent. However, the large volume of water discharged in June and July also had higher concentrations of some metals. The combination of high discharge volumes and higher concentrations of certain parameters in CP1, contributed to observed increases for several metals in the NF area in the July sampling event, notably arsenic, cobalt, and manganese (among others). Of all the parameters that showed increases in 2020, arsenic stands out, because of the large magnitude of the increase at the MF area relative to concentrations observed in 2019. For context, prior to 2020, variable, yet increasing concentrations of arsenic were evident at the NF area, while the MF and reference areas remained relatively consistent in the range of 0.2 to 0.3 µg/L (**Figure 5-7**). In 2020, an increase was observed for both total and dissolved arsenic at MEL-02, with concentrations in the July sampling event approaching 0.6 µg/L. What makes this result surprising is that concentrations at MEL-02 were of similar magnitude to both MEL-01 and MEL-13 (above diffuser) (**Figure 5-15** and **Figure 5-16**). This observation seems inconsistent with effluent as the source, particularly given the measured plume dilution in the receiving environment (Golder 2020a) and the effluent mixing model update by Tetra Tech (2020), which both demonstrate rapid dilution of effluent within a relatively short distance of the diffuser. Finally, the absolute concentrations are well below the AEMP Action Level of 7.5 µg/L.

## 5.4 Low Action Level Assessment – Meliadine Lake

Water quality data from the AEMP are assessed within a response framework that compares results from the current monitoring year against Low Action Level criteria to determine if additional studies, monitoring, or mitigation are required. Low Action levels, which were updated in 2018, provide an early warning indicator (aka 'trigger') that changes in water quality have occurred before concentrations increase to levels associated with effects to aquatic life or impaired drinking water quality for human consumption. The conclusions of the Low Action Level assessment for effluent toxicity and water quality are presented in the following sections. The Low Action Level assessment for nutrient enrichment in Meliadine Lake is presented **Section 6.5** of the phytoplankton study.

### 5.4.1 End-of-Pipe Effluent Toxicity

The Low Action Level for end-of-pipe toxicity is classified as a persistent sublethal toxic effect observed in the same test organism in three consecutive monthly samples collected from MEL-14 for compliance purposes. Persistent sublethal effects due to effluent exposure were not observed in the toxicity tests conducted on *L. minor*, *H. azteca*, *D. magna*, or Fathead Minnow in 2020. The frequency with which toxicity testing was conducted in 2020 provides a high level of confidence in the conclusion that effluent discharged to Meliadine Lake is non-toxic to aquatic plants, invertebrates, and fish. Furthermore, the absence of persistent effects attributable to effluent demonstrates that the increase in the TDS limit from 1,400 mg/L to 3,500 in 2020 is protective of aquatic life.

### 5.4.2 Water Quality for the Protection of Aquatic Life and Human Health

The Low Action Level for water quality and toxicological effects to aquatic life and impacts to human health have 3 conditions (**Table 2-3**), all three of which must be exceeded to trigger a Low Action Level exceedance:

- Water quality in the NF area is different from baseline (normal range assessment),
- At least one parameter exceeds 75% of the AEMP Benchmark, and
- Divergent trends between the NF and reference areas.

The harmonized list of AEMP Benchmarks for aquatic life and human health to a single AEMP Benchmark for a water quality parameter reduced redundancy in reporting as compared to previous years. Of the parameters with both aquatic life and drinking water quality guidelines, the aquatic life guidelines were typically lower. This meant water quality deemed safe for aquatic life from a toxicological perspective can also be considered safe for human drinking water use. The drinking water guideline was adopted as the AEMP Benchmark for arsenic, antimony, iron, and manganese. In the case of iron, the drinking water guideline is based on preserving taste (aesthetic objective) rather than protecting against toxicological effects. Normally the aesthetic objective would not be factored into decision-making, but given that members of the community have recently expressed concern about activities at the mine changing the taste of the water, use of the aesthetic objective as the AEMP Benchmark seems appropriate.

**Figure 5-21** presents the median concentration in the NF, MF and pooled reference areas relative to the normal range, AEMP Action Level, and AEMP Benchmark in a “dashboard”. The results of the normal range and water quality screening assessment (as shown in **Figure 5-21**), as well as the temporal and spatial trend assessment (**Section 5.3.6**), provide the supporting evidence used to answer the following three questions.

***Question 1****: Has water quality in the NF area changed relative to baseline/reference conditions?*

- **Response**: Yes
- The normal range assessment flagged several major ions, TOC, and several metals as exceeding the upper limit of the normal range in 2020.

***Question 2**: Is the concentration for a given parameter at Near-field area MEL-01 greater than 75% of the AEMP benchmark?*

- **Response**: No.
- No parameters exceeded the AEMP Action Level in 2020. For parameters without an AEMP Benchmark, the second criterion is not applicable; for these parameters, the low action level trigger is evaluated based on criteria in questions 1 (above) and 3 (below).

***Question 3**: Is there evidence of a divergent trend over time in the concentrations of a given parameter at the Near-field compared to the reference area?*

- **Response**: Several parameters have increased in the NF area relative to baseline and reference conditions. The pattern of the change in the NF area is consistent with changes related to effluent discharge, as reflected by higher concentrations of TDS and constituent ions, nitrogen parameters, and some metals linked to mining activities. Importantly, the pattern of the change in concentration is consistent with what was predicted in the FEIS, namely that water quality in the east basin would change relative to baseline conditions, but that water quality at the edge of the mixing zone (100 m) would meet aquatic life guidelines, human health guidelines, or SSWQOs.

## 5.5 Conclusions and Recommendations for 2021

The various approaches to evaluating water quality (e.g., normal range assessment, spatial/temporal scatterplots) all point to changes in water quality in the east basin associated with effluent. The magnitude of the change is broadly consistent with predictions in the FEIS, namely, that water quality would change relative to baseline/reference conditions, but that water quality would continue to meet guidelines for the protection of aquatic life and human drinking water quality at 100 m from the diffuser. Based on the extensive monitoring program in 2020, the proposed increase in the MAC of TDS in effluent from 1,400 mg/L to 3,500 mg/L appears protective of aquatic life and human drinking water quality.

At this stage of the AEMP, there is no evidence of year-over-year changes in water quality that warrant management actions or mitigation strategies beyond on-going monitoring as per the Water Licence and MDMER requirements.

The scope of the 2021 monitoring program includes biological monitoring for the health of the fish and benthic invertebrate communities in Meliadine as per the 3-year monitoring cycle under the harmonized EEM/AEMP.

## 5.6 Figures – Meliadine Lake Water Quality

Figures specific to Meliadine Lake are presented below. Additional supporting water chemistry plots are provided in **Appendix C1** (boxplots) and **Appendix C2** (scatterplots).

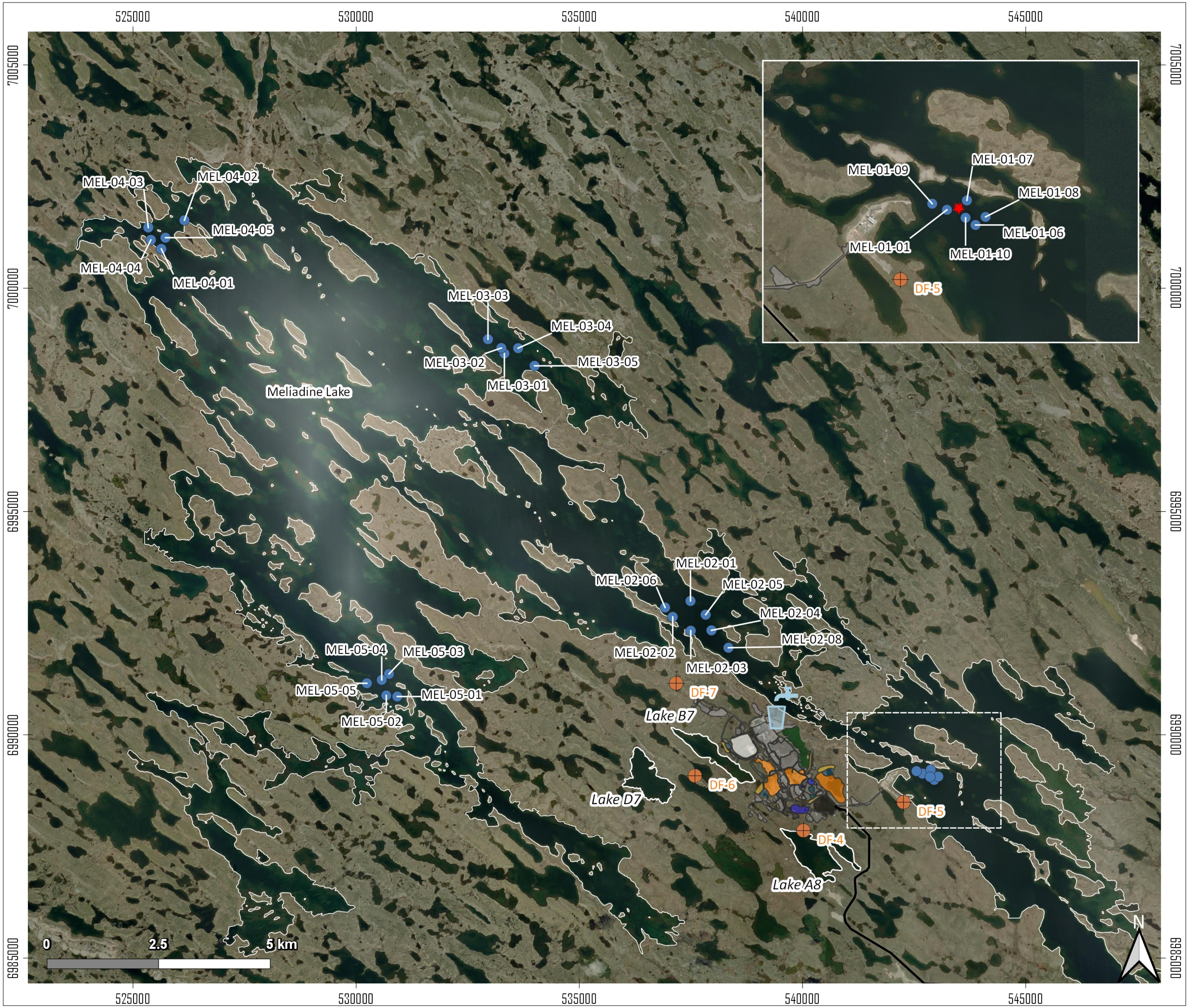


Figure 5-1
Water quality monitoring stations in Meliadine Lake.

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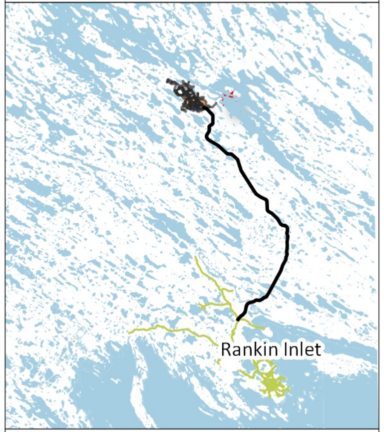
AZIMUTH

| | |
|---|---|
| Date: | March 25, 2021 |
| Datum: | NAD 83 UTM Zone 15N |
| Scale: | 1:110,000 (inset: 1:45,000) |
| Software: | QGIS version 3.8.2 |
| Produced by: | E. Franz |

REFERENCES:
1. Basemap imagery from Sentinel 2 on September 13, 2019
2. Mine Plan provided by Agnico Eagle
3. Mixing zone extent based on Golder (2019) and the FEIS (Agnico Eagle 2014)




**Legend**

Monitoring Stations
- Diffuser
- Meliadine Lake Water Stations
- Dustfall/Snowpack Monitoring Station
- Water intake from Meliadine Lake for drinking water at the camp

MEL-02-01 and MEL-02-04 were inadvertently sampled in July, August, and September instead of the permanent stations MEL-02-06 and MEL-02-08.

**Figure 5-2 Dissolved Oxygen (DO, mg/L), pH, and Temperature from Limnology Profiles in Meliadine Lake in 2020**

Notes: Each line represents the average of the five water quality profiles taken at each area per month under the AEMP. The June (2020-6) sampling was done as part of the WQ-MOP. Results are shown here to provide an additional under-ice monitoring event to assess spatial and season changes.

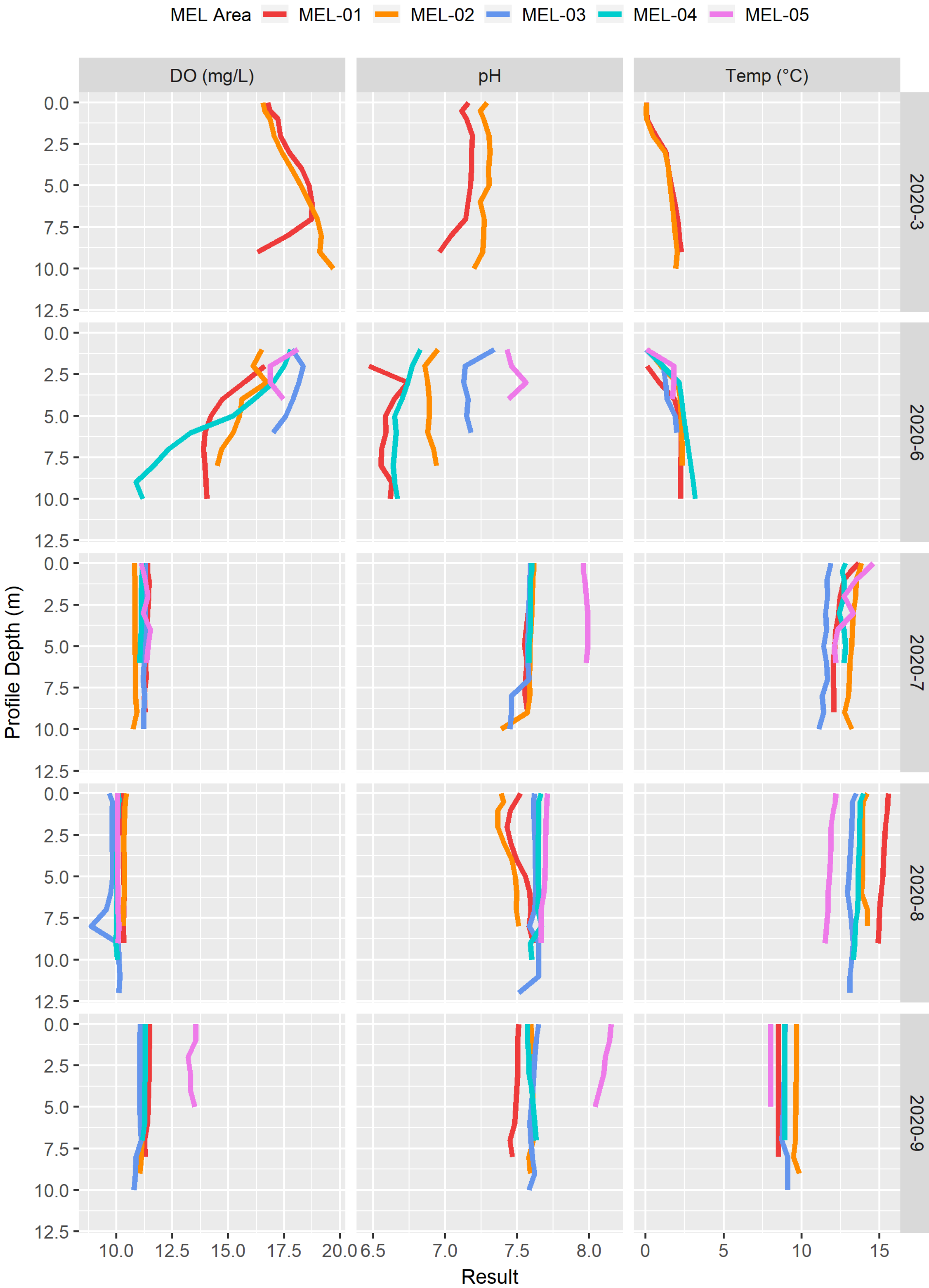


**Figure 5-3 Specific Conductivity (µS/cm) Throughout Meliadine Lake By Area and Date in 2020**

Notes: Each line represents the average of Sp. Cond readings taken in each area on a particular day. The Diffuser station refers to MEL-13, located on top of the diffuser. Approximately weekly profiles were taken as per the WQ-MOP at the edge of the mixing zone in MEL-01. Monthly profiling was done at the mid-field (MEL-02) and reference areas (MEL-03, MEL-04, and MEL-05) under the AEMP.

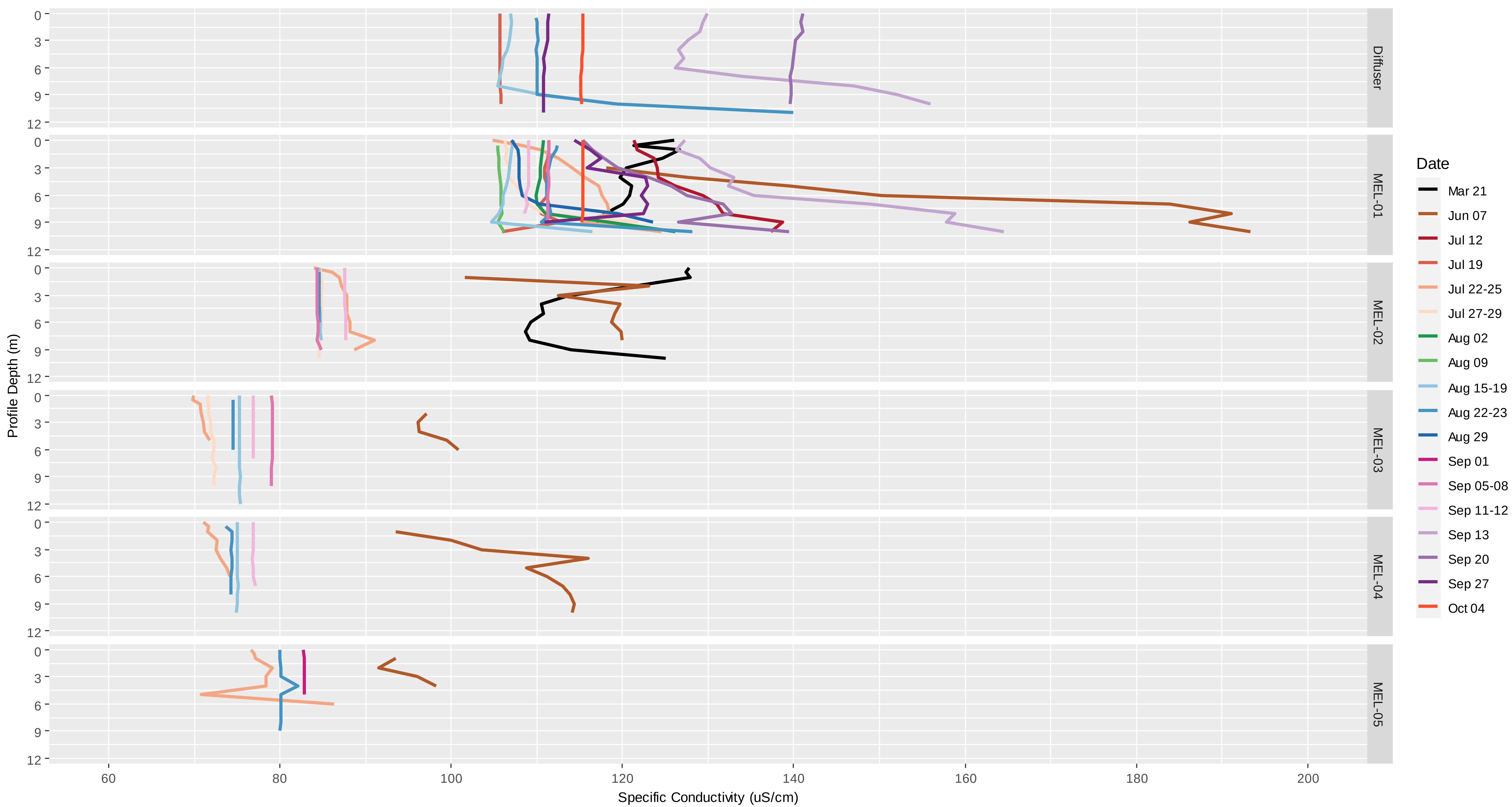


**Figure 5-4 Specific Conductivity (µS/cm) in the Near-Field Area (MEL-01) By Station and Date in 2020**

Notes: Each line represents discrete sampling taken on each day at each station (1 complete profile). The Diffuser station refers to MEL-13, located on top of the diffuser. Approximately weekly profiles were taken as per the WQ-MOP at the edge of the mixing zone in MEL-01. Stations MEL-01-01, MEL-01-07 and MEL-01-10 correspond to stations MEL-13-01, MEL-13-07, and MEL-13-10 in the WQ-MOP.

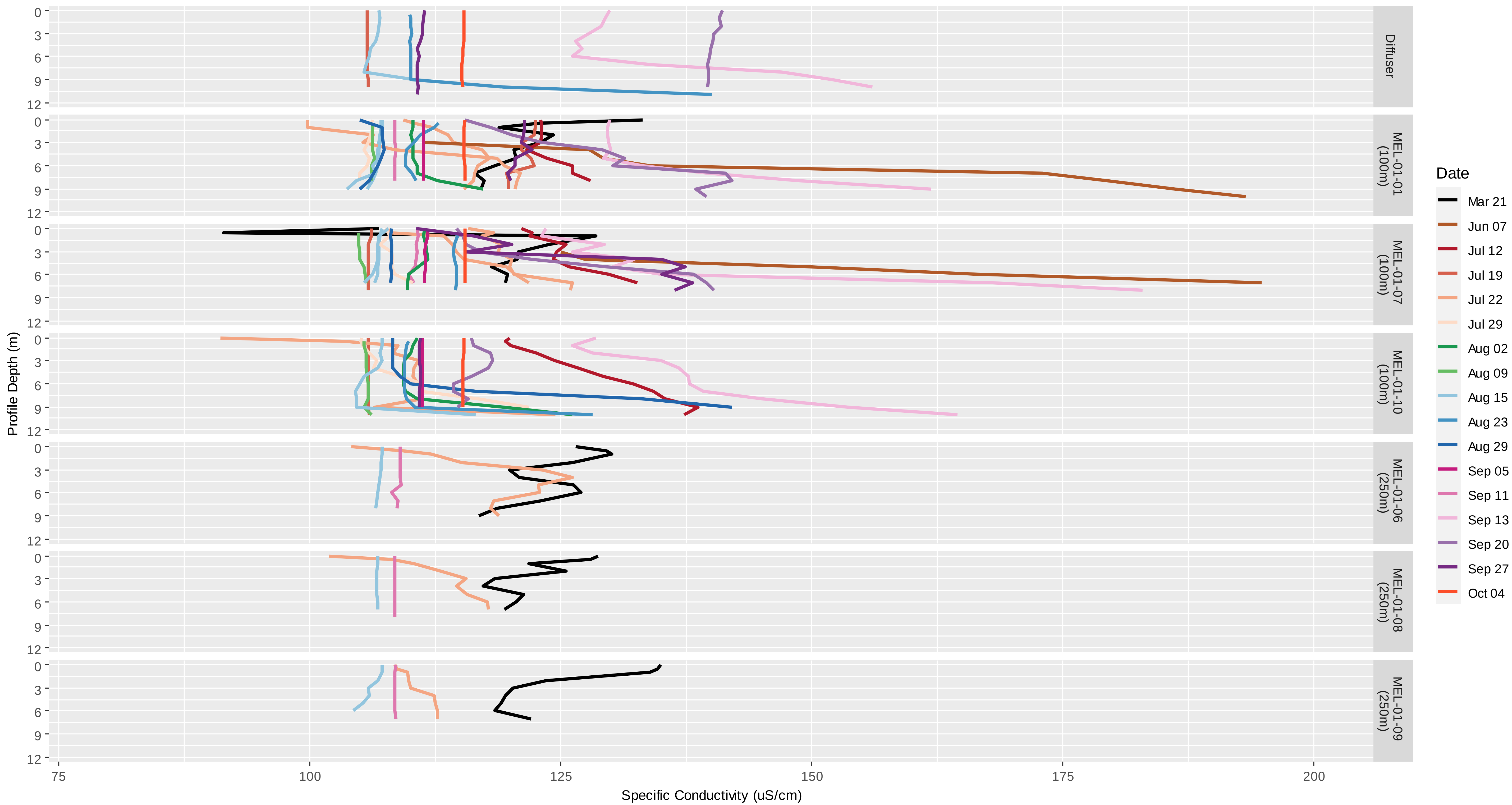


**Figure 5-5. Meliadine Lake water quality (open water) – concentrations of TDS, hardness, and major ions (Ca, Mg, K, and Na) since 2013.**

Notes: The dates on the x-axis are "condensed" to show the results for samples collected during the open water sampling events (July through September) each year.
The green line corresponds to the upper 90th percentile concentration for samples collected during baseline and from the reference areas.
TDS = total dissolved solids; Hard = hardness; Ca, Mg, K, and Na = calcium, magnesium, potassium, sodium; Cl = chloride; SO4 = sulphate.

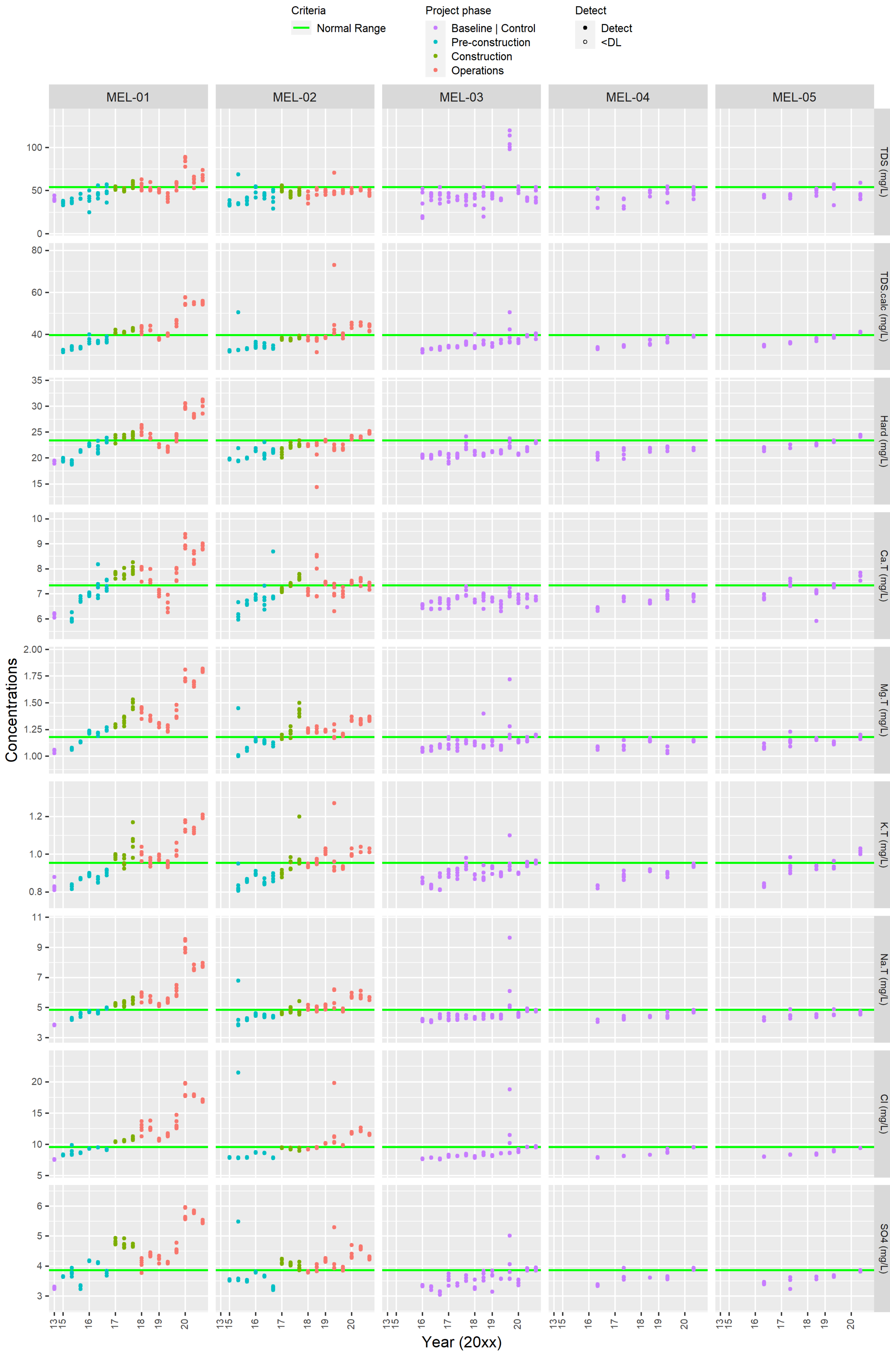


**Figure 5-6. Meliadine Lake water quality (open-water) – pH, conductivity, and concentrations of selected nutrients since 2013.**

Notes: The dates on the x-axis are "condensed" to show the results for samples collected during the open water sampling events (July through September) each year. The green line corresponds to the upper 90th percentile concentration for samples collected during baseline and from the reference areas. field and lab conductivity (F and L); Alk.T = total alkalinity; NH3-N = ammonia (as N); NO3-N = nitrate (as N); TKN = total Kjeldahl nitrogen; T-P = total phosphorus.

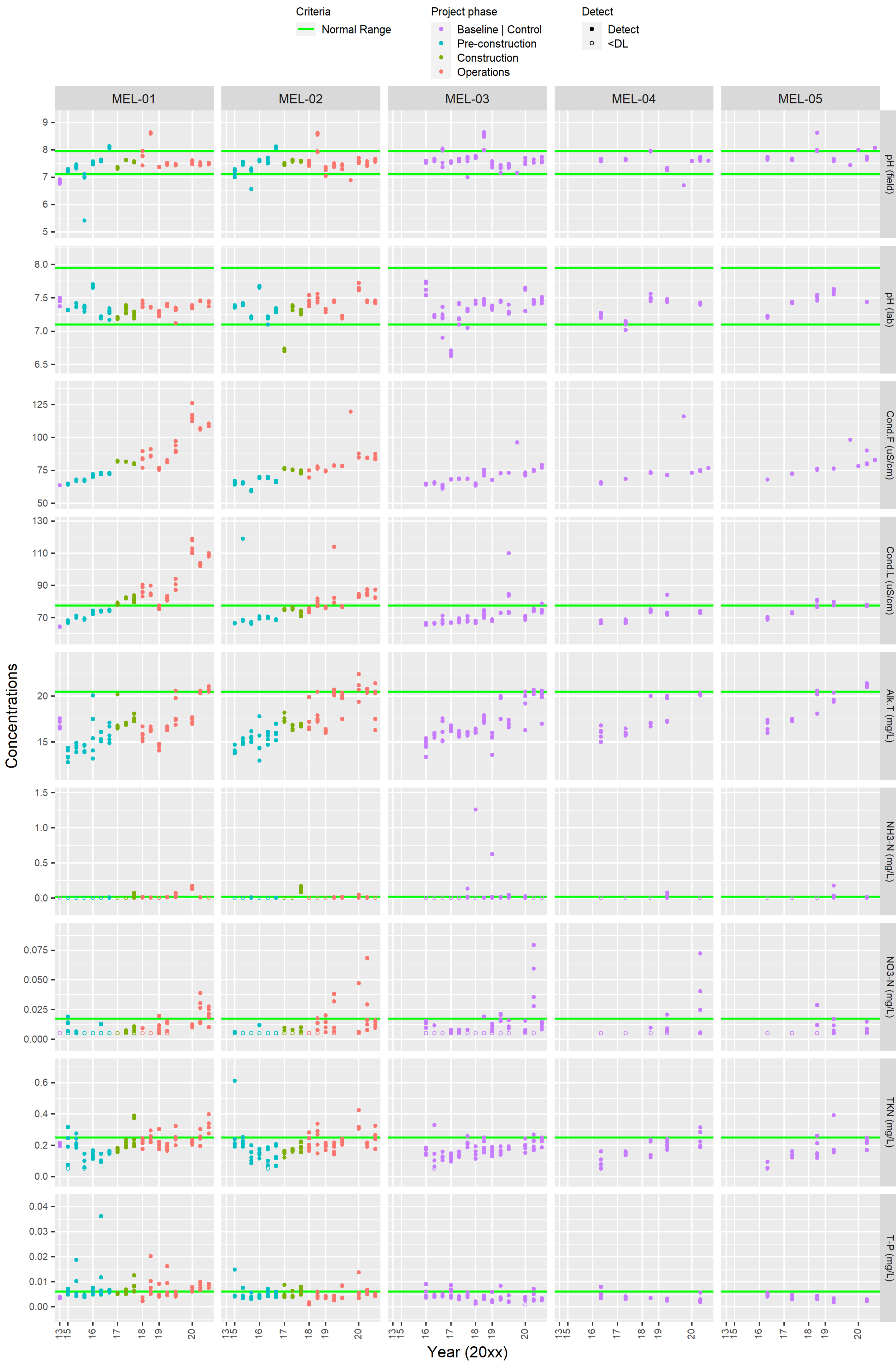


**Figure 5-7. Meliadine Lake water quality (open-water) –concentrations of selected metals (total) since 2013.**

Notes: The dates on the x-axis are "condensed" to show the results for samples collected during the open water sampling events (July through September) each year. The green line corresponds to the upper 90th percentile concentration for samples collected during baseline and from the reference areas.

**Figure 5-8. Meliadine Lake water quality (open-water) –concentrations of selected metals (total) since 2013.**

Notes: The dates on the x-axis are "condensed" to show the results for samples collected during the open water sampling events (July through September) each year. The green line corresponds to the upper 90th percentile concentration for samples collected during baseline and from the reference areas.

**Figure 5-9. Meliadine Lake water quality (open-water) – concentrations of selected metals (dissolved) since 2013.**

Notes: Concentrations for the dissolved (0.45 µm filtered) fraction.
The dates on the x-axis are "condensed" to show the results for samples collected during the open water sampling events (July through September) each year.
Normal ranges are not calculated for the dissolved fraction of these metals (water quality guidelines specific to these parameters apply to the unfiltered fraction).

**Figure 5-10. Meliadine Lake water quality (open-water) – concentrations of selected metals (dissolved) since 2013.**

Notes: Concentrations for the dissolved (0.45 µm filtered) fraction.
The dates on the x-axis are "condensed" to show the results for samples collected during the open water sampling events (July through September) each year.
Normal ranges were calculated for dissolved lead, manganese, and zinc because the aquatic life guidelines were derived for the dissolved fraction.

**Figure 5-11. Predicted Changes in Total Dissolved Solids (calculated; mg/L) in the East Basin of Meliadine Lake Compared to Observed Results**

Notes: The FEIS (2014) predictions (green line) were presented in Volume 7.4-A of Agnico Eagle (2014). The blue dashed line represents the updated model prediction for changes in TDS from 2018 to 2020 (Tetra Tech 2020). The pink dots represent the observed TDS calculated data collected to date from the NF area as part of the AEMP.

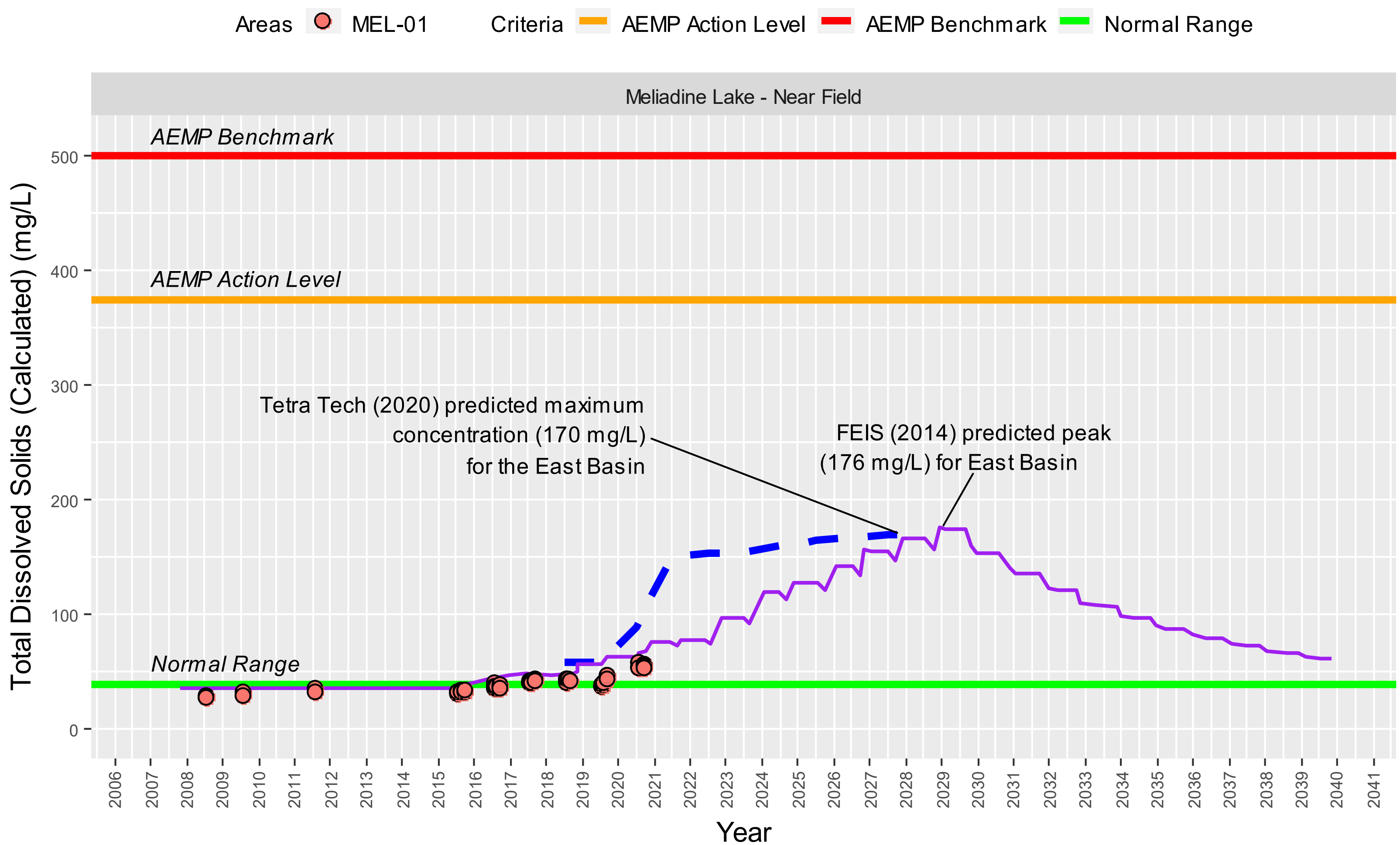


**Figure 5-12. Predicted Changes in Chloride (mg/L) in the East Basin of Meliadine Lake Compared to Observed Results**

Notes: The FEIS (2014) predictions (green line) were presented in Volume 7.4-A of Agnico Eagle (2014). The blue dashed line represents the updated model prediction for changes in chloride from 2018 to 2020 (Tetra Tech 2020). The pink dots represent the observed chloride data collected to date from the NF area as part of the AEMP.

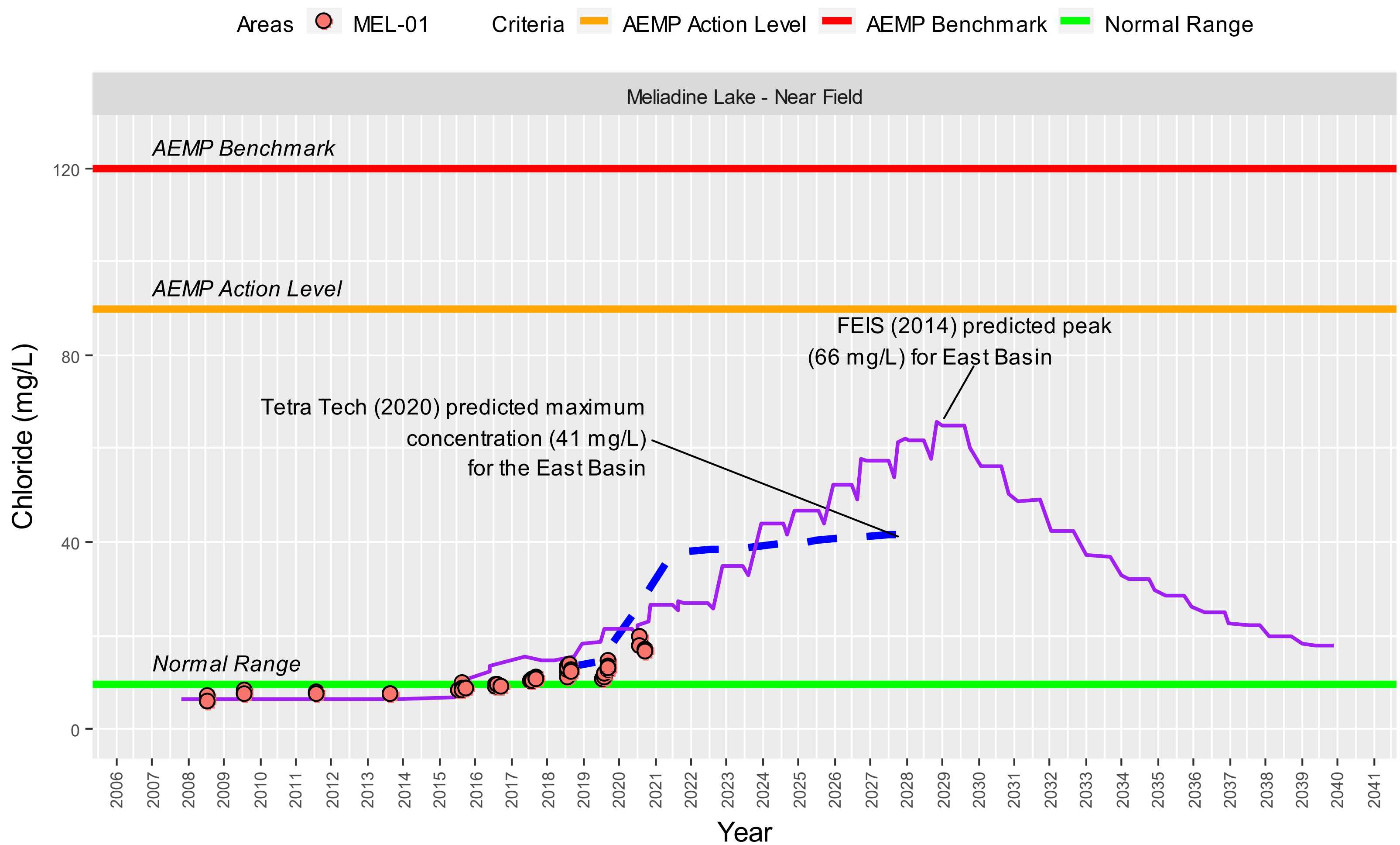
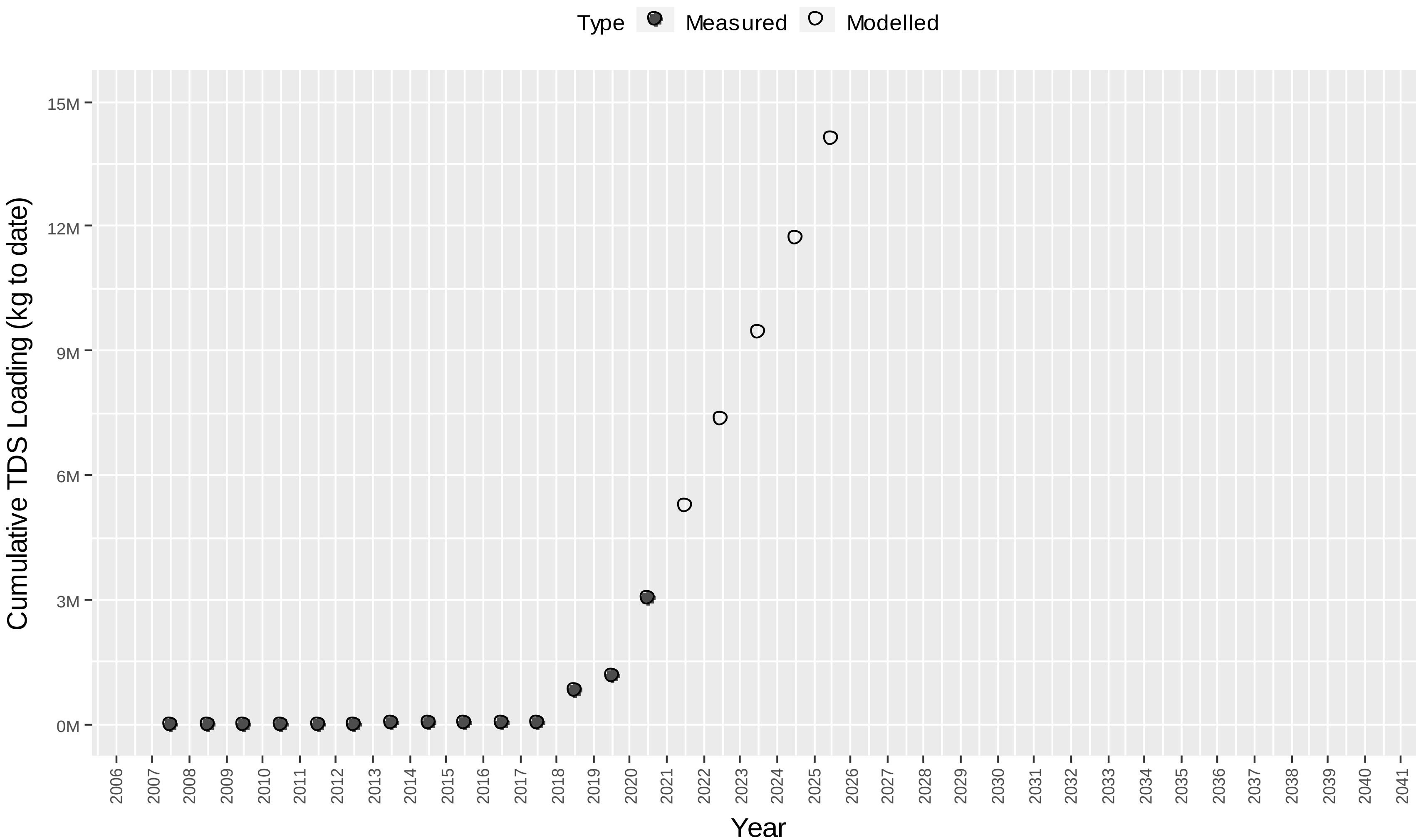


**Figure 5-13. Cumulative Measured and Modeled Loadings of TDS in the Current Life of Mine.**



## Figure 5-14. Spatial and Temporal Changes in TDS and Constituent Major Ions In Meliadine Lake Since 2018

Notes: Data are for the open water sampling events only, corresponding to when treated effluent was released to the lake. Points are jittered slightly to avoid overplotting. The full suite of water quality analyses were not completed at the MEL-13 diffuser station and the edge of the mixing zone samples each year.

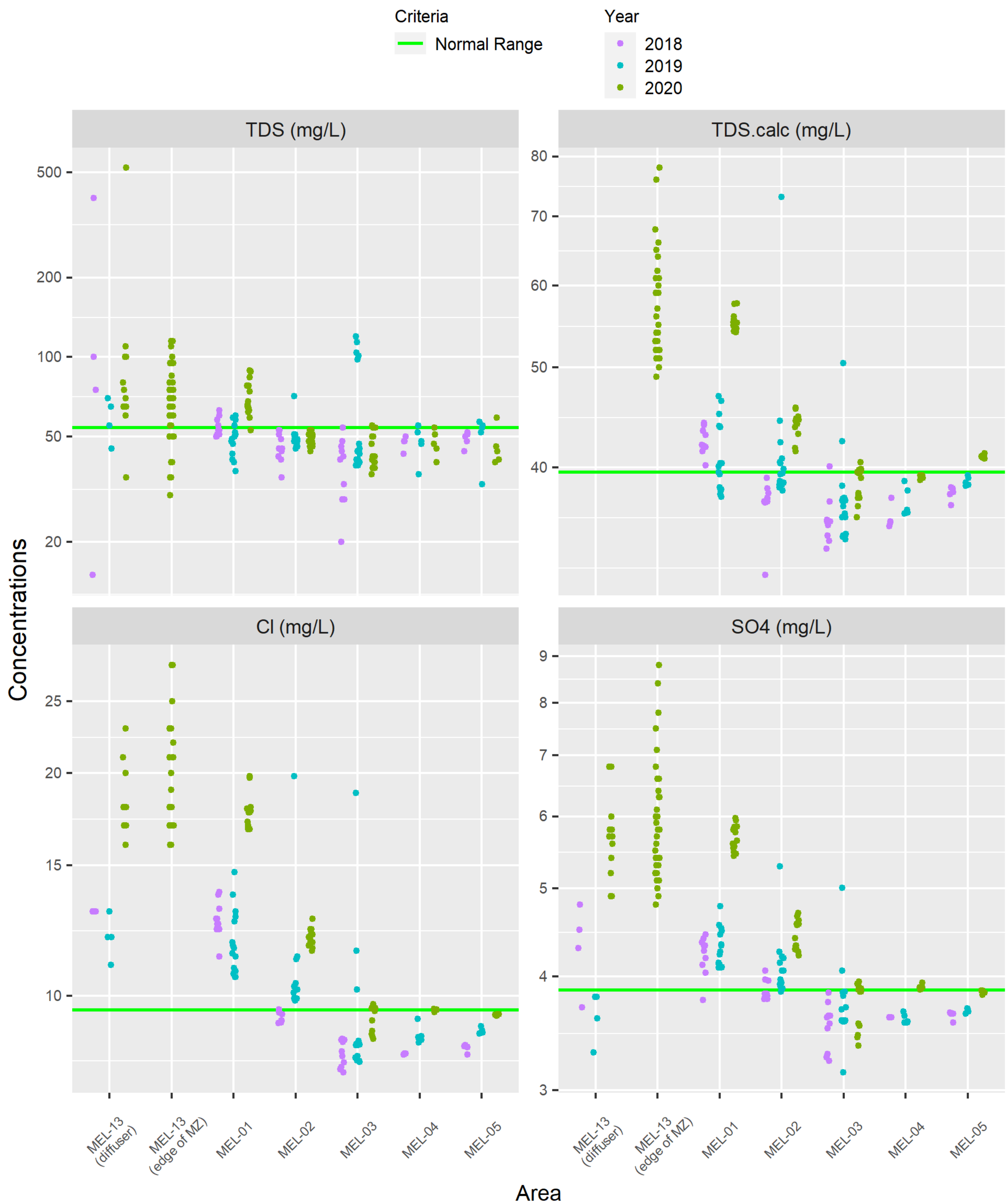


**Figure 5-15. Spatial and Temporal Changes in Arsenic, Barium, Copper, and Manganese in Meliadine Lake Since 2018**

Notes: Data are for the open water sampling events only, corresponding to when treated effluent was released to the lake. Points are jittered slightly to avoid overplotting. The full suite of water quality analyses were not completed at the MEL-13 diffuser station and the edge of the mixing zone samples each year.

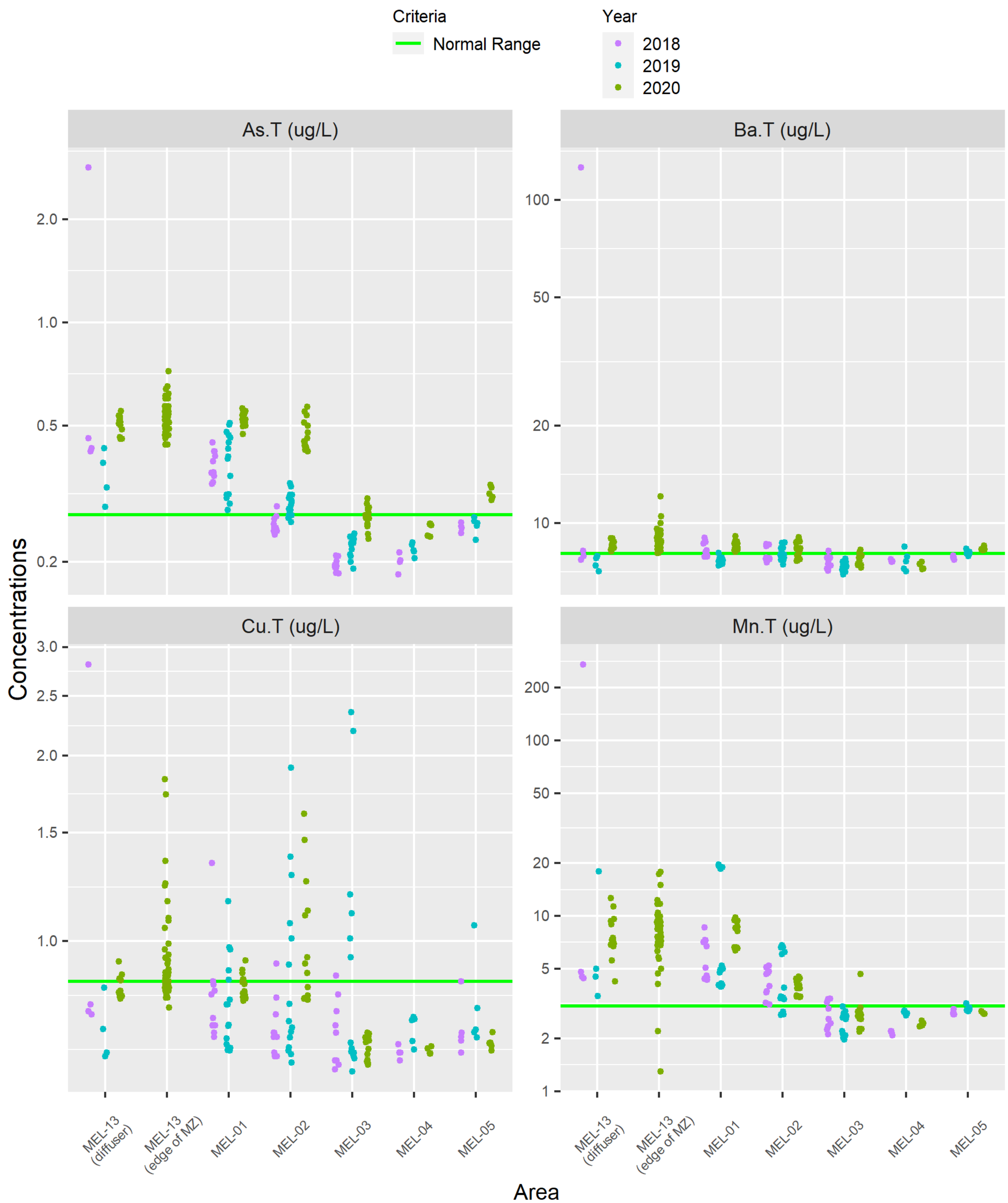
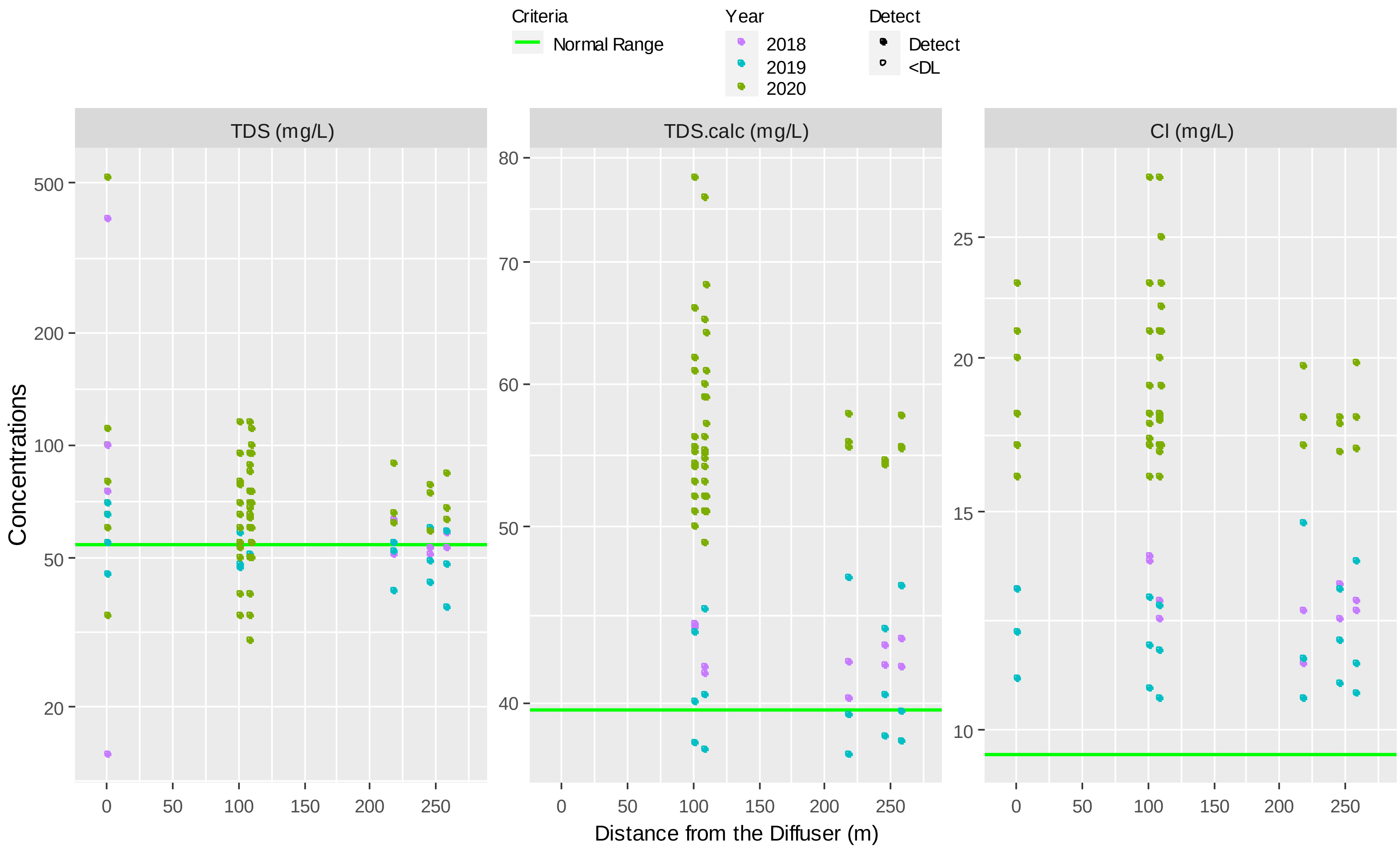


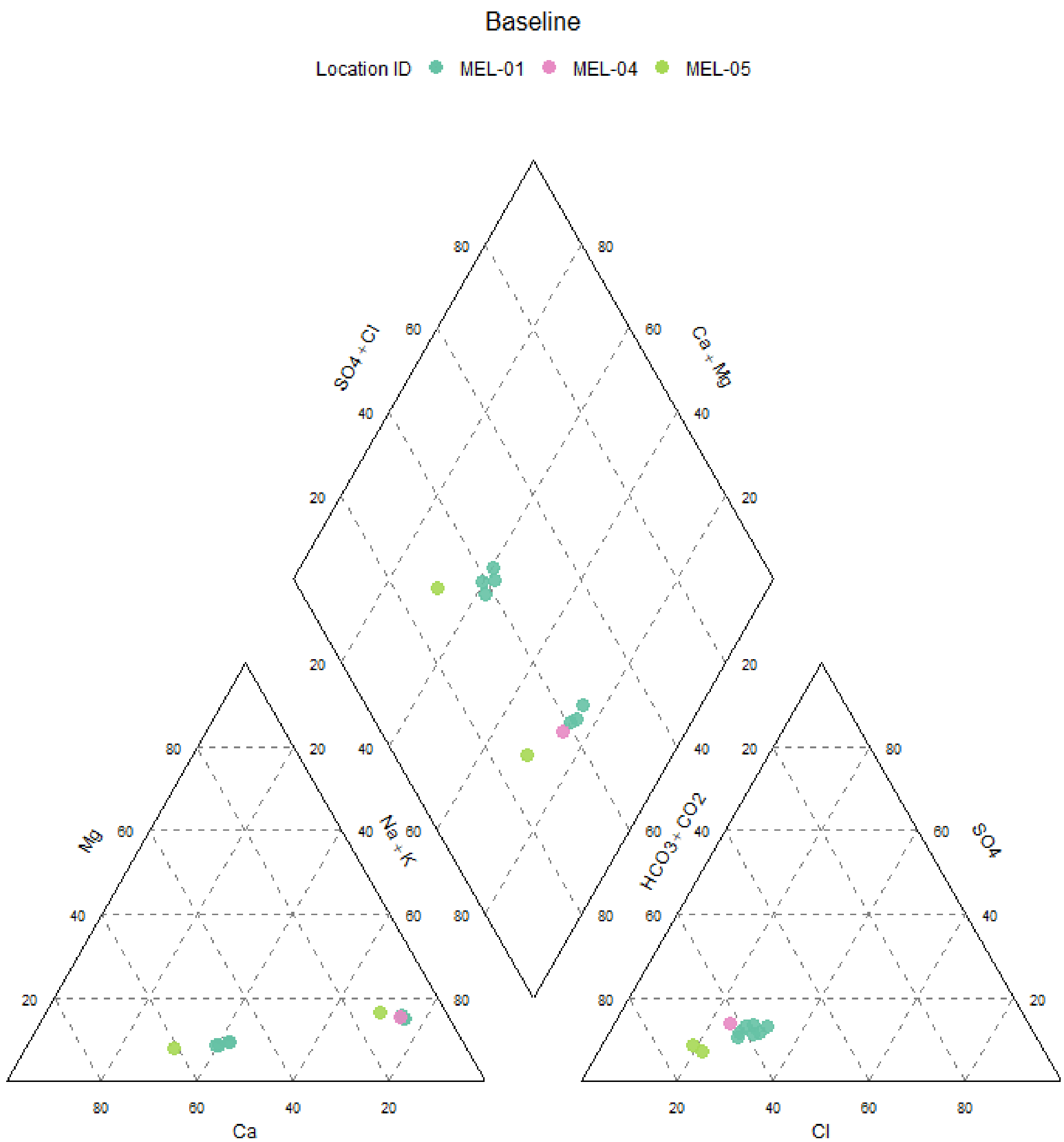
**Figure 5-16. Concentrations of Total Dissolved Solids (measured and calculated) and Chloride at MEL-01 Stations Relative to the Distance from the Diffuser Since 2018**

Notes: Open water sampling events only, corresponding to when treated effluent was released to the lake. Results for the diffuser sampling station "MEL-13" are shown at 0 m on the x-axis. Stations MEL-01-01, MEL-01-07, and MEL-01-10 are located at ~ 100 m from the diffuser.



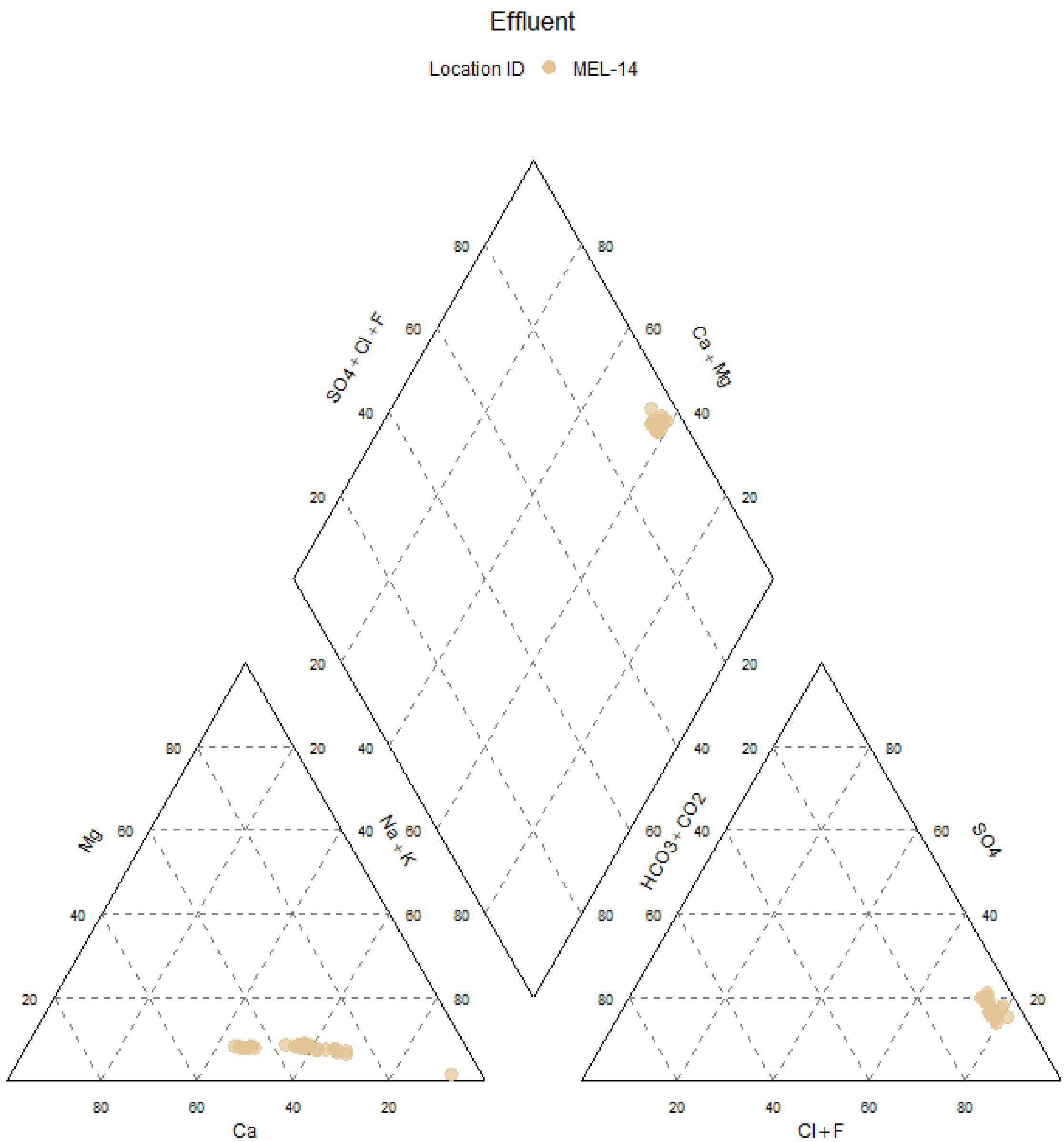
## Figure 5-17. Ionic Composition of Baseline Surface Water in Meliadine Lake

Notes: The trilinear plot on the bottom left shows the relative proportion (%) of major cations in each sample. The plot on the bottom right shows the relative proportion (%) of the major anions. The rhomb integrates the relative contribution of the cations and anions for each sample in one panel. Baseline water is characterized as calcium carbonate or sodium carbonate.



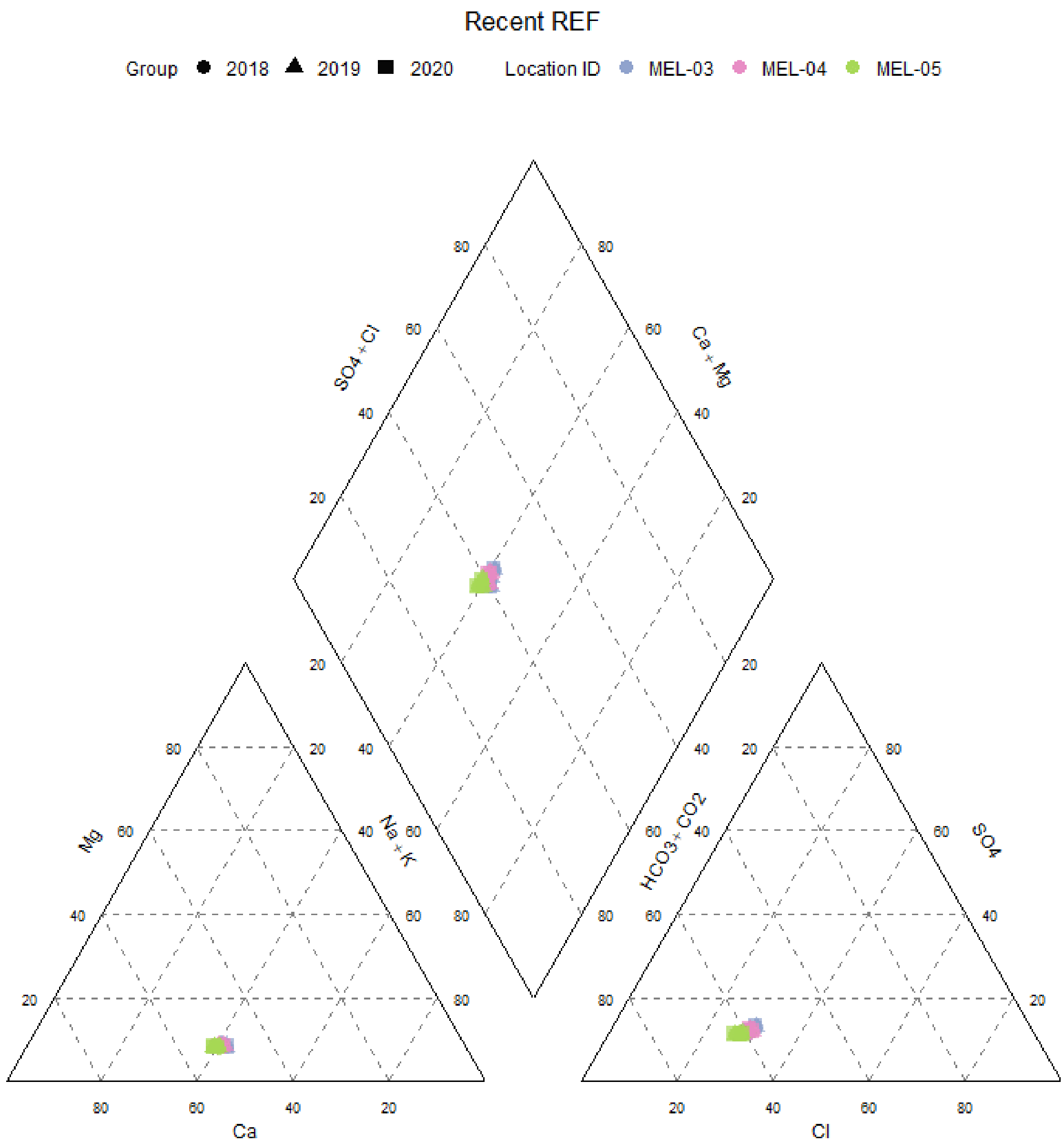
## Figure 5-18. Ionic Composition of Surface Contact Water (MEL-14)

Notes: The trilinear plot on the bottom left shows the relative proportion (%) of major cations in each sample. The plot on the bottom right shows the relative proportion (%) of the major anions. The rhomb integrates the relative contribution of the cations and anions for each sample in one panel. Effluent discharged to Meliadine Lake is predominantly sodium chloride.



## Figure 5-19. Ionic Composition of Recent Reference Area Surface Water from Meliadine Lake

Notes: The trilinear plot on the bottom left shows the relative proportion (%) of major cations in each sample. The plot on the bottom right shows the relative proportion (%) of the major anions. The rhomb integrates the relative contribution of the cations and anions for each sample in one panel. Recent reference area water samples are characterized as predominantly calcium bicarbonate.



## Figure 5-20. Ionic Composition of Recent Surface Water from MEL-01, MEL-02 and the Edge of the Mixing Zone

Notes: The trilinear plot on the bottom left shows the relative proportion (%) of major cations in each sample. The plot on the bottom right shows the relative proportion (%) of the major anions. The rhomb integrates the relative contribution of the cations and anions for each sample in one panel. Recent NF (MEL-01) and edge of mixing zone water samples are characterized as calcium chloride and calcium bicarbonate.

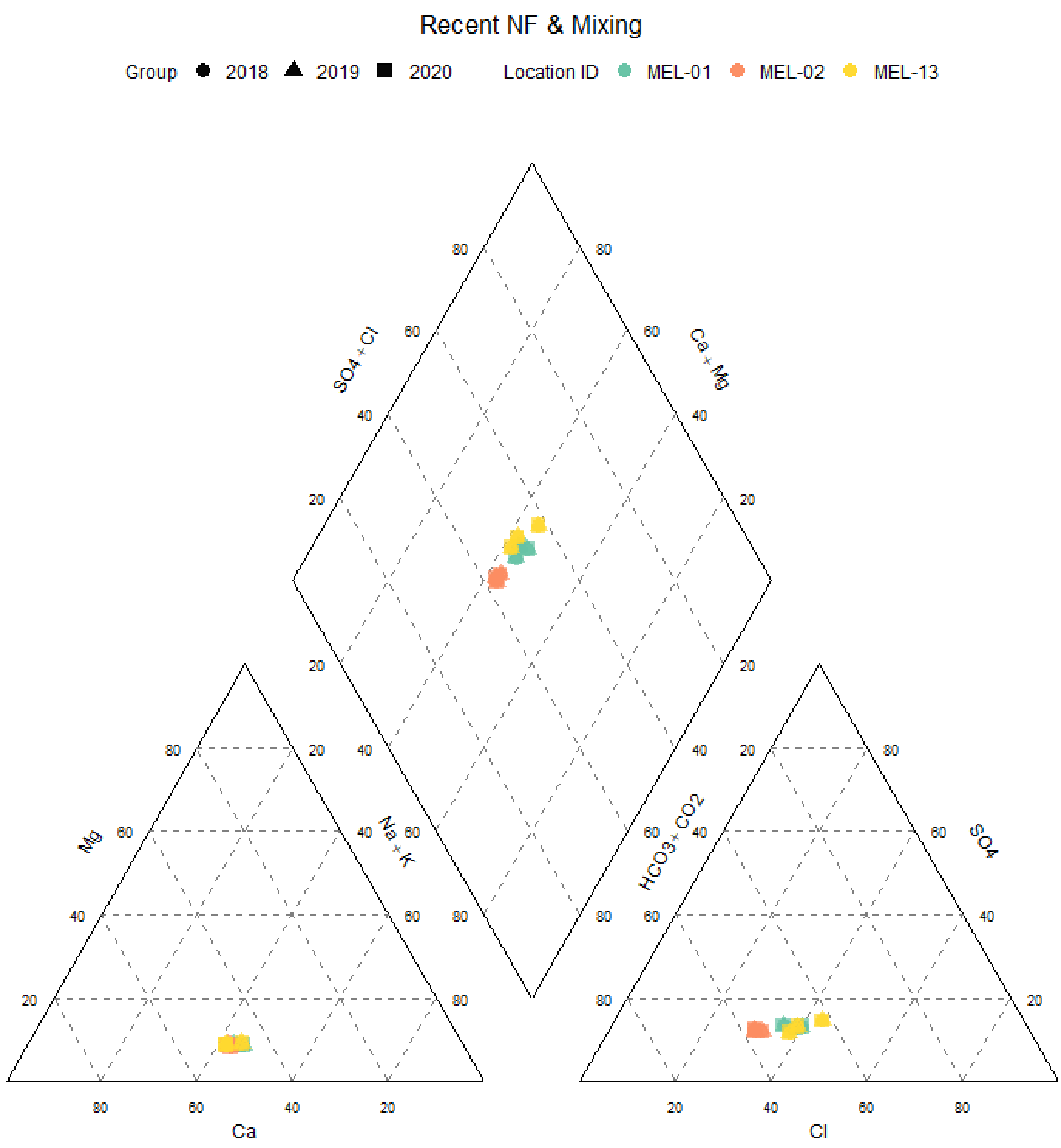
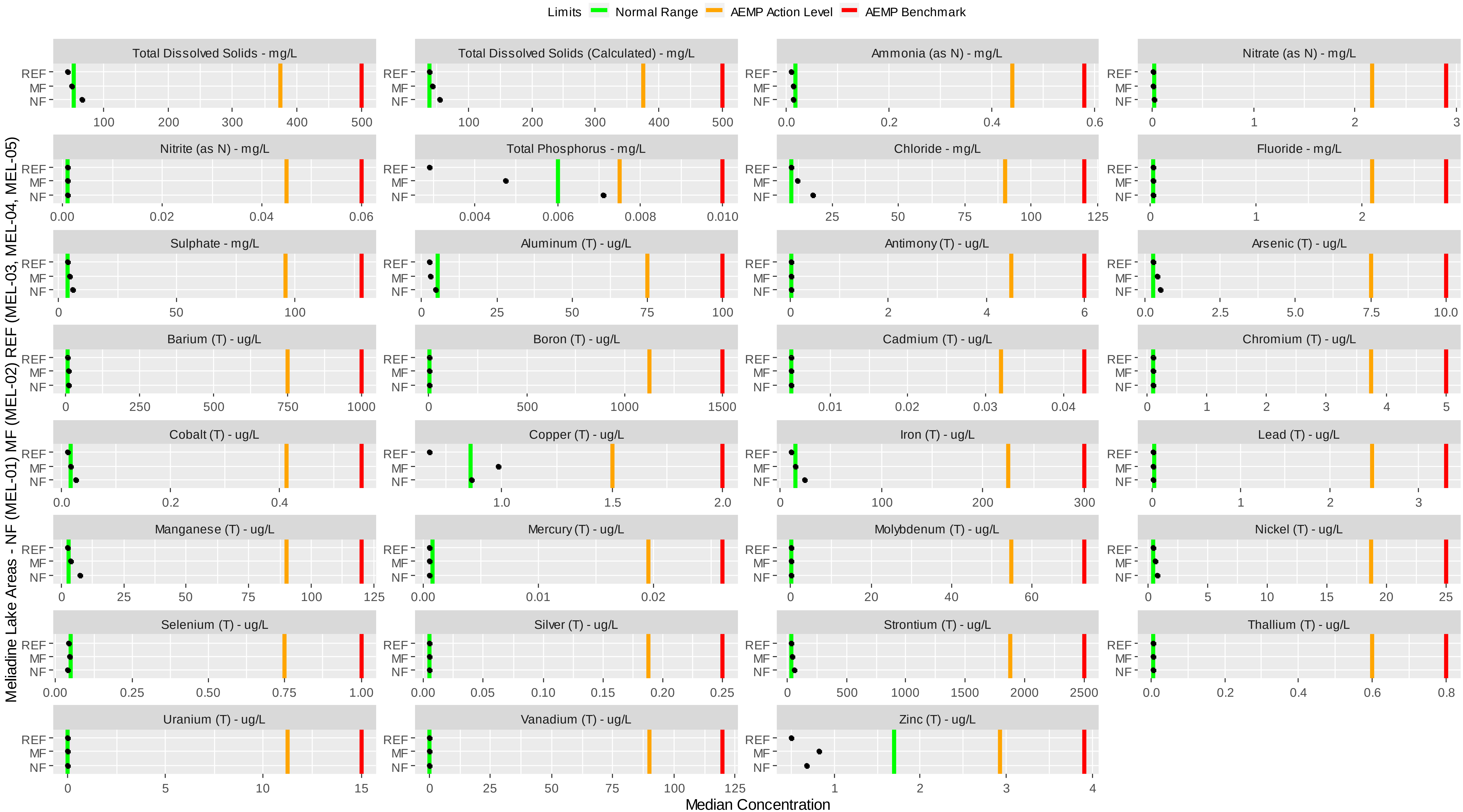


**Figure 5-21. Water Quality in Meliadine Lake in 2020 Relative to the Normal Ranges, AEMP Action Levels and AEMP Benchmarks**

Notes: AEMP Action Level = 75% of the AEMP Benchmark. Refer to Table 2-2 for the AEMP Benchmarks for each parameter. The black dot represents the median concentration of the open water samples in 2020.



## 5.7 Tables – Meliadine Lake Water Quality

Tables specific to Meliadine Lake are presented below. The 2019 water quality dataset for the Meliadine Lake stations is provided in **Appendix C3**.

## Table 5-2. Summary of the Meliadine Lake sampling events in 2020.

| Area | Station ID | UTM (zone 15V) | | March event | July event | | August event | | | | September event | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 21-Mar | 22-Jul | 27-Jul | 15-Aug | 18-Aug | 19-Aug | 23-Aug | 7-Sep | 8-Sep | 11-Sep |
| Near-field | MEL-01-01 | 542690 | 6989132 | LP, WQ | LP, WQ | | LP, WQ, Phyto | | | | | | LP, WQ |
| | MEL-01-06 | 542952 | 6988993 | LP, WQ | LP, WQ | | LP, WQ, Phyto | | | | | | LP, WQ |
| | MEL-01-07 | 542873 | 6989218 | LP, WQ | LP, WQ | | LP, WQ, Phyto | | | | | | LP, WQ |
| | MEL-01-08 | 543044 | 6989067 | LP, WQ | LP, WQ | | LP, WQ, Phyto | | | | | | LP, WQ |
| | MEL-01-09 | 542555 | 6989188 | LP, WQ | LP, WQ | | LP, WQ, Phyto | | | | | | LP, WQ |
| Mid-field | MEL-02-01* | 537491 | 6992999 | | | LP, WQ | | LP, WQ, Phyto | | | LP, WQ | | |
| | MEL-02-02 | 537093 | 6992642 | LP, WQ | | LP, WQ | | LP, WQ, Phyto | | | LP, WQ | | |
| | MEL-02-03 | 537497 | 6992332 | LP, WQ | | LP, WQ | | LP, WQ, Phyto | | | LP, WQ | | |
| | MEL-02-04* | 537961 | 6992341 | | | LP, WQ | | LP, WQ, Phyto | | | LP, WQ | | |
| | MEL-02-05 | 537831 | 6992692 | LP, WQ | | LP, WQ | | LP, WQ, Phyto | | | LP, WQ | | |
| | MEL-02-06 | 536922 | 6992853 | LP, WQ | | | | | | | | | |
| | MEL-02-08 | 538342 | 6991952 | LP, WQ | | | | | | | | | |
| Reference Area 1 | MEL-03-01 | 533321 | 6998540 | LP, WQ | | LP, WQ | | | LP, WQ, Phyto | | | LP, WQ | |
| | MEL-03-02 | 533253 | 6998664 | LP, WQ | | LP, WQ | | | LP, WQ, Phyto | | | LP, WQ | |
| | MEL-03-03 | 532954 | 6998860 | LP, WQ | | LP, WQ | | | LP, WQ, Phyto | | | LP, WQ | |
| | MEL-03-04 | 533629 | 6998660 | LP, WQ | | LP, WQ | | | LP, WQ, Phyto | | | LP, WQ | |
| | MEL-03-05 | 533997 | 6998265 | LP, WQ | | LP, WQ | | | LP, WQ, Phyto | | | LP, WQ | |
| Reference Area 2 | MEL-04-01 | 525634 | 7000884 | LP, WQ | | | | | LP, WQ, Phyto | | | | |
| | MEL-04-02 | 526151 | 7001525 | LP, WQ | | | | | LP, WQ, Phyto | | | | |
| | MEL-04-03 | 525343 | 7001363 | LP, WQ | | | | | LP, WQ, Phyto | | | | |
| | MEL-04-04 | 525401 | 7001085 | LP, WQ | | | | | LP, WQ, Phyto | | | | |
| | MEL-04-05 | 525727 | 7001134 | LP, WQ | | | | | LP, WQ, Phyto | | | | |
| Reference Area 3 | MEL-05-01 | 530922 | 6990859 | LP, WQ | | | | | | LP, WQ, Phyto | | | |
| | MEL-05-02 | 530675 | 6990883 | LP, WQ | | | | | | LP, WQ, Phyto | | | |
| | MEL-05-03 | 530737 | 6991365 | LP, WQ | | | | | | LP, WQ, Phyto | | | |
| | MEL-05-04 | 530573 | 6991231 | LP, WQ | | | | | | LP, WQ, Phyto | | | |
| | MEL-05-05 | 530241 | 6991156 | LP, WQ | | | | | | LP, WQ, Phyto | | | |

Notes:
* Historical monitoring stations MEL-02-01 and MEL-02-04 in the mid-field area were inadvertently sampled in July, August, and September instead of MEL-02-06 and MEL-02-08.
Phyto = depth-integrated samples taken for phytoplankton taxonomy, nutrients, and chlorophyll-a
WQ = water samples for chemistry (conventional parameters, major ions and nutrients, organic carbon, metals)
Profile = limno profile for DO, temp, pH, and specific conductivity

## Table 5-3. Overview of Monitoring Completed for the WQ-MOP and Cross-Over with the AEMP in 2020

| Area | AEMP Water Quality Monitoring | Station ID | UTM (zone 15V) | | Monitoring for the Emergency Amendment (WQ-MOP) | |
|---|---|---|---|---|---|---|
| | | | Easting | Northing | Water Quality | Chronic Toxicity |
| **MEL-01 Near-field** | - Near-field sampling areas<br>- Sampled once during the winter, and monthly during the open water period when water is discharge (July, August and September) | MEL-01-01 = MEL-13-01 | 542690 | 6989132 | ~ weekly | Jun, Jul, Aug, Sep |
| | | MEL-01-06 | 542952 | 6988993 | | |
| | | MEL-01-07 = MEL-13-07 | 542873 | 6989218 | ~ weekly | Jun, Jul, Aug, Sep |
| | | MEL-01-08 | 543044 | 6989067 | | |
| | | MEL-01-09 | 542555 | 6989188 | | |
| | Edge of mixing zone station for WQ-MOP | MEL-01-10 = MEL-13-10 † | 542861 | 6989059 | ~ weekly | Jun, Jul, Aug, Sep |
| **MEL-02 Mid-field** | - Mid-field sampling stations<br>- Sampled on the same frequency as the NF area stations to determine the spatial extent of water quality changes related to effluent discharge into Meliadine Lake | MEL-02-01 * | 537491 | 6992999 | | |
| | | MEL-02-02 | 537093 | 6992642 | | |
| | | MEL-02-03 | 537497 | 6992332 | | |
| | | MEL-02-04 * | 537961 | 6992341 | | |
| | | MEL-02-05 | 537831 | 6992692 | Jun, Jul, Aug, Sep | |
| | | MEL-02-06 * | 536922 | 6992853 | | |
| | | MEL-02-08 * | 538342 | 6991952 | | |
| **MEL-03 Reference Area 1** | - Reference area located in the west basin of Meliadine Lake<br>- Sampled monthly in July, August, and September to track natural fluctuations in water quality | MEL-03-01 | 533321 | 6998540 | | |
| | | MEL-03-02 | 533253 | 6998664 | Jun, Jul, Aug, Sep | |
| | | MEL-03-03 | 532954 | 6998860 | | |
| | | MEL-03-04 | 533629 | 6998660 | | |
| | | MEL-03-05 | 533997 | 6998265 | | |
| **MEL-04 Reference Area 2** | - Reference area located in the northwest basin of Meliadine Lake near the outlet to Peter lake<br>- Sampled only in August | MEL-04-01 | 525634 | 7000884 | | |
| | | MEL-04-02 | 526151 | 7001525 | | |
| | | MEL-04-03 | 525343 | 7001363 | | |
| | | MEL-04-04 | 525401 | 7001085 | | |
| | | MEL-04-05 | 525727 | 7001134 | Jun, Jul, Aug, Sep | |
| **MEL-05 Reference Area 3** | - Reference area located in the southeast basin of Meliadine Lake near the outlet to the Meliadine River<br>- Sampled only in August | MEL-05-01 | 530922 | 6990859 | | |
| | | MEL-05-02 | 530675 | 6990883 | | |
| | | MEL-05-03 | 530737 | 6991365 | | |
| | | MEL-05-04 | 530573 | 6991231 | Jun, Jul, Aug, Sep | |
| | | MEL-05-05 | 530241 | 6991156 | | |

Notes:
[a] Station IDs for the NF area differed slightly for the AEMP (MEL-01) compared to the WQ-MOP (MEL-13).
Water quality under the WQ-MOP was conducted approximately weekly at the AEMP monitoring stations at the edge of the mixing zone.

## Table 5-4. MEL-01 Water Quality Summary Statistics – March 2020 Sampling Event

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | Near-Field Area (MEL-01) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | Summary Statistics [c] Winter Sampling | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | 5 | 0 | 0 | 1.46 | 0.0536 | 1.43 | 1.41 | 1.53 | - | - | - | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 5 | 0 | 0 | 120 | 1.47 | 120 | 117 | 121 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 5 | 0 | 0 | 7.18 | 0.154 | 7.22 | 6.93 | 7.35 | 0 | - | 1 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 5 | 0 | 0 | 18.3 | 0.422 | 18.2 | 17.8 | 18.8 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | 5 | 0 | 0 | 132 | 2.9 | 131 | 128 | 135 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | 5 | 0 | 0 | 118 | 1.92 | 118 | 116 | 121 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | 5 | 0 | 0 | 37.3 | 3.43 | 35.2 | 34.6 | 42.7 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 5 | 0 | 0 | 7.3 | 0.0344 | 7.29 | 7.27 | 7.35 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 5 | 0 | 0 | 64.6 | 6.19 | 67 | 54 | 70 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 5 | 0 | 0 | 62 | 2.31 | 61.3 | 59.1 | 64.5 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 1 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | 5 | 0 | 0 | 0.216 | 0.0581 | 0.19 | 0.16 | 0.31 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | 5 | 0 | 0 | 32.8 | 0.439 | 32.8 | 32.1 | 33.2 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | 5 | 0 | 0 | 26.8 | 0.358 | 26.9 | 26.3 | 27.2 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 11.8 | 1.3 | 11 | 10.7 | 13.8 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 11.2 | 0.259 | 11.2 | 10.9 | 11.6 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 5 | 0 | 0 | 16.4 | 0.867 | 16.3 | 15.1 | 17.5 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 5 | 0 | 0 | 0.0322 | 0.00192 | 0.033 | 0.029 | 0.034 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | 5 | 0 | 0 | 1.92 | 0.0487 | 1.91 | 1.87 | 1.99 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | 5 | 0 | 0 | 1.95 | 0.0205 | 1.95 | 1.92 | 1.97 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 1.35 | 0.0148 | 1.35 | 1.33 | 1.37 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 1.39 | 0.0261 | 1.38 | 1.36 | 1.43 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 0.611 | 0.0141 | 0.616 | 0.595 | 0.624 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 7.82 | 0.184 | 7.86 | 7.56 | 8.06 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | 5 | 0 | 0 | 7.96 | 0.147 | 7.99 | 7.71 | 8.07 | - | - | 0 | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | 5 | 0 | 0 | 6.3 | 0.283 | 6.34 | 5.87 | 6.63 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 5 | 0 | 0 | 0.015 | 0.00246 | 0.0148 | 0.0123 | 0.019 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 5 | 0 | 0 | 0.0563 | 0.0309 | 0.0455 | 0.0355 | 0.111 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | 5 | 0 | 0 | 0.0642 | 0.0277 | 0.0548 | 0.0386 | 0.111 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 5 | 1 | 20 | 0.00806 | 0.0068 | 0.007 | 0.001 | 0.0171 | 0 | 0 | - | - |
| Nitrogen | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.318 | 0.0612 | 0.295 | 0.266 | 0.416 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | Near-Field Area (MEL-01) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | Summary Statistics [c] Winter Sampling | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | 5 | 0 | 0 | 0.00196 | 0.000391 | 0.002 | 0.0013 | 0.0023 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.296 | 0.0257 | 0.283 | 0.275 | 0.338 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.254 | 0.0377 | 0.257 | 0.214 | 0.305 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.232 | 0.00973 | 0.227 | 0.222 | 0.245 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | 5 | 0 | 0 | 0.00506 | 0.000385 | 0.0051 | 0.0045 | 0.0055 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 4.53 | 0.176 | 4.43 | 4.4 | 4.81 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 4.49 | 0.0847 | 4.51 | 4.38 | 4.57 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 5 | 0 | 0 | 4.00 | 3.18 | 2.40 | 1.60 | 9.30 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | - | 6 | - | - | 5 | 4 | 80 | - | - | 0.02 | 0.02 | 0.157 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 5 | 0 | 0 | 0.496 | 0.0294 | 0.486 | 0.473 | 0.547 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | 5 | 0 | 0 | 11.4 | 0.356 | 11.3 | 11.1 | 12 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 5 | 0 | 0 | 6.92 | 0.13 | 6.9 | 6.8 | 7.1 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.0427 \| 0.0604 | 5 | - | - | 5 | 4 | 80 | - | - | 0.005 | 0.005 | 0.009 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 4 | 80 | - | - | 0.1 | 0.1 | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 5 | 0 | 0 | 0.0172 | 0.000856 | 0.0175 | 0.0161 | 0.018 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 5 | 0 | 0 | 1.34 | 0.493 | 1.1 | 1.04 | 2.21 | 1 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 5 | 0 | 0 | 14 | 12.7 | 8.6 | 7.5 | 36.7 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 5 | 3 | 60 | - | - | 0.01 | 0.01 | 1.04 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 1.38 | 0.0245 | 1.38 | 1.34 | 1.4 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | 20 | - | 5 | 0 | 0 | 1.71 | 0.357 | 1.58 | 1.44 | 2.32 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 5 | 2 | 40 | 0.000414 | 0.000151 | 5.00E-04 | 5.00E-04 | 0.00056 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 5 | 0 | 0 | 3.7 | 5.22 | 0.791 | 0.116 | 12.2 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 5 | 0 | 0 | 0.913 | 0.0321 | 0.901 | 0.893 | 0.97 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 5 | 1 | 20 | 0.0512 | 0.0192 | 0.057 | 0.04 | 0.068 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | 5 | 0 | 0 | 269 | 12.5 | 268 | 258 | 289 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 5 | 0 | 0 | 66.9 | 0.672 | 67 | 66 | 67.8 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | 5 | 0 | 0 | 2090 | 55.9 | 2090 | 2040 | 2180 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | 5 | 3 | 60 | - | - | 0.05 | 0.05 | 0.183 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 5 | 0 | 0 | 0.019 | 0.00132 | 0.0185 | 0.0178 | 0.0211 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 5 | 1 | 20 | 3.54 | 4.96 | 1.98 | 0.5 | 12.3 | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 0.0574 | 0.0916 | 0.021 | 0.012 | 0.221 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | Near-Field Area (MEL-01) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | Summary Statistics [c] Winter Sampling | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | 5 | 0 | 0 | 2.94 | 1.65 | 2.8 | 1.3 | 5 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 0.456 | 0.0113 | 0.457 | 0.44 | 0.471 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 11 | 0.152 | 11 | 10.8 | 11.1 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | 5 | 0 | 0 | 6.98 | 0.0837 | 7 | 6.9 | 7.1 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | 5 | 0 | 0 | 0.0128 | 0.00231 | 0.0117 | 0.0111 | 0.0166 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 1.11 | 0.0709 | 1.07 | 1.05 | 1.22 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | 5 | 0 | 0 | 6.08 | 1.59 | 5.6 | 4.8 | 8.6 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 5 | 3 | 60 | - | - | 0.01 | 0.01 | 0.022 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 1.35 | 0.0195 | 1.34 | 1.32 | 1.37 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 5 | 0 | 0 | 0.598 | 0.212 | 0.461 | 0.422 | 0.88 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | 5 | 4 | 80 | - | - | 5.00E-04 | 5.00E-04 | 0.00076 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.106 | 0.00518 | 0.103 | 0.102 | 0.113 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.876 | 0.0367 | 0.867 | 0.835 | 0.935 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | 5 | 1 | 20 | 0.0448 | 0.0153 | 0.051 | 0.04 | 0.06 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | 5 | 0 | 0 | 258 | 8.44 | 258 | 245 | 268 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.01 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 5 | 0 | 0 | 66.3 | 1.38 | 66.3 | 64.3 | 68.2 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | 5 | 0 | 0 | 2150 | 82 | 2130 | 2060 | 2280 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | 5 | 0 | 0 | 0.0191 | 0.00103 | 0.0193 | 0.018 | 0.0206 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 5 | 1 | 20 | 7.76 | 10.4 | 1.66 | 0.5 | †24.1 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 0.023 | 0.0224 | 0.013 | 0.012 | 0.063 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.0085 | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of acute and chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
Maximum total and dissolved zinc results were considered outliers (†)

## Table 5-5. MEL-02 Water Quality Summary Statistics – March 2020 Sampling Event

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | Mid-Field Area (MEL-02) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | Summary Statistics [c] Open Water Sampling | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | 5 | 0 | 0 | 1.45 | 0.0559 | 1.46 | 1.39 | 1.51 | - | - | 0 | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 5 | 0 | 0 | 110 | 2.89 | 112 | 106 | 113 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 5 | 0 | 0 | 7.3 | 0.0728 | 7.27 | 7.22 | 7.41 | 0 | - | 0 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 5 | 0 | 0 | 17.8 | 1.18 | 17.5 | 16.3 | 19.3 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | 5 | 0 | 0 | 129 | 7.82 | 127 | 120 | 138 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | 5 | 0 | 0 | 109 | 2.51 | 109 | 105 | 112 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | 5 | 0 | 0 | 32.8 | 0.606 | 33.1 | 31.8 | 33.3 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 5 | 0 | 0 | 7.32 | 0.0344 | 7.33 | 7.29 | 7.37 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 5 | 0 | 0 | 60.4 | 4.93 | 59 | 55 | 68 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 5 | 0 | 0 | 56.9 | 1.86 | 56.9 | 53.9 | 59 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | 5 | 4 | 80 | - | - | 1 | 1 | 1.3 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | 5 | 1 | 20 | 0.156 | 0.068 | 0.18 | 0.1 | 0.22 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | 5 | 0 | 0 | 31.6 | 0.585 | 31.8 | 30.6 | 32.1 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | 5 | 0 | 0 | 25.9 | 0.477 | 26.1 | 25.1 | 26.3 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 10.3 | 0.183 | 10.3 | 9.96 | 10.4 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 10.4 | 0.398 | 10.4 | 9.88 | 11 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 5 | 0 | 0 | 14.8 | 0.85 | 14.8 | 13.5 | 15.8 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 5 | 0 | 0 | 0.0324 | 0.00167 | 0.032 | 0.031 | 0.035 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | 5 | 0 | 0 | 1.76 | 0.0531 | 1.76 | 1.68 | 1.82 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | 5 | 0 | 0 | 1.78 | 0.051 | 1.79 | 1.71 | 1.84 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 1.33 | 0.0297 | 1.33 | 1.29 | 1.37 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 1.33 | 0.0288 | 1.33 | 1.28 | 1.35 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | 5 | 0 | 0 | 0.446 | 0.035 | 0.441 | 0.409 | 0.501 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 7.27 | 0.276 | 7.31 | 6.82 | 7.57 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | 5 | 0 | 0 | 7.28 | 0.236 | 7.27 | 7.04 | 7.57 | - | - | 0 | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | 5 | 0 | 0 | 5.73 | 0.273 | 5.7 | 5.34 | 6.1 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 5 | 0 | 0 | 0.0183 | 0.0032 | 0.0168 | 0.0153 | 0.0234 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 5 | 0 | 0 | 0.0255 | 0.00321 | 0.0259 | 0.0213 | 0.0296 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | 5 | 0 | 0 | 0.0319 | 0.00486 | 0.0318 | 0.0269 | 0.039 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 5 | 0 | 0 | 0.00636 | 0.00371 | 0.0055 | 0.0021 | 0.0117 | 0 | 0 | - | - |
| Nitrogen | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.324 | 0.0815 | 0.307 | 0.25 | 0.457 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | Mid-Field Area (MEL-02) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | Summary Statistics [c] Open Water Sampling | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | 5 | 0 | 0 | 0.00206 | 0.000428 | 0.0018 | 0.0017 | 0.0027 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.293 | 0.0258 | 0.287 | 0.272 | 0.335 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.292 | 0.0812 | 0.268 | 0.224 | 0.425 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.261 | 0.0223 | 0.259 | 0.239 | 0.296 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | 5 | 0 | 0 | 0.00402 | 0.000444 | 0.0039 | 0.0034 | 0.0045 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 4.05 | 0.103 | 4.07 | 3.88 | 4.13 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 4.01 | 0.0731 | 4.03 | 3.89 | 4.08 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 5 | 0 | 0 | 1.6 | 0.235 | 1.5 | 1.4 | 2 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | - | 6 | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 5 | 0 | 0 | 0.39 | 0.015 | 0.382 | 0.38 | 0.416 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | 5 | 0 | 0 | 10.9 | 0.313 | 11 | 10.4 | 11.2 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 5 | 0 | 0 | 6.32 | 0.249 | 6.5 | 6 | 6.5 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.0427 \| 0.0604 | 5 | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 5 | 100 | - | - | - | - | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 5 | 0 | 0 | 0.0133 | 0.00237 | 0.0127 | 0.0103 | 0.0164 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 5 | 0 | 0 | 1.06 | 0.0217 | 1.07 | 1.03 | 1.08 | 0 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 5 | 0 | 0 | 5.68 | 0.795 | 5.9 | 4.5 | 6.5 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 5 | 4 | 80 | - | - | 0.01 | 0.01 | 0.011 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 1.22 | 0.0438 | 1.23 | 1.15 | 1.27 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | 20 | - | 5 | 0 | 0 | 1.35 | 0.214 | 1.24 | 1.17 | 1.7 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 5 | 5 | 100 | - | - | - | - | 5.00E-04 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 5 | 0 | 0 | 2.55 | 3.38 | 0.132 | 0.114 | 7.09 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 5 | 0 | 0 | 0.756 | 0.0332 | 0.762 | 0.7 | 0.788 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 5 | 0 | 0 | 0.0584 | 0.00799 | 0.063 | 0.047 | 0.065 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | 5 | 0 | 0 | 195 | 21.1 | 202 | 169 | 215 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 5 | 0 | 0 | 60 | 2.67 | 59.6 | 56.7 | 63.4 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | 5 | 0 | 0 | 1910 | 99.3 | 1940 | 1760 | 2000 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | 5 | 4 | 80 | - | - | 0.02 | 0.02 | 0.135 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 5 | 0 | 0 | 0.0166 | 0.00213 | 0.016 | 0.0142 | 0.0193 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 5 | 0 | 0 | 1.34 | 1.06 | 0.99 | 0.63 | 3.22 | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | 5 | 2 | 40 | 0.044 | 0.08 | 0.011 | 0.01 | 0.187 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | Mid-Field Area (MEL-02) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | Summary Statistics [c] Open Water Sampling | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | 5 | 0 | 0 | 1.22 | 0.0837 | 1.2 | 1.1 | 1.3 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 0.363 | 0.0154 | 0.367 | 0.341 | 0.378 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | 5 | 0 | 0 | 10.8 | 0.444 | 10.8 | 10.1 | 11.3 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | 5 | 0 | 0 | 6.38 | 0.164 | 6.4 | 6.1 | 6.5 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | 5 | 0 | 0 | 0.0102 | 0.00179 | 0.0099 | 0.008 | 0.0127 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.98 | 0.0298 | 0.975 | 0.956 | 1.03 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | 5 | 0 | 0 | 3.32 | 0.482 | 3.2 | 2.7 | 3.9 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.01 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | 5 | 0 | 0 | 1.18 | 0.0308 | 1.18 | 1.13 | 1.21 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 5 | 0 | 0 | 0.391 | 0.0194 | 0.39 | 0.367 | 0.412 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | 5 | 4 | 80 | - | - | 5.00E-04 | 5.00E-04 | 0.00055 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.108 | 0.0177 | 0.103 | 0.093 | 0.139 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | 5 | 0 | 0 | 0.744 | 0.0328 | 0.765 | 0.7 | 0.769 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | 5 | 3 | 60 | - | - | 0.04 | 0.04 | 0.05 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | 5 | 0 | 0 | 193 | 15.5 | 193 | 170 | 212 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 5 | 0 | 0 | 61.7 | 2.73 | 62.2 | 58.2 | 64.8 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | 5 | 0 | 0 | 2000 | 85 | 1980 | 1920 | 2130 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | 5 | 0 | 0 | 0.0163 | 0.000596 | 0.0164 | 0.0155 | 0.0169 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 5 | 0 | 0 | 3.14 | 2.89 | 2.17 | 1.07 | 8.13 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | 5 | 3 | 60 | - | - | 0.01 | 0.01 | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | 5 | 4 | 80 | - | - | 0.001 | 0.001 | 0.0022 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 5 | 4 | 80 | - | - | 0.001 | 0.001 | 0.0024 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | 5 | 4 | 80 | - | - | 0.001 | 0.001 | 0.0021 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | 5 | 4 | 80 | - | - | 0.0077 | 0.0031 | 0.0092 | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of acute and chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.

## Table 5-6. Near-Field Area (MEL-01) Water Quality Summary Statistics – 2020 Open Water Sampling Events (July, August, September)

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Near-Field Area (MEL-01) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics – Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | - | - | 15 | 0 | 0 | 12 | 2.86 | 12.2 | 8.5 | 15.4 | - | - | - | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | - | - | 15 | 0 | 0 | 111 | 5.46 | 109 | 106 | 126 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 15 | 0 | 0 | 7.52 | 0.0515 | 7.52 | 7.43 | 7.61 | 0 | - | 0 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 15 | 0 | 0 | 11 | 0.534 | 11.3 | 10.2 | 11.5 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 15 | 0 | 0 | 96.7 | 24.9 | 104 | 7.5 | 107 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 109 | 5.18 | 108 | 102 | 119 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | - | - | 15 | 0 | 0 | 29.5 | 1.24 | 29.7 | 27.8 | 31.3 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 15 | 0 | 0 | 7.42 | 0.0419 | 7.43 | 7.34 | 7.46 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 500 | 375 | 15 | 0 | 0 | 70.6 | 10.8 | 68 | 53 | 89 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 500 | 375 | 15 | 0 | 0 | 55.3 | 1.11 | 55.2 | 54.1 | 57.7 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | - | - | 15 | 12 | 80 | - | - | 1 | 1 | 1.3 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | - | - | 15 | 0 | 0 | 0.486 | 0.107 | 0.46 | 0.29 | 0.67 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | - | - | 15 | 0 | 0 | 23.8 | 2.02 | 25 | 20.7 | 25.7 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 19.5 | 1.66 | 20.5 | 17 | 21.1 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 8.98 | 0.388 | 9.04 | 8.46 | 9.56 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 8.79 | 0.338 | 8.82 | 8.2 | 9.39 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 120 | 90 | 15 | 0 | 0 | 17.8 | 0.907 | 17.8 | 16.8 | 19.8 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 15 | 0 | 0 | 0.0255 | 0.00188 | 0.024 | 0.024 | 0.028 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | - | - | 15 | 0 | 0 | 1.72 | 0.0764 | 1.72 | 1.61 | 1.82 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | - | - | 15 | 0 | 0 | 1.74 | 0.0653 | 1.73 | 1.65 | 1.82 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 1.14 | 0.0515 | 1.12 | 1.08 | 1.23 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 1.16 | 0.0368 | 1.14 | 1.11 | 1.21 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 0.333 | 0.0798 | 0.327 | 0.237 | 0.447 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 8 | 0.319 | 7.95 | 7.54 | 8.69 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | - | - | 15 | 0 | 0 | 8.17 | 0.724 | 7.82 | 7.48 | 9.55 | - | - | 0 | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | - | - | 15 | 0 | 0 | 5.68 | 0.185 | 5.64 | 5.43 | 5.97 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 0.58 | 0.44 | 15 | 0 | 0 | 0.0187 | 0.00913 | 0.0145 | 0.0098 | 0.0389 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 15 | 5 | 33 | 0.055 | 0.0716 | 0.0109 | 0.005 | 0.173 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | - | - | 15 | 5 | 33 | 0.0556 | 0.0723 | 0.0109 | 0.0051 | 0.175 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 0.06 | 0.045 | 15 | 10 | 67 | - | - | 0.001 | 0.001 | 0.0019 | 0 | 0 | - | - |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Near-Field Area (MEL-01) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics – Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 15 | 1 | 7 | 0.00289 | 0.000931 | 0.0029 | 0.001 | 0.0046 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.281 | 0.0698 | 0.281 | 0.12 | 0.366 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.267 | 0.059 | 0.246 | 0.196 | 0.398 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.226 | 0.0675 | 0.219 | 0.105 | 0.359 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 15 | 0 | 0 | 0.00785 | 0.00125 | 0.0077 | 0.006 | 0.01 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 3.44 | 0.202 | 3.4 | 3.13 | 3.8 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 3.44 | 0.228 | 3.4 | 3.04 | 3.8 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 100 | 75 | 15 | 0 | 0 | 5.3 | 1.62 | 4.7 | 3.3 | 8.4 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | 9 | 6 | - | - | - | 4.5 | 15 | 15 | 100 | - | - | - | - | 0.02 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 10 | 7.5 | 15 | 0 | 0 | 0.523 | 0.0244 | 0.522 | 0.472 | 0.561 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | - | 750 | 15 | 0 | 0 | 8.49 | 0.273 | 8.37 | 8.14 | 9.11 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 14 | 93 | - | - | 0.005 | 0.005 | 0.0061 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 1500 | 1125 | 15 | 0 | 0 | 7.6 | 0.657 | 7.5 | 6.7 | 9 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.043 \| 0.060 | 5 | - | - | 0.043 | 0.032 | 15 | 15 | 100 | - | - | - | - | 0.005 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 3.75 | 15 | 15 | 100 | - | - | - | - | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 0.78 | 0.585 | 15 | 0 | 0 | 0.0302 | 0.00503 | 0.0315 | 0.0224 | 0.0402 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 2 | 1.5 | 15 | 0 | 0 | 0.848 | 0.0383 | 0.852 | 0.8 | 0.93 | 0 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 300 | 225 | 15 | 0 | 0 | 25.9 | 2.69 | 24.6 | 22.9 | 29.9 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 3.31 | 2.48 | 15 | 9 | 60 | - | - | 0.01 | 0.01 | 0.022 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 1.53 | 0.123 | 1.49 | 1.4 | 1.81 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | - | - | 120 | 90 | 15 | 0 | 0 | 8.32 | 1.38 | 8.67 | 6.34 | 9.82 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 0.026 | 0.020 | 15 | 8 | 53 | - | - | 0.0005 | 0.0005 | 0.00076 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 73 | 54.8 | 15 | 0 | 0 | 0.155 | 0.154 | 0.103 | 0.091 | 0.68 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 25 | 18.8 | 15 | 0 | 0 | 0.781 | 0.0578 | 0.776 | 0.701 | 0.888 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 1 | 0.75 | 15 | 14 | 93 | - | - | 0.04 | 0.04 | 0.055 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | - | - | 15 | 0 | 0 | 194 | 66.5 | 165 | 137 | 351 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 15 | 15 | 100 | - | - | - | - | 0.025 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 2500 | 1875 | 15 | 0 | 0 | 67.1 | 7.97 | 65 | 58.5 | 82.1 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | - | - | 15 | 0 | 0 | 1900 | 111 | 1930 | 1670 | 2080 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 15 | 15 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.114 | 0.0384 | 0.098 | 0.058 | 0.189 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 15 | 11.25 | 15 | 0 | 0 | 0.0189 | 0.00135 | 0.0187 | 0.0175 | 0.0227 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | 120 | - | - | - | 120 | 90 | 15 | 14 | 93 | - | - | 0.05 | 0.05 | 0.061 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 3.91 | 2.93 | 15 | 5 | 33 | 0.755 | 0.597 | 0.64 | 0.5 | 2.47 | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | - | - | 15 | 11 | 73 | - | - | 0.01 | 0.01 | 0.013 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Near-Field Area (MEL-01) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics – Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 4.12 | 2.74 | 2.5 | 1.8 | 9 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 11 | 73 | - | - | 0.02 | 0.02 | 0.023 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 0.478 | 0.0169 | 0.483 | 0.439 | 0.5 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 8.31 | 0.419 | 8.26 | 7.69 | 8.89 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | - | - | 15 | 0 | 0 | 7.67 | 0.793 | 7.7 | 6.8 | 9.6 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 0 | 0 | 0.0224 | 0.0121 | 0.0148 | 0.0127 | 0.04 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.827 | 0.0304 | 0.83 | 0.763 | 0.897 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 17 | 14.2 | 7.9 | 5.8 | 37 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 3.31 | 2.48 | 15 | 8 | 53 | - | - | 0.01 | 0.01 | 0.025 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 1.56 | 0.149 | 1.54 | 1.41 | 1.85 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 210 | 158 | 15 | 0 | 0 | 3.69 | 4.32 | 1.07 | 0.309 | 9.82 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 11 | 73 | - | - | 0.0005 | 0.0005 | 0.00078 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.114 | 0.0112 | 0.112 | 0.095 | 0.135 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.747 | 0.0576 | 0.726 | 0.668 | 0.837 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | - | - | 15 | 8 | 53 | - | - | 0.04 | 0.04 | 0.056 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | - | - | 15 | 0 | 0 | 204 | 118 | 156 | 125 | 533 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 2500 | 1875 | 15 | 0 | 0 | 64.6 | 4.6 | 64.4 | 58.9 | 75.9 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | - | - | 15 | 0 | 0 | 1920 | 187 | 1870 | 1670 | 2310 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 9 | 60 | - | - | 0.05 | 0.05 | 0.151 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | - | - | 15 | 0 | 0 | 0.0204 | 0.0025 | 0.0202 | 0.0172 | 0.025 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 3.91 | 2.93 | 15 | 4 | 27 | 1.98 | 1.52 | 1.53 | 0.5 | 4.8 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | - | - | 15 | 11 | 73 | - | - | 0.01 | 0.01 | 0.014 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.004 | 15 | 15 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | - | - | 15 | 13 | 87 | - | - | 0.0089 | 0.005 | 0.03 | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] AEMP Action Level = 75% of the AEMP Benchmark (lowest of the water quality guidelines for aquatic life and human health).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
** There were not water quality exceedances of aquatic life, drinking water, or site-specific water quality objectives in the 2020 open water sampling events.

### Table 5-7. Mid-Field Area (MEL-02) Water Quality Summary Statistics – 2020 Open Water Sampling Events (July, August, September)

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Mid-Field Area (MEL-02) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | - | - | 19 | 0 | 0 | 11.7 | 3.03 | 13.3 | 2.21 | 14.2 | - | - | 0 | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | - | - | 19 | 0 | 0 | 86.7 | 8.05 | 84.7 | 83.5 | 120 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 19 | 0 | 0 | 7.52 | 0.174 | 7.57 | 6.89 | 7.7 | 0 | - | 1 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 19 | 0 | 0 | 11 | 1.17 | 10.8 | 10.3 | 15.6 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 19 | 0 | 0 | 102 | 4.12 | 102 | 97.5 | 115 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 84.1 | 1.65 | 84.1 | 82.3 | 87.5 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | - | - | 15 | 0 | 0 | 24.3 | 0.511 | 24.2 | 23.6 | 25.2 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 15 | 0 | 0 | 7.51 | 0.104 | 7.45 | 7.42 | 7.72 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 500 | 375 | 15 | 0 | 0 | 49.1 | 2.77 | 49 | 44 | 53 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 500 | 375 | 15 | 0 | 0 | 44.1 | 1.18 | 44.4 | 41.5 | 45.7 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | - | - | 15 | 14 | 93 | - | - | 1 | 1 | 2.2 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | - | - | 15 | 1 | 7 | 0.256 | 0.0799 | 0.26 | 0.1 | 0.37 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | - | - | 15 | 0 | 0 | 24.7 | 1.86 | 25.3 | 19.9 | 27.3 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 20.3 | 1.53 | 20.7 | 16.3 | 22.4 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 7.55 | 0.16 | 7.52 | 7.31 | 7.8 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 7.44 | 0.124 | 7.44 | 7.17 | 7.63 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 120 | 90 | 15 | 0 | 0 | 11.9 | 0.324 | 11.8 | 11.5 | 12.7 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 15 | 0 | 0 | 0.0263 | 0.0011 | 0.026 | 0.025 | 0.028 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | - | - | 15 | 0 | 0 | 1.32 | 0.0421 | 1.33 | 1.21 | 1.38 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | - | - | 15 | 0 | 0 | 1.34 | 0.0193 | 1.34 | 1.3 | 1.37 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 0.986 | 0.0255 | 0.987 | 0.903 | 1.02 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 1.01 | 0.0147 | 1.01 | 0.991 | 1.04 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 0.293 | 0.0163 | 0.286 | 0.273 | 0.319 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 5.66 | 0.192 | 5.63 | 5.3 | 6.03 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | - | - | 15 | 0 | 0 | 5.74 | 0.15 | 5.7 | 5.5 | 6.12 | - | - | 0 | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | - | - | 15 | 0 | 0 | 4.42 | 0.167 | 4.33 | 4.22 | 4.7 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 0.58 | 0.44 | 15 | 2 | 13 | 0.0173 | 0.0181 | 0.0124 | 0.005 | 0.0682 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 15 | 9 | 60 | - | - | 0.005 | 0.005 | 0.0504 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | - | - | 15 | 9 | 60 | - | - | 0.0051 | 0.0051 | 0.0504 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 0.06 | 0.045 | 15 | 15 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Mid-Field Area (MEL-02) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 15 | 0 | 0 | 0.00183 | 0.000337 | 0.0018 | 0.0013 | 0.0024 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.248 | 0.0751 | 0.215 | 0.172 | 0.375 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.264 | 0.0673 | 0.244 | 0.176 | 0.424 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.241 | 0.0677 | 0.215 | 0.171 | 0.361 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 15 | 0 | 0 | 0.00569 | 0.00241 | 0.005 | 0.0035 | 0.0137 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 2.98 | 0.402 | 2.83 | 2.7 | 4.3 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 3.06 | 0.465 | 2.9 | 2.62 | 4.1 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 100 | 75 | 15 | 0 | 0 | 3.53 | 1.09 | 3.3 | 2.2 | 6.3 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | 9 | 6 | - | - | - | 4.5 | 15 | 15 | 100 | - | - | - | - | 0.02 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 10 | 7.5 | 15 | 0 | 0 | 0.471 | 0.0492 | 0.449 | 0.421 | 0.567 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | - | 750 | 15 | 0 | 0 | 8.32 | 0.455 | 8.35 | 7.64 | 9.05 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 1500 | 1125 | 15 | 1 | 7 | 5.4 | 0.973 | 5.4 | 5 | 7 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.043 \| 0.060 | 5 | - | - | 0.043 | 0.032 | 15 | 14 | 93 | - | - | 0.005 | 0.005 | 0.0071 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 3.75 | 15 | 13 | 87 | - | - | 0.1 | 0.1 | 0.19 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 0.78 | 0.585 | 15 | 0 | 0 | 0.0177 | 0.00308 | 0.0167 | 0.0136 | 0.0233 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 2 | 1.5 | 15 | 0 | 0 | 0.999 | 0.259 | 0.888 | 0.804 | 1.61 | 0 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 300 | 225 | 15 | 0 | 0 | 17.6 | 4.24 | 15.8 | 13.4 | 24.4 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 3.31 | 2.48 | 15 | 7 | 47 | 0.0241 | 0.0334 | 0.011 | 0.01 | 0.123 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 0.942 | 0.0455 | 0.93 | 0.88 | 1.01 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | - | - | 120 | 90 | 15 | 0 | 0 | 3.94 | 0.391 | 4.02 | 3.44 | 4.5 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 0.026 | 0.020 | 15 | 7 | 47 | 0.000489 | 0.000344 | 0.00051 | 0.0005 | 0.00158 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 73 | 54.8 | 15 | 0 | 0 | 0.47 | 1.31 | 0.094 | 0.072 | 5.19 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 25 | 18.8 | 15 | 0 | 0 | 0.618 | 0.0662 | 0.595 | 0.544 | 0.748 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 1 | 0.75 | 15 | 7 | 47 | 0.0373 | 0.018 | 0.042 | 0.04 | 0.066 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | - | - | 15 | 0 | 0 | 146 | 12.2 | 146 | 122 | 166 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 15 | 15 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 2500 | 1875 | 15 | 0 | 0 | 43.5 | 1.66 | 43.5 | 41.1 | 46.6 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | - | - | 15 | 0 | 0 | 1480 | 108 | 1440 | 1380 | 1730 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 15 | 15 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 13 | 87 | - | - | 0.02 | 0.02 | 0.045 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 2 | 13 | 0.0744 | 0.0273 | 0.075 | 0.05 | 0.125 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 15 | 11.25 | 15 | 0 | 0 | 0.0157 | 0.000981 | 0.0155 | 0.0141 | 0.0174 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | 120 | - | - | - | 120 | 90 | 15 | 15 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 3.91 | 2.93 | 15 | 5 | 33 | 2.69 | 5.99 | 0.77 | 0.5 | 23.6† | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.01 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Mid-Field Area (MEL-02) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | - | - | 15 | 2 | 13 | 1.59 | 1.06 | 1.4 | 1 | 5.1 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 0.435 | 0.0458 | 0.431 | 0.351 | 0.509 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 8.13 | 0.644 | 8.31 | 6.96 | 8.81 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | - | - | 15 | 0 | 0 | 5.54 | 0.558 | 5.3 | 5 | 6.7 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | - | - | 15 | 13 | 87 | - | - | 0.1 | 0.1 | 0.16 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 0 | 0 | 0.00831 | 0.00132 | 0.0087 | 0.0058 | 0.0102 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.789 | 0.0592 | 0.776 | 0.731 | 0.965 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 6.32 | 1.94 | 6.3 | 3.9 | 9.3 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 3.31 | 2.48 | 15 | 10 | 67 | - | - | 0.01 | 0.01 | 0.016 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 0.951 | 0.0433 | 0.97 | 0.88 | 1 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 210 | 158 | 15 | 0 | 0 | 0.458 | 0.0806 | 0.465 | 0.348 | 0.559 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 12 | 80 | - | - | 0.0005 | 0.0005 | 0.00084 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.0875 | 0.0104 | 0.089 | 0.072 | 0.102 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.582 | 0.051 | 0.563 | 0.525 | 0.658 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | - | - | 15 | 8 | 53 | - | - | 0.04 | 0.04 | 0.055 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | - | - | 15 | 0 | 0 | 144 | 7.77 | 144 | 126 | 154 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 2500 | 1875 | 15 | 0 | 0 | 43.9 | 0.675 | 43.9 | 42.3 | 44.9 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | - | - | 15 | 0 | 0 | 1510 | 142 | 1510 | 1290 | 1720 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | - | - | 15 | 0 | 0 | 0.0162 | 0.00127 | 0.016 | 0.0142 | 0.0185 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 3.91 | 2.93 | 15 | 4 | 27 | 0.778 | 0.485 | 0.76 | 0.5 | 1.86 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | - | - | 15 | 14 | 93 | - | - | 0.01 | 0.01 | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.004 | 15 | 15 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] AEMP Action Level = 75% of the AEMP Benchmark (lowest of the water quality guidelines for aquatic life and human health).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
** There were not water quality exceedances of aquatic life, drinking water, or site-specific water quality objectives in the 2020 open water sampling events.

## Table 5-8. Reference Area 1 (MEL-03) Water Quality Summary Statistics – 2020 Open Water Sampling Events (July, August, September)

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 1 (MEL-03) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | - | - | 19 | 0 | 0 | 10.7 | 2.9 | 11.5 | 1.36 | 13.5 | - | - | 0 | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | - | - | 18 | 0 | 0 | 76.4 | 5.78 | 75.2 | 71.1 | 96.2 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 19 | 0 | 0 | 7.58 | 0.118 | 7.59 | 7.16 | 7.73 | 0 | - | 0 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 19 | 0 | 0 | 11.1 | 1.87 | 10.9 | 7.64 | 17.9 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 19 | 0 | 0 | 100 | 8.28 | 97.3 | 94.1 | 131 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 73.2 | 2.64 | 73.5 | 68.7 | 78.7 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | - | - | 15 | 0 | 0 | 21.8 | 0.991 | 21.8 | 20.6 | 23.2 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 15 | 0 | 0 | 7.49 | 0.098 | 7.47 | 7.3 | 7.65 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 500 | 375 | 15 | 0 | 0 | 45.1 | 6.57 | 42 | 36 | 55 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 500 | 375 | 15 | 0 | 0 | 38.7 | 1.4 | 39.5 | 35.8 | 40.5 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 1 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | - | - | 15 | 0 | 0 | 0.204 | 0.0478 | 0.2 | 0.14 | 0.33 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | - | - | 15 | 0 | 0 | 24.1 | 1.62 | 24.6 | 19.9 | 25.3 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 19.8 | 1.32 | 20.2 | 16.3 | 20.7 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 6.82 | 0.34 | 6.84 | 6.34 | 7.28 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 6.8 | 0.137 | 6.8 | 6.46 | 6.98 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 120 | 90 | 15 | 0 | 0 | 9.39 | 0.357 | 9.61 | 8.75 | 9.74 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 15 | 0 | 0 | 0.0275 | 0.00239 | 0.027 | 0.025 | 0.032 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | - | - | 15 | 0 | 0 | 1.17 | 0.0383 | 1.15 | 1.12 | 1.23 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | - | - | 15 | 0 | 0 | 1.16 | 0.0262 | 1.15 | 1.13 | 1.2 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 0.924 | 0.0258 | 0.927 | 0.885 | 0.971 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 0.936 | 0.0272 | 0.947 | 0.895 | 0.967 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | - | - | 15 | 0 | 0 | 0.23 | 0.0186 | 0.234 | 0.202 | 0.254 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 4.72 | 0.165 | 4.78 | 4.47 | 4.95 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | - | - | 15 | 0 | 0 | 4.74 | 0.175 | 4.84 | 4.39 | 4.94 | - | - | 0 | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | - | - | 15 | 0 | 0 | 3.75 | 0.213 | 3.86 | 3.36 | 3.95 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 0.58 | 0.44 | 15 | 2 | 13 | 0.02 | 0.0222 | 0.0122 | 0.005 | 0.0793 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 15 | 11 | 73 | - | - | 0.005 | 0.005 | 0.0271 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | - | - | 15 | 11 | 73 | - | - | 0.0051 | 0.0051 | 0.0271 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 0.06 | 0.045 | 15 | 15 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 1 (MEL-03) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 15 | 5 | 33 | 0.00193 | 0.00247 | 0.0012 | 0.001 | 0.0104 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.19 | 0.0255 | 0.19 | 0.153 | 0.235 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.209 | 0.0346 | 0.201 | 0.152 | 0.268 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.186 | 0.0242 | 0.19 | 0.148 | 0.231 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 15 | 1 | 7 | 0.00324 | 0.00142 | 0.0031 | 0.001 | 0.0071 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 2.21 | 0.633 | 2.57 | 1.3 | 2.91 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 2.15 | 0.498 | 2.45 | 1.4 | 2.63 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 100 | 75 | 15 | 0 | 0 | 3.27 | 1.27 | 2.8 | 2.3 | 7.4 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | 9 | 6 | - | - | - | 4.5 | 15 | 14 | 93 | - | - | 0.02 | 0.02 | 0.021 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 10 | 7.5 | 15 | 0 | 0 | 0.271 | 0.0203 | 0.274 | 0.234 | 0.307 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | - | 750 | 15 | 0 | 0 | 7.77 | 0.294 | 7.87 | 7.29 | 8.26 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 1500 | 1125 | 15 | 15 | 100 | - | - | - | - | 5 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.043 \| 0.060 | 5 | - | - | 0.043 | 0.032 | 15 | 15 | 100 | - | - | - | - | 0.005 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 3.75 | 15 | 15 | 100 | - | - | - | - | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 0.78 | 0.585 | 15 | 0 | 0 | 0.0124 | 0.00271 | 0.0121 | 0.0084 | 0.0197 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 2 | 1.5 | 15 | 0 | 0 | 0.676 | 0.0287 | 0.69 | 0.631 | 0.711 | 0 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 300 | 225 | 15 | 0 | 0 | 12.9 | 4.03 | 11.7 | 10.7 | 27 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 3.31 | 2.48 | 15 | 10 | 67 | - | - | 0.01 | 0.01 | 0.062 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 0.679 | 0.0289 | 0.69 | 0.64 | 0.72 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | - | - | 120 | 90 | 15 | 0 | 0 | 2.72 | 0.601 | 2.69 | 2.19 | 4.67 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 0.026 | 0.020 | 15 | 14 | 93 | - | - | 0.0005 | 0.0005 | 0.00072 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 73 | 54.8 | 15 | 0 | 0 | 0.987 | 3.52 | 0.072 | 0.06 | 13.7 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 25 | 18.8 | 15 | 0 | 0 | 0.422 | 0.0169 | 0.418 | 0.402 | 0.448 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 1 | 0.75 | 15 | 5 | 33 | 0.0399 | 0.0164 | 0.043 | 0.04 | 0.068 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | - | - | 15 | 0 | 0 | 112 | 10.3 | 113 | 97 | 128 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 15 | 15 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 2500 | 1875 | 15 | 0 | 0 | 35.6 | 0.792 | 35.5 | 34 | 36.9 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | - | - | 15 | 0 | 0 | 1350 | 115 | 1360 | 1080 | 1560 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 15 | 15 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 14 | 93 | - | - | 0.02 | 0.02 | 0.025 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 4 | 27 | 0.0993 | 0.118 | 0.069 | 0.05 | 0.501 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 15 | 11.25 | 15 | 0 | 0 | 0.0142 | 0.000964 | 0.0138 | 0.0128 | 0.0158 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | 120 | - | - | - | 120 | 90 | 15 | 14 | 93 | - | - | 0.05 | 0.05 | 0.055 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 3.91 | 2.93 | 15 | 5 | 33 | 0.631 | 0.343 | 0.67 | 0.5 | 1.46 | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.01 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 1 (MEL-03) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 1.87 | 0.716 | 1.6 | 1.1 | 3.3 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 0.268 | 0.0177 | 0.266 | 0.249 | 0.308 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 0 | 0 | 7.74 | 0.562 | 7.85 | 7 | 8.59 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | - | - | 15 | 13 | 87 | - | - | 5 | 5 | 5 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 14 | 93 | - | - | 0.005 | 0.005 | 0.0054 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 6 | 40 | 0.0045 | 0.00178 | 0.0051 | 0.005 | 0.0072 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.645 | 0.0348 | 0.654 | 0.596 | 0.705 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | - | - | 15 | 0 | 0 | 4.71 | 1.05 | 4.2 | 3.4 | 7.7 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 3.31 | 2.48 | 15 | 13 | 87 | - | - | 0.01 | 0.01 | 0.262 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 0 | 0 | 0.678 | 0.0509 | 0.66 | 0.62 | 0.75 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 210 | 158 | 15 | 0 | 0 | 0.521 | 0.296 | 0.42 | 0.301 | 1.43 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.0005 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.0713 | 0.0122 | 0.073 | 0.051 | 0.096 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 0 | 0 | 0.42 | 0.0141 | 0.421 | 0.397 | 0.448 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | - | - | 15 | 10 | 67 | - | - | 0.04 | 0.04 | 0.062 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | - | - | 15 | 0 | 0 | 111 | 10.8 | 110 | 94 | 132 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 2500 | 1875 | 15 | 0 | 0 | 34.9 | 1.91 | 36 | 31.8 | 37.1 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | - | - | 15 | 0 | 0 | 1360 | 127 | 1360 | 1160 | 1610 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 13 | 87 | - | - | 0.05 | 0.05 | 0.136 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | - | - | 15 | 0 | 0 | 0.0131 | 0.00172 | 0.0132 | 0.0102 | 0.0167 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 3.91 | 2.93 | 15 | 10 | 67 | - | - | 0.5 | 0.5 | 5.7 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.004 | 15 | 15 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | - | - | 15 | 15 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | - | - | 15 | 14 | 93 | - | - | 0.008 | 0.0063 | 0.031 | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] AEMP Action Level = 75% of the AEMP Benchmark (lowest of the water quality guidelines for aquatic life and human health).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
** There were not water quality exceedances of aquatic life, drinking water, or site-specific water quality objectives in the 2020 open water sampling events.

## Table 5-9. Reference Area 2 (MEL-04) Water Quality Summary Statistics – 2020 Open Water Sampling Events (August)

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 2 (MEL-04) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | - | - | 9 | 0 | 0 | 11.8 | 3.9 | 13.8 | 2.29 | 13.9 | - | - | 0 | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | - | - | 9 | 0 | 0 | 79.5 | 13.7 | 75 | 73 | 116 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 9 | 0 | 0 | 7.53 | 0.314 | 7.6 | 6.7 | 7.74 | 0 | - | 1 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 9 | 0 | 0 | 11 | 2.02 | 10.1 | 9.92 | 16.2 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 9 | 0 | 0 | 100 | 8.14 | 96.8 | 96 | 121 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 73.8 | 0.55 | 73.9 | 72.8 | 74.2 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | - | - | 5 | 0 | 0 | 21.7 | 0.259 | 21.6 | 21.5 | 22 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 5 | 0 | 0 | 7.42 | 0.0122 | 7.42 | 7.4 | 7.43 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 500 | 375 | 5 | 0 | 0 | 47.4 | 5.41 | 47 | 40 | 54 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 500 | 375 | 5 | 0 | 0 | 39.1 | 0.167 | 39.1 | 38.9 | 39.3 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 1 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | - | - | 5 | 0 | 0 | 0.172 | 0.0661 | 0.14 | 0.14 | 0.29 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | - | - | 5 | 0 | 0 | 24.7 | 0.134 | 24.6 | 24.5 | 24.8 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 20.2 | 0.0837 | 20.2 | 20.1 | 20.3 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | - | - | 5 | 0 | 0 | 6.81 | 0.094 | 6.78 | 6.71 | 6.91 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | - | - | 5 | 0 | 0 | 6.88 | 0.104 | 6.91 | 6.71 | 6.97 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 120 | 90 | 5 | 0 | 0 | 9.56 | 0.0316 | 9.57 | 9.51 | 9.59 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 5 | 0 | 0 | 0.0272 | 0.000447 | 0.027 | 0.027 | 0.028 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | - | - | 5 | 0 | 0 | 1.15 | 0.00837 | 1.15 | 1.14 | 1.16 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | - | - | 5 | 0 | 0 | 1.15 | 0.00548 | 1.15 | 1.14 | 1.15 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 0.918 | 0.00557 | 0.919 | 0.909 | 0.923 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 0.94 | 0.00718 | 0.939 | 0.932 | 0.951 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | - | - | 5 | 0 | 0 | 0.245 | 0.00385 | 0.244 | 0.24 | 0.249 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 4.64 | 0.0327 | 4.64 | 4.6 | 4.67 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | - | - | 5 | 0 | 0 | 4.77 | 0.0672 | 4.76 | 4.68 | 4.86 | - | - | 0 | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | - | - | 5 | 0 | 0 | 3.89 | 0.027 | 3.89 | 3.87 | 3.94 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 0.58 | 0.44 | 5 | 1 | 20 | 0.0291 | 0.0286 | 0.0246 | 0.005 | 0.0723 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.0051 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 0.06 | 0.045 | 5 | 5 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 2 (MEL-04) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 5 | 0 | 0 | 0.00138 | 0.000249 | 0.0013 | 0.0012 | 0.0018 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.2 | 0.023 | 0.215 | 0.171 | 0.218 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.241 | 0.0553 | 0.223 | 0.188 | 0.314 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.2 | 0.023 | 0.215 | 0.171 | 0.218 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 5 | 0 | 0 | 0.00302 | 0.0015 | 0.0026 | 0.0019 | 0.0056 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 2.44 | 0.15 | 2.35 | 2.34 | 2.68 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 2.41 | 0.141 | 2.49 | 2.18 | 2.51 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 100 | 75 | 5 | 0 | 0 | 2.18 | 0.563 | 2.3 | 1.4 | 2.9 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | 9 | 6 | - | - | - | 4.5 | 5 | 5 | 100 | - | - | - | - | 0.02 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 10 | 7.5 | 5 | 0 | 0 | 0.25 | 0.0108 | 0.256 | 0.237 | 0.259 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | - | 750 | 5 | 0 | 0 | 7.35 | 0.169 | 7.25 | 7.21 | 7.58 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 1500 | 1125 | 5 | 5 | 100 | - | - | - | - | 5 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.043 \| 0.060 | 5 | - | - | 0.043 | 0.032 | 5 | 5 | 100 | - | - | - | - | 0.02 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 3.75 | 5 | 5 | 100 | - | - | - | - | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 0.78 | 0.585 | 5 | 0 | 0 | 0.0101 | 0.00188 | 0.0108 | 0.0072 | 0.0119 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 2 | 1.5 | 5 | 0 | 0 | 0.664 | 0.00832 | 0.658 | 0.657 | 0.675 | 0 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 300 | 225 | 5 | 0 | 0 | 8.06 | 0.351 | 8 | 7.6 | 8.5 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 3.31 | 2.48 | 5 | 4 | 80 | - | - | 0.01 | 0.01 | 0.011 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 0.686 | 0.0114 | 0.69 | 0.67 | 0.7 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | - | - | 120 | 90 | 5 | 0 | 0 | 2.43 | 0.0733 | 2.44 | 2.34 | 2.52 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 0.026 | 0.020 | 5 | 5 | 100 | - | - | - | - | 0.0005 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 73 | 54.8 | 5 | 0 | 0 | 6.21 | 5.94 | 7.76 | 0.1 | 13.5 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 25 | 18.8 | 5 | 0 | 0 | 0.431 | 0.00952 | 0.426 | 0.421 | 0.442 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 1 | 0.75 | 5 | 4 | 80 | - | - | 0.04 | 0.04 | 0.048 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | - | - | 5 | 0 | 0 | 122 | 7.66 | 119 | 112 | 131 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 2500 | 1875 | 5 | 0 | 0 | 36.5 | 0.602 | 36.3 | 36 | 37.5 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | - | - | 5 | 0 | 0 | 1240 | 126 | 1280 | 1040 | 1360 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 4 | 80 | - | - | 0.05 | 0.05 | 0.07 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 15 | 11.25 | 5 | 0 | 0 | 0.0128 | 0.000941 | 0.0127 | 0.0116 | 0.0142 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | 120 | - | - | - | 120 | 90 | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 3.91 | 2.93 | 5 | 4 | 80 | - | - | 0.5 | 0.5 | 0.91 | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.01 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 2 (MEL-04) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 1.3 | 0.141 | 1.2 | 1.2 | 1.5 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 0.245 | 0.0144 | 0.248 | 0.225 | 0.264 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 7.11 | 0.179 | 7.14 | 6.86 | 7.28 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 5 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 3 | 60 | - | - | 0.005 | 0.005 | 0.0062 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.647 | 0.0143 | 0.647 | 0.627 | 0.667 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 2.94 | 0.167 | 2.9 | 2.8 | 3.2 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 3.31 | 2.48 | 5 | 5 | 100 | - | - | - | - | 0.01 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 0.646 | 0.0152 | 0.65 | 0.63 | 0.66 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 210 | 158 | 5 | 0 | 0 | 0.266 | 0.0334 | 0.26 | 0.226 | 0.308 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.0005 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.911 | 1.28 | 0.083 | 0.073 | 2.97 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.417 | 0.0223 | 0.413 | 0.398 | 0.455 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | - | - | 5 | 3 | 60 | - | - | 0.04 | 0.04 | 0.068 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | - | - | 5 | 0 | 0 | 114 | 5.07 | 115 | 108 | 119 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 2500 | 1875 | 5 | 0 | 0 | 35 | 0.719 | 34.9 | 34.4 | 36.2 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | - | - | 5 | 0 | 0 | 1230 | 93.1 | 1230 | 1100 | 1350 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | - | - | 5 | 0 | 0 | 0.0125 | 0.000385 | 0.0126 | 0.0121 | 0.013 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 3.91 | 2.93 | 5 | 5 | 100 | - | - | - | - | 0.5 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.004 | 5 | 5 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] AEMP Action Level = 75% of the AEMP Benchmark (lowest of the water quality guidelines for aquatic life and human health).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
** There were not water quality exceedances of aquatic life, drinking water, or site-specific water quality objectives in the 2020 open water sampling events.

## Table 5-10. MEL-05 Water Quality Summary Statistics – 2020 Open Water Sampling Events (August)

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 3 (MEL-05) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | - | - | 8 | 0 | 0 | 10.2 | 3.68 | 11.8 | 1.7 | 12.3 | - | - | 0 | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | - | - | 8 | 0 | 0 | 83.7 | 6.9 | 80.2 | 78.3 | 98.2 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 8 | 0 | 0 | 7.75 | 0.2 | 7.7 | 7.44 | 8.07 | 0 | - | 0 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 8 | 0 | 0 | 11.6 | 2.66 | 10.1 | 9.99 | 17.5 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 8 | 0 | 0 | 101 | 11.9 | 93.2 | 92.2 | 123 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 77.6 | 0.342 | 77.5 | 77.1 | 78 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | - | - | 5 | 0 | 0 | 24.3 | 0.148 | 24.3 | 24.1 | 24.5 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 5 | 0 | 0 | 7.44 | 0 | 7.44 | 7.44 | 7.44 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 500 | 375 | 5 | 0 | 0 | 46 | 7.65 | 44 | 40 | 59 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 500 | 375 | 5 | 0 | 0 | 41 | 0.192 | 41 | 40.8 | 41.3 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 1 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | - | - | 5 | 0 | 0 | 0.362 | 0.303 | 0.25 | 0.17 | 0.9 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | - | - | 5 | 0 | 0 | 25.9 | 0.187 | 25.9 | 25.6 | 26.1 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 21.2 | 0.148 | 21.2 | 21 | 21.4 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | - | - | 5 | 0 | 0 | 7.74 | 0.0476 | 7.75 | 7.66 | 7.78 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | - | - | 5 | 0 | 0 | 7.67 | 0.14 | 7.72 | 7.53 | 7.85 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 120 | 90 | 5 | 0 | 0 | 9.42 | 0.0179 | 9.42 | 9.4 | 9.44 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 5 | 0 | 0 | 0.0262 | 0.000447 | 0.026 | 0.026 | 0.027 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | - | - | 5 | 0 | 0 | 1.21 | 0.0148 | 1.21 | 1.19 | 1.23 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | - | - | 5 | 0 | 0 | 1.18 | 0.0152 | 1.19 | 1.16 | 1.2 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 0.948 | 0.0107 | 0.949 | 0.937 | 0.962 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 1.02 | 0.0114 | 1.02 | 1 | 1.03 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | - | - | 5 | 0 | 0 | 0.281 | 0.00517 | 0.28 | 0.276 | 0.289 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 5.06 | 0.215 | 5.08 | 4.73 | 5.27 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | - | - | 5 | 0 | 0 | 4.67 | 0.1 | 4.7 | 4.54 | 4.76 | - | - | - | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | - | - | 5 | 0 | 0 | 3.84 | 0.0167 | 3.84 | 3.82 | 3.86 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 0.58 | 0.44 | 5 | 1 | 20 | 0.00812 | 0.00447 | 0.0086 | 0.005 | 0.0147 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 5 | 3 | 60 | - | - | 0.005 | 0.005 | 0.0134 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | - | - | 5 | 3 | 60 | - | - | 0.0051 | 0.0051 | 0.0134 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 0.06 | 0.045 | 5 | 5 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 3 (MEL-05) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 5 | 0 | 0 | 0.0014 | 0.000122 | 0.0014 | 0.0012 | 0.0015 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.194 | 0.0224 | 0.191 | 0.177 | 0.232 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.221 | 0.0315 | 0.228 | 0.17 | 0.248 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.19 | 0.0254 | 0.185 | 0.165 | 0.232 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 5 | 0 | 0 | 0.00252 | 0.000259 | 0.0025 | 0.0022 | 0.0029 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 2.59 | 0.135 | 2.55 | 2.46 | 2.77 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 2.63 | 0.201 | 2.63 | 2.42 | 2.95 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 100 | 75 | 5 | 0 | 0 | 2.28 | 0.217 | 2.2 | 2.1 | 2.6 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | 9 | 6 | - | - | - | 4.5 | 5 | 5 | 100 | - | - | - | - | 0.02 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 10 | 7.5 | 5 | 0 | 0 | 0.319 | 0.0137 | 0.316 | 0.303 | 0.336 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | - | 750 | 5 | 0 | 0 | 8.33 | 0.117 | 8.29 | 8.23 | 8.53 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 1500 | 1125 | 5 | 4 | 80 | - | - | 5 | 5 | 5.1 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.043 \| 0.060 | 5 | - | - | 0.043 | 0.032 | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 3.75 | 5 | 5 | 100 | - | - | - | - | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 0.78 | 0.585 | 5 | 0 | 0 | 0.0109 | 0.00115 | 0.0108 | 0.0098 | 0.0124 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 2 | 1.5 | 5 | 0 | 0 | 0.684 | 0.0173 | 0.683 | 0.665 | 0.712 | 0 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 300 | 225 | 5 | 0 | 0 | 9.9 | 0.367 | 9.7 | 9.6 | 10.5 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 3.31 | 2.48 | 5 | 5 | 100 | - | - | - | - | 0.01 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 0.738 | 0.0148 | 0.74 | 0.72 | 0.76 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | - | - | 120 | 90 | 5 | 0 | 0 | 2.79 | 0.0472 | 2.77 | 2.76 | 2.87 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 0.026 | 0.020 | 5 | 5 | 100 | - | - | - | - | 0.0005 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 73 | 54.8 | 5 | 0 | 0 | 0.149 | 0.0669 | 0.128 | 0.099 | 0.266 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 25 | 18.8 | 5 | 0 | 0 | 0.355 | 0.0135 | 0.355 | 0.342 | 0.372 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 1 | 0.75 | 5 | 0 | 0 | 0.0516 | 0.00709 | 0.049 | 0.046 | 0.064 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | - | - | 5 | 0 | 0 | 147 | 9.58 | 148 | 134 | 161 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 2500 | 1875 | 5 | 0 | 0 | 36.5 | 0.404 | 36.6 | 35.9 | 37 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | - | - | 5 | 0 | 0 | 1350 | 86.4 | 1330 | 1240 | 1450 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 5 | 5 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 15 | 11.25 | 5 | 0 | 0 | 0.0133 | 0.00135 | 0.0132 | 0.0115 | 0.0148 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | 120 | - | - | - | 120 | 90 | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 3.91 | 2.93 | 5 | 4 | 80 | - | - | 0.5 | 0.5 | 0.9 | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.01 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Reference Area 3 (MEL-05) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 1.36 | 0.114 | 1.4 | 1.2 | 1.5 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 0.289 | 0.0201 | 0.281 | 0.268 | 0.313 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 0 | 0 | 7.62 | 0.251 | 7.74 | 7.19 | 7.78 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 5 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 3 | 60 | - | - | 0.005 | 0.005 | 0.006 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.681 | 0.0279 | 0.684 | 0.634 | 0.706 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | - | - | 5 | 0 | 0 | 4.38 | 0.363 | 4.3 | 3.9 | 4.9 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 3.31 | 2.48 | 5 | 5 | 100 | - | - | - | - | 0.01 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | - | - | 5 | 0 | 0 | 0.726 | 0.0152 | 0.73 | 0.7 | 0.74 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 210 | 158 | 5 | 0 | 0 | 0.377 | 0.0528 | 0.413 | 0.316 | 0.421 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.0005 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.089 | 0.0308 | 0.07 | 0.062 | 0.125 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 0 | 0 | 0.406 | 0.0124 | 0.405 | 0.388 | 0.418 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | - | - | 5 | 4 | 80 | - | - | 0.04 | 0.04 | 0.042 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | - | - | 5 | 0 | 0 | 135 | 4.55 | 134 | 130 | 142 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 2500 | 1875 | 5 | 0 | 0 | 34.5 | 0.594 | 34.6 | 33.7 | 35.1 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | - | - | 5 | 0 | 0 | 1380 | 70.5 | 1400 | 1260 | 1430 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | - | - | 5 | 0 | 0 | 0.0143 | 0.00141 | 0.0137 | 0.013 | 0.0158 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 3.91 | 2.93 | 5 | 4 | 80 | - | - | 0.5 | 0.5 | 1.12 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.004 | 5 | 5 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | - | - | 5 | 5 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] AEMP Action Level = 75% of the AEMP Benchmark (lowest of the water quality guidelines for aquatic life and human health).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
** There were not water quality exceedances of aquatic life, drinking water, or site-specific water quality objectives in the 2020 open water sampling events.

**Table 5-11. Water Quality Summary Statistics for the Pooled Reference Areas (MEL-03, MEL-04 and MEL-05) – 2020 Open Water Sampling Events (July, August, September)**

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Pooled Reference Areas | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature | C | - | - | - | 15 | - | - | - | 36 | 0 | 0 | 10.8 | 3.29 | 11.8 | 1.36 | 13.9 | - | - | 0 | - |
| Sp. Conductivity (field) | uS/cm | - | - | - | - | - | - | - | 35 | 0 | 0 | 78.8 | 8.93 | 75.3 | 71.1 | 116 | - | - | - | - |
| pH (field) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 36 | 0 | 0 | 7.6 | 0.21 | 7.61 | 6.7 | 8.07 | 0 | - | 1 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 36 | 0 | 0 | 11.2 | 2.05 | 10.9 | 7.64 | 17.9 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 36 | 0 | 0 | 100 | 8.88 | 97 | 92.2 | 131 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | - | - | - | - | - | - | 25 | 0 | 0 | 74.2 | 2.67 | 74 | 68.7 | 78.7 | - | - | - | - |
| Hardness | mg/L | 0.2 | - | - | - | - | - | - | 25 | 0 | 0 | 22.3 | 1.28 | 22 | 20.6 | 24.5 | - | - | - | - |
| pH (lab) | pH units | 0.1 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | 6.5 \| 9.0 | 25 | 0 | 0 | 7.47 | 0.0816 | 7.44 | 7.3 | 7.65 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | 13 | - | - | 500 | - | 500 | 375 | 25 | 0 | 0 | 45.8 | 6.37 | 45 | 36 | 59 | - | - | 0 | - |
| Total Dissolved Solids (Calc) | mg/L | 1 | - | - | 500 | - | 500 | 375 | 25 | 0 | 0 | 39.2 | 1.42 | 39.5 | 35.8 | 41.3 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 1 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 1 | - | - | - | - |
| Turbidity (lab) | NTU | 0.1 | - | - | - | - | - | - | 25 | 0 | 0 | 0.229 | 0.149 | 0.2 | 0.14 | 0.9 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1.2 | - | - | - | - | - | - | 25 | 0 | 0 | 24.6 | 1.43 | 24.8 | 19.9 | 26.1 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | 0.6 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | 0.34 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 1 | - | - | - | - | - | - | 25 | 0 | 0 | 20.1 | 1.16 | 20.3 | 16.3 | 21.4 | - | - | - | - |
| Bromide | mg/L | 0.1 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | - | - | 25 | 0 | 0 | 7 | 0.461 | 6.9 | 6.34 | 7.78 | - | - | - | - |
| Calcium (T) | mg/L | 0.01 | - | - | - | - | - | - | 25 | 0 | 0 | 6.99 | 0.373 | 6.87 | 6.46 | 7.85 | - | - | - | - |
| Chloride | mg/L | 0.1 | 120 | - | 250 | - | 120 | 90 | 25 | 0 | 0 | 9.43 | 0.282 | 9.55 | 8.75 | 9.74 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.02 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 25 | 0 | 0 | 0.0272 | 0.00191 | 0.027 | 0.025 | 0.032 | 0 | 0 | - | 0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | - | - | 25 | 0 | 0 | 1.17 | 0.0356 | 1.16 | 1.12 | 1.23 | - | - | - | - |
| Magnesium (T) | mg/L | 0.004 | - | - | - | - | - | - | 25 | 0 | 0 | 1.16 | 0.0245 | 1.15 | 1.13 | 1.2 | - | - | - | - |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | - | - | 25 | 0 | 0 | 0.927 | 0.023 | 0.927 | 0.885 | 0.971 | - | - | - | - |
| Potassium (T) | mg/L | 0.02 | - | - | - | - | - | - | 25 | 0 | 0 | 0.953 | 0.0388 | 0.95 | 0.895 | 1.03 | - | - | - | - |
| Reactive Silica (SiO2) | mg/L | 0.01 | - | - | - | - | - | - | 25 | 0 | 0 | 0.243 | 0.0249 | 0.243 | 0.202 | 0.289 | - | - | - | - |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | - | - | 25 | 0 | 0 | 4.77 | 0.214 | 4.77 | 4.47 | 5.27 | - | - | - | - |
| Sodium (T) | mg/L | 0.02 | - | - | 200 | - | - | - | 25 | 0 | 0 | 4.73 | 0.147 | 4.76 | 4.39 | 4.94 | - | - | 0 | - |
| Sulphate | mg/L | 0.3 | - | - | 500 | - | - | - | 25 | 0 | 0 | 3.8 | 0.175 | 3.86 | 3.36 | 3.95 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.141 | - | - | - | 0.58 | 0.44 | 25 | 4 | 16 | 0.0195 | 0.0218 | 0.0099 | 0.005 | 0.0793 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 25 | 19 | 76 | - | - | 0.005 | 0.005 | 0.0271 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | 0.0051 | - | - | - | - | - | - | 25 | 19 | 76 | - | - | 0.0051 | 0.0051 | 0.0271 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.001 | 0.06 | 1 | - | - | 0.06 | 0.045 | 25 | 25 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Orthophosphate (PO4-P) | mg/L | 0.001 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.001 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Pooled Reference Areas | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| Total Diss Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 25 | 5 | 20 | 0.00172 | 0.00191 | 0.0014 | 0.001 | 0.0104 | - | - | - | - |
| Total Dissolved Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 25 | 0 | 0 | 0.193 | 0.0238 | 0.19 | 0.153 | 0.235 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | - | - | - | - | - | - | 25 | 0 | 0 | 0.218 | 0.0391 | 0.223 | 0.152 | 0.314 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | mg/L | 0.05 | - | - | - | - | - | - | 25 | 0 | 0 | 0.19 | 0.0239 | 0.19 | 0.148 | 0.232 | - | - | - | - |
| Total Phosphorus | mg/L | 0.001 | - | - | - | - | - | - | 25 | 1 | 4 | 0.00305 | 0.00128 | 0.0029 | 0.001 | 0.0071 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 25 | 0 | 0 | 2.33 | 0.516 | 2.51 | 1.3 | 2.91 | - | - | - | - |
| Total Organic Carbon | mg/L | 0.5 | - | - | - | - | - | - | 25 | 0 | 0 | 2.3 | 0.44 | 2.47 | 1.4 | 2.95 | - | - | - | - |
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 1 | 100 | - | - | - | 100 | 75 | 25 | 0 | 0 | 2.85 | 1.13 | 2.6 | 1.4 | 7.4 | 0 | - | - | - |
| Antimony (T) | ug/L | 0.02 | 9 | 6 | - | - | - | 4.5 | 25 | 24 | 96 | - | - | 0.02 | 0.02 | 0.021 | - | 0 | - | - |
| Arsenic (T) | ug/L | 0.02 | 5 | 10 | - | 25 | 10 | 7.5 | 25 | 0 | 0 | 0.277 | 0.0288 | 0.274 | 0.234 | 0.336 | 0 | 0 | - | 0 |
| Barium (T) | ug/L | 0.02 | - | 1000 | - | - | - | 750 | 25 | 0 | 0 | 7.8 | 0.397 | 7.87 | 7.21 | 8.53 | - | 0 | - | - |
| Beryllium (T) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (T) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (T) | ug/L | 5 | 1500 | 5000 | - | - | 1500 | 1125 | 25 | 24 | 96 | - | - | 5 | 5 | 5.1 | 0 | 0 | - | - |
| Cadmium (T) | ug/L | 0.005 | 0.043 \| 0.060 | 5 | - | - | 0.043 | 0.032 | 25 | 25 | 100 | - | - | - | - | 0.02 | 0 | 0 | - | - |
| Chromium (T) | ug/L | 0.1 | 5 | 50 | - | - | 5 | 3.75 | 25 | 25 | 100 | - | - | - | - | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | ug/L | 0.005 | 0.78 | - | - | - | 0.78 | 0.585 | 25 | 0 | 0 | 0.0117 | 0.00246 | 0.0114 | 0.0072 | 0.0197 | 0 | - | - | - |
| Copper (T) | ug/L | 0.05 | 2 | 2000 | 1000 | - | 2 | 1.5 | 25 | 0 | 0 | 0.675 | 0.0243 | 0.677 | 0.631 | 0.712 | 0 | 0 | 0 | - |
| Iron (T) | ug/L | 1 | 300 | - | 300 | 1060 | 300 | 225 | 25 | 0 | 0 | 11.3 | 3.7 | 10.8 | 7.6 | 27 | 0 | - | 0 | 0 |
| Lead (T) | ug/L | 0.01 | - | 5 | - | - | 3.31 | 2.48 | 25 | 19 | 76 | - | - | 0.01 | 0.01 | 0.062 | - | 0 | - | - |
| Lithium (T) | ug/L | 0.5 | - | - | - | - | - | - | 25 | 0 | 0 | 0.692 | 0.0331 | 0.69 | 0.64 | 0.76 | - | - | - | - |
| Manganese (T) | ug/L | 0.05 | - | 120 | - | - | 120 | 90 | 25 | 0 | 0 | 2.68 | 0.479 | 2.69 | 2.19 | 4.67 | - | 0 | 0 | - |
| Mercury (T) | ug/L | 0.5 | 0.026 | 1 | - | - | 0.026 | 0.020 | 25 | 24 | 96 | - | - | 0.0005 | 0.0005 | 0.00072 | 0 | 0 | - | - |
| Molybdenum (T) | ug/L | 0.05 | 73 | - | - | - | 73 | 54.8 | 25 | 0 | 0 | 1.86 | 4.26 | 0.099 | 0.06 | 13.7 | 0 | - | - | - |
| Nickel (T) | ug/L | 0.05 | 25 | - | - | - | 25 | 18.8 | 25 | 0 | 0 | 0.41 | 0.0319 | 0.418 | 0.342 | 0.448 | 0 | - | - | - |
| Selenium (T) | ug/L | 0.04 | 1 | 50 | - | - | 1 | 0.75 | 25 | 9 | 36 | 0.0394 | 0.0162 | 0.044 | 0.04 | 0.068 | 0 | 0 | - | - |
| Silicon (T) | ug/L | 50 | - | - | - | - | - | - | 25 | 0 | 0 | 121 | 16.9 | 117 | 97 | 161 | - | - | - | - |
| Silver (T) | ug/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 25 | 25 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Strontium (T) | ug/L | 0.02 | 2500 | 7000 | - | - | 2500 | 1875 | 25 | 0 | 0 | 35.9 | 0.826 | 36 | 34 | 37.5 | 0 | 0 | - | - |
| Sulfur (T) | ug/L | 500 | - | - | - | - | - | - | 25 | 0 | 0 | 1330 | 117 | 1330 | 1040 | 1560 | - | - | - | - |
| Thallium (T) | ug/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 25 | 25 | 100 | - | - | - | - | 0.005 | 0 | - | - | - |
| Tin (T) | ug/L | 0.02 | - | - | - | - | - | - | 25 | 24 | 96 | - | - | 0.02 | 0.02 | 0.025 | - | - | - | - |
| Titanium (T) | ug/L | 0.05 | - | - | - | - | - | - | 25 | 13 | 52 | - | - | 0.05 | 0.05 | 0.501 | - | - | - | - |
| Uranium (T) | ug/L | 0.001 | 15 | 20 | - | - | 15 | 11.25 | 25 | 0 | 0 | 0.0137 | 0.00115 | 0.0136 | 0.0115 | 0.0158 | 0 | 0 | - | - |
| Vanadium (T) | ug/L | 0.05 | 120 | - | - | - | 120 | 90 | 25 | 24 | 96 | - | - | 0.05 | 0.05 | 0.055 | - | - | - | - |
| Zinc (T) | ug/L | 0.5 | - | - | 5000 | - | 3.91 | 2.93 | 25 | 13 | 52 | - | - | 0.5 | 0.5 | 1.46 | - | - | 0 | - |
| Zirconium (T) | ug/L | 0.01 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.01 | - | - | - | - |

| Parameter | Units | Lowest Detection Limit | Screening Criteria [a] | | | | AEMP Benchmark | AEMP Action Level [c] | Pooled Reference Areas | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Aquatic Life [b] | Health Canada | | SSWQO | | | Summary Statistics - Open Water Sampling [d] | | | | | | | | Screening Summary | | | |
| | | | Chronic | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQO |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | ug/L | 1 | - | - | - | - | - | - | 25 | 0 | 0 | 1.66 | 0.615 | 1.4 | 1.1 | 3.3 | - | - | - | - |
| Antimony (D) | ug/L | 0.02 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Arsenic (D) | ug/L | 0.02 | - | - | - | - | - | - | 25 | 0 | 0 | 0.268 | 0.0222 | 0.266 | 0.225 | 0.313 | - | - | - | - |
| Barium (D) | ug/L | 0.02 | - | - | - | - | - | - | 25 | 0 | 0 | 7.59 | 0.513 | 7.59 | 6.86 | 8.59 | - | - | - | - |
| Beryllium (D) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Bismuth (D) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Boron (D) | ug/L | 5 | - | - | - | - | - | - | 25 | 23 | 92 | - | - | 5 | 5 | 5 | - | - | - | - |
| Cadmium (D) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 24 | 96 | - | - | 0.005 | 0.005 | 0.0054 | - | - | - | - |
| Chromium (D) | ug/L | 0.1 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.1 | - | - | - | - |
| Cobalt (D) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 12 | 48 | 0.00423 | 0.00175 | 0.0051 | 0.005 | 0.0072 | - | - | - | - |
| Copper (D) | ug/L | 0.05 | - | - | - | - | - | - | 25 | 0 | 0 | 0.653 | 0.0328 | 0.654 | 0.596 | 0.706 | - | - | - | - |
| Iron (D) | ug/L | 1 | - | - | - | - | - | - | 25 | 0 | 0 | 4.29 | 1.08 | 4.2 | 2.8 | 7.7 | - | - | - | - |
| Lead (D) | ug/L | 0.01 | 3.31 \| 6.32 | - | - | - | 3.31 | 2.48 | 25 | 23 | 92 | - | - | 0.01 | 0.01 | 0.262 | 0 | - | - | - |
| Lithium (D) | ug/L | 0.5 | - | - | - | - | - | - | 25 | 0 | 0 | 0.681 | 0.0476 | 0.66 | 0.62 | 0.75 | - | - | - | - |
| Manganese (D) | ug/L | 0.05 | 210 \| 330 | - | - | - | 210 | 158 | 25 | 0 | 0 | 0.441 | 0.251 | 0.374 | 0.226 | 1.43 | 0 | - | - | - |
| Mercury (D) | ug/L | 0.5 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.0005 | - | - | - | - |
| Molybdenum (D) | ug/L | 0.05 | - | - | - | - | - | - | 25 | 0 | 0 | 0.243 | 0.623 | 0.074 | 0.051 | 2.97 | - | - | - | - |
| Nickel (D) | ug/L | 0.05 | - | - | - | - | - | - | 25 | 0 | 0 | 0.417 | 0.016 | 0.415 | 0.388 | 0.455 | - | - | - | - |
| Selenium (D) | ug/L | 0.04 | - | - | - | - | - | - | 25 | 17 | 68 | - | - | 0.04 | 0.04 | 0.068 | - | - | - | - |
| Silicon (D) | ug/L | 50 | - | - | - | - | - | - | 25 | 0 | 0 | 117 | 12.9 | 116 | 94 | 142 | - | - | - | - |
| Silver (D) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Strontium (D) | ug/L | 0.02 | 2500 | - | - | - | 2500 | 1875 | 25 | 0 | 0 | 34.8 | 1.52 | 34.9 | 31.8 | 37.1 | 0 | - | - | - |
| Sulfur (D) | ug/L | 500 | - | - | - | - | - | - | 25 | 0 | 0 | 1340 | 120 | 1350 | 1100 | 1610 | - | - | - | - |
| Thallium (D) | ug/L | 0.005 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.005 | - | - | - | - |
| Tin (D) | ug/L | 0.02 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.02 | - | - | - | - |
| Titanium (D) | ug/L | 0.05 | - | - | - | - | - | - | 25 | 23 | 92 | - | - | 0.05 | 0.05 | 0.136 | - | - | - | - |
| Uranium (D) | ug/L | 0.001 | - | - | - | - | - | - | 25 | 0 | 0 | 0.0132 | 0.00156 | 0.013 | 0.0102 | 0.0167 | - | - | - | - |
| Vanadium (D) | ug/L | 0.05 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.05 | - | - | - | - |
| Zinc (D) | ug/L | 0.5 | 3.91 \| 10.6 | - | 5000 | - | 3.91 | 2.93 | 25 | 19 | 76 | - | - | 0.5 | 0.5 | †5.7 | 0 | - | 0 | - |
| Zirconium (D) | ug/L | 0.01 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.001 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.004 | 25 | 25 | 100 | - | - | - | - | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | 0.001 | - | - | - | - | - | - | 25 | 25 | 100 | - | - | - | - | 0.001 | - | - | - | - |
| Radium-226 | Bq/l | 0.005 | - | - | - | - | - | - | 15 | 14 | 93 | - | - | 0.008 | 0.0063 | 0.031 | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of chronic guidelines are shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] AEMP Action Level = 75% of the AEMP Benchmark (lowest of the water quality guidelines for aquatic life and human health).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
** There were not water quality exceedances of aquatic life, drinking water, or site-specific water quality objectives in the 2020 open water sampling events.

### Table 5-12. Normal Range Screening Summary for the Near-field and Mid-field areas in 2020

| Parameter | Units | Lowest Detection Limit | Normal Range (upper 90th percentile) | Median Reference Concentration in 2020 | Near-Field Area (MEL-01) | | | | | Mid-Field Area (MEL-02) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | N | N<MDL | Median | % Increase | # > NR in 2020 | N | N<MDL | Median | % Increase | # > NR in 2020 |
| **Conventional Parameters** | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | 77.5 | 74 | 15 | 0 | 108 | 33% | 15 | 15 | 0 | 84.1 | 8% | 15 |
| Hardness | mg/L | 0.2 | 23.4 | 22 | 15 | 0 | 29.7 | 24% | 15 | 15 | 0 | 24.2 | 3% | 15 |
| TDS (Calculated) | mg/L | 1 | 39.6 | 39.5 | 15 | 0 | 55.2 | 33% | 15 | 15 | 0 | 44.4 | 11% | 15 |
| **Major Ions** | | | | | | | | | | | | | | |
| Alkalinity, Total | mg/L | 1 | 20.5 | 20.3 | 15 | 0 | 20.5 | 0% | 6 | 15 | 0 | 20.7 | 1% | 8 |
| Calcium (T) | mg/L | 0.01 | 7.33 | 6.87 | 15 | 0 | 8.82 | 18% | 15 | 15 | 0 | 7.44 | 1% | 12 |
| Chloride | mg/L | 0.1 | 9.56 | 9.55 | 15 | 0 | 17.8 | 60% | 15 | 15 | 0 | 11.8 | 21% | 15 |
| Fluoride | mg/L | 0.02 | 0.028 | 0.027 | 15 | 0 | 0.024 | -15% | 0 | 15 | 0 | 0.026 | -7% | 0 |
| Magnesium (T) | mg/L | 0.004 | 1.18 | 1.15 | 15 | 0 | 1.73 | 38% | 15 | 15 | 0 | 1.34 | 13% | 15 |
| Potassium (T) | mg/L | 0.02 | 0.95 | 0.95 | 15 | 0 | 1.14 | 18% | 15 | 15 | 0 | 1.01 | 6% | 15 |
| Reactive Silica (SiO2) | mg/L | 0.01 | 0.27 | 0.24 | 15 | 0 | 0.327 | 20% | 10 | 15 | 0 | 0.286 | 6% | 15 |
| Sodium (T) | mg/L | 0.02 | 4.85 | 4.76 | 15 | 0 | 7.82 | 47% | 15 | 15 | 0 | 5.7 | 16% | 15 |
| Sulphate | mg/L | 0.3 | 3.87 | 3.86 | 15 | 0 | 5.64 | 37% | 15 | 15 | 0 | 4.33 | 11% | 15 |
| **Nutrients** | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.005 | 0.017 | 0.010 | 15 | 0 | 0.0145 | -18% | 7 | 15 | 2 | 0.0124 | -34% | 3 |
| Nitrate (as N) | mg/L | 0.005 | 0.018 | 0.005 | 15 | 5 | 0.0109 | -49% | 5 | 15 | 9 | 0.005 | -113% | 1 |
| Total Diss Phosphorus | mg/L | 0.001 | 0.0031 | 0.0014 | 15 | 1 | 0.0029 | -8% | 4 | 15 | 0 | 0.0018 | -54% | 0 |
| Total Kjeldahl Nitrogen | mg/L | 0.05 | 0.25 | 0.22 | 15 | 0 | 0.246 | -2% | 7 | 15 | 0 | 0.244 | -2% | 7 |
| Total Phosphorus | mg/L | 0.001 | 0.006 | 0.0029 | 15 | 0 | 0.0077 | 25% | 14 | 15 | 0 | 0.005 | -18% | 4 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | |
| Total Organic Carbon | mg/L | 0.5 | 3.00 | 2.47 | 15 | 0 | 3.4 | 13% | 15 | 15 | 0 | 2.9 | -3% | 4 |
| **Total Metals** | | | | | | | | | | | | | | |
| Aluminum (T) | µg/L | 1 | 5.32 | 2.6 | 15 | 0 | 4.7 | -12% | 6 | 15 | 0 | 3.3 | -47% | 1 |
| Arsenic (T) | µg/L | 0.02 | 0.275 | 0.274 | 15 | 0 | 0.522 | 62% | 15 | 15 | 0 | 0.449 | 48% | 15 |
| Barium (T) | µg/L | 0.02 | 8.05 | 7.87 | 15 | 0 | 8.37 | 4% | 15 | 15 | 0 | 8.35 | 4% | 10 |
| Boron (T) | µg/L | 5 | 6.52 | 5 | 15 | 0 | 7.5 | 14% | 15 | 15 | 1 | 5.4 | -19% | 1 |
| Cobalt (T) | µg/L | 0.005 | 0.016 | 0.0114 | 15 | 0 | 0.0315 | 65% | 15 | 15 | 0 | 0.0167 | 4% | 11 |
| Copper (T) | µg/L | 0.05 | 0.86 | 0.677 | 15 | 0 | 0.852 | -1% | 6 | 15 | 0 | 0.89 | 3% | 8 |
| Iron (T) | µg/L | 1 | 15 | 10.8 | 15 | 0 | 24.6 | 48% | 15 | 15 | 0 | 15.8 | 5% | 9 |
| Lead (T) | µg/L | 0.01 | 0.0222 | 0.01 | 15 | 9 | 0.01 | -76% | 0 | 15 | 7 | 0.011 | -67% | 5 |

| Parameter | Units | Lowest Detection Limit | Normal Range (upper 90th percentile) | Median Reference Concentration in 2020 | Near-Field Area (MEL-01) | | | | | Mid-Field Area (MEL-02) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | N | N<MDL | Median | % Increase | # > NR in 2020 | N | N<MDL | Median | % Increase | # > NR in 2020 |
| Lithium (T) | µg/L | 0.5 | 0.72 | 0.69 | 15 | 0 | 1.49 | 70% | 15 | 15 | 0 | 0.93 | 25% | 15 |
| Manganese (T) | µg/L | 0.05 | 3.06 | 2.69 | 15 | 0 | 8.67 | 96% | 15 | 15 | 0 | 4.02 | 27% | 15 |
| Mercury (T) | µg/L | 0.5 | 0.0008 | 0.0005 | 15 | 8 | 0.0005 | -46% | 0 | 15 | 7 | 0.00051 | -44% | 1 |
| Molybdenum (T) | µg/L | 0.05 | 0.107 | 0.099 | 15 | 0 | 0.103 | -4% | 6 | 15 | 0 | 0.094 | -13% | 4 |
| Nickel (T) | µg/L | 0.05 | 0.441 | 0.418 | 15 | 0 | 0.776 | 55% | 15 | 15 | 0 | 0.595 | 30% | 15 |
| Selenium (T) | µg/L | 0.04 | 0.049 | 0.044 | 15 | 14 | 0.04 | -20% | 1 | 15 | 7 | 0.042 | -15% | 4 |
| Strontium (T) | µg/L | 0.02 | 36.1 | 0.02 | 15 | 0 | 65 | 57% | 15 | 15 | 0 | 43.5 | 19% | 15 |
| Titanium (T) | µg/L | 0.05 | 0.17 | 0.05 | 15 | 0 | 0.098 | -54% | 1 | 15 | 2 | 0.075 | -78% | 0 |
| Uranium (T) | µg/L | 0.001 | 0.0164 | 0.0136 | 15 | 0 | 0.0187 | 13% | 15 | 15 | 0 | 0.0155 | -6% | 4 |
| Zinc (T) | µg/L | 0.5 | 1.7 | 0.5 | 15 | 5 | 0.64 | -91% | 1 | 15 | 5 | 0.77 | -75% | 3 |
| **Dissolved Metals** | | | | | | | | | | | | | | |
| Lead (D) | µg/L | 0.00001 | 0.0125 | 0.01 | 15 | 8 | 0.010 | -22% | 7 | 15 | 10 | 0.010 | -22% | 4 |
| Manganese (D) | µg/L | 0.05 | 1.2 | 0.374 | 15 | 0 | 1.07 | -11% | 5 | 15 | 0 | 0.465 | -88% | 0 |
| Zinc (D) | µg/L | 0.5 | 1.9 | 0.5 | 15 | 4 | 1.53 | -22% | 7 | 15 | 4 | 0.76 | -86% | 0 |

Notes.
The normal range assessment applies to open water sampling events (July, August, and September) collected under the AEMP.
Median concentration in 2020 compared against the normal range. Values <MDL were conservatively set equal to MDL when calculating the median concentration.
The % increase in the median concentration relative to the normal range was calculated as: (Median-NR)/((Median+NR)/2*100)
Yellow highlighted cells indicate the median concentration is greater than the normal range.
Orange highlighted cells indicate parameters where the median concentration was > 10% above the normal range.

# 6 MELIADINE LAKE – PHYTOPLANKTON

## 6.1 Background

Phytoplankton, or algae, are a diverse group of primary producers that exist freely in the water column, converting sunlight to chemical energy via the photosynthetic pigment chlorophyll-a. Several species of algae occur in freshwater subarctic lakes, and each species is uniquely adapted to exist under the extreme climate conditions. Zooplankton are tiny, free-swimming animals that live in the water column and feed on phytoplankton. Collectively, phytoplankton and zooplankton form the base of the pelagic food web, providing energy and nutrients to higher trophic level consumers such as fish.

The first phytoplankton monitoring studies in Meliadine Lake and other lakes in the region were completed in the late 1990's to support the environmental assessment process. Four locations were sampled throughout Meliadine Lake in July, August, and September of 1997 and 1998. Chrysophytes (golden brown algae) were the dominant taxa group in terms of density and biomass. The community composition was broadly similar among the four basins, and followed the same pattern of temporal change during the open water season each year (Golder 2012). Biomass was lower in 1997 in comparison to 1998, with values in the 300 to 600 µg/L range in July and August. The following year, biomass was approximately 2-fold higher, with values as high as 1,900 µg /L at the south basin in the vicinity of the current monitoring area MEL-05.

**Table 6-1. Phytoplankton Community Data from Locations Sampled in Meliadine Lake in 1997 and 1998**

| Site | AEMP Area | Date | Density (No. cells/L) | Biomass (µg/L) | Richness (No. taxa/site) |
|---|---|---|---|---|---|
| ML-E | MEL-01 | 19 Jul 97 | 2,008,000 | 529 | 56 |
| | | 17 Aug 97 | 3,844,000 | 636 | 65 |
| | | 17 Jul 98 | 2,593,000 | 1887 | 75 |
| | | 4 Sep 98 | 4,933,000 | 1,362 | 78 |
| ML-S | MEL-05 | 20 Jul 97 | 1,863,000 | 627 | 73 |
| | | 16 Aug 97 | 1,871,000 | 437 | 63 |
| | | 25 Jul 98 | 3,736,000 | 1,119 | 67 |
| | | 1 Sep 98 | 5,713,000 | 1,996 | 80 |
| ML-SE | SE of MEL-05 | 22 Jul 98 | 2,991,000 | 1,772 | 83 |
| ML-W | MEL-04 | 20 Jul 97 | 2,175,000 | 483 | 46 |
| | | 16 Aug 97 | 1,135,000 | 342 | 52 |
| | | 27 Jul 98 | 3,026,000 | 828 | 68 |

The historical data from the late 1990's was not formally included in the dataset for evaluating spatial and temporal trends in the AEMP because of differences in the collection methods. The data are provided strictly for qualitative, high-level comparisons with phytoplankton data collected during the AEMP. One additional baseline phytoplankton sampling event was completed in the NF area in August 2013 as part of a wider program tasked with collecting data to help develop the AEMP. Phytoplankton data from this program were included in the AEMP dataset as a "recent" baseline data given the same lab was used for the analysis. Due to differences in field sampling methods, the results from the 2013 baseline program should be used with caution when comparing against data collected as part of the AEMP.

Plankton monitoring for the AEMP started in 2015. Assessment of the first three years of data (2015-2017) resulted in the recommendation to exclude zooplankton as a tool for long-term monitoring under the AEMP due to high spatial and temporal variability in abundance and biomass (Golder 2018). Meanwhile, phytoplankton was carried forward for monitoring under what were termed "targeted studies" in the AEMP Design Plan (Golder 2016). Phytoplankton monitoring was classified as a targeted study rather than a core component of the AEMP because there was some uncertainty about utility of the phytoplankton for monitoring mine-related changes in primary productivity. The use of phytoplankton as a biomonitoring tool for changes in the environment is well established (Pienitz et al. 2004), but there can be considerable spatial and temporal variability in community response to environmental conditions that can confound, or obscure, the identification of changes caused by human activities. In an effort to streamline the assessment, Golder recommended one sampling per year in August, the month with the least variability in phytoplankton community endpoints based on the analysis of three-years' worth of data (2015 – 2017).

Notwithstanding a limited baseline dataset to compare against, the phytoplankton studies have provided meaningful insight into the structure and function of the phytoplankton community in Meliadine Lake as the mine transitioned from the pre-construction phase (2015) to operations. Furthermore, as the only biological monitoring program conducted annually under the AEMP, the phytoplankton study provides a "snap-shot" of the health of the aquatic environment in Meliadine Lake in years when fish and benthic invertebrate studies aren't completed as per the 3-year AEMP and EEM cycle.

## 6.2 Objectives

This section presents the results of the August 2020 phytoplankton sampling program in Meliadine Lake and explores spatial and temporal trends across the entire dataset (summer events only). The following analyses presented herein are to:

1. Assess spatial and temporal patterns in nutrients. Increased nutrient loads to Meliadine Lake could result in the stimulation of phytoplankton productivity.
2. Assess spatial and temporal patterns in phytoplankton metrics. This includes looking at key metrics (biomass, density, and taxa richness) across all taxa (i.e., *total*) or by major taxa group (MTG), as well as looking more closely at changes in community structure using multivariate analyses.
3. Assess nutrient-productivity relationships. This portion of the analysis involves looking at the spatial/temporal patterns in phytoplankton productivity metrics and comparing them to corresponding nutrient concentrations to determine if the patterns are linked.
4. Track spatial and temporal patterns in Trophic Status Index (TSI). TSI has been used to classify estimated productivity of lakes based on TP, chlorophyll-a, and/or Secchi depth.

Collectively, these analyses provide insights into whether development-related changes in nutrient concentrations in Meliadine Lake has resulted in corresponding changes to the phytoplankton community.

## 6.3 2020 Field Program

Field collections and sample analyses were conducted according to methods outlined in the *AEMP Design Document* (Golder, 2016).

Phytoplankton sampling was conducted in August 2020 in conjunction with AEMP water quality sampling. Five replicate stations were sampled at the “fixed” monitoring stations in each area with the exception of the MF area where 2 of the original stations were sampled (MEL-02-01 and MEL-02-04) rather than MEL-02-06 and MEL-02-08. New monitoring locations were established in the MF prior to the August 2018 field program in areas that were more suitable for benthic invertebrate sampling. With respect to water quality monitoring, the stations are broadly within the same area, and not materially important to characterizing water quality and the phytoplankton community at MEL-02. Sampling areas and stations are shown in **Figure 5-1**. Coordinates are listed in **Table 5-2**.

### 6.3.1 Data Analysis

#### Spatial and Temporal Trends

Time series plots organized by sampling area were used to highlight spatial and temporal patterns in nutrients, chlorophyll-a, and phytoplankton metrics.

Phytoplankton metrics (biomass, density and taxa richness) for individual taxa were summed across all taxa (i.e., total of all organisms) and across major taxa groups (i.e., dinoflagellates, diatoms, cyanophytes, cryptophytes, chrysophytes, and chlorophytes).

## Community Structure

Multivariate ordination analyses were undertaken to investigate differences in biological community structure over space and time using non-metric multidimensional scaling (nMDS). nMDS takes multidimensional taxonomic data (e.g., biomass by station-year) and then reduces it to two or three dimensions that capture major patterns of variation in the underlying data. Azimuth follows a nMDS approach based on the reference condition approach (RCA) outlined in the Technical Guidance Document for EEM studies (EC 2012). The fundamental premise of RCA is that a suitably large set of baseline and/or reference data can be used to characterize unimpaired conditions in terms of a variety of biological attributes (EC 2012). Thus, patterns in community structure are first examined for the Meliadine Lake reference areas. Secondly, patterns in community structure at the NF (MEL-01) and MF (MEL-02) areas are explored in the context of the results for the reference areas.

All statistical analyses were conducted using R 3.5.1 (R Core Team 2018) and the analysis was conducted as follows:

- Data were compiled for 12 metrics (i.e., biomass and taxa richness results for each major taxa [2 endpoints x 6 major taxa]).
- The statistical package 'vegan' (version 2.5-6) was used to conduct the nMDS. First, the entire data set was turned into a Bray-Curtis distance matrix. Next, nMDS was run on the matrix; Shepard plots and stress values were used to optimize results. Stress, in the context of nMDS, refers to how distorted the representation of the data are in two or three dimensions relative to the original multi-dimensionality of the data. Lower stress means a better fit of the data in the reduced dimensionality. Multiple iterations of the analysis are completed to determine which position (or ordination) of points in two or three dimensions produces the lowest stress value. Clarke (1993) suggests the following guidelines for acceptable stress values: <0.05 = excellent, <0.10 = good, <0.20 = usable, >0.20 = not acceptable.
- nMDS results were visualized by first plotting $90^{th}$, $95^{th}$ and $99^{th}$ percentile probability ellipses using the reference data only. The next step involved adding nMDS scores for NF (MEL-01) and MF (MEL-02) areas for each year.

The $90^{th}$, $95^{th}$ and $99^{th}$ percentile probability ellipses provide a concise way of visualizing whether the phytoplankton community at the NF and MF areas are within the range of baseline/reference conditions for Meliadine Lake. In the future, other statistical approaches may be implemented on a case-by-case basis to supplement the RCA analyses if the underlying data support a more detailed investigation of spatial and temporal trends.

## Trophic Status

Trophic status is a means of classifying estimated productivity of a lake based on concentrations of key nutrients and chlorophyll-a, and on water transparency. The three main categories of productivity are:

- Oligotrophic (low nutrients, low productivity)
- Mesotrophic (intermediate productivity)
- Eutrophic (high nutrients, high productivity)

Three parameters are used in the classification of trophic status: total phosphorus, chlorophyll-a, and water transparency. Phosphorus is the primary nutrient used in trophic status indexes because it often limits primary productivity in freshwater systems. Chlorophyll-a is the primary pigment used for photosynthesis in phytoplankton and is used as a surrogate measure of primary production. Water transparency, measured with a Secchi disk, is also used as a coarse indicator of phytoplankton biomass.

Three trophic status indices were used (each cited in Golder 2019):

- Vollenweider (1968) - A general classification scheme based on ranges of TP, chlorophyll-a and Secchi depth (**Table 6-2**).
- CCME (2004) - A total phosphorus-specific scheme using trigger ranges (**Table 6-3**).
- Carlson (1977) - Independent index scores for TP, chlorophyll-a and Secchi depth (**Table 6-4**), calculated as follows:

$$TSI_{TP} = 10\left(6 - \left[\frac{\ln\left(^{48}/_{TP}\right)}{\ln 2}\right]\right)$$

$$TSI_{Chl} = 10\left(6 - \left[\frac{2.04 - 0.68(\ln Chl)}{\ln 2}\right]\right)$$

$$TSI_{Secchi} = 10\left(6 - \left[\frac{\ln \text{Secchi}}{\ln 2}\right]\right)$$

**Table 6-2. Trophic classification of lakes based on ranges of total phosphorus, chlorophyll-a and Secchi depth.**

| Trophic Status | Total Phosphorus (mg/L) | | Chlorophyll-a (µg/L) | | Secchi Depth (m) | |
|---|---|---|---|---|---|---|
| | Mean | Range | Mean | Range | Mean | Range |
| Oligotrophic | 0.008 | 0.003 to 0.018 | 1.7 | 0.3 to 4.5 | 9.9 | 5.4 to 28.3 |
| Mesotrophic | 0.027 | 0.011 to 0.096 | 4.7 | 3.0 to 11.0 | 4.2 | 1.5 to 8.1 |
| Eutrophic | 0.084 | 0.016 to 0.386 | 14.3 | 3.0 to 78.0 | 2.5 | 0.8 to 7.0 |

Note:
Reference = Vollenweider 1968

**Table 6-3. Trophic classification of lakes based on total phosphorus trigger ranges.**

| Trophic Status | Total Phosphorus (mg/L) |
|---|---|
| Ultra-oligotrophic (very nutrient-poor) | <0.004 |
| Oligotrophic (nutrient-poor) | 0.004 to 0.010 |
| Mesotrophic (containing a moderate level of nutrients) | 0.010 to 0.020 |
| Meso-eutrophic (containing moderate to high levels of nutrients) | 0.020 to 0.035 |
| Eutrophic (nutrient-rich) | 0.035 to 0.100 |
| Hyper-eutrophic (very nutrient-rich) | >0.100 |

Note:
Reference = CCME 2004

**Table 6-4. Comparison of trophic status index and general trophic classifications in lakes.**

| Trophic State Index | Total Phosphorus (mg/L) | Chlorophyll-a (µg/L) | Secchi Depth (m) | General Trophic Classification |
|---|---|---|---|---|
| <30 to 40 | 0 to 0.012 | 0 to 2.6 | >8.0 to 4 | Oligotrophic |
| 40 to 50 | 0.012 to 0.024 | 2.6 to 20 | 4 to 2 | Mesotrophic |
| 50 to 70 | 0.024 to 0.096 | 20 to 56 | 2 to 0.5 | Eutrophic |
| 70 to 100+ | 0.096 to 0.38+ | 56 to 155+ | 0.5 to <0.25 | Hyper-eutrophic |

Note:
Reference = Carlson 1977

### Action Level Assessment – Nutrient Enrichment

Total phosphorus and chlorophyll-a are the two supporting measures/indicators used to evaluate nutrient enrichment. Other nutrients and water quality parameters can affect phytoplankton community structure, but phosphorous appears to be the limiting nutrient for Meliadine Lake (Golder 2019). The AEMP benchmarks are:

- Total phosphorus = 0.01 mg/L, corresponding to the upper limit of oligotrophic status in the CCME guidance document for managing freshwater systems (CCME 2004), and
- Chlorophyll-a = 4.5 µg/L, based on the relationship between chlorophyll-a and trophic status.

Concentrations greater than 75% of the AEMP benchmark are the early warning trigger values used in the low Action Level assessment.

## 6.4 Results and Discussion

### 6.4.1 Context for Assessing Nutrient Enrichment in Meliadine Lake

#### Nutrient Loading to the NF Area

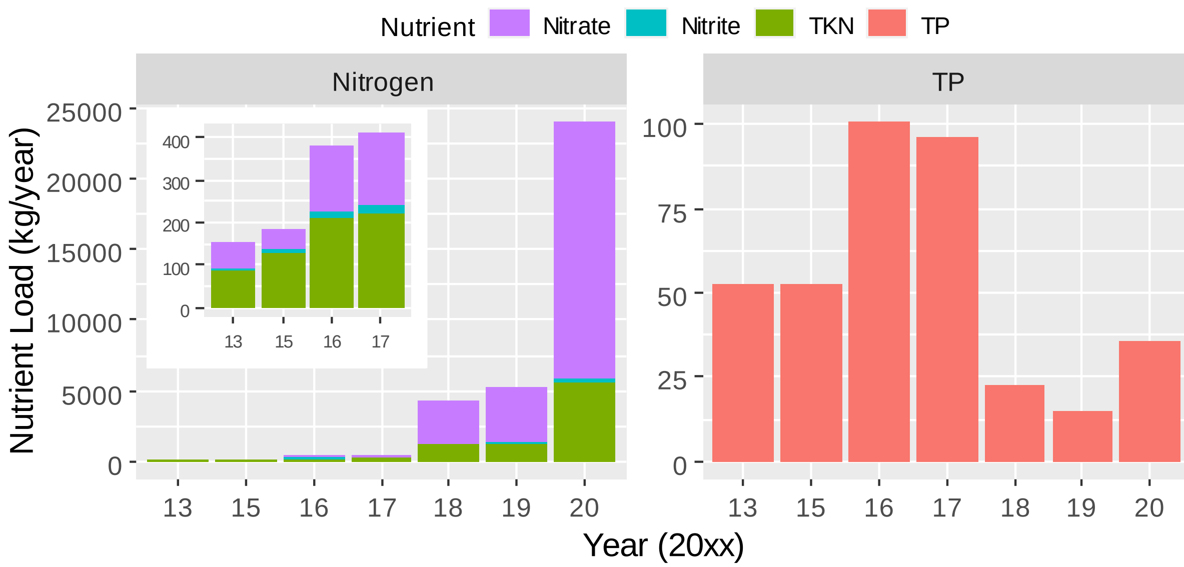
As discussed earlier in **Section 4.4**, loadings are calculated each month based on the average monthly concentration measured in samples from MEL-14 and the total volume of effluent released to the lake. The monthly loadings for key nutrients (e.g., nitrate [$NO_3$], nitrite [$NO_2$], total Kjeldahl nitrogen [TKN] [28], and total phosphorous) are discussed here to provide context for the water quality data and phytoplankton community results. **Figure 6-1** shows the estimated nutrient loading (kg/year) to Meliadine Lake since 2013 for total phosphorus and total nitrogen, which is the sum of nitrate, nitrite, and TKN.

Inputs of nitrogen to Meliadine Lake increased in 2020 relative to 2018 and 2019 as a direct result of the draw-down of the water level in CP1. **Figure 6-1**. Nitrate was the dominant nitrogen species in the water. Residual nitrogen from explosives residue is mobilized in surface water (i.e., rain and snow melt) that comes in contact with waste rock on site. Absolute concentrations of various nitrogen species were higher in MEL-14 samples collected in June and early July 2020 during the peak discharge period, but by the middle of July, total nitrogen and total phosphorus concentrations were at or below concentrations reported in 2018 and 2019 (**Figure 6-2**).

Phosphorus loadings to Meliadine Lake increased slightly in 2020 relative to 2018/2019, but loadings are still well below the peak observed in 2016/2017. Commissioning and operation of the main camp sewage treatment plant in 2017 to treat gray water and sewage has effectively lowered the amount of phosphorus discharged to Meliadine Lake compared to the pre-construction and construction phase (2015-2017).

[28] Total Kjeldahl nitrogen is the sum of organic nitrogen and ammonia.

**Figure 6-1. Annual loadings (kg/year) of nitrogen and total phosphorus to Meliadine Lake**




## Phytoplankton Responses to Changes in Nutrients

The effects of nutrients on phytoplankton production have been studied extensively (e.g., Schindler 1971, 1974, Kelly et al. 2018). While much of this research has focused on the adverse effects of nutrient enrichment (eutrophication) in low latitude, temperate lakes, some studies explored productivity dynamics in oligotrophic systems, including high-latitude lakes in northern Canada (e.g., Lim et al. 2001, Michelutti et al. 2002, Ogbebo et al. 2009).

Total phosphorous (TP) and/or total nitrogen (TN) are generally considered the most important nutrients affecting phytoplankton productivity in freshwater systems (e.g., Schindler 1971). While TN:TP ratios have long been used as a tool to categorize lakes based on the nutrient most likely limiting primary production (see Lewis & Wurtsbaugh 2008 for review), they have been shown to be inaccurate for both high-latitude (Ogbebo et al. 2009) and temperate lakes (Dolman and Wiedner 2015). One of the possible reasons for this is that there is substantial uncertainty in which nutrient forms are assimilable. Both nitrogen and phosphorus are present in molecules that range from highly bioavailable to essentially unavailable for uptake by algae. The challenge in assessing nutrient limitation is that the bioavailable forms are notoriously variable due to extremely high turnover rates. Lewis and Wurtsbaugh (2008) suggest that the stronger correlation between chlorophyll-a and TP relative to TN is simply due to TP having proportionately more bioavailable forms than TN. Broad experimental evidence from nitrogen and phosphorus enrichment studies suggests that phosphorus is far less limiting than was previously thought and that primary productivity is often co-limited by both nitrogen and phosphorus (Esler et al. 2007, Lewis and Wurtsbaugh 2008, Sterner 2008).

### 6.4.2 Nutrients and Chlorophyll-a Concentrations

Concentrations of key nutrients from the August AEMP and depth-integrate-nutrient (DIN) sampling events since 2015 are plotted in **Figure 6-5** (key nutrients). Nutrient data from the routine AEMP samples in **Section 5** are presented to provide a supporting information and context for some of the more variable estimates of nutrient concentrations obtained from the DIN sampling events.

#### Total Phosphorus

Phosphorus in the NF area (MEL-01) shows a high degree of within-station variability for a given year. Five-fold differences in total phosphorus among stations within an area are not out of the ordinary, and have been observed nearly every year since monitoring under the AEMP started in 2015. The DIN samples have shown considerably less within-station variability for total phosphorus relative to the AEMP samples, with the exception of 2019 when the DIN samples showed considerable within-station variability in most of the study areas.

Total phosphorus concentrations in the 2020 DIN samples (blue dots in **Figure 6-5**) were lower than in 2019, but relative to previous years, total phosphorus was at the upper range of concentrations measured since 2015. Concentrations in the DIN ranged from 0.007 to 0.013 mg/L, with an average of 0.011 mg/L. Looking specifically at the AEMP samples, the evidence of increasing concentrations of total phosphorus in the NF area is less conclusive. In 2020, the August total phosphorus concentrations were well within the range observed in August since 2015 (less than 0.01 µg/L). Furthermore, the 2020 samples show considerably less variability compared to previous years. Nonetheless, both the AEMP and DIN samples demonstrate that current concentrations of phosphorus are at the upper boundary of the oligotrophic status for freshwater lakes (0.01 µg/L). The comparatively large volume of water discharged to Meliadine Lake in 2020 likely contributed to higher concentrations in the NF area in 2020, particularly in comparison to 2019 when less than 1/3 of the total volume in 2020 was discharged.

At the MF area, total phosphorus concentrations in 2020 were comparable to previous years for the AEMP samples collected in August. The DIN data from the MF area were more variable compared to the AEMP samples, but looking across years, there is no indication that phosphorus concentrations are trending higher in the west basin of Meliadine Lake. This conclusion is supported by the total dissolved phosphorus data (D.TP) and orthophosphate data (PO4-P) that have remained consistent over time, dating back to 2015 (**Figure 6-5**).

Total phosphorus concentrations at the far-field reference areas were typically at or below the ultra-oligotrophic status of 0.004 mg/L in samples collected in 2020. The available monitoring data indicate that the increase in phosphorus is confined the east basin of Meliadine Lake.

Dissolved phosphorus concentrations are considerably less variable compared to unfiltered total phosphorus. **Figure 6-5** clearly shows that dissolved phosphorus concentrations have remained stable within and between exposure and reference areas dating back to 2016. Dissolved phosphorus, rather than total, appears to provide a more resolved (i.e., less variable) representation of spatial and temporal changes in phosphorus within Meliadine Lake.

### Nitrogen

Concentrations of nitrogen (dissolved and total N, TKN) in the DIN samples were higher in 2020 relative to previous years. The temporal change was particularly evident for total nitrogen and TKN, despite both parameters showing considerable with-area variability, particularly for the unfiltered samples (**Figure 6-5**). Notwithstanding the considerable within-station variability, it's clear that total nitrogen and TKN are increasing in each area relative to the early years of monitoring in 2015 and 2016. While there is likely a site-related component to the observed increase, other factors are likely contributing to the increases observed in some areas. For example, among the highest reported concentrations of nitrate in 2020 were measured in samples from MEL-05 (**Figure 6-5**). The spatial pattern of higher concentrations at the reference area compared to MF and NF samples does not point to activities at the mine as the principal cause of the observed change. If a "lake-wide" change was occurring in response to activities at the mine, higher concentrations of nitrate would be expected at MF area MEL-02 as the first downstream monitoring area along the southeast to northwest flow path for effluent discharged to the east basin (MEL-01). The nitrate results for MEL-05, while seemingly anomalous, were not flagged as invalid during the QC screening assessment; therefore, the data were retained for comparing spatial and temporal trends.

### Reactive Silica

In 2020, $SiO_2$ concentrations at the NF area decreased substantially from 0.4 mg/L to just over 0.3 mg/L (**Figure 6-5**). The concentrations measured at the NF area in 2020 are now within the range observed at the MF area between 2017 and 2020. The reduction in 2020 continues the recent trend of lower $SiO_2$ concentrations since 2017 when concentrations spiked at 0.55 mg/L in response to dewatering of Lake H17 to create CP1 (**Figure 6-5**). While there are slight differences in $SiO_2$ among exposure and reference areas that are consistent with a development-related source, the pattern of the change at the NF area indicates $SiO_2$ is trending towards a return to baseline/reference conditions.

### Organic Carbon

Long-term monitoring as part of the AEMP shows concentrations have remained fairly consistent dating back to 2013 (NF) and 2015 (MF) (**Figure C2-24** [DOC] and **Figure C2-25** [TOC]). There was a noticeable increase during the pre-construction/construction phase from 2017 through early 2018, but since then DOC and TOC have returned to 2013 baseline levels.

### Nutrient Summary

The spatial and temporal pattern of the increase in nitrogen shows some evidence of a mining-related change, although considering baseline data dating back to 1997, it's clear that nitrogen concentrations have, historically, been at levels similar to current concentrations (see TKN; **Figure C2-21**). Spatial and temporal changes in TP related to mining activity are less evident. Dissolved and total phosphorus are trending higher at the NF area, but the spatial extent appears largely confined to the east basin, with concentrations in the MF remaining relatively consistent dating back to 2015. At the far-field areas, total phosphorus concentrations have shown an overall decrease since 2016, coinciding with upgrades to the sewage treatment plant that came online in 2017.

### Chlorophyll-a

Summary statistics for chlorophyll-a data collected between 2015 and 2020 are shown in **Table 6-5**. Plots of the chlorophyll-a concentrations by year and area are shown in **Figure 6-7**. In 2020, chlorophyll-a concentrations where highest at the NF area, ranging between 1.6 and 2.4 µg/L in the 15 samples collected. Farther away at MEL-02, chlorophyll-a concentrations were approximately 2-fold lower (average of 0.9 µg/L) and broadly within the range of concentrations reported at the three reference areas (0.5 to 1.1 µg/L). The spatial pattern observed in 2020 (i.e., NF>MF>=REF) is consistent with monitoring conducted since 2016, the first year that reference area sampling was completed under the AEMP. Over-time, chlorophyll-a concentrations have been relatively stable among the various study areas. The only notable exception is data collected in 2019 when an issue with the filter material used for sampling chlorophyll-a resulted in uniformly lower concentrations at all five study areas compared to previous years. The absolute concentrations in each area are not considered representative of the conditions the lake, but the pattern of the difference among the NF, MF, and reference areas is informative, and for this reason, the data were retained in the analysis.

In summary, there is no evidence of year-over-year increases in chlorophyll-a concentrations at the NF area in response to activities at the mine. There are spatial differences with Meliadine Lake, with higher concentrations of chlorophyll-a in the east basin compared to the far-field areas in the lake, but the relative magnitude of the difference between the exposure and reference areas hasn't changed.

## 6.4.3 Phytoplankton Community

Raw species data for the 2020 phytoplankton study is provided in **Appendix E1** along with estimates of the biovolume for each species. Summary data for major taxa group biomass and density for 2020 are presented in **Table 6-6** and for previous years in **Appendix E2**. The primary metrics used to evaluate the health of the phytoplankton community and potential nutrient enrichment in Meliadine Lake are total biomass and total richness. Phytoplankton density results are tabulated and plotted to support the discussion as needed.

## Biomass

Total phytoplankton biomass for Meliadine Lake is shown in **Figure 6-8**. Average biomass for the major taxa groups is presented in **Figure 6-9**.

Phytoplankton biomass trended lower in 2020 compared to previous years at the exposure and reference areas. The most pronounced decline occurred in the NF area where biomass declined from around 430 mg/m$^3$ in 2019 to less than 250 mg/m$^3$ at all five NF sampling stations in 2020 (**Figure 6-8**). Within Meliadine Lake, the relative difference in biomass between the NF, MF and reference areas narrowed in 2020. Average biomass at NF exposure area was 210 mg/m$^3$ compared to 170 mg/m$^3$ at the MF area, and 200 mg/m$^3$ at MEL-03 (reference area 1). Average biomass was lowest (140 mg/m$^3$) at reference areas 2 and 3.

Among the major taxa, the decline was primarily reflected in reduced biomass for chrysophytes species, which are commonly referred to as golden-brown algae (**Figure 6-9**). Lower chrysophytes biomass in 2020 was accompanied by a corresponding increase in the proportional biomass of cryptophytes (**Figure 6-9**). Phytoplankton communities fluctuate seasonally in response to yearly climate and seasonal patterns in water temperature, as well as the nutrient status of the lake.

With the step-decrease in biomass observed at the NF area in 2020, primary productivity in the NF, as measured by total biomass, is in the range of values from the August 2013 baseline monitoring program. Sampling methods were different between the baseline program in 2013 and the AEMP (discrete sampling in 2013 vs depth-integrated for the AEMP since 2015), which means the absolute differences or similarities between years should be interpreted cautiously. Overall, nutrient loading and corresponding increases in some parameters (i.e., nitrogen species) does not appear to be resulting in a corresponding increase in primary productivity as indicated by phytoplankton biomass (discussed in greater detail below).

## Richness

There was a wide-spread reduction in the number of taxa in 2020 compared to 2019, a pattern that matches what was observed for biomass. Taxa richness, at the lowest practical level of identification, was generally between 30 and 35 among the five study areas in 2020. By comparison, richness measured in 2015 to 2019 has fairly consistently been between 40 and 50 taxa per sample (**Figure 6-8**). Lower total richness at the NF was primarily reflected in fewer species of the chrysophyte major taxa group (between 10 and 14 taxa per sample) compared to previous years where the number of taxa was typically closer to 20 (**Figure 6-9**). To date, monitoring under the AEMP has consistently shown that chrysophytes are the dominant taxa group in Meliadine Lake, in terms of the number of species, as well as biomass and density during the late summer period (**Figure 6-9**). Subtle shifts in species dominance are part of natural succession patterns that phytoplankton communities undergo in response to a variety of physical (e.g., climactic), chemical (e.g., water quality), and biological factors (e.g., trophic interactions).

## Community Structure

Finer patterns in community structure across sampling areas and years were explored with multivariate non-metric multidimensional scaling (nMDS) analysis[29]. The ordination plot showing results for *reference* area-year combinations and their associated 90$^{th}$, 95$^{th}$ and 99$^{th}$ percentile probability ellipses is presented in the left panel of **Figure 6-10**[30]. These probability ellipses reflect the overall phytoplankton community at the reference areas across all sampling events; they are included on all plots to provide context. Note that this approach assumes that there were no among-basin differences in the phytoplankton community prior to mine development. Unfortunately, the baseline dataset is limited (the two earliest events only targeted NF [2013] or NF/MF [2015]; these earlier results are presented for general context, but should be interpreted cautiously given the lack of corresponding reference area data) and this assumption cannot be verified. Thus, the reference-based probability ellipses may not fully represent the phytoplankton community on a lake-wide basis.

Results for *exposure* area-year combinations relative to the reference area probability ellipses are presented in the right panel of **Figure 6-10**. Note that the 2013 and 2015 data for the NF area are shown for general context, but should be interpreted with caution given the reference areas were not sampled in either of those years. Results are presented by year in **Figure 6-11** to highlight the relative locations of each area both within and across years. The correlation matrix at the bottom of **Figure 6-11** is provided to aid in the interpretation of results by showing how major taxa group biomass and richness relate to each of the nMDS axes. Key results are as follows:

- Axis 1 – this axis is dominated by chrysophyte biomass and richness and to a slightly lesser extent by dinoflagellate biomass and richness. The negative correlations for all these metrics indicates that higher scores on Axis 1 equate to lower biomass and richness for these two taxa groups.
- Axis 2 – this axis is dominated by diatom, chlorophyte and cryptophyte biomass. Again, the negative correlations mean that higher scores on Axis 2 have lower biomass of these groups.

Interpretation of the overall (**Figure 6-10**) and by-year (**Figure 6-11**) plots needs to consider both the absolute (i.e., results in relation to the probability ellipses) and relative (i.e., positions of areas relative to

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[29] A description of the nMDS analysis using the 'Vegan' software package is presented here: (Link)

[30] The stress value for the best fit of the data in 2-dimensions was 0.088. As discussed in the data analysis section, stress is the measure of the goodness of fit of the transformed multi-dimensional data, and according to Clarke (1993), a stress value <0.1 is considered "good" for visualizing multi-dimensional data in a reduced number of dimensions.

one another) patterns. For example, the relative position of the NF and MF areas relative to one another and to the reference areas varies among years. While the MF area has generally tracked in line with the reference areas, both the MF and NF consistently had higher scores on Axis 2, indicating relatively higher biomass for diatoms, chlorophytes and cryptophytes relative to the reference areas. In years where community biomass has been higher (2015 through 2019), the NF area has had consistently lower scores on Axis 1, indicating higher biomass and richness of chrysophytes and dinoflagellates relative to the other areas. In contrast, the only two years where NF had a positive score on Axis 1 were the two years with the lowest community biomass (2013 and 2020). Despite these general differences, there have been years (e.g., 2018) where all the stations grouped fairly close to one another.

The 2020 results show the largest year-over-year changes seen to date, with major shifts occurring at all areas, and predominantly on Axis 1 (**Figure 6-11**). The reference areas all had higher scores on Axis 1, relative to 2019, reflecting the lake-wide decrease in biomass and richness of chrysophytes and dinoflagellates (as seen in **Figure 6-8**). The MF area saw a shift of similar magnitude as the reference areas on Axis 1 and the NF shift was even higher. Overall, the 2020 scores on Axis 1 were actually very close across NF, MF and MEL-04/MEL-05. In contrast, the spread on Axis 2 shows similar results across the reference areas (both in 2020 and in relation to 2019), whereas the NF and MF areas both show lower scores in 2020 (**Figure 6-11**). Again, as noted previously, negative scores on Axis 2 translate to higher biomass of chlorophytes, diatoms and cryptophytes relative to the reference areas (as seen in **Figure 6-9**). Interesting, the NF and MF areas are relatively closer together in 2020 than in other years, likely reflecting the more similar biomass between these two areas than has been observed in other years (as seen in **Figure 6-9**). Overall, the 2020 results reflect the largest differences observed to date in the phytoplankton community between the NF/MF areas and the reference areas. However, given that they are predominantly on Axis 2, these differences reflect relatively higher biomass of chlorophytes, diatoms and cryptophytes compared to the reference areas despite the lake-wide drop in overall biomass.

The underlying drivers of the above patterns are unclear. While the FEIS concluded that increased nitrogen concentrations beyond the mixing zone could result in a shift in community structure favoring species that are capable of assimilating nitrogen more efficiently (Agnico Eagle 2014), it seems unlikely that these patterns are mine-related for the following reasons:

- Lake-wide drop in biomass and richness – despite a substantial increase in nitrogen loading to the east basin (**Figure 6-1**) and increased total phosphorus concentrations both NF and MF (**Figure 6-5**), the prevailing trend in the phytoplankton community was the drop in biomass and richness seen across all areas in 2020. This pattern suggests a regional change due to natural variability.

- Lack of appreciable differences between NF, MF and REFs – if the observed differences in the community were due to mine-related changes in water quality, then the response pattern should roughly match the gradient in concentrations observed (i.e., NF>>MF>>REFs). However, the main changes to the community in 2020 occurred across all stations. Further, the relatively consistent differences between NF and MF observed since 2015 actually decreased in 2020, despite the changes in water quality discussed previously.

In conclusion, the 2020 results show a clear, lake-wide pattern of decreased biomass and richness of chrysophytes and dinoflagellates that is best explained by natural variability. In addition, despite the largest year-over-year changes in water quality observed to date, there were no obvious patterns discernable between the NF and MF areas that could be attributed to the mine as these two areas had more similar communities in spite of a steeper exposure gradient to effluent in 2020.

### 6.4.4 Nutrient-Productivity Relationships

Two phytoplankton productivity metrics were used in this study: chlorophyll-a and phytoplankton volumetric-based biomass. The relationship between biomass and chlorophyll-a was explored across years (**Figure 6-12**) and across sampling areas within years (**Figure 6-13**). Both plots show a positive relationship between these productivity metrics, although it appears to be stronger in early years of monitoring (e.g., 2016 – 2019). Variability in the relationship, particularly among years, is likely due to differing chlorophyll-a content among phytoplankton groups. For example, smaller algal cells have proportionately more chlorophyll-a than do larger cells, and there is a general shift towards larger size cells during seasonal succession (Felip and Catalan 2000, Kasprzak et al. 2008).

Relationships between nutrient concentrations (TN and TP) and the two phytoplankton biomass estimators are shown across all areas and years (**Figure 6-14** highlighting areas and **Figure 6-15** highlighting years) and for the NF area only across years (**Figure 6-16**). The relationships were all highly variable and did not show consistent changes in phytoplankton biomass with increasing nutrient concentrations. This is most easily visualized in the plot singling out MEL-01 (**Figure 6-16**), particularly looking at the 2019 results for TP, which clearly show little change in either phytoplankton biomass or chlorophyll-a across a broad range of TP concentrations.

While no apparent nutrient-productivity relationships were identified, the high uncertainty regarding the representativeness of TP and TN of their bioavailable forms precludes concluding that these results are evidence of a lack of effect on productivity. Consequently, a higher weighting should be placed on the actual phytoplankton community results.

### 6.4.5 Trophic Status Index

Trophic status index (TSI) values were calculated for 2020 based on mean (+/- se) of TP, chlorophyll-a and Secchi depth at each sampling area and compared to previous years in **Figure 6-17**. TP results are presented in **Table 5-6**. Chlorophyll-a summary statistics and Secchi depth results from the August sampling events are provided in **Table 6-5** and **Table 6-7**, respectively.

TSI values based on TP, chlorophyll-a and Secchi depth were all highest at the NF (MEL-01) area but remained within the oligotrophic classification category. Results are described in more detail below in the context of the underlying metrics:

- Total Phosphorus – the TSI value at the NF area in 2020 was the highest recorded to date, continuing an upward trend since 2015 (see **Figure 6-5**). By comparison, the TSI values for other areas in Meliadine Lake have remained consistent.
- Chlorophyll-a – the TSI value at the NF area in 2020 was in the range of values observed since 2016. Mean chlorophyll-a in 2020 was 1.97 µg/L (**Table 6-5**).
- Secchi Depth – the TSI at the NF area was in the range of values dating back to 2015. There is no indication of trophic changes in the NF area based on water quality data collected to date.

It is important to note that TSI is simply an index used to predict the trophic status of a lake. The existing TSI, developed by Carlson (1977), has been around for decades and is based, at least in part, on the premise that TP limits primary production in freshwater systems. As discussed previously, the current state of knowledge is such that N-P co-limitation is more prevalent (Lewis and Wurtsbaugh 2008). Nojavan et al. (2019a, 2019b) published a modified TSI that incorporates TN, TP, Secchi depth, and elevation into a single model that classifies lakes in probabilistic terms. In the absence of direct quantification of phytoplankton communities, as is often the case in water quality studies, the TSI (or new and improved version) can provide useful information on potential spatial or temporal differences in trophic status across locations and/or years. However, when actual phytoplankton data are available, less emphasis should be placed on the TSI values.

## 6.5 Low Action Level Assessment

The low action level assessment for nutrient enrichment relies on TP and chlorophyll-a results as indicators of nutrient enrichment in the NF area. The following two questions were assessed to determine if the low action level was exceeded.

*Question 1: Are concentrations of total phosphorous (TP) and chlorophyll-a elevated relative to baseline / reference?*

- **Response**: The average total phosphorus concentration in samples collected between July and September at the NF area in the 2020 AEMP was 0.0079 mg/L, which exceeded the 90$^{th}$

percentile normal range of 0.006 mg/L, indicating that TP in the NF area has increased relative to baseline / reference conditions in Meliadine Lake. Chlorophyll-a was higher in the NF area relative to the other areas of Meliadine Lake, but the relative difference between the NF and MF and NF and FF areas was similar in 2020 compared with previous monitoring dating back to 2015.

- Based on 5 years of data, excluding anomalous results from 2019, there is fairly conclusive evidence to suggest that chlorophyll-a is naturally variable among the east, west, and south basins. A more relevant point of comparison is whether the temporal pattern of chlorophyll-a concentrations more or less mirrors the pattern observed in other areas of the lake (Question 3).

*Question 2: Do concentrations exceed the AEMP Action Level for Total Phosphorus and Chlorophyll-a?*

- **Response**: The AEMP Benchmarks are based on the objective of keeping Meliadine Lake within the oligotrophic classification. The AEMP Benchmark for total phosphorus comes from CCME (2004); 0.01 µg/L is the upper bound of the oligotrophic status, and not a guideline associated with adverse effects to aquatic life (CCME, 2004). Furthermore, there are a multitude of factors that contribute to changes in the trophic status of a lake, of which TP is one. In 2020, TP marginally exceeded the AEMP Action Level based on the mean (0.00785 mg/L) and median (0.0077 mg/L) in samples collected under the AEMP[31]. Exceedances of the AEMP Benchmark (0.01 mg/L) have periodically occurred at the exposure and reference areas in Meliadine Lake (**Figure C2-23**). To provide additional context on potential changes in the trophic status of the lake, a second assessment criteria using the chlorophyll-a data is included in the AEMP Action Level assessment.
- The AEMP Benchmark for chlorophyll-a is 4.5 µg/L. The value was adopted from Diavik Diamond Mines Inc (DDMI 2013) as a “reasonable” upper limit for classifying northern lakes as oligotrophic. The AEMP Action Level of 3.36 µg/L was not exceeded in the samples from the NF area in 2020.

*Question 3: Is there a divergent temporal trend between NF and reference areas?*

- **Response**: TP has shown considerable within-area and within-year variability throughout the AEMP monitoring period (2015 to 2020). As shown in **Figure 6-5**, TP is typically more variable within a given year (i.e., seasonally between month) than between years (i.e., from 2015 to 2016, etc.). This applies to both exposure and reference areas in Meliadine Lake.

[31] The detection limit for TP for samples collected under the WQ-MOP was 0.02 mg/L, which is 2-times the limit of 0.01 mg/L for classifying lakes as oligotrophic (CCME 2004). The TP data, as well as nitrogen data from the WQ-MOP were not included in the nutrient assessment given the comparatively high detection limits for these parameters.

- The results from MEL-01 beyond the mixing zone in 2020 were well within the range reported in 2018 and 2019 from the NF area. Furthermore, the maximum reported TP concentration in 2020 was lower (~0.01 mg/L) compared to 2018 (~0.02 mg/L) and 2019 (0.017 mg/L).
- In short, TP concentrations vary month-by-month in a similar pattern at the NF and MEL-03 reference area and year-over-year increases in TP at the NF area are not evident based on the available data dating back to 2013.

## 6.6 Summary and Recommendations for 2021

The following conclusions are based on findings of the 2020 phytoplankton study, taking into consideration the full range of available nutrient data and phytoplankton community results collected under the AEMP.

**Nutrients** – Results to date indicate that changes in nutrient concentrations, particularly nitrogen, have occurred at the NF area since 2015 (i.e., the pattern is consistent with mining activities). There is some uncertainty about the magnitude of the change depending on whether the AEMP dataset or DIN data are relied on for interpreting the change. Further, confounding the interpretation of spatial and temporal trends is the fact that some nitrogen parameters, namely TKN and ammonia, trended higher at the reference areas in 2020; in some samples collected under the AEMP, concentrations exceeded the maximum observed in the NF area, despite nitrogen loading from CP1 increasing nearly 5-fold in 2020 compared to 2019. It's evident that the nitrogen parameters in CP1 are not contributing to a substantial increase relative to the reference areas or previous monitoring data from the NF area.

Water sampling for depth-integrate nutrients is no longer recommended as part of the August phytoplankton program. Water is collected for nutrients more frequently as part of the routine AEMP water quality program (discrete sampling at mid-depth), providing a more robust dataset for assessing changes in nutrient concentrations within and between years. Water for phytoplankton taxonomy and chlorophyll-a analyses will still be collected using the depth-integrated collection method for comparability between years.

**Phytoplankton** – The phytoplankton community had noticeably lower biomass and richness across all 5 study areas in 2020 that was attributed to natural variability. Prior to 2020, there was some plausible evidence supporting the notion that nutrient loading (TP in particular) during the pre-construction period had contributed to an increase in biomass in 2015 relative to the results from 2013. Results from 2020 further demonstrate that despite higher loadings of some nitrogen parameters since 2018, there is no evidence to suggest nutrient enrichment is occurring in the form of year-over-year increases in total biomass.

The multivariate community analysis clearly showed the lake-wide changes described above. Despite this predominant lake-wide pattern, the NF and MF areas became more similar to one another than in previous years. This latter pattern does not appear to support a mine-related effect as water quality was generally quite different between these areas in 2020, which would have led to bigger differences rather than to lower. Continued annual monitoring of phytoplankton is recommended to assess differences in the structure of the community between the NF, MF, and reference areas. The phytoplankton community in Meliadine Lake appears healthy.

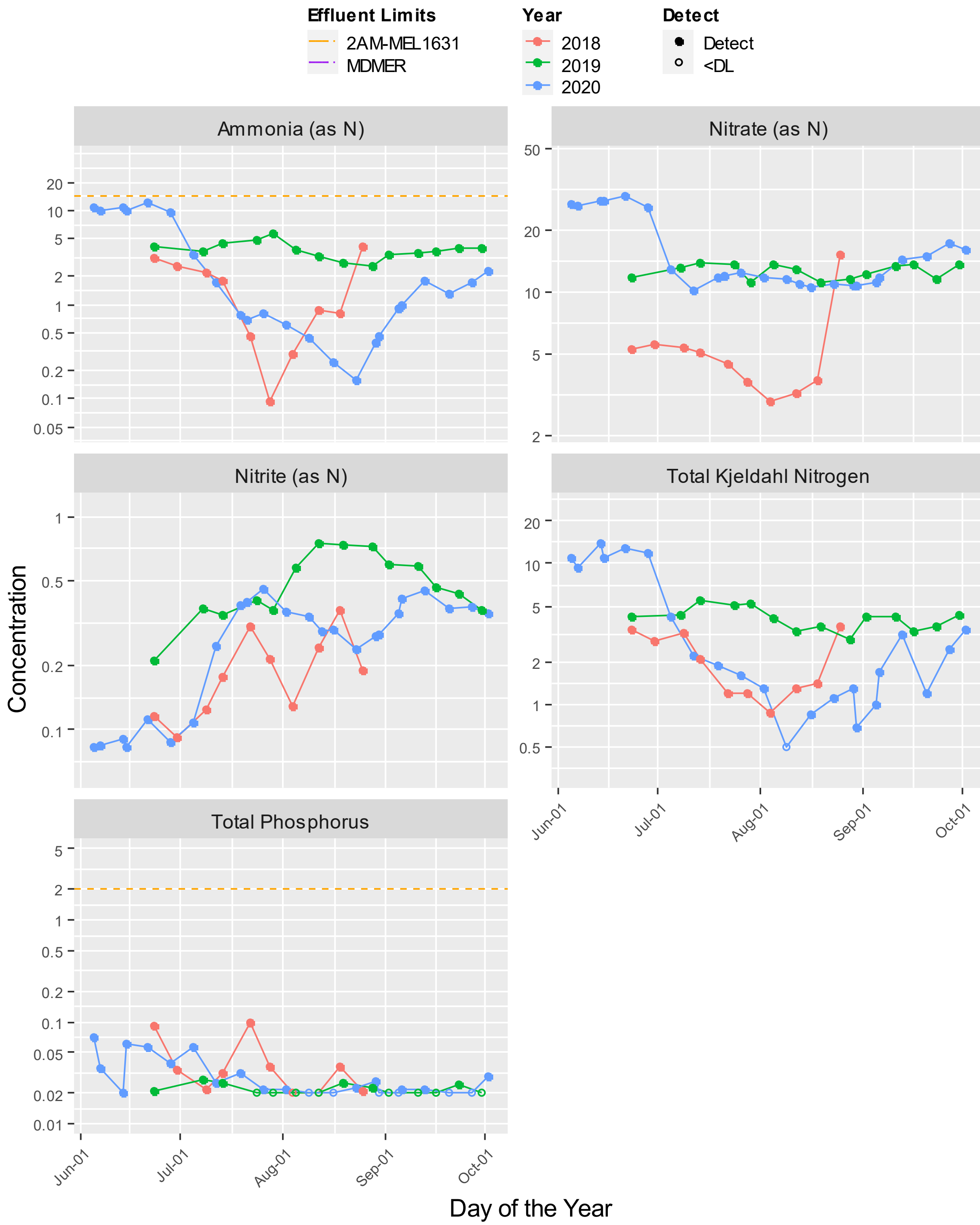
**Nutrient-Productivity Relationships** – Phytoplankton biomass was tracked by two metrics: volumetric-based biomass (direct measure of the community) and chlorophyll-a (surrogate measure). The metrics were weakly, but positively, correlated across years, with differential photosynthetic pigment content among phytoplankton taxa a likely important source of the variability. Ultimately, direct measurement of the community is a better indicator of biomass, but chlorophyll-a provides complementary, yet independent, information that is easy to collect. As in previous years, neither measure of biomass was correlated to either TN or TP, suggesting that mining-related nutrient inputs do not appear to be responsible for the observed differences in phytoplankton biomass or chlorophyll-a.

**Trophic Status Index** – TSI values remain in the oligotrophic classification. While TSI values based on TP and Secchi depth at the NF area were higher than in previous years, the TSI value for the NF area based on chlorophyll-a was within the range of values reported since 2016. These TSI values provide a rough guide only and should be given less emphasis than direct measures of the phytoplankton community.

Collectively, the phytoplankton community and nutrient data provide useful information to help detect potential effects to primary productivity resulting from nutrient enrichment in Meliadine Lake. Continued phytoplankton monitoring in 2021 is recommended.

## 6.7 Figures – Meliadine Lake Phytoplankton

**Figure 6-2 Concentration of Nitrogen Species Measured in Effluent Samples from MEL-14 from 2018 – 2020**



### Figure 6-3. Spatial and Temporal Changes in Nitrogen and Phosphorus, 2018-2020

Notes: Data are for the open water sampling events only, corresponding to when treated effluent was released to the lake. Points are jittered slightly to avoid overplotting. The full suite of water quality analyses were not completed at the MEL-13 edge of the mixing zone stations each year.

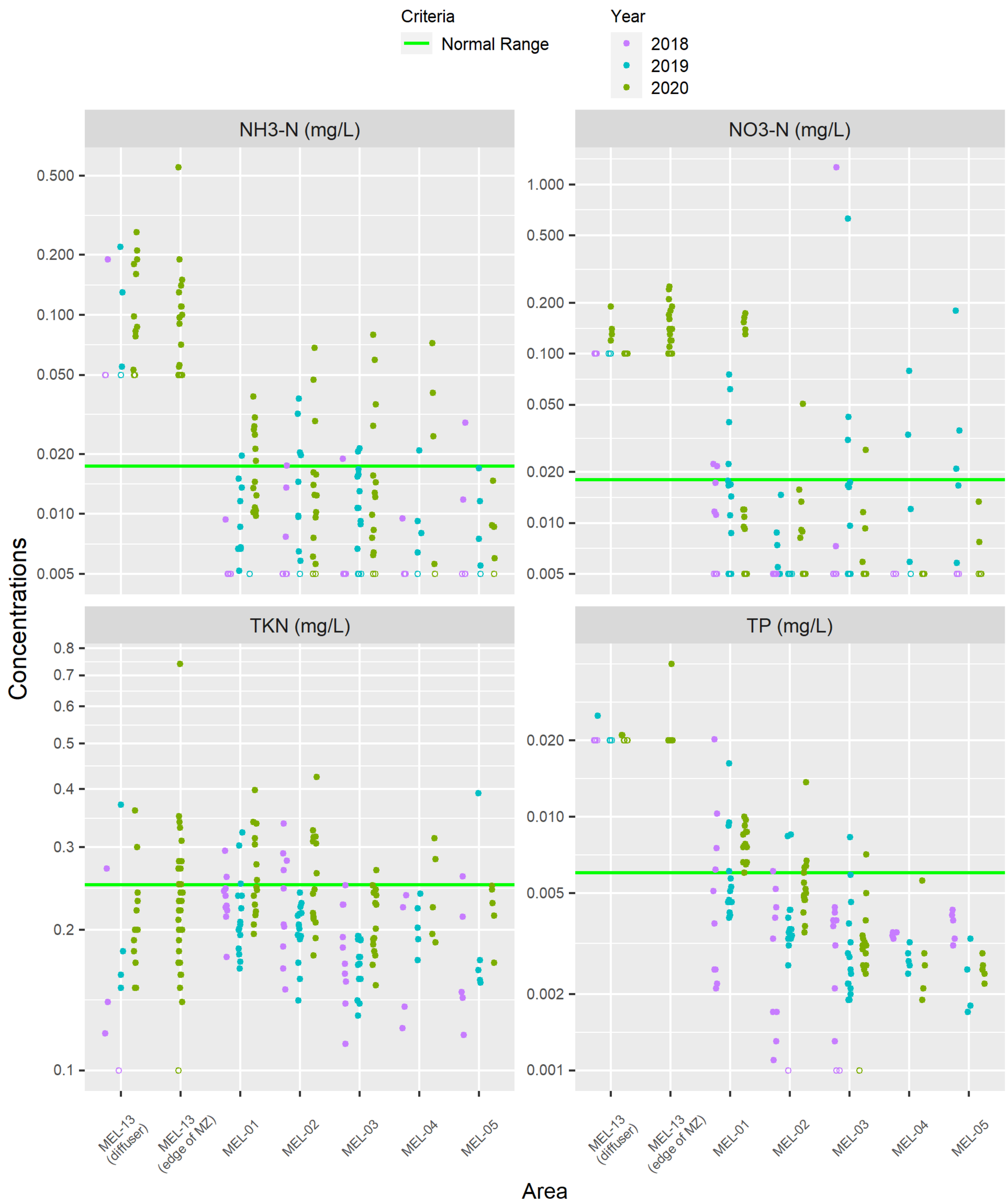


**Figure 6-4. Spatial and Temporal Changes in Nitrogen and Phosphorus Relative to the Distance from the Diffuser, 2018-2020**

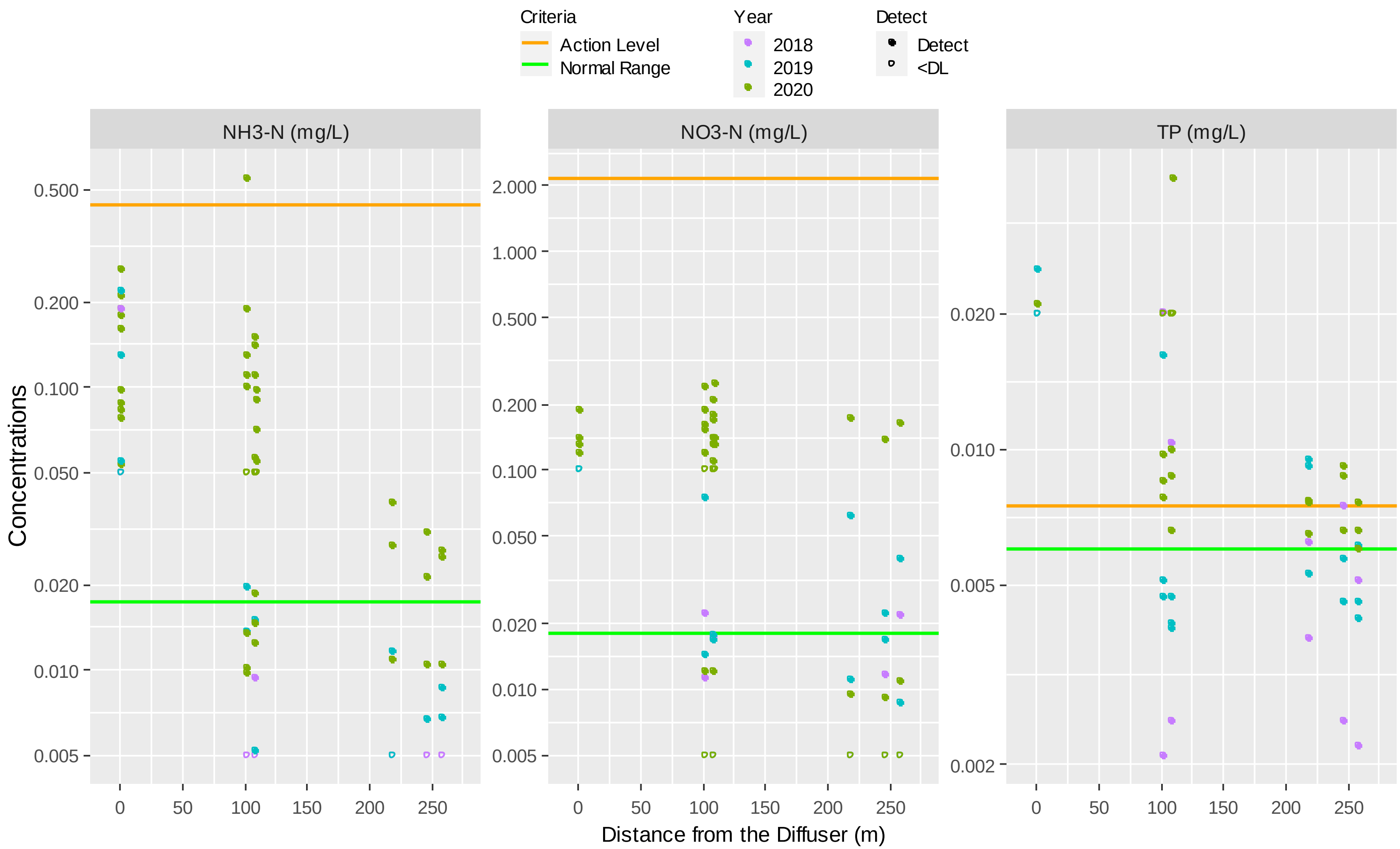


**Figure 6-5 Concentrations of Key Nutrients Collected in Meliadine Lake from the August Phytoplankton Studies, 2015 – 2020**

Notes: Nutrient concentrations are presented for both the AEMP and depth integrate nutrient (DIN) samples for August sampling events to compare differences between the two sampling methods.

**Figure 6-6 Concentrations of nitrogen and phosphorus in Meliadine Lake, 1997 through 2013.**

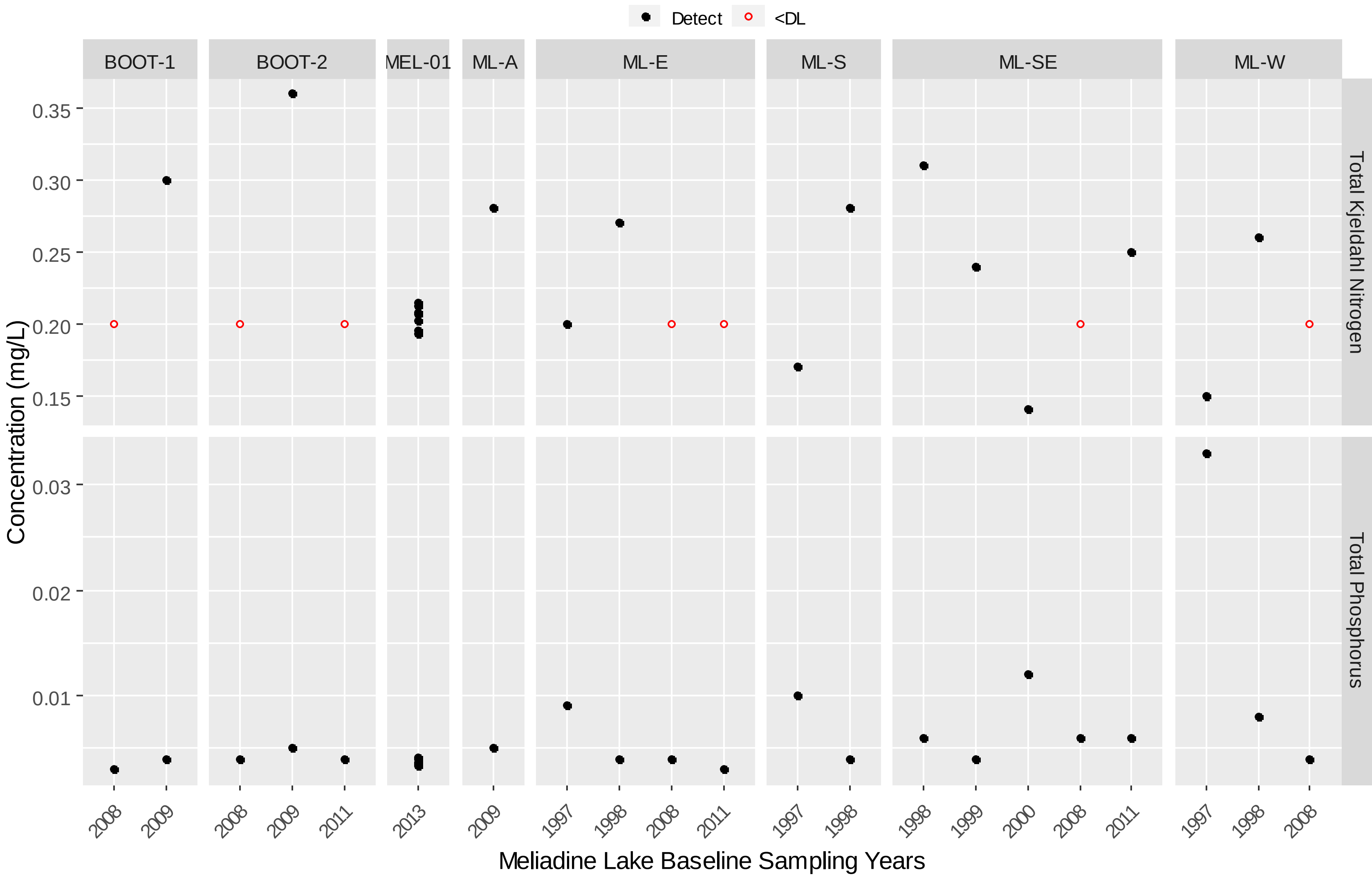


**Figure 6-7 Chlorophyll-a Concentrations (µg/L) in Meliadine Lake from the August Phytoplankton Studies, 2015 – 2020**

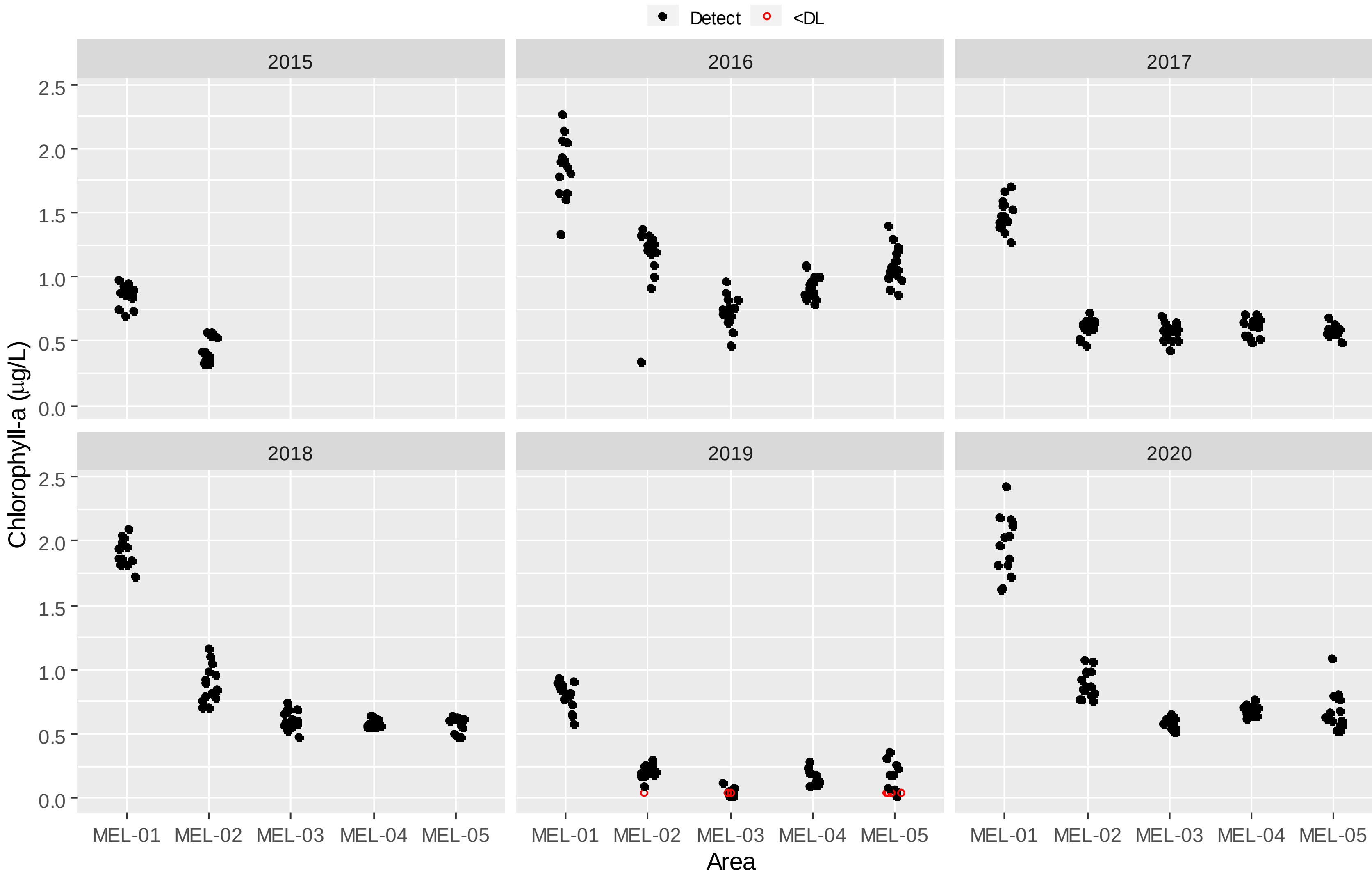


**Figure 6-8 Total phytoplankton biomass, density and taxa richness for Meliadine Lake sampling areas.**

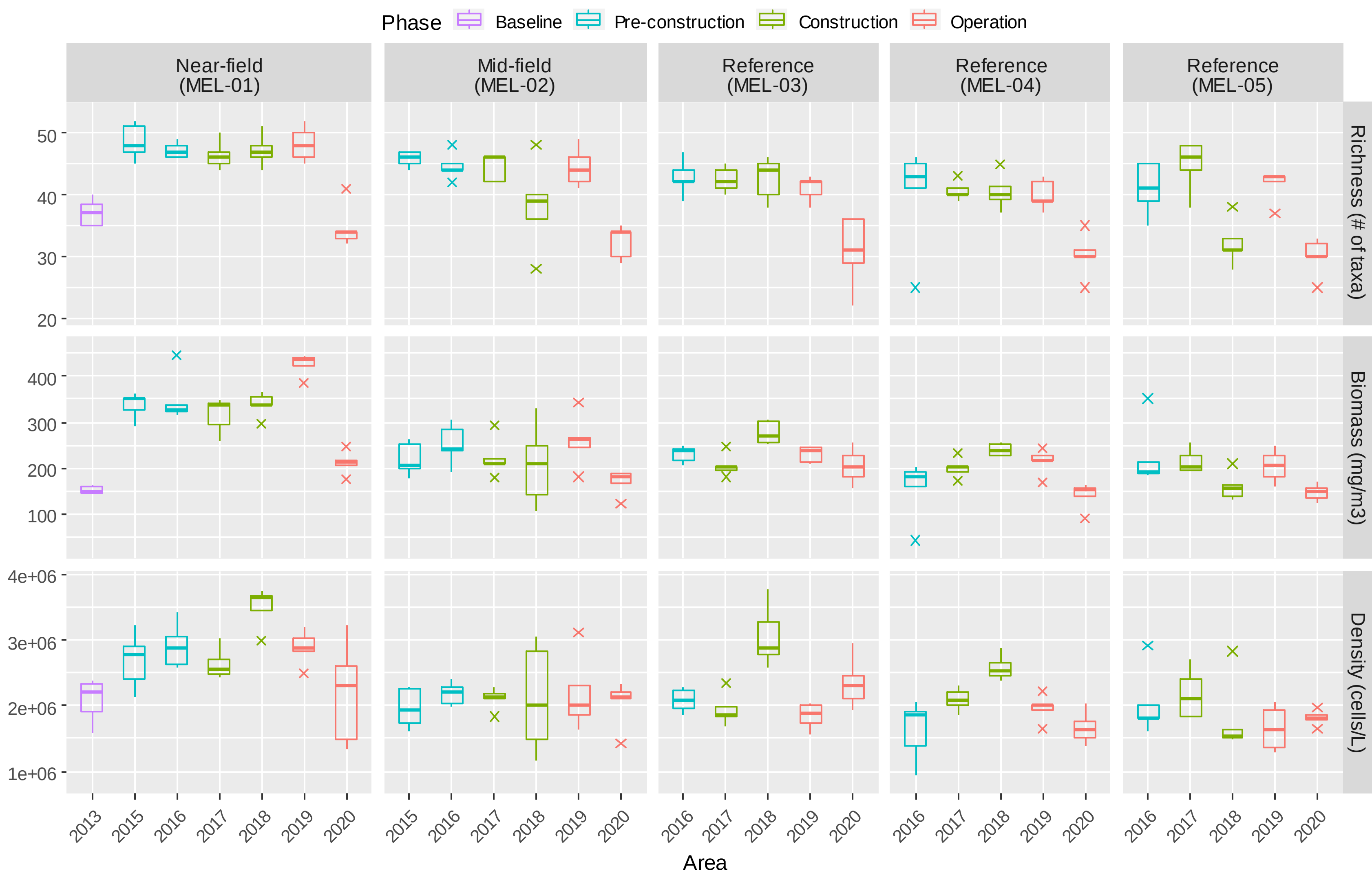


**Figure 6-9. Major taxa group biomass, density and taxa richness for phytoplankton in Meliadine Lake sampling areas (2013 – 2020).**

Notes: Major taxa group endpoints (richness, biomass, and density) for each area-year are based on the average (arithmetic mean) of 5 samples.

**Figure 6-10. Ordination plot of phytoplankton community non-metric multidimensional scaling (nMDS) for Meliadine Lake (2015 through 2020).**

Notes: area-year nomenclature: MEL04-18 = Meliadine Lake area MEL-04 sample collected in 2018.
Left panel (REF) = results for reference area-year combinations and their associated probability ellipses
Right panel (EXP) = exposure area-year combinations shown relative to reference area probability ellipses

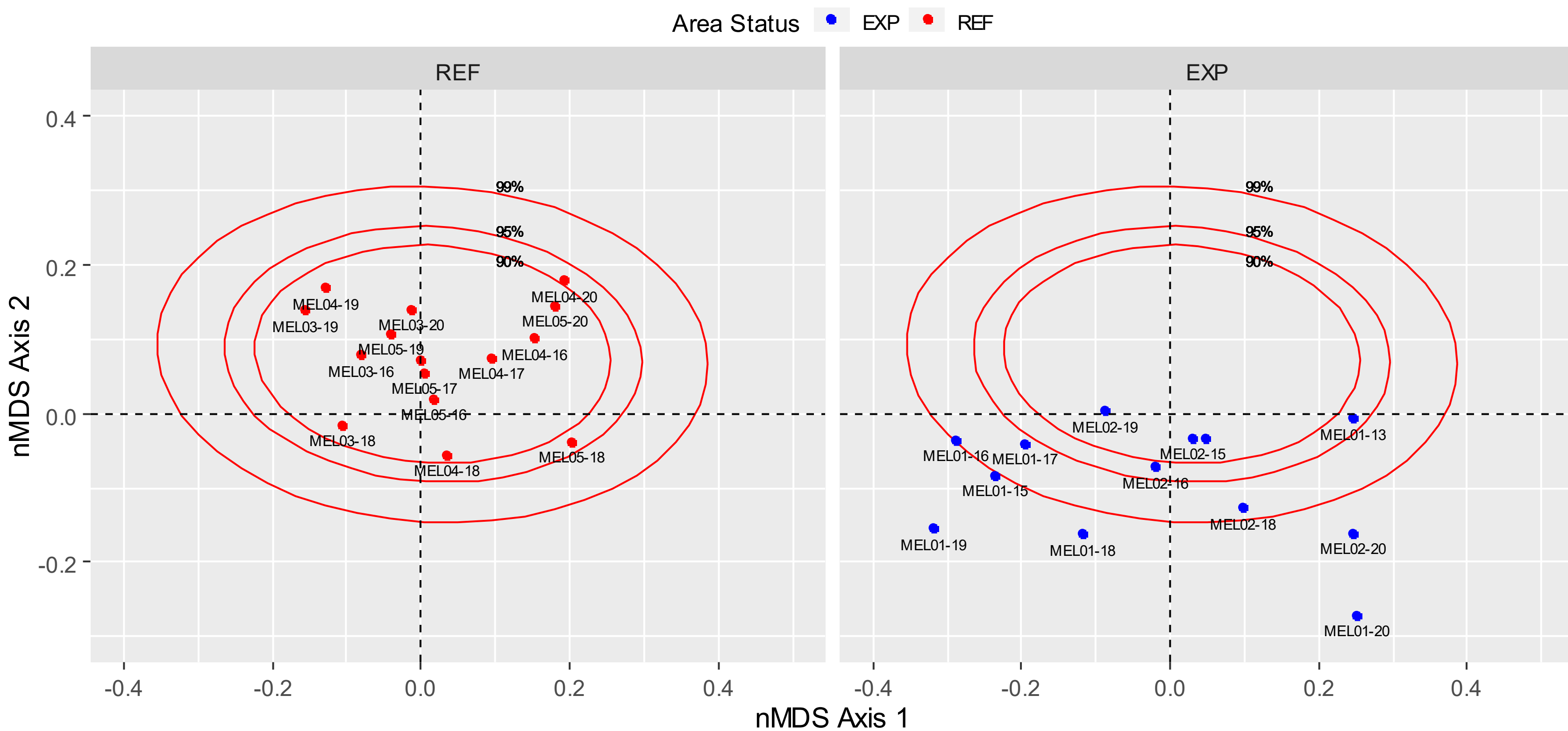


**Figure 6-11. Non-metric multidimensional scaling (nMDS) results showing ordination of the reference and exposure area phytoplankton results by year for Meliadine Lake.**

Notes: The correlation plot at the bottom is based on the 2020 data; blue cells are negatively correlated, red cells are positively correlated. "X" indicates the correlation value is not statistically significant (p<0.05).

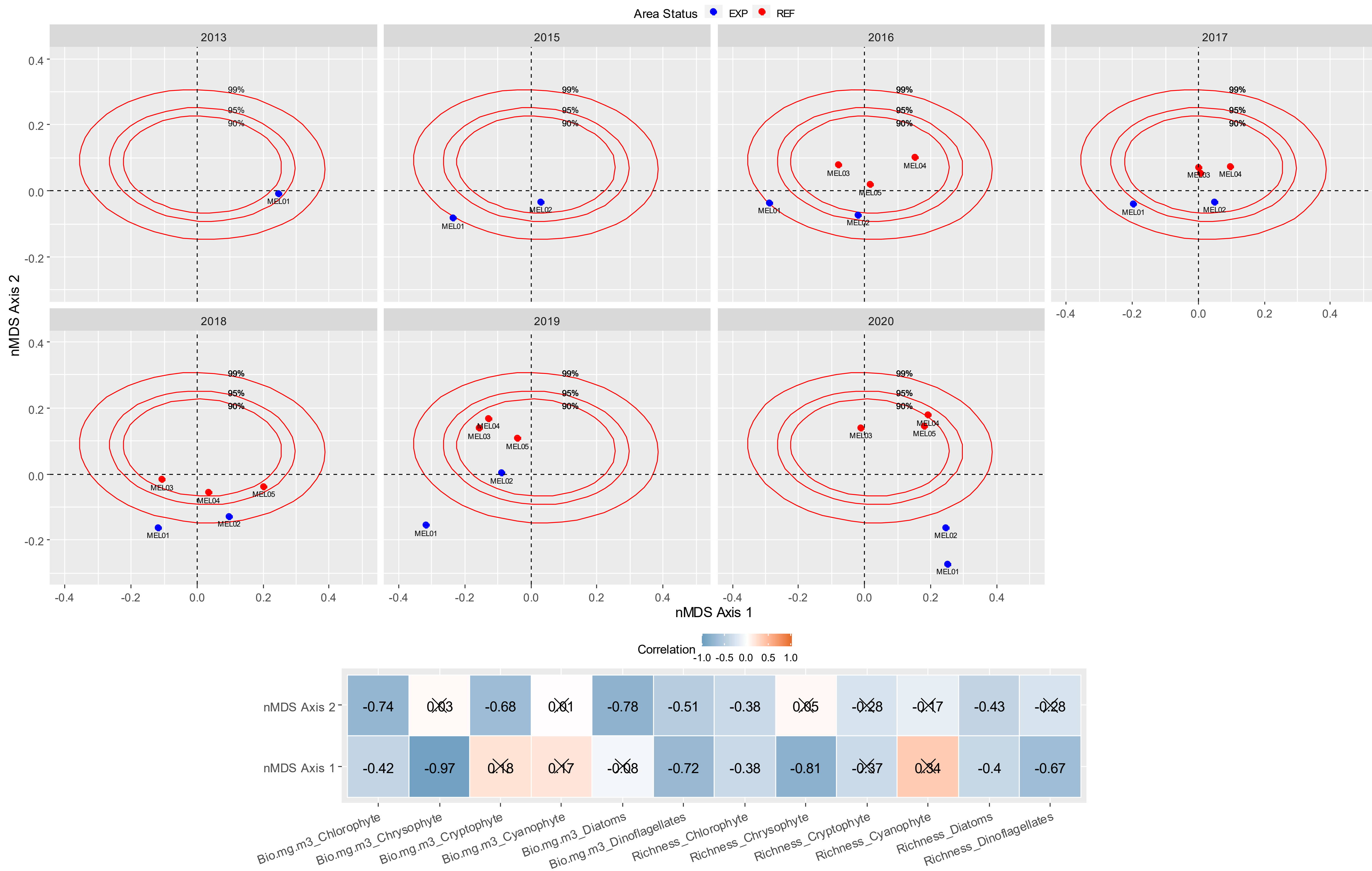


**Figure 6-12. Relationship between chlorophyll-a and phytoplankton biomass for Meliadine Lake across years, 2016 through 2020.**

Notes: The chlorophyll-a data from 2019 were given a cautionary flag during the QC review of the data due to concerns over the filter material. Data are shown for transparency, but the results are not considered representative of the chlorophyll-a concentrations in the lake during 2019.

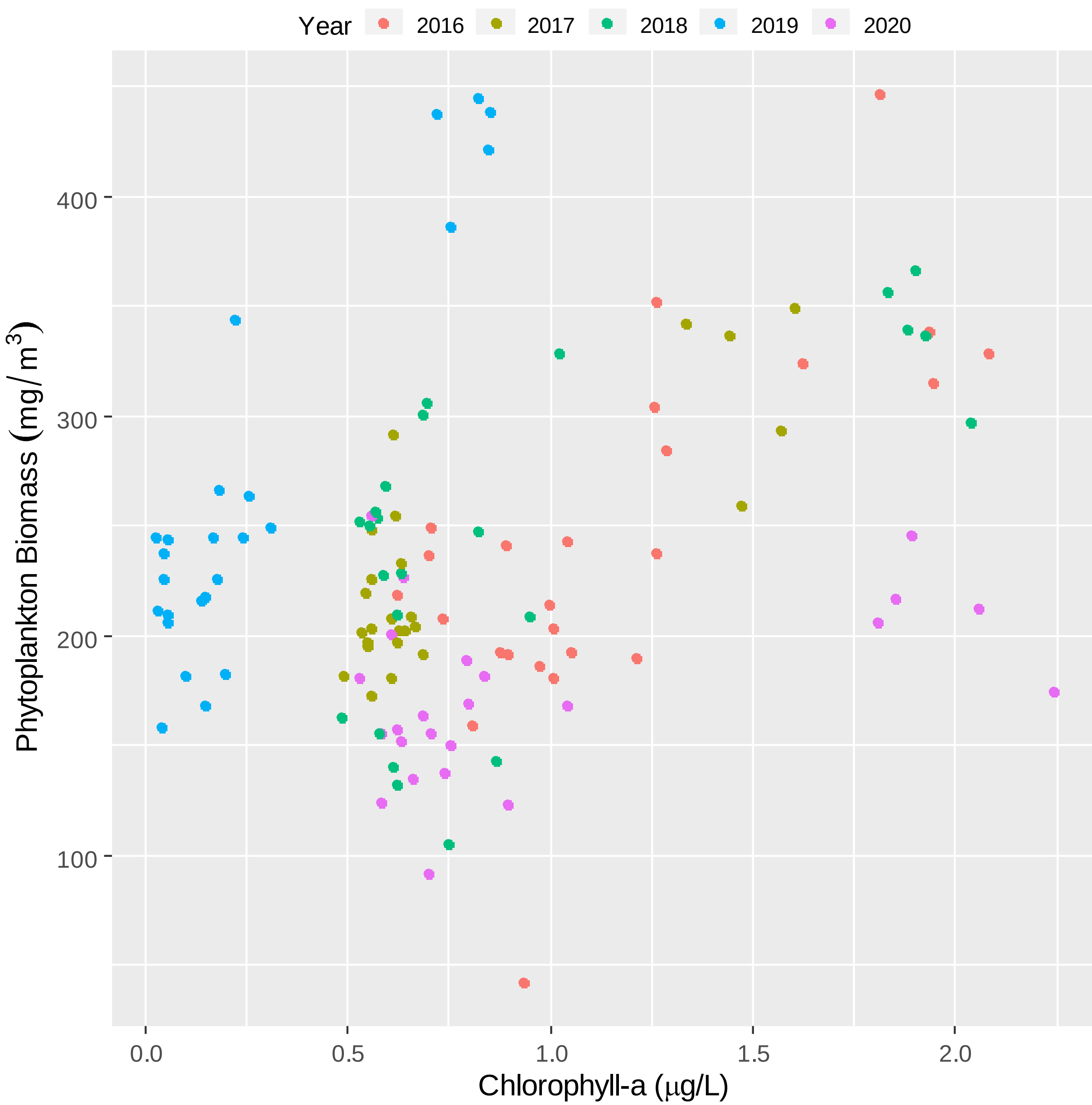


**Figure 6-13. Relationship between chlorophyll-a and phytoplankton biomass for Meliadine Lake by year, 2016 through 2020.**

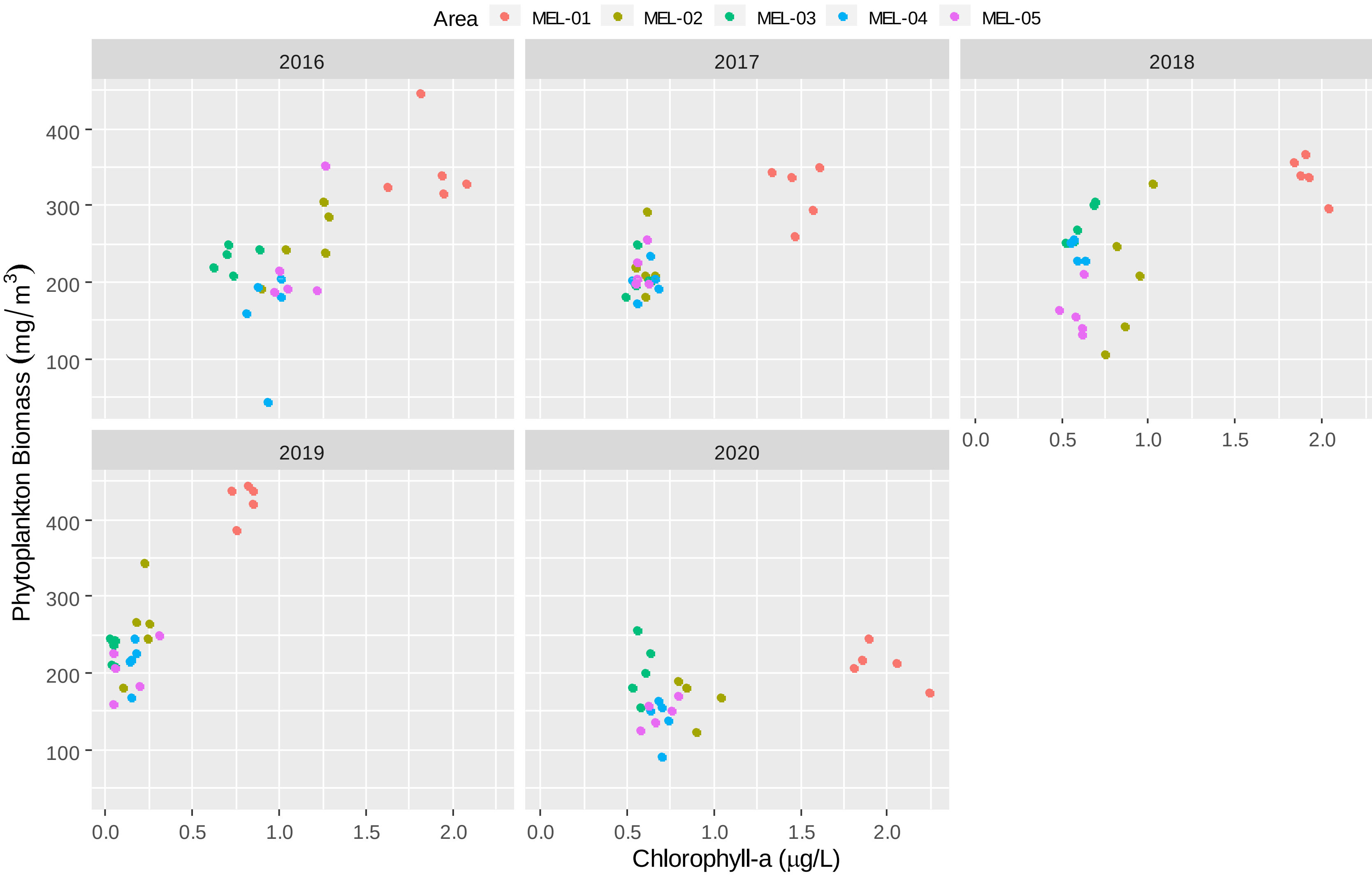


**Figure 6-14. Relationship between key nutrient concentrations and phytoplankton biomass indicators by sampling area for Meliadine Lake, 2016 through 2020**

Notes: The black dots represent total nitrogen concentrations that were measured below the limit of detection in samples from 2015.

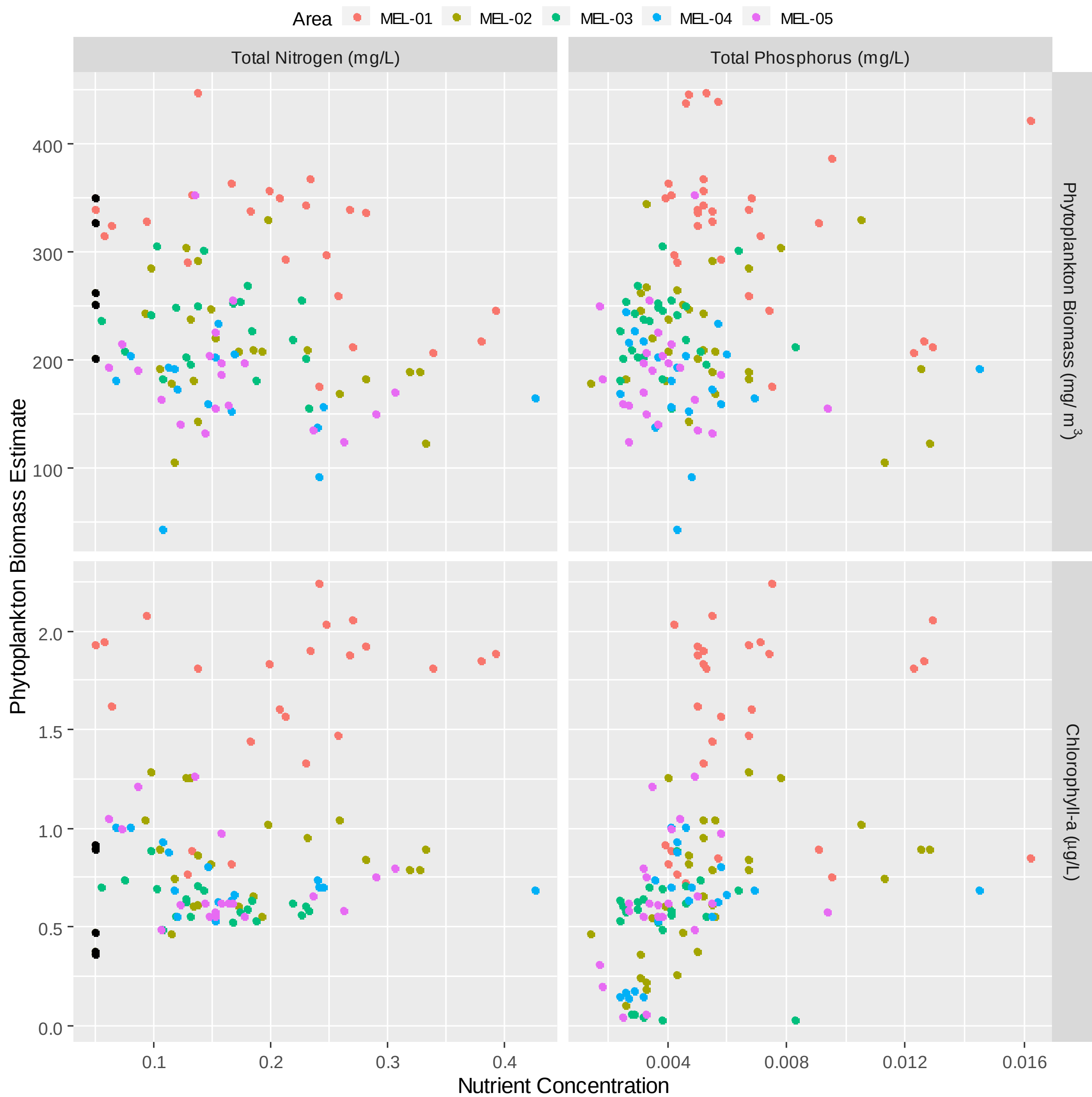


**Figure 6-15. Relationship between key nutrient concentrations and phytoplankton biomass indicators by year for Meliadine Lake, 2015 through 2020**

Notes: The black dots represent total nitrogen concentrations that were measured below the limit of detection in samples from 2015.

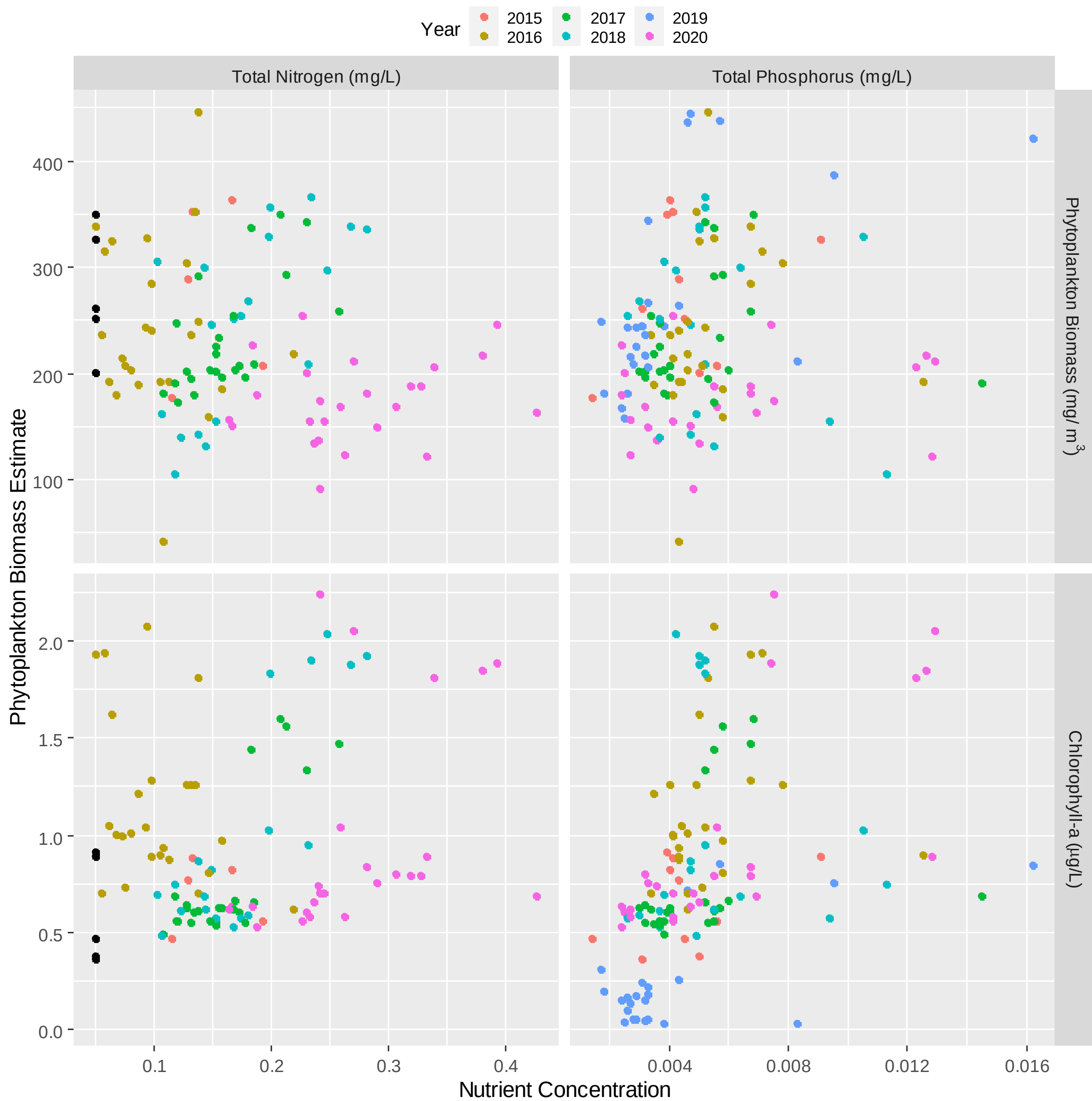


**Figure 6-16. Relationship between key nutrient concentrations and phytoplankton biomass indicators by year for the near-field area (MEL-01) of Meliadine Lake, 2015 through 2020.**

Notes: The black dots represent total nitrogen concentrations that were measured below the limit of detection in samples from 2015.

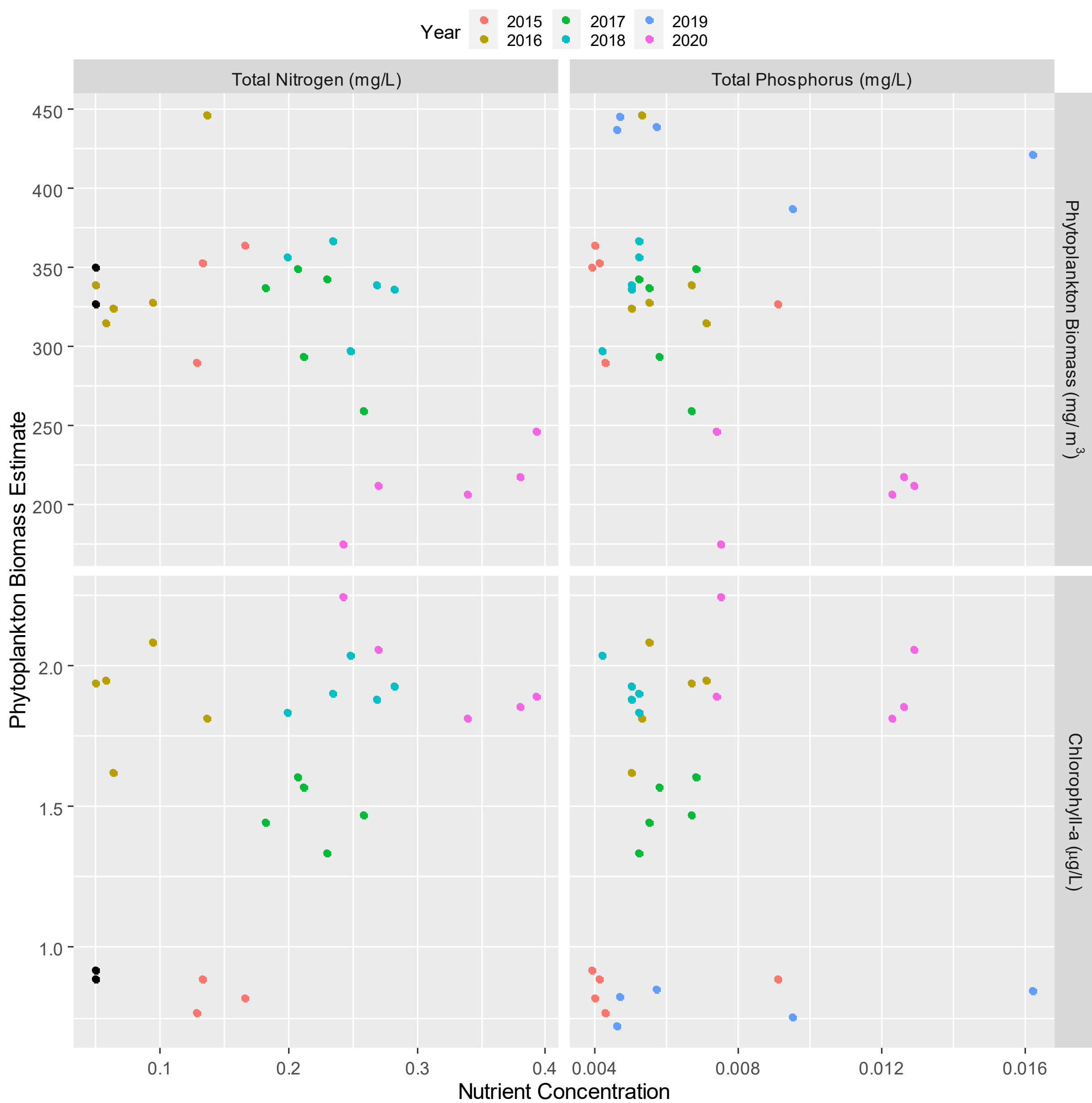
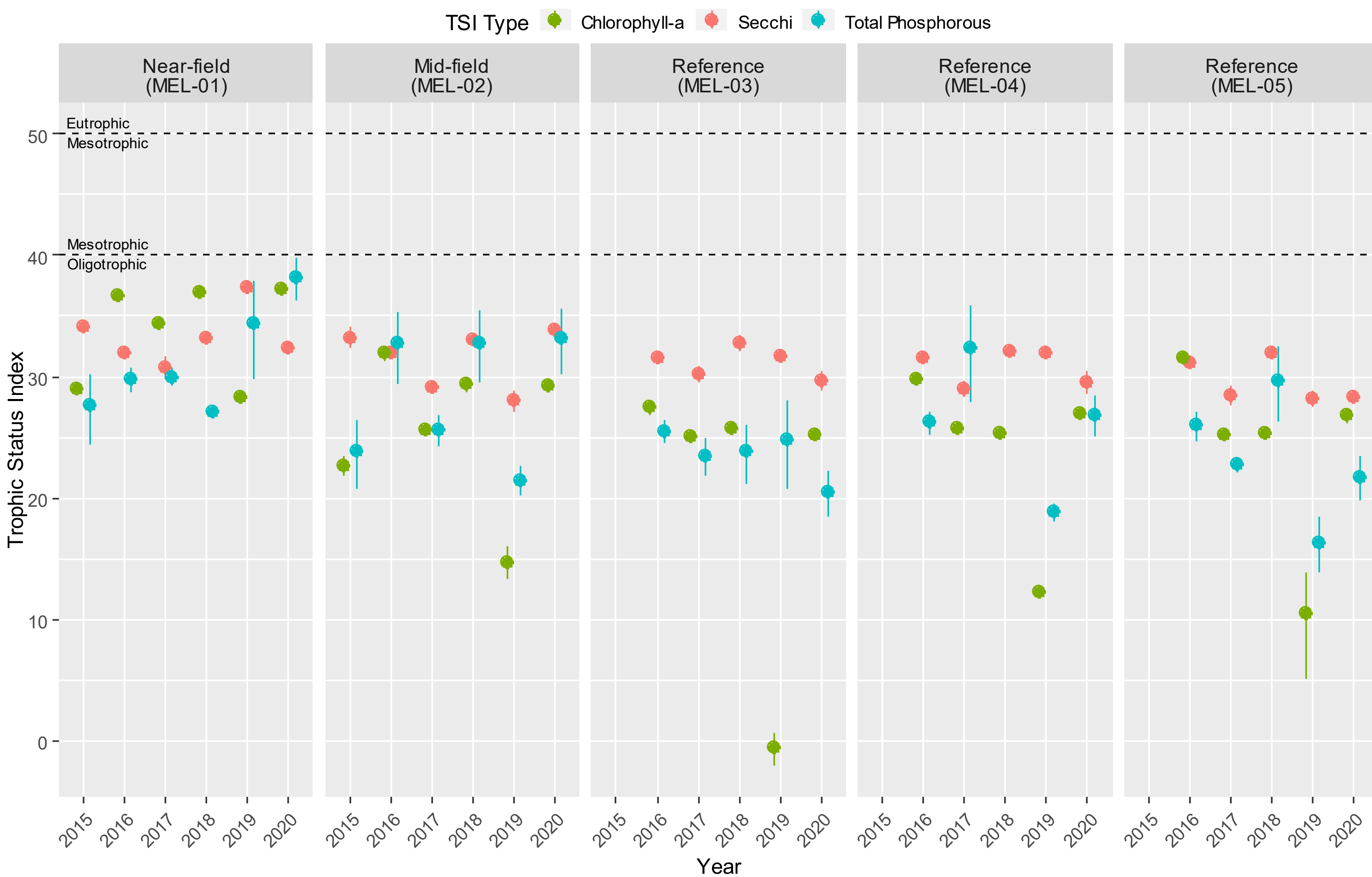


**Figure 6-17. Trophic Status Index values (+/- standard error) for Meliadine Lake, 2015 through 2020**



## 6.8 Tables – Meliadine Lake Phytoplankton

Tables for the Meliadine Phytoplankton Study are listed below. Supporting tables for phytoplankton and chlorophyll-a data are provided in **Appendix E** and **Appendix F**.

### Table 6-5 Chlorophyll-a (µg/L) Summary Statistics for August Sampling Events, 2015-2020.

| Area | Year | Count | Mean | SD | SE | Median | Min | Max |
|---|---|---|---|---|---|---|---|---|
| MEL-01 | 2015 | 14 | 0.859 | 0.0793 | 0.0212 | 0.871 | 0.702 | 0.973 |
| | 2016 | 15 | 1.88 | 0.257 | 0.0663 | 1.9 | 1.33 | 2.27 |
| | 2017 | 15 | 1.48 | 0.118 | 0.0304 | 1.47 | 1.27 | 1.7 |
| | 2018 | 15 | 1.91 | 0.103 | 0.0266 | 1.94 | 1.73 | 2.09 |
| | 2019† | 15 | 0.799 | 0.106 | 0.0273 | 0.82 | 0.58 | 0.93 |
| | 2020 | 15 | 1.97 | 0.226 | 0.0584 | 2.03 | 1.62 | 2.43 |
| MEL-02 | 2015 | 15 | 0.445 | 0.0959 | 0.0248 | 0.412 | 0.32 | 0.573 |
| | 2016 | 15 | 1.15 | 0.256 | 0.0662 | 1.21 | 0.337 | 1.37 |
| | 2017 | 15 | 0.605 | 0.0675 | 0.0174 | 0.62 | 0.46 | 0.72 |
| | 2018 | 15 | 0.881 | 0.148 | 0.0381 | 0.84 | 0.7 | 1.17 |
| | 2019† | 15 | 0.199 | 0.0667 | 0.0172 | 0.2 | 0.04 | 0.3 |
| | 2020 | 15 | 0.889 | 0.106 | 0.0274 | 0.87 | 0.75 | 1.08 |
| MEL-03 | 2016 | 15 | 0.73 | 0.122 | 0.0315 | 0.744 | 0.46 | 0.965 |
| | 2017 | 15 | 0.573 | 0.0662 | 0.0171 | 0.58 | 0.43 | 0.69 |
| | 2018 | 15 | 0.613 | 0.0725 | 0.0187 | 0.6 | 0.48 | 0.74 |
| | 2019† | 15 | 0.042 | 0.0286 | 0.00738 | 0.03 | 0.01 | 0.12 |
| | 2020 | 15 | 0.584 | 0.0442 | 0.0114 | 0.59 | 0.51 | 0.65 |
| MEL-04 | 2016 | 15 | 0.926 | 0.0922 | 0.0238 | 0.915 | 0.78 | 1.09 |
| | 2017 | 15 | 0.613 | 0.0733 | 0.0189 | 0.63 | 0.49 | 0.71 |
| | 2018 | 11 | 0.585 | 0.0375 | 0.0113 | 0.56 | 0.55 | 0.64 |
| | 2019† | 15 | 0.161 | 0.0548 | 0.0142 | 0.15 | 0.09 | 0.28 |
| | 2020 | 15 | 0.691 | 0.0394 | 0.0102 | 0.7 | 0.62 | 0.77 |
| MEL-05 | 2016 | 15 | 1.1 | 0.147 | 0.0379 | 1.08 | 0.868 | 1.4 |
| | 2017 | 15 | 0.581 | 0.0448 | 0.0116 | 0.58 | 0.49 | 0.68 |
| | 2018 | 15 | 0.583 | 0.0569 | 0.0147 | 0.61 | 0.47 | 0.64 |
| | 2019† | 15 | 0.129 | 0.115 | 0.0296 | 0.07 | 0.02 | 0.36 |
| | 2020 | 15 | 0.682 | 0.149 | 0.0384 | 0.63 | 0.53 | 1.09 |

Notes
Three replicate samples are collected at each of the 5 stations per area, per event.
† The 2019 chlorophyll-a concentration data were considered “unreliable” for comparing between years because of an issue with the filter type used in 2019. Data are retained for spatial comparisons between areas in 2019, but should not be used for temporal analysis.

**Table 6-6 Major Taxa Biomass and Density from the Phytoplankton Study in Meliadine Lake in 2020**

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| ***2020*** | | | | | | | | | | | | | | | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL -0101 - PC | 15-Aug-20 | 1 | 7.12 | 51 | 51.13 | 84.33 | 11.75 | 206.17 | 2,600 | 100,192 | 714,416 | 328,904 | 187,296 | 2,400 | 1,335,808 |
| MEL -0106 - PC | 15-Aug-20 | 2 | 23.29 | 69 | 26.96 | 79.03 | 17.70 | 217.16 | 3,000 | 970,840 | 1,066,432 | 341,160 | 206,848 | 23,952 | 2,612,232 |
| MEL -0107 - PC | 15-Aug-20 | 8.62 | 14.25 | 102 | 35.55 | 66.91 | 18.43 | 246.07 | 75,440 | 444,624 | 1,970,616 | 425,816 | 301,808 | 3,200 | 3,221,504 |
| MEL -0108 - PC | 15-Aug-20 | 1.50 | 15.52 | 35 | 34.12 | 72.07 | 16.65 | 174.81 | 3,000 | 460,976 | 441,224 | 330,024 | 229,784 | 10,384 | 1,475,392 |
| MEL -0109 - PC | 15-Aug-20 | 1.50 | 18.84 | 79 | 24.77 | 80.04 | 8.13 | 212.26 | 3,000 | 540,000 | 1,094,168 | 252,952 | 413,568 | 2,000 | 2,305,688 |
| ***Percent Density or Biomass*** | | ***1.37*** | ***7.48*** | ***31.75*** | ***16.33*** | ***36.19*** | ***6.88*** | | ***0.79*** | ***22.98*** | ***48.28*** | ***15.33*** | ***12.23*** | ***0.38*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL -0201 - PC | 18-Aug-20 | 0 | 27.48 | 78 | 35.03 | 37.30 | 3.25 | 181.52 | 800 | 500,296 | 1,078,400 | 258,088 | 368,600 | 800 | 2,206,984 |
| MEL -0202 - PC | 18-Aug-20 | 0 | 4.59 | 61 | 79.15 | 36.21 | 7.75 | 188.65 | 800 | 348,232 | 1,200,128 | 275,000 | 278,008 | 1,400 | 2,103,568 |
| MEL -0203 - PC | 18-Aug-20 | 1 | 3.62 | 66 | 22.11 | 25.47 | 4.88 | 122.89 | 1,000 | 65,456 | 977,824 | 230,920 | 147,696 | 1,200 | 1,424,096 |
| MEL -0204 - PC | 18-Aug-20 | 0.50 | 5.72 | 101 | 31.97 | 43.39 | 6.53 | 188.69 | 1,000 | 130,712 | 1,487,088 | 158,512 | 352,048 | 600 | 2,129,960 |
| MEL -0205 - PC | 18-Aug-20 | 0.10 | 27.47 | 78 | 20.84 | 34.78 | 7.53 | 168.55 | 200 | 567,736 | 1,221,880 | 261,856 | 265,240 | 1,600 | 2,318,512 |
| ***Percent Density or Biomass*** | | ***0.22*** | ***8.10*** | ***45.08*** | ***22.24*** | ***20.83*** | ***3.52*** | | ***<0.1*** | ***15.83*** | ***58.58*** | ***11.63*** | ***13.86*** | ***<0.1*** | |
| **MEL-03** | | | | | | | | | | | | | | | |
| MEL -0301 | 19-Aug-20 | 0 | 6 | 152 | 9.62 | 19.71 | 14.02 | 200.81 | 200 | 135,512 | 2,040,656 | 51,888 | 233,488 | 2,400 | 2,464,144 |
| MEL -0302 | 19-Aug-20 | 0 | 8 | 176 | 10.16 | 24.58 | 7.33 | 226.69 | 0 | 97,392 | 1,559,128 | 145,680 | 305,528 | 1,400 | 2,109,128 |
| MEL -0303 | 19-Aug-20 | 0 | 22.75 | 196 | 5.79 | 26.53 | 4.03 | 254.94 | 0 | 604,656 | 1,883,608 | 108,760 | 348,032 | 800 | 2,945,856 |
| MEL -0304 | 19-Aug-20 | 0 | 6.16 | 126 | 11.30 | 18.05 | 18 | 180.41 | 0 | 131,712 | 1,817,752 | 132,312 | 224,704 | 2,400 | 2,308,880 |
| MEL -0305 | 19-Aug-20 | 0 | 1.70 | 103 | 23.46 | 18.68 | 8.03 | 155.18 | 200 | 14,968 | 1,587,664 | 95,592 | 232,088 | 2,200 | 1,932,712 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***4.38*** | ***74.02*** | ***5.93*** | ***10.56*** | ***5.10*** | | ***<0.1*** | ***8.37*** | ***75.58*** | ***4.54*** | ***11.43*** | ***<0.1*** | |
| **MEL-04** | | | | | | | | | | | | | | | |
| MEL -0401 | 19-Aug-20 | 0.2 | 2.073 | 103 | 8.57 | 21.4 | 1.84 | 137.54 | 400 | 8,784 | 1,107,336 | 88,208 | 192,784 | 200 | 1,397,712 |
| MEL -0402 | 19-Aug-20 | 0 | 0.77 | 141 | 6.68 | 14.25 | 0.81 | 163.81 | 0 | 29,136 | 1,731,744 | 182,600 | 98,392 | 200 | 2,042,072 |
| MEL -0403 | 19-Aug-20 | 0.4 | 11.08 | 102 | 11.9 | 18.08 | 8.35 | 151.72 | 800 | 132,712 | 1,351,192 | 80,040 | 184,000 | 600 | 1,749,344 |
| MEL -0404 | 19-Aug-20 | 0 | 7.17 | 115 | 10.73 | 19.8 | 2.44 | 155.67 | 0 | 59,272 | 1,228,864 | 158,648 | 178,016 | 600 | 1,625,400 |
| MEL -0405 | 19-Aug-20 | 0.1 | 3.39 | 62 | 6.94 | 17.6 | 1.63 | 91.65 | 200 | 152,464 | 1,106,736 | 66,056 | 183,400 | 400 | 1,509,256 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***3.50*** | ***74.83*** | ***6.40*** | ***13.02*** | ***2.15*** | | ***<0.1*** | ***4.59*** | ***78.40*** | ***6.91*** | ***10.05*** | ***<0.1*** | |
| **MEL-05** | | | | | | | | | | | | | | | |
| MEL -0501 - PC | 23-Aug-20 | 3 | 3.65 | 129 | 14.17 | 15.47 | 4 | 169.41 | 29,336 | 31,536 | 1,501,856 | 69,656 | 140,896 | 600 | 1,773,880 |
| MEL -0502 - PC | 23-Aug-20 | 0 | 4.71 | 93 | 8.64 | 15.96 | 12.04 | 134.89 | 600 | 123,528 | 1,221,880 | 103,376 | 189,184 | 1,600 | 1,640,168 |
| MEL -0503 - PC | 23-Aug-20 | 4 | 2.56 | 104 | 11.60 | 13.48 | 15.19 | 149.93 | 28,736 | 252,440 | 1,243,432 | 175,216 | 146,480 | 1,000 | 1,847,304 |
| MEL -0504 - PC | 23-Aug-20 | 0 | 5.41 | 102 | 16.98 | 16.76 | 16.15 | 157.15 | 0 | 138,296 | 1,544,560 | 103,776 | 175,616 | 2,600 | 1,964,848 |
| MEL -0505 - PC | 23-Aug-20 | 1 | 1.92 | 91 | 10.38 | 9.07 | 11.71 | 124.10 | 1,000 | 29,936 | 1,623,584 | 68,856 | 75,440 | 2,600 | 1,801,416 |
| ***Percent Density or Biomass*** | | ***0.98*** | ***2.48*** | ***70.44*** | ***8.40*** | ***9.62*** | ***8.09*** | | ***0.66*** | ***6.38*** | ***79.04*** | ***5.77*** | ***8.06*** | ***<0.1*** | |

### Table 6-7 Secchi Depth and Total Water Depth from the August 2020 Sampling Event

| Area | Station | Secchi (m) | Water (m) |
|---|---|---|---|
| MEL-01 | MEL-01-01 | 7.1 | 9.4 |
| | MEL-01-06 | na | 8.8 |
| | MEL-01-07 | 7 | 7.7 |
| | MEL-01-08 | 7.2 | 7.5 |
| | MEL-01-09 | 6 | 7.1 |
| MEL-02 | MEL-02-01 | 6 | 6 |
| | MEL-02-02 | 6.1 | 7.8 |
| | MEL-02-03 | 6.3 | 7 |
| | MEL-02-04 | 6.1 | 9 |
| | MEL-02-05 | 6.1 | 8 |
| MEL-03 | MEL-03-01 | 7.1 | 7.1 |
| | MEL-03-02 | 8 | 8.5 |
| | MEL-03-03 | 10 | 12.2 |
| | MEL-03-04 | 8 | 8 |
| | MEL-03-05 | 7.8 | 7.8 |
| MEL-04 | MEL-04-01 | 7.4 | 7.4 |
| | MEL-04-02 | 10.1 | 10.1 |
| | MEL-04-03 | 8.6 | 8.6 |
| | MEL-04-04 | 8.1 | 8.1 |
| | MEL-04-05 | 7.1 | 7.1 |
| MEL-05 | MEL-05-01 | 9.1 | 9.1 |
| | MEL-05-02 | 9.2 | 9.2 |
| | MEL-05-03 | 8.38 | 8.38 |
| | MEL-05-04 | 10 | 10 |
| | MEL-05-05 | 8.3 | 8.3 |

Notes
na = Secchi depth was not recorded at MEL-01-06

# 7 PENINSULA LAKES – WATER QUALITY

## 7.1 2020 Field Program

Field collections and sample analyses were conducted according to methods outlined in the *AEMP Design Document* (Golder 2016) and in recent AEMP interpretive reports.

### 7.1.1 Field Data and Sample Collection

Water sampling was completed in July and August 2020 at Lake A8, Lake B7, and Lake D7 as per the study design (**Figure 1-2**). The three Peninsula Lakes are relatively shallow (1.5 to 2.5 m). Total water depth was measured using a sounding line or portable depth sounder. Secchi depth was not recorded at any of the Peninsula Lakes due the shallow depth of the lakes (i.e., the Secchi disc is visible at the bottom of the lake).

*In-situ* water quality measurements (temperature, dissolved oxygen (% and mg/L), pH, and specific conductivity) were recorded at the three fixed sampling stations in each lake (**Figure 1-2**; **Table 7-3**). Measurements were recorded at discrete intervals just below the surface and every 0.5 m through the water column. The bottom profile was taken within 0.5 m of the sediment water interface.

Surface water samples were collected at 1 m using a Kemmerer grab sampler according to the water sampling SOP for the AEMP (Golder 2016). Water samples for dissolved analyses (e.g., metals) were filtered in the field using a syringe and disposable 0.45 µm disc filter according to standard methods recommended by ALS Environmental[32]. Samples were refrigerated and shipped to ALS (Winnipeg, MB) for analysis.

## 7.2 Approach and Objectives

Lakes A8, B7, and D7 are located on the peninsula between the south and east basins of Meliadine Lake near the mine and are monitored annually as part of the AEMP. These small lakes are included in the AEMP because of the potential for mine-related changes to water quality caused by deposition of air emissions and alteration of the sub-watersheds on the peninsula (Golder 2016). The methods and data analyses described in this report are consistent with previous AEMP reporting cycles and followed the objectives outlined in the *AEMP Study Design Document* (Golder 2016) to answer the following two key questions:

[32] ALS EnviroMail™ Issue #121 (Link to ALS website) for information on best practices for filtering water samples.

1. *Is water quality in the Peninsula Lakes consistent with water quality predictions in the FEIS and less than AEMP Action Levels[33]?*
2. *Are concentrations of key parameters increasing over time relative to baseline conditions?*

To answer these questions, water quality data from the Peninsula Lakes study in 2020 were evaluated by:

- Comparison against the normal range of baseline conditions,
- Screening against aquatic life and drinking water quality guidelines (AEMP Benchmarks),
- Comparison to water quality predictions in the FEIS, and
- Temporal comparisons of changing concentrations over time.

## Normal Range Comparison

Normal ranges calculated for the Lake A8, Lake B7, and Lake D7 in 2018 AEMP have been carried forward for use in this report. Data included in the normal range calculation for each parameter were collected between 1995 and 2011 (baseline) and 2015 to 2017 (pre-construction). Golder conducted a review of the historical data as part of the 2018 normal range assessment and concluded that conventional parameters, major ions, and selected nutrients from the historical data were fit for use in the normal range estimation. Nitrogen parameters and metals were not retained because DLs in the historical data are not comparable with current DLs. Statistical methods used to estimate the normal range of concentrations for the Peninsula Lakes are described in Golder (2018).

## Comparison to FEIS Predictions

Golder conducted water quality modeling as part of the 2014 FEIS submission to predict how construction and mining activities would affect water quality in small lakes located in the A, B, and D watersheds on the peninsula[34]. As mentioned previously, the original Project Certificate No.006 included development of deposits other than Tiriganiaq, two of which would have required dewatering of Lake A8 and nearby Lake A6. Based on the expectation that Lake A8 would be dewatered to make way for development of other deposits south of Tiriganiaq, water quality predictions were developed for the baseline phase (pre-development) and post-closure phases (after the lake is flooded) for Lake A8, but not for constructions and operations. For the Type A Water Licence Application, Lake B7, Lake A8, and

[33] AEMP Action Levels and Benchmarks are listed in **Table 2-2**.

[34] Refer to Table 7.4-A2 (Inventory of Waterbodies) in Appendix 7.4-A of the FEIS (Agnico Eagle 2014) for lakes that were carried forward for water quality modelling.

Lake D7 were removed from the final design because the lakes are underlain by a zone of permanently unfrozen ground (Agnico Eagle 2015).

For waterbodies that were included in the water quality model for the construction and operations period, changes to water quality were predicted to occur due to diversion of water, alteration of the watershed size and contributing areas, natural hydrological processes, evaporation, and aerial deposition of particulate matter (modelled as TSS), nutrients from blasting activities, and metals (modelled by individual metal parameter). Similar to Meliadine Lake, water quality in the waterbodies closest to the mine (e.g., Lake B7) was predicted to change, but most water quality parameters, changes in water quality were predicted to be *minor*, defined as an increase from baseline, but less than guidelines for protection of aquatic life, drinking water quality, and SSWQO. The only notable statement in the Type A Water Licence Application with direct relevance for the Peninsula Lakes study applies to arsenic. During operations, water quality was predicted to meet MMER (now MDMER) discharge limits at all CPs on site, with the exception of arsenic in CP3 during operations, which receives runoff from the TSF. Arsenic infiltration and seepage are minimized by dewatering (dry stacking) the tailings and subsequent freezing (Agnico Eagle 2015).

#### Temporal Trend Assessment

Temporal trends in concentrations were examined qualitatively using plots showing concentrations of selected water quality parameters over time. Parameters were carried forward for temporal trend assessment if the parameter *exceeded* the normal range screening assessment, similar to the approach outlined for the Meliadine Lake study.

## 7.3 Results and Discussion

This section summarizes results of the 2020 water quality assessment for the Peninsula Lakes. Figures and tables to support the results and discussion are presented at the end of this chapter in **Section 7.6** (Figures) and **Section 7.7** (Tables), respectively.

### 7.3.1 Field-Measured Water Quality Parameters

Limnology profiles for the Peninsula Lakes in July and August 2020 are presented in **Figure 7-1**. The small size and shallow depth of the Peninsula Lakes means oxygen, pH, temperature, and specific conductivity are well mixed vertically (top to bottom in the water column) and horizontally (between stations).

**Dissolved oxygen** – Wave and wind action kept the lakes well oxygenated in July and August (> 8 mg/L).

**pH** – The pH of the lakes was slightly alkaline, typically measuring between 7.5 and 8.5 compared to Meliadine Lake which is typically circum-neutral (7 to 7.5). There is no evidence of changes in pH in the Peninsula Lakes since the transition from baseline to constructions and operations.

**Specific conductivity** – Specific conductivity was lowest at Lake D7 and highest at Lake B7 and Lake A8 in 2020. Specific conductivity increased slightly between the July and August event at Lake D7 and Lake A8, consistent with the pattern of change that was observed in 2019. At Lake B7, the magnitude of the increase between July and August 2020 was more pronounced, as indicated by Lake B7 conductivity measuring the range observed in Lake A8 (244 µS/cm in July and 281 µS/cm; **Figure 7-1**).

Compared to limnology profiles taken in 2018, conductivity in both Lake A8 and Lake B7 has increased, with a particularly noticeable step-increase between 2019 and 2020 at Lake B7 (**Figure 7-1**). In 2018, lake-wide conductivity was in the range of 130 to 140 µS/cm and in the range of conductivity reported for Lake D7. From July 2019 to August 2020, lake-wide conductivity has increased from 150 µS/cm to 275 µS/cm. conductivity in Lake D7 has remained consistent, while both Lake B7 and Lake A8 have trended higher based on their locations relative to the TSF (Lake B7) and Tiriganiaq Pit development (Lake A8).

### 7.3.2 Water Quality Screening

Summary statistics and water quality screening results for the Peninsula Lakes are provided in **Table 7-4** (Lake A8), **Table 7-5** (Lake B7), and **Table 7-6** (Lake D7).

#### Comparison to Guidelines

Water quality for the Peninsula Lakes was predicted to meet aquatic life, human health guideline, or in the case of fluoride, arsenic, and iron SSWQO throughout construction, operations, and closure (Agnico Eagle 2015). Arsenic concentrations were below the SSWQO of 25 µg/L in Lake A8 (mean sample concentration of 5.4 µg/L) and Lake B7 (mean sample concentration of 5.5 µg/L). The SSWQO is the AEMP Benchmark for the protection of aquatic life and is conservatively protective of the aquatic receiving environment (Golder 2013). There were no other exceedances of CCME WQGs or drinking water quality guidelines in the Peninsula Lakes samples from 2020 based on the mean concentration from the July and August sampling events.

#### Normal Range Assessment

Results of the normal range screening assessment for the Peninsula Lakes are summarized in **Table 7-1**. Detailed tables showing results of the normal range screening assessment are provided in **Table 7-7** (Lake A8), **Table 7-8 (**Lake B7) and, **Table 7-9** (Lake D7) at the end of this chapter. The upper limit of the normal range is also shown in the temporal chemistry plots in **Figure 7-2** to **Figure 7-6** to help visualize changes in water quality over time relative to the normal range.

**Table 7-1. Parameters that exceeded the normal range in concentration for the Peninsula Lakes in 2020 and comparison of mean/median concentrations from 2018-2020**

| Lake | Parameter > NR in 2020 | Normal Range [a[ | AEMP Benchmark | Baseline [b] | | Concentration [c] | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Median | Max | 2020 | 2019 | 2018 |
| A8 | Ammonia as N | 0.011 | 0.58 | <0.05 | 1.3 | **0.043** | 0.016* | 0.003 |
| | Aluminum (T) (µg/L) | 3.0 | 100 | 2 | 40 | 4.5* | **5.2** | 4.3 |
| | Arsenic (T) (µg/L) | 2.4 | 25 | 1.8 | 4.2 | **5.4** | 2.3 | 2.5 |
| | Boron (T) (µg/L) | 5.0 | 1,500 | <50 | <100 | 5.6 * | 5.0 | 2.9 |
| | Copper (T) (µg/L) | 0.89 | 2.1 | 1.2 | 27 | **1.3** | 0.73 | 0.7 |
| | Iron (T) (µg/L) | 67 | 300 | 72 | 695 | 73 | **89** | **79** |
| | Lead (T) (µg/L) | 0.030 | 5.0 | <0.05 | 63 | **0.069** | **0.060** | 0.020 |
| | Molybdenum (T) | 0.22 | 73 | <0.02 | <5 | **0.27** | 0.19 | 0.25* |
| | Vanadium (T) (µg/L) | 0.05 | 120 | 0.25 | 1 | 0.051* | 0.067* | 0.053* |
| B7 | Chloride (mg/L) | 25.0 | 120 | | | **38.9** | 26.6 | 24 |
| | Sulphate (mg/L) | 6.00 | 218 | | | **8.15** | 5.90 | 4.92 |
| | Antimony (T) (µg/L) | 0.020 | 6.0 | | | 0.069* | 0.020 | 0.020 |
| | Arsenic (T) (µg/L) | 1.80 | 25 | | | **5.45** | 1.79 | 1.59 |
| | Barium (T) (µg/L) | 20.0 | 1,000 | | | **24.6** | 19.4 | 20.0 |
| | Boron (T) (µg/L) | 8.00 | 1,500 | | | 14.9* | 9.6 * | 10.5* |
| | Cobalt (T) (µg/L) | 0.05 | 0.92 | | | **0.07** | 0.052 | 0.04 |
| | Lithium (T) (µg/L) | 7.50 | na | | | **19.6** | **12.6** | **14.4** |
| | Molybdenum (T) | 0.24 | 73 | | | **1.42** | 0.18 | 0.19 |
| | Strontium (T) (µg/L) | 155 | 1,700 | | | **276** | **205** | 226 |
| | Uranium (T) (µg/L) | 0.030 | 15 | | | **0.044** | 0.025 | 0.026 |
| | Vanadium (T) (µg/L) | 0.050 | 120 | | | 0.051* | 0.072* | 0.074* |
| D7 | Ammonia (as N) | 0.009 | 0.14 | <0.05 | 1.4 | **0.031** | 0.019* | 0.020* |
| | Nitrate (as N) (mg/L) | 0.005 | 2.9 | 0.04 | 0.8 | 0.012* | 0.009* | 0.005 |
| | Aluminum (T) (µg/L) | 6.7 | 100 | 5.3 | 21 | 7.3 | 6.3 | 5.28 |
| | Arsenic (T) (µg/L) | 1.2 | 25 | 1.1 | 3.8 | 1.3 | 1.1 | 1.0 |
| | Cobalt (T) (µg/L) | 0.050 | 0.78 | <0.1 | <15 | **0.064** | 0.050 | **0.064** |
| | Lead (T) (µg/L) | 0.020 | 5.0 | <0.2 | 1.4 | 0.024* | **0.034** | 0.019 |
| | Titanium (T) (µg/L) | 0.34 | na | 0.7 | <10 | **0.40** | 0.31 | 0.23 |
| | Vanadium (T) (µg/L) | 0.070 | 120 | 0.1 | 30 | 0.092* | 0.11* | 0.07 |

Notes
na = no AEMP Benchmark for lithium or titanium (i.e., no aquatic life or human health drinking water guidelines).
[a] Normal ranges were calculated in Golder (2019) using baseline data from 1995 to 2011 and 2015 to 2017. Some baseline data used in the FEIS for metals and nitrogen parameters were not included in derivation of the normal range estimates due to high detection limits in samples analyzed from the 1990s and 2000s baseline surveys.
[b] Baseline median and maximum concentrations for Lake A8 and Lake D7 are reported in Appendix 7.4-A (Agnico Eagle 2014).
[c] **Bolded** concentrations exceeded the upper limit of the normal range by more than 10% and were > 5* the analytical detection limit.
"*" indicates the mean/median concentration exceed the normal range in 2020 but was <5-times the analytical detection limit.

**Table 7-2. Parameters that exceeded Baseline Concentrations by More than 10% in 2020**

| Lake | Concentrations Exceed 10% Baseline |
|---|---|
| A8 | Ammonia, arsenic, copper, lead, molybdenum |
| B7 | Chloride, sulphate, arsenic, barium, cobalt, lithium, molybdenum, strontium, uranium |
| D7 | Ammonia, cobalt, titanium |

Notes
"*" indicates the mean/median concentration exceed the FEIS prediction but was <5 x the analytical detection limit.

## Comparison to Water Quality Predictions in the FEIS

**Table 7-1** presents those parameters (in bold) where the mean or median concentration in 2020 exceeded the upper limit of baseline concentrations by 10%. For the purpose of this assessment, the upper 90$^{th}$ percentile of the normal range is used to characterize baseline concentrations. Parameters that exceeded 10% of baseline but where concentrations were measured at less than 5-times the analytical detection limit are shown, but not considered "elevated" because of higher uncertainty with results close to the analytical detection limit. Results for each lake are discussed below.

## Lake A8 Water Quality Summary

Lake A8 water quality in 2020 was within the normal range of concentrations for the majority of the parameters. Mean and/or median concentrations of ammonia, copper, lead, and molybdenum exceeded the upper limit of the normal range by more than 10% and were greater than 5x the detection limit, but were below the water quality guidelines for protection of aquatic life and drinking water quality. The mean arsenic concentration in Lake A8 in 2020 (5.6 µg/L) was elevated relative to the normal range for the baseline period (2.4 µg/L) and but was below the AEMP Benchmark (SSWQO) for the project of 25 µg/L.

Dustfall monitoring location DF-4 located on the north shore of Lake A8 was sampled during the snow pack survey in February and April 2020. The station is located directly south of Tirianiaq pit development. Most of the parameters were detected above DL in 2020 (**Appendix G**). Parameters detected in 2019 were also reported at detectable concentrations in the 2020 snow samples including; aluminum, arsenic, iron, strontium, as well as major cations (e.g., calcium and magnesium). Several parameters were detected at concentrations at least 5 times above the detection limit at DF-4 in at least one sampling event in 2020 including; aluminum, antimony, arsenic, barium, cadmium, cobalt, chromium, copper, iron, lead, manganese, molybdenum, nickel, strontium, thallium, uranium and zinc. Of these, aluminum, arsenic, copper, lead, and molybdenum also exceeded their respective water quality normal ranges by over 10% during summer sampling, suggesting that dust may be influencing water quality in Lake A8; however, concentrations are not trending upward, and concentrations remain below the AEMP benchmarks which are protective of aquatic life.

### Lake B7 Water Quality Summary

The extent of the TSF, as of the end of 2020, is within approximately 150 m of the northeast shore of Lake B7. Water quality results from 2020 were compared against the upper limit of the normal range of baseline data to evaluate the effectiveness of control measures to limit off-site migration of contaminants from non-point sources (e.g., dust and aerial emissions). Concentrations of chloride, sulphate, arsenic, barium, cobalt, lithium boron, lithium, strontium, and uranium exceeded normal ranges by over 10% and were also at least 5 times the analytical detection limit. Of the parameters with AEMP Benchmarks, none exceeded their respective Action Levels (75% of the AEMP Benchmark).

Snow samples were collected at the dustfall station DF-6 (**Figure 1-2**), the station closest to B7, in February and April, 2020. Unlike in 2019, TSS was detected in samples collected in 2020. Other parameters that were detected at concentrations greater than 5 times the DL in at least one sampling event include aluminum, antimony, arsenic, barium, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, selenium, silver, strontium, uranium, and zinc. Whether detectable concentrations of TSS or other parameters is linked to off-site dust migration is unclear. However, the effect of dust on water quality in Lake B7 is likely negligible considering the volume of water entering these lakes during spring freshet.

### Lake D7 Water Quality Summary

Cobalt and titanium were the only two parameters, other than ammonia, that were elevated in 2020 relative to baseline concentrations and greater than 5 times the analytical detection limit. In the case of cobalt, the mean concentration (0.064 µg/L) was also observed in 2018, and was marginally above the normal range of 0.05 µg/L. Similarly, the mean concentration of titanium (0.40 µg/L), is only slightly above the normal range of 0.34 µg/L. However, mean concentration has increased relative to 2019 (0.31 µg/L) and 2018 (0.23 µg/L). These results conform to water quality model results that predicted titanium concentrations would increase by 10% from baseline levels for the D watershed lakes during construction and operations. By post-closure, titanium concentrations are predicted to decrease to baseline concentrations (FEIS Volume 7; Agnico Eagle 2014). Other parameters, including nitrate, lead, and vanadium are elevated relative to baseline concentrations but are within 5 times the analytical detection limit. Measurement uncertainty is higher for readings close to the detection limit, and these results should be interpreted with caution due to greater uncertainty associated with low-level analyses[35].

[35] The BC Environmental Laboratory Technical Advisor recommends 5-times the analytical detection limit as a guide for assessing analytical accuracy for laboratory duplicates based on measurement uncertainty estimates from various laboratories (Link to document).

Lake D7 is, as expected, the lake that more closely resembles baseline conditions given its location relative to the mine. In this context, Lake D7 provides a good point of comparison with which to monitor the spatial extent of changes in water quality attributable to non-point source discharges from the mine. It's evident that for most parameters, and particularly those that were elevated at Lake B7 and Lake A8, the spatial extent of mine-related changes to water quality for lakes on the peninsula is confined to lakes closest to the site.

### 7.3.3 Temporal Trend Assessment

The normal range assessment is one way of evaluating whether current water quality is within the range of conditions measured prior to development. To further support the normal range assessment, temporal changes in water quality were qualitatively examined using temporal plots to visually examine changes in concentration for key parameters since the onset of formal baseline monitoring for the AEMP in 2015. Condensed-temporal plots of changes in concentration over time are presented in **Figure 7-2** to **Figure 7-7** and provide a visual means of assessing changes over time.

Observations from the temporal assessment of changes in water quality are:

- Relative to the construction phase (2017 and 2018) major ionic compounds (**Figure 7-2**) and conductivity (**Figure 7-3**) have remained stable through 2020 at Lake A8 and Lake D7. However, these parameters have shown an increasing trend during 2020 at Lake B7 relative to the construction phase. Sodium, chloride, and sulphate were slightly higher at B7 in 2020 compared to previous years, with chloride and sulphate exceeding 10% of the normal range for the baseline dataset (**Table 7-8**).
- Nutrient parameters were within the range of baseline concentrations (see TKN, total phosphorus, and DOC in **Figure 7-3**), with the exception of nitrate at D7. Nitrate concentrations have typically been less than the analytical detection limit of 0.005 µg/L at D7. However, in 2020, the mean concentration was 0.012 µg/L.
- Metal concentrations (total and dissolved fractions) in Lake D7 were similar in 2020 to the two previous years (**Figure 7-4** to **Figure 7-7**). However, increases in metals concentrations were observed in both Lake A8 (arsenic, copper, and lead) and Lake B7 (arsenic, barium, boron, cobalt, lithium, molybdenum, strontium, and uranium).

Concentrations of aluminum and iron (total fraction) appear to have stabilized at Lake A8 after increasing during the construction phase (**Figure 7-4**).

Lead concentrations at Lake A8 and Lake D7 also appear to have stabilized after increasing during the construction phase. It is clear from **Figure 7-7** that the frequency of detection for total lead has increased at all three Peninsula Lakes since 2017. Current concentrations are consistent with predictions in the FEIS and below concentrations that would trigger a Low Action Level exceedance.

## 7.4 Low Action Level Assessment – Peninsula Lakes

Results presented in **Section 7.3** provides the evidence used to answer the following two questions about whether the mine is causing changes to water quality in the Peninsula Lakes:

*Question 1: is water quality in the Peninsula Lakes consistent with the FEIS predictions (negligible to minor increase from baseline) and less than the AEMP benchmarks* (**Table 2-2**)?

- **Response**: Water quality in the Peninsula Lakes has changed relative to baseline conditions, particularly in the case of Lake A8 and Lake B7. Among the parameters with noticeable increases in 2020 are arsenic (Lake A8 and Lake B7), barium (Lake B7), cobalt (Lake B7), and lithium (Lake B7). Arsenic is the only parameter with effects-based guidelines. The AEMP Benchmark for arsenic is 10 µg/L for protection of human drinking water quality, which may not be an appropriate benchmark to compare against given the proximity of Lake A8 and Lake B7 to mine infrastructure and the expectation that people are not using either lake for drinking water. All four samples in Lake B7 and Lake A8 were above 3 µg/L, but the average concentration at Lake A8 (5.8 µg/L) and Lake B7 (5.5 µg/L) remains below the Low Action Level of 7.5 µg/L.
- There were a few samples in Lake A8 with copper concentrations that exceeded the AEMP Action Level, but the average concentration from the July and August sampling events was 1.3 µg/L, marginally below the 1.5 µg/L Low Action Level concentration for copper.
- No other parameters were close to the AEMP Low Action Levels.

*Question 2: are concentrations increasing over time relative to baseline conditions in each lake?*

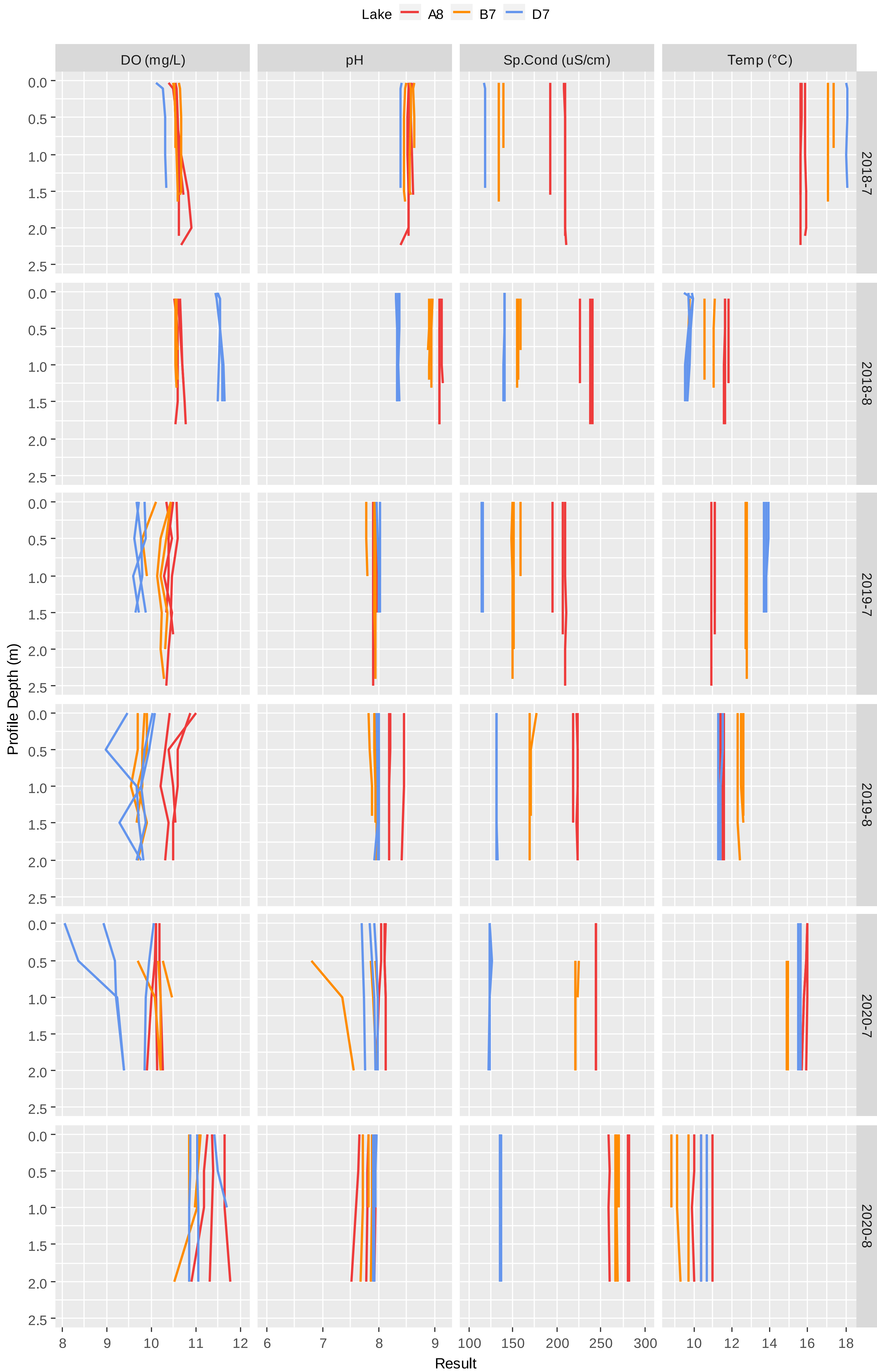
- **Response**: There is clear evidence that some parameters have increased relative to the baseline period, most notably arsenic in Lake A8 and Lake B7 and lithium in Lake B7. For the majority of other parameters, concentrations have either plateaued or decreased as the mine has transitioned from peak construction to operations. The small number of parameters that have increased at Lake A8 and Lake B7 (e.g., arsenic, boron, lithium) are clearly attributable to mining activities; however, it's important to reiterate that minor changes in water quality were predicted in the FEIS (Agnico Eagle 2014) for these, and other lakes on the peninsula, due to non-point source discharges such as dust and altered hydrology to accommodate mine development.

## 7.5 Recommendations for 2021

Water quality in Lake A8 and Lake B7 in 2020 conform to the FEIS prediction of a *minor* change (i.e., > baseline but < WQG) and concentrations are less than the AEMP Action Levels (75% of the AEMP Benchmark). According to the Response Framework criteria, routine monitoring is planned for 2021 to continue track mine-related changes in water quality in the Peninsula Lakes.

## 7.6 Figures – Peninsula Lakes

**Figure 7-1. *In-situ* Limnology Profiles at the Peninsula Lakes, 2018 – 2020**



### Figure 7-2. Concentrations of TDS, Hardness, and Major Ions (Ca, Mg, K, and Na) Since 2015

Notes: TDS = total dissolved solids; Hard = hardness; Ca, Mg, K, and Na = calcium, magnesium, potassium, sodium; Cl = chloride; SO4 = sulphate.
Normal range = the upper 90th prediction interval or percentile of baseline concentrations (pre-2018). Action Level = 75% of the AEMP Benchmark (Table 2-2).

**Figure 7-3. pH, conductivity, and Concentrations of Selected Nutrients Since 2015**

Notes: TDS = total dissolved solids; Hard = hardness; Ca, Mg, K, and Na = calcium, magnesium, potassium, sodium; Cl = chloride; SO4 = sulphate.
Normal range = the upper 90th prediction interval or percentile of baseline concentrations (pre-2018). Action Level = 75% of the AEMP Benchmark (Table 2-2).

**Figure 7-4. Total (Unfiltered) Concentrations of Selected Metals Since 2015 (Aluminum to Lead)**

Notes: Normal range = the upper 90th prediction interval or percentile of baseline concentrations (pre-2018). Action Level = 75% of the AEMP Benchmark (**Table 2-2**).

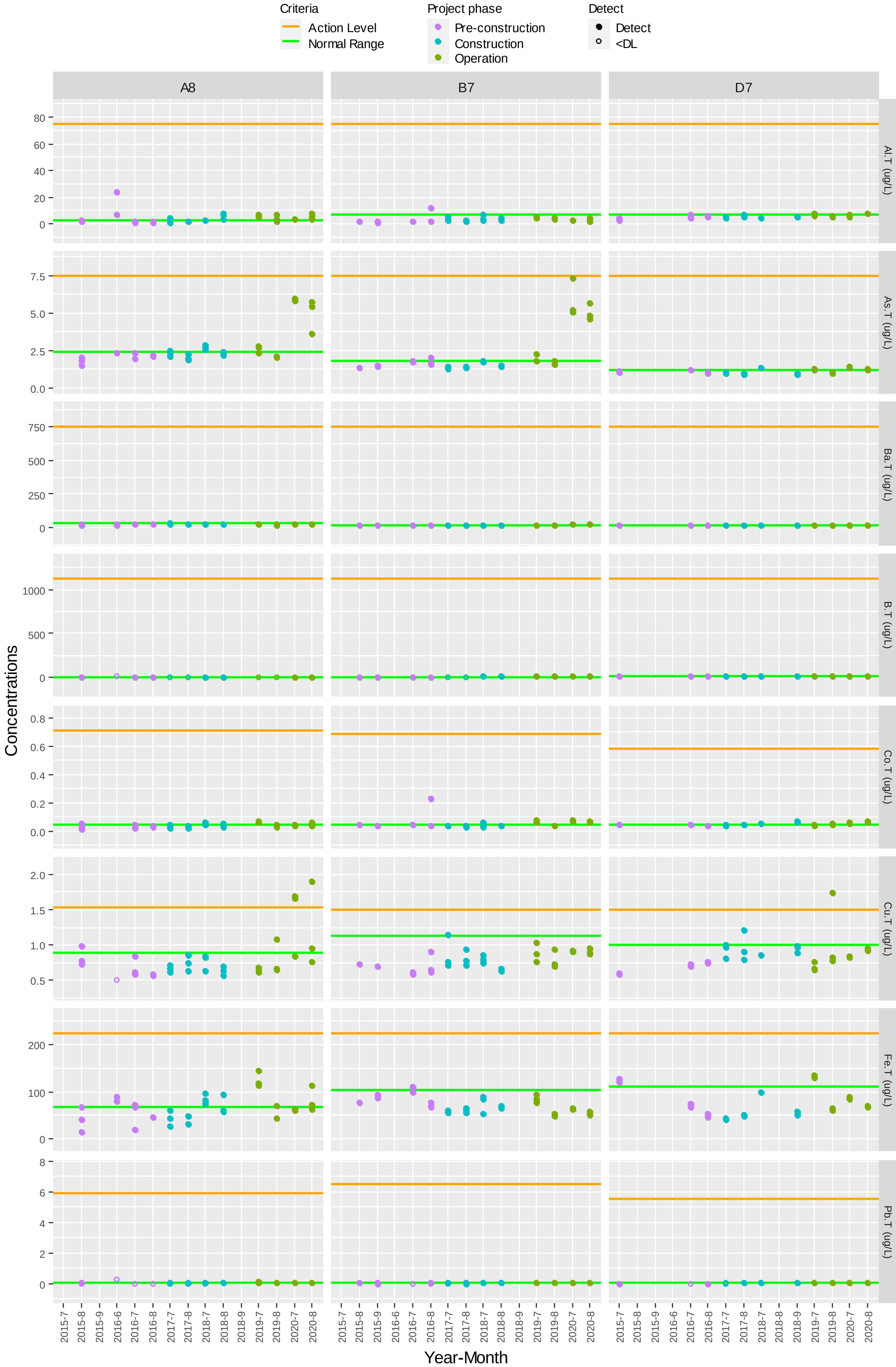


**Figure 7-5. Total (Unfiltered) Concentrations of Selected Metals Since 2015 (Lithium to Zinc)**

Notes: Normal range = the upper 90th prediction interval or percentile of baseline concentrations (pre-2018). Action Level = 75% of the AEMP Benchmark (**Table 2-2**).

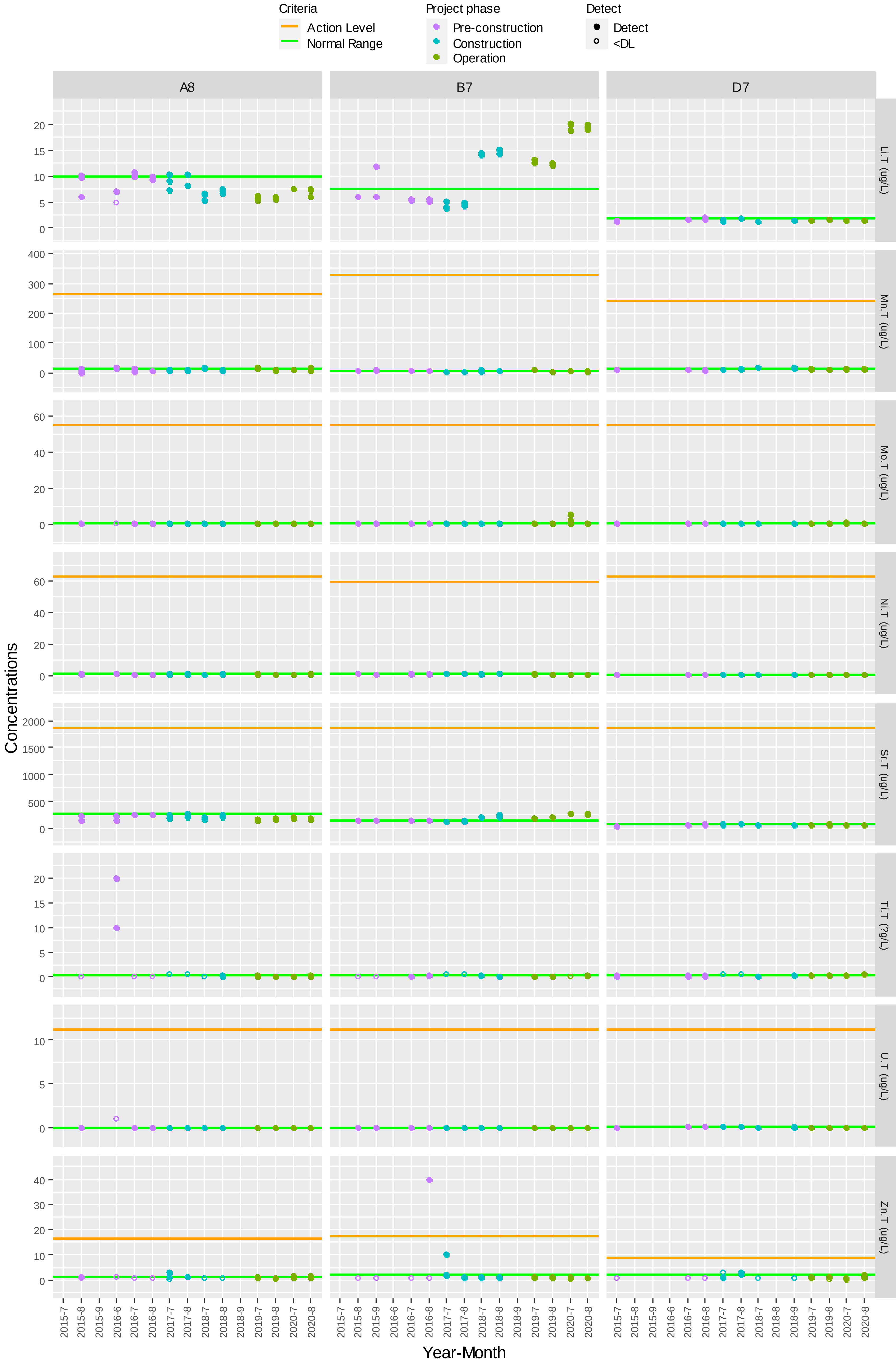


**Figure 7-6. Concentration of Selected Dissolved Metals Since 2015 (Aluminum to Lead)**

Notes: Concentrations shown in log10 scale for the dissolved (0.45 µm filtered) fraction.
Normal ranges were not computed for these dissolved parameters.

**Figure 7-7. Concentration of Selected Dissolved Metals Since 2015 (Lithium to Zinc)**

Notes: Concentrations shown in log10 scale for the dissolved (0.45 µm filtered) fraction. Normal ranges were not originally developed for dissolved manganese and strontium.

## 7.7 Tables – Peninsula Lakes

Tables specific to the Peninsula Lakes study areas are presented below. The 2020 water quality dataset for the Peninsula Lake stations is provided in **Appendix D**.

## Table 7-3. Peninsula Lake area monitoring stations sampled in 2020

| Area | Station ID | UTM (zone 15V) | | | | Depths[b] |
|---|---|---|---|---|---|---|
| | | | | Jul | Aug | |
| | | Easting | Northing | 11, 13 & 15 | 9, 12 & 14 | Total |
| Lake A8 | A8-01 | 540007 | 6987659 | ✓ | ✓ (FD) | 2.3 |
| | A8-02 | 540211 | 6987204 | ✓ | ✓ | 2.2 |
| | A8-03 | 540925 | 6987421 | ✓ | ✓ | 1.7 |
| Lake B7 | B7-01 | 538631 | 6989096 | ✓ | ✓ | 1.0 |
| | B7-02 | 538195 | 6989436 | ✓ | ✓ | 1.7 |
| | B7-03 | 537713 | 6989798 | ✓ | ✓ | 1.7 |
| Lake D7 | D7-01 | 536390 | 6989340 | ✓ (FD) | ✓ (FD) | 1.7 |
| | D7-02 | 536567 | 6988868 | ✓ | ✓ | 1.7 |
| | D7-03 | 536852 | 6988689 | ✓ | ✓ | 1.8 |

Notes
[a] Water and limno profiles = ✓ ; Field duplicate sample collected = FD
[b] Total depths are reported as the average if the station was sampled more than once (Golder 2018).

### Table 7-4. Lake A8 – Water Quality Screening Assessment, 2020.

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake A8 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | GCDWQ | AO | SSWQG |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature (°C) | °C | - | - | - | 15 | - | - | - | 6 | 0 | 0 | 13.2 | 3 | 13.4 | 9.9 | 16 | - | - | - | - |
| Sp. Conductivity (field) (µS/cm) | uS/cm | 334 | - | - | - | - | - | - | 6 | 0 | 0 | 259 | 18.2 | 252 | 244 | 281 | - | - | - | - |
| pH (field) | pH units | 7.7 \| 8.3 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | - | 6 | 0 | 0 | 7.93 | 0.206 | 7.98 | 7.59 | 8.12 | 0 | - | 0 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 5 | 0 | 0 | 10.6 | 0.737 | 10.2 | 10 | 11.6 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 6 | 0 | 0 | 102 | 2.17 | 102 | 99.9 | 106 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab, µS/cm) | uS/cm | - | - | - | - | - | - | - | 6 | 0 | 0 | 236 | 14.3 | 230 | 222 | 256 | - | - | - | - |
| Hardness | mg/L | 123 | - | - | - | - | - | - | 6 | 0 | 0 | 93.2 | 8.79 | 91.6 | 84.5 | 103 | - | - | - | - |
| pH (lab) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | - | 6 | 0 | 0 | 7.76 | 0.0602 | 7.76 | 7.71 | 7.82 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | - | - | - | 500 | - | 500 | 375 | 6 | 0 | 0 | 155 | 14.3 | 147 | 144 | 174 | - | - | 0 | - |
| TDS (Calculated) | mg/L | 152 | - | - | 500 | - | 500 | 375 | 6 | 0 | 0 | 123 | 6.5 | 120 | 118 | 132 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 4 | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 1 | 1 | 1.2 | - | - | - | - |
| Turbidity (lab, NTU) | NTU | 0.87 | - | - | - | - | - | - | 6 | 0 | 0 | 0.47 | 0.132 | 0.465 | 0.35 | 0.71 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 91 | - | - | - | - | - | - | 6 | 0 | 0 | 62.4 | 4.44 | 61.4 | 58.3 | 70.2 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.6 | 0.6 | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.34 | 0.34 | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 83.6 | - | - | - | - | - | - | 6 | 0 | 0 | 51.1 | 3.62 | 50.3 | 47.8 | 57.5 | - | - | - | - |
| Bromide | | - | - | - | - | - | | | 6 | 0 | 0 | 0.237 | 0.0163 | 0.24 | 0.21 | 0.26 | - | - | - | - |
| Calcium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 30.5 | 2.97 | 30 | 27.5 | 33.9 | - | - | - | - |
| Calcium (T) | mg/L | 40 | - | - | - | - | - | - | 6 | 0 | 0 | 30.6 | 2.61 | 30.2 | 27.8 | 34.1 | - | - | - | - |
| Chloride | mg/L | 61.000 | 120 | - | 250 | - | 120 | 90 | 6 | 0 | 0 | 41.1 | 2.87 | 41.2 | 36 | 43.8 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.04 | 0.12 | 1.5 | - | 2.8 | 1.5 | 1.125 | 6 | 0 | 0 | 0.0338 | 0.00248 | 0.0335 | 0.031 | 0.038 | na | 0 | - | 0 |
| Magnesium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 4.18 | 0.386 | 4.03 | 3.85 | 4.78 | - | - | - | - |
| Magnesium (T) | mg/L | 5.6 | - | - | - | - | - | - | 6 | 0 | 0 | 4.24 | 0.289 | 4.12 | 3.98 | 4.63 | - | - | - | - |
| Potassium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.84 | 0.0611 | 1.82 | 1.78 | 1.94 | - | - | - | - |
| Potassium (T) | mg/L | 2.5 | - | - | - | - | - | - | 6 | 0 | 0 | 1.87 | 0.0615 | 1.86 | 1.78 | 1.95 | - | - | - | - |
| Reactive Silica (SIO2) | | 1.3 | - | - | - | - | | | 6 | 0 | 0 | 0.795 | 0.299 | 0.722 | 0.554 | 1.3 | - | - | - | - |
| Sodium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 7.54 | 0.436 | 7.34 | 7.18 | 8.16 | - | - | - | - |
| Sodium (T) | mg/L | 8.4 | - | - | 200 | - | - | - | 6 | 0 | 0 | 7.68 | 0.569 | 7.49 | 6.96 | 8.41 | - | - | 0 | - |
| Sulphate | mg/L | 9.3 | - | - | 500 | - | 218 | 164 | 6 | 0 | 0 | 7.49 | 0.612 | 7.63 | 6.39 | 8.02 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.011 | 0.141 | - | - | - | 0.141 | 0.106 | 6 | 0 | 0 | 0.0433 | 0.0144 | 0.043 | 0.0227 | 0.0656 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.015 | 2.9 | 10 | - | - | 2.9 | 2.175 | 6 | 3 | 50 | - | - | 0.0057 | 0.005 | 0.0139 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | - | - | 6 | 3 | 50 | - | - | 0.00575 | 0.0051 | 0.0139 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.0005 | 0.06 | 1 | - | - | 0.06 | 0.045 | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | 0 | 0 | - | - |
| Nitrogen | | - | - | - | - | - | | | 6 | 0 | 0 | 0.442 | 0.0295 | 0.44 | 0.406 | 0.481 | - | - | - | - |
| Orthophosphate (PO4-P) | | 0.0023 | - | - | - | - | | | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - |
| Total Diss Phosphorus | | 0.006 | - | - | - | - | | | 6 | 0 | 0 | 0.0028 | 0.000346 | 0.0028 | 0.0023 | 0.0033 | - | - | - | - |
| Total Dissolved Nitrogen | | - | - | - | - | - | | | 6 | 0 | 0 | 0.362 | 0.0361 | 0.37 | 0.318 | 0.403 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.63 | - | - | - | - | - | - | 6 | 0 | 0 | 0.438 | 0.0311 | 0.43 | 0.406 | 0.481 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | | - | - | - | - | - | | | 6 | 0 | 0 | 0.357 | 0.0355 | 0.366 | 0.312 | 0.403 | - | - | - | - |
| Total Phosphorus | mg/L | 0.009 | - | - | - | - | 0.01 | 0.0075 | 6 | 0 | 0 | 0.00627 | 0.000592 | 0.00615 | 0.0056 | 0.007 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 4.9 | - | - | - | - | - | - | 6 | 0 | 0 | 4.23 | 0.455 | 4.16 | 3.86 | 5.11 | - | - | - | - |
| Total Organic Carbon | mg/L | 4.7 | - | - | - | - | - | - | 6 | 0 | 0 | 4.18 | 0.43 | 4.02 | 3.9 | 5.05 | - | - | - | - |

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake A8 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | GCDWQ | AO | SSWQG |
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | µg/L | 3 | 100 | - | - | - | 100 | 75 | 6 | 0 | 0 | 4.47 | 1.79 | 3.75 | 3.2 | 7.9 | 0 | - | - | - |
| Antimony (T) | µg/L | 0.4 | 9 | 6 | - | - | 6 | 4.5 | 6 | 0 | 0 | 0.0895 | 0.109 | 0.05 | 0.034 | 0.312 | - | 0 | - | - |
| Arsenic (T) | µg/L | 2.4 | 5 | 10 | - | 25 | 10 | 7.5 | 6 | 0 | 0 | 5.39 | 0.908 | 5.78 | 3.58 | 5.92 | na | 0 | - | 0 |
| Barium (T) | µg/L | 32 | - | 1000 | - | - | 1000 | 750 | 6 | 0 | 0 | 25 | 0.85 | 24.8 | 23.9 | 26 | - | 0 | - | - |
| Beryllium (T) | µg/L | 0.01 | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Bismuth (T) | µg/L | 0.01 | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Boron (T) | µg/L | 5 | 1500 | 5000 | - | - | 1500 | 1125 | 6 | 2 | 33 | 4.6 | 1.63 | 5.6 | 5 | 5.7 | 0 | 0 | - | - |
| Cadmium (T) | µg/L | 0.005 | 0.138 \| 0.162 | 5 | - | - | 0.138 | 0.104 | 6 | 5 | 83 | - | - | 0.005 | 0.005 | 0.0076 | 0 | 0 | - | - |
| Chromium (T) | µg/L | 0.06 | 1 | 50 | - | - | 1 | 0.75 | 6 | 6 | 100 | - | - | 0.1 | 0.1 | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | µg/L | 0.05 | 0.951 \| 1.03 | - | - | - | 0.951 | 0.713 | 6 | 0 | 0 | 0.0477 | 0.00837 | 0.046 | 0.0401 | 0.0633 | 0 | - | - | - |
| Copper (T) | µg/L | 0.89 | 2.05 \| 2.43 | 2000 | 1000 | - | 2.05 | 1.54 | 6 | 0 | 0 | 1.3 | 0.505 | 1.31 | 0.758 | 1.9 | 0 | 0 | 0 | - |
| Iron (T) | µg/L | 67 | 300 | - | 300 | 1060 | 300 | 225 | 6 | 0 | 0 | 72.7 | 20.1 | 63.5 | 61.6 | 113 | na | - | 0 | 0 |
| Lead (T) | µg/L | 0.03 | - | 5 | - | - | 5 | 3.8 | 6 | 0 | 0 | 0.0663 | 0.0111 | 0.0685 | 0.049 | 0.081 | - | 0 | - | - |
| Lithium (T) | µg/L | 10 | - | - | - | - | - | - | 6 | 0 | 0 | 7.26 | 0.603 | 7.51 | 6.03 | 7.55 | - | - | - | - |
| Manganese (T) | µg/L | 13 | - | 120 | 20 | - | 350 | 263 | 6 | 0 | 0 | 10.8 | 3.74 | 9.53 | 8.39 | 18.4 | - | 0 | 0 | - |
| Mercury (T) | µg/L | 0.0012 | 0.026 | 1 | - | - | 0.026 | 0.020 | 6 | 3 | 50 | - | - | 0.00051 | 0.0005 | 0.00078 | 0 | 0 | - | - |
| Molybdenum (T) | µg/L | 0.22 | 73 | - | - | - | 73 | 54.8 | 6 | 0 | 0 | 0.274 | 0.013 | 0.272 | 0.261 | 0.297 | 0 | - | - | - |
| Nickel (T) | µg/L | 0.92 | 84.1 \| 97.7 | - | - | - | 84.1 | 63.1 | 6 | 0 | 0 | 0.827 | 0.095 | 0.79 | 0.744 | 1 | 0 | - | - | - |
| Selenium (T) | µg/L | 0.02 | 1 | 50 | - | - | 1 | 0.75 | 6 | 4 | 67 | - | - | 0.04 | 0.04 | 0.043 | 0 | 0 | - | - |
| Silicon (T) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 395 | 164 | 360 | 258 | 677 | - | - | - | - |
| Silver (T) | µg/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | 0 | - | - | - |
| Strontium (T) | µg/L | 273 | 2500 | 7000 | - | - | 1700 | 1275 | 6 | 0 | 0 | 192 | 12 | 194 | 173 | 204 | 0 | 0 | - | - |
| Sulfur (T) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2660 | 217 | 2670 | 2290 | 2880 | - | - | - | - |
| Thallium (T) | µg/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | 0 | - | - | - |
| Tin (T) | µg/L | 0.05 | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.02 | 0.02 | 0.022 | - | - | - | - |
| Titanium (T) | µg/L | 0.25 | - | - | - | - | - | - | 6 | 0 | 0 | 0.144 | 0.107 | 0.112 | 0.057 | 0.346 | - | - | - | - |
| Uranium (T) | µg/L | 0.054 | 15 | 20 | - | - | 15 | 11.3 | 6 | 0 | 0 | 0.0484 | 0.00414 | 0.0465 | 0.045 | 0.0557 | 0 | 0 | - | - |
| Vanadium (T) | µg/L | 0.01 | - | - | - | - | 120 | 90 | 6 | 3 | 50 | - | - | 0.0505 | 0.05 | 0.064 | - | - | - | - |
| Zinc (T) | µg/L | 1.2 | - | - | 5000 | - | 21.9 | 16.4 | 6 | 0 | 0 | 1.15 | 0.448 | 1.01 | 0.62 | 1.8 | - | - | 0 | - |
| Zirconium (T) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.01 | 0.01 | 0.132 | - | - | - | - |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2.15 | 0.616 | 2.15 | 1.1 | 2.9 | - | - | - | - |
| Antimony (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.058 | 0.0318 | 0.049 | 0.03 | 0.106 | - | - | - | - |
| Arsenic (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 4.44 | 0.836 | 4.72 | 2.8 | 5.02 | - | - | - | - |
| Barium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 23.8 | 0.776 | 23.6 | 22.9 | 25.1 | - | - | - | - |
| Beryllium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Bismuth (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Boron (D) | µg/L | - | - | - | - | - | - | - | 6 | 1 | 17 | 4.82 | 1.14 | 5.25 | 5 | 5.4 | - | - | - | - |
| Cadmium (D) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.005 | 0.005 | 0.0062 | - | - | - | - |
| Chromium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.1 | 0.1 | 0.1 | - | - | - | - |
| Cobalt (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.0228 | 0.00423 | 0.0214 | 0.0196 | 0.0305 | - | - | - | - |
| Copper (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.02 | 0.432 | 0.78 | 0.702 | 1.61 | - | - | - | - |
| Iron (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 33.6 | 9.03 | 31.6 | 25.6 | 51.2 | - | - | - | - |
| Lead (D) | µg/L | - | 7.88 \| 9.32 | - | - | - | 7.88 | 5.91 | 6 | 0 | 0 | 0.0307 | 0.00864 | 0.033 | 0.02 | 0.039 | 0 | - | - | - |
| Lithium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 7.22 | 0.617 | 7.37 | 6.01 | 7.69 | - | - | - | - |
| Manganese (D) | µg/L | - | 350 \| 440 | - | - | - | 350 | 263 | 6 | 0 | 0 | 1.42 | 0.92 | 1.08 | 0.879 | 3.29 | 0 | - | - | - |
| Mercury (D) | µg/L | - | - | - | - | - | - | - | 6 | 4 | 67 | - | - | 0.0005 | 0.0005 | 0.00216 | - | - | - | - |
| Molybdenum (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.302 | 0.048 | 0.298 | 0.259 | 0.392 | - | - | - | - |
| Nickel (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.784 | 0.106 | 0.753 | 0.711 | 0.993 | - | - | - | - |

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake A8 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | GCDWQ | AO | SSWQG |
| Selenium (D) | µg/L | - | - | - | - | - | - | - | 6 | 4 | 67 | - | - | 0.04 | 0.04 | 0.044 | - | - | - | - |
| Silicon (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 390 | 149 | 352 | 270 | 652 | - | - | - | - |
| Silver (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Strontium (D) | µg/L | - | 2500 | - | - | - | - | - | 6 | 0 | 0 | 192 | 8.93 | 193 | 177 | 201 | 0 | - | - | - |
| Sulfur (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2690 | 212 | 2760 | 2270 | 2840 | - | - | - | - |
| Thallium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Tin (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.02 | 0.02 | 0.02 | - | - | - | - |
| Titanium (D) | µg/L | - | - | - | - | - | - | - | 6 | 4 | 67 | - | - | 0.05 | 0.05 | 0.097 | - | - | - | - |
| Uranium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.0496 | 0.00347 | 0.0502 | 0.0439 | 0.0539 | - | - | - | - |
| Vanadium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.05 | 0.05 | 0.05 | - | - | - | - |
| Zinc (D) | µg/L | 8.5 | 21.9 \| 25.3 | - | - | - | 21.9 | 16.4 | 6 | 0 | 0 | 0.922 | 0.221 | 1.02 | 0.52 | 1.1 | 0 | - | - | - |
| Zirconium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.01 | 0.01 | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (Free) | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.0038 | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - |

Notes
[a] Refer to the main document for references to the various screening criteria.
[b] The range of acute and chronic guidelines calculated for the 2020 water quality data is shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] Refer to **Table 2-2** for the list of the AEMP Benchmarks. Benchmarks and corresponding Action Levels for dissolved Pb, Mn, Sr, and Zn were applied to the total (unfiltered fraction).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
"na" refers to the chronic WQG screening results that don't apply to parameters with SSWQO (fluoride, arsenic, iron).

### Table 7-5. Lake B7 – Water Quality Screening Assessment, 2020.

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake B7 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | GCDWQ | AO | SSWQO |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature (°C) | °C | - | - | - | 15 | - | - | - | 6 | 0 | 0 | 12.1 | 3.15 | 12.3 | 8.8 | 15 | - | - | - | - |
| Sp. Conductivity (field) (µS/cm) | uS/cm | 302 | - | - | - | - | - | - | 6 | 0 | 0 | 245 | 25.3 | 246 | 222 | 270 | - | - | - | - |
| pH (field) | pH units | 7 \| 8.2 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | - | 6 | 0 | 0 | 7.77 | 0.228 | 7.84 | 7.35 | 7.99 | 0 | - | 0 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 6 | 0 | 0 | 10.6 | 0.408 | 10.7 | 10.1 | 11 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 6 | 0 | 0 | 99.2 | 4.5 | 98.4 | 94.8 | 105 | - | - | - | - |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab, µS/cm) | uS/cm | - | - | - | - | - | - | - | 6 | 0 | 0 | 220 | 14.3 | 220 | 205 | 235 | - | - | - | - |
| Hardness | mg/L | 118 | - | - | - | - | - | - | 6 | 0 | 0 | 85.4 | 7.86 | 85 | 77.6 | 94.6 | - | - | - | - |
| pH (lab) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | - | 6 | 0 | 0 | 7.7 | 0.0559 | 7.68 | 7.65 | 7.78 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | - | - | - | 500 | - | 500 | 375 | 6 | 0 | 0 | 150 | 10.6 | 148 | 140 | 164 | - | - | 0 | - |
| TDS (Calculated) | mg/L | 171 | - | - | 500 | - | 500 | 375 | 6 | 0 | 0 | 114 | 6.41 | 114 | 108 | 121 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 3 | - | - | - | - | - | - | 6 | 3 | 50 | - | - | 1.15 | 1 | 2.8 | - | - | - | - |
| Turbidity (lab, NTU) | NTU | 0.69 | - | - | - | - | - | - | 6 | 0 | 0 | 0.387 | 0.0612 | 0.41 | 0.3 | 0.44 | - | - | - | - |
| **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 135 | - | - | - | - | - | - | 6 | 0 | 0 | 53.4 | 3.33 | 53.2 | 50 | 56.9 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.6 | 0.6 | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.34 | 0.34 | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 110 | - | - | - | - | - | - | 6 | 0 | 0 | 43.7 | 2.72 | 43.6 | 41 | 46.6 | - | - | - | - |
| Bromide | | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.152 | 0.00983 | 0.155 | 0.14 | 0.16 | - | - | - | - |
| Calcium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 29.4 | 2.77 | 29.2 | 26.6 | 32.6 | - | - | - | - |
| Calcium (T) | mg/L | 39 | - | - | - | - | - | - | 6 | 0 | 0 | 29.7 | 2.97 | 29.3 | 26.5 | 33.1 | - | - | - | - |
| Chloride | mg/L | 25.000 | 120 | - | 250 | - | 120 | 90 | 6 | 0 | 0 | 38.9 | 1.75 | 38.8 | 37.1 | 41 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.04 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 6 | 0 | 0 | 0.0317 | 0.00225 | 0.0315 | 0.029 | 0.034 | na | 0 | - | 0 |
| Magnesium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2.92 | 0.228 | 2.88 | 2.7 | 3.19 | - | - | - | - |
| Magnesium (T) | mg/L | 5.3 | - | - | - | - | - | - | 6 | 0 | 0 | 2.92 | 0.23 | 2.9 | 2.7 | 3.2 | - | - | - | - |
| Potassium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.77 | 0.035 | 1.77 | 1.73 | 1.82 | - | - | - | - |
| Potassium (T) | mg/L | 2.8 | - | - | - | - | - | - | 6 | 0 | 0 | 1.78 | 0.0414 | 1.78 | 1.72 | 1.83 | - | - | - | - |
| Reactive Silica (SIO2) | | 2.3 | - | - | - | - | - | - | 6 | 0 | 0 | 0.856 | 0.158 | 0.85 | 0.69 | 1.03 | - | - | - | - |
| Sodium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 6.85 | 0.41 | 6.77 | 6.36 | 7.35 | - | - | - | - |
| Sodium (T) | mg/L | 7.5 | - | - | 200 | - | - | - | 6 | 0 | 0 | 6.86 | 0.453 | 6.8 | 6.41 | 7.45 | - | - | 0 | - |
| Sulphate | mg/L | 6 | - | - | 500 | - | 218 | 164 | 6 | 0 | 0 | 8.22 | 0.168 | 8.14 | 8.13 | 8.56 | - | - | 0 | - |
| **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.025 | 0.141 | - | - | - | 0.141 | 0.106 | 6 | 0 | 0 | 0.022 | 0.0162 | 0.0158 | 0.0062 | 0.0444 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 6 | 4 | 67 | - | - | 0.005 | 0.005 | 0.0206 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | - | - | 6 | 4 | 67 | - | - | 0.0051 | 0.0051 | 0.0206 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.005 | 0.06 | 1 | - | - | 0.06 | 0.045 | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | 0 | 0 | - | - |
| Nitrogen | | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.428 | 0.0265 | 0.43 | 0.394 | 0.469 | - | - | - | - |
| Orthophosphate (PO4-P) | | 0.001 | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - |
| Total Diss Phosphorus | | 0.008 | - | - | - | - | - | - | 6 | 0 | 0 | 0.00295 | 0.000321 | 0.0029 | 0.0026 | 0.0033 | - | - | - | - |
| Total Dissolved Nitrogen | | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.375 | 0.0951 | 0.374 | 0.212 | 0.497 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.73 | - | - | - | - | - | - | 6 | 0 | 0 | 0.424 | 0.0201 | 0.428 | 0.394 | 0.448 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.371 | 0.093 | 0.374 | 0.204 | 0.477 | - | - | - | - |
| Total Phosphorus | mg/L | 0.01 | - | - | - | - | - | - | 6 | 0 | 0 | 0.0079 | 0.00273 | 0.00675 | 0.0061 | 0.0133 | - | - | - | - |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 5.5 | - | - | - | - | - | - | 6 | 0 | 0 | 4.92 | 0.118 | 4.9 | 4.8 | 5.1 | - | - | - | - |
| Total Organic Carbon | mg/L | 7.6 | - | - | - | - | - | - | 6 | 0 | 0 | 4.83 | 0.0876 | 4.86 | 4.7 | 4.9 | - | - | - | - |

| Parameter | Units | Screening Criteria [a]: Normal Range (Upper Limit of Baseline) | Screening Criteria [a]: Aquatic Life: CCME or FEQG Aquatic Life [b] | Screening Criteria [a]: Health Canada: GCDWQ | Screening Criteria [a]: Health Canada: Aesthetic Objective | Screening Criteria [a]: SSWQO | AEMP Benchmark[c] | AEMP Action Level | Lake B7: Summary Statistics [d]: N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Lake B7: % of samples > screening criteria: Chronic | GCDWQ | AO | SSWQO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | µg/L | 6.6 | 100 | - | - | - | 100 | 75 | 6 | 0 | 0 | 3.02 | 1.03 | 3.1 | 1.6 | 4.7 | 0 | - | - | - |
| Antimony (T) | µg/L | 0.02 | 9 | 6 | - | - | 6 | 4.5 | 6 | 0 | 0 | 0.0693 | 0.0483 | 0.0425 | 0.035 | 0.144 | - | 0 | - | - |
| Arsenic (T) | µg/L | 1.8 | 5 | 10 | - | 25 | 10 | 7.5 | 6 | 0 | 0 | 5.45 | 0.989 | 5.13 | 4.62 | 7.33 | na | 0 | - | 0 |
| Barium (T) | µg/L | 20 | - | 1000 | - | - | 1000 | 750 | 6 | 0 | 0 | 24.7 | 1 | 24.6 | 23.4 | 25.8 | - | 0 | - | - |
| Beryllium (T) | µg/L | 0.01 | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Bismuth (T) | µg/L | 0.01 | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Boron (T) | µg/L | 8 | 1500 | 5000 | - | - | 1500 | 1125 | 6 | 0 | 0 | 15 | 0.462 | 14.8 | 14.5 | 15.6 | 0 | 0 | - | - |
| Cadmium (T) | µg/L | 0.007 | 0.128 \| 0.151 | 5 | - | - | 0.128 | 0.096 | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.02 | 0 | 0 | - | - |
| Chromium (T) | µg/L | 0.06 | 1 | 50 | - | - | 1 | 0.75 | 6 | 6 | 100 | - | - | 0.1 | 0.1 | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | µg/L | 0.05 | 0.918 \| 0.997 | - | - | - | 0.918 | 0.689 | 6 | 0 | 0 | 0.0697 | 0.00831 | 0.0718 | 0.0585 | 0.0784 | 0 | - | - | - |
| Copper (T) | µg/L | 1.13 | 2 \| 2.26 | 2000 | 1000 | - | 2 | 1.5 | 6 | 0 | 0 | 0.91 | 0.0279 | 0.908 | 0.878 | 0.957 | 0 | 0 | 0 | - |
| Iron (T) | µg/L | 103 | 300 | - | 300 | 1060 | 300 | 225 | 6 | 0 | 0 | 59.6 | 6.2 | 60.8 | 50.7 | 66 | na | - | 0 | 0 |
| Lead (T) | µg/L | 0.08 | - | 5 | - | - | 5 | 3.75 | 6 | 0 | 0 | 0.0557 | 0.0201 | 0.057 | 0.025 | 0.077 | - | 0 | - | - |
| Lithium (T) | µg/L | 7.5 | - | - | - | - | - | - | 6 | 0 | 0 | 19.6 | 0.555 | 19.8 | 18.9 | 20.2 | - | - | - | - |
| Manganese (T) | µg/L | 8.6 | - | 120 | 20 | - | 440 | 330 | 6 | 0 | 0 | 6.13 | 0.808 | 6.16 | 5.22 | 7.06 | - | 0 | 0 | - |
| Mercury (T) | µg/L | 0.004 | 0.026 | 1 | - | - | 0.026 | 0.020 | 6 | 4 | 67 | - | - | 0.0005 | 0.0005 | 0.00056 | 0 | 0 | - | - |
| Molybdenum (T) | µg/L | 0.24 | 73 | - | - | - | 73 | 54.75 | 6 | 0 | 0 | 1.42 | 2.04 | 0.271 | 0.241 | 5.27 | 0 | - | - | - |
| Nickel (T) | µg/L | 1.4 | 78.8 \| 91.6 | - | - | - | 25 | 18.75 | 6 | 0 | 0 | 0.829 | 0.028 | 0.841 | 0.781 | 0.851 | 0 | - | - | - |
| Selenium (T) | µg/L | 0.04 | 1 | 50 | - | - | 1 | 0.75 | 6 | 3 | 50 | - | - | 0.043 | 0.04 | 0.054 | 0 | 0 | - | - |
| Silicon (T) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 424 | 102 | 409 | 323 | 541 | - | - | - | - |
| Silver (T) | µg/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | 0 | - | - | - |
| Strontium (T) | µg/L | 155 | 2500 | 7000 | - | - | 1700 | 1275 | 6 | 0 | 0 | 273 | 12.5 | 276 | 254 | 285 | 0 | 0 | - | - |
| Sulfur (T) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2880 | 135 | 2860 | 2750 | 3100 | - | - | - | - |
| Thallium (T) | µg/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 6 | 3 | 50 | - | - | 0.00535 | 0.005 | 0.0058 | 0 | - | - | - |
| Tin (T) | µg/L | 0.05 | - | - | - | - | - | - | 6 | 3 | 50 | - | - | 0.0205 | 0.02 | 0.035 | - | - | - | - |
| Titanium (T) | µg/L | 0.25 | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.05 | 0.05 | 0.303 | - | - | - | - |
| Uranium (T) | µg/L | 0.03 | 15 | 20 | - | - | 15 | 11.3 | 6 | 0 | 0 | 0.0436 | 0.00401 | 0.0428 | 0.0389 | 0.0488 | 0 | 0 | - | - |
| Vanadium (T) | µg/L | 0.01 | - | - | - | - | 120 | 90 | 6 | 2 | 33 | 0.0455 | 0.0166 | 0.0505 | 0.05 | 0.063 | - | - | - | - |
| Zinc (T) | µg/L | 1.9 | - | - | 5000 | - | 23 | 17.3 | 6 | 1 | 17 | 0.722 | 0.378 | 0.695 | 0.5 | 1.39 | - | - | 0 | - |
| Zirconium (T) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.01 | 0.01 | 0.01 | - | - | - | - |
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2.32 | 0.608 | 2.4 | 1.3 | 2.9 | - | - | - | - |
| Antimony (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.077 | 0.0702 | 0.0395 | 0.034 | 0.208 | - | - | - | - |
| Arsenic (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 4.78 | 0.798 | 4.63 | 4.07 | 6.24 | - | - | - | - |
| Barium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 23.6 | 1.01 | 23.6 | 22.5 | 24.8 | - | - | - | - |
| Beryllium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Bismuth (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Boron (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 14.6 | 0.333 | 14.6 | 14.3 | 15.1 | - | - | - | - |
| Cadmium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Chromium (D) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.1 | 0.1 | 0.23 | - | - | - | - |
| Cobalt (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.052 | 0.00888 | 0.0492 | 0.0451 | 0.0691 | - | - | - | - |
| Copper (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.89 | 0.0462 | 0.903 | 0.832 | 0.94 | - | - | - | - |
| Iron (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 37.4 | 14.2 | 33.6 | 28.2 | 65.8 | - | - | - | - |
| Lead (D) | µg/L | - | 8.61 \| 9.21 | - | - | - | 8.61 | 6.46 | 6 | 0 | 0 | 0.0385 | 0.018 | 0.0385 | 0.018 | 0.068 | 0 | - | - | - |
| Lithium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 19.6 | 0.217 | 19.5 | 19.3 | 19.8 | - | - | - | - |
| Manganese (D) | µg/L | - | 440 | - | - | - | 440 | 330 | 6 | 0 | 0 | 1.7 | 2.42 | 0.722 | 0.407 | 6.61 | 0 | - | - | - |
| Mercury (D) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.0005 | 0.0005 | 0.00075 | - | - | - | - |
| Molybdenum (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.11 | 2.03 | 0.285 | 0.259 | 5.26 | - | - | - | - |
| Nickel (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.857 | 0.0265 | 0.862 | 0.815 | 0.886 | - | - | - | - |
| Selenium (D) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.04 | 0.04 | 0.042 | - | - | - | - |

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake B7 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | GCDWQ | AO | SSWQO |
| Silicon (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 421 | 76.1 | 421 | 338 | 503 | - | - | - | - |
| Silver (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Strontium (D) | µg/L | - | 2500 | - | - | - | 2500 | 1875 | 6 | 0 | 0 | 273 | 11.7 | 271 | 258 | 293 | 0 | - | - | - |
| Sulfur (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2900 | 138 | 2940 | 2710 | 3040 | - | - | - | - |
| Thallium (D) | µg/L | - | - | - | - | - | - | - | 6 | 3 | 50 | - | - | 0.00565 | 0.005 | 0.0067 | - | - | - | - |
| Tin (D) | µg/L | - | - | - | - | - | - | - | 6 | 4 | 67 | - | - | 0.02 | 0.02 | 0.065 | - | - | - | - |
| Titanium (D) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.05 | 0.05 | 0.063 | - | - | - | - |
| Uranium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.0449 | 0.00212 | 0.0448 | 0.042 | 0.0486 | - | - | - | - |
| Vanadium (D) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.05 | 0.05 | 0.051 | - | - | - | - |
| Zinc (D) | µg/L | 2.2 | 23 \| 26.7 | - | - | - | 23 | 17.3 | 6 | 2 | 33 | 1.13 | 1.7 | 0.54 | 0.5 | 4.59 | 0 | - | - | - |
| Zirconium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.01 | 0.01 | 0.01 | - | - | - | - |
| **Other** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (Free) | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.00375 | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | 0 | 0 | - | - |
| Cyanide (WAD) | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - |

Notes

[a] Refer to the main document for references to the various screening criteria.

[b] The range of acute and chronic guidelines calculated for the 2020 water quality data is shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).

[c] Refer to **Table 2-2** for the list of the AEMP Benchmarks. Benchmarks and corresponding Action Levels for dissolved Pb, Mn, Sr, and Zn were applied to the total (unfiltered fraction).

[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.

"na" refers to the chronic WQG screening results that don't apply to parameters with SSWQO (fluoride, arsenic, iron).

### Table 7-6. Lake D7 – Water Quality Screening Assessment, 2020.

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake D7 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQG |
| **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| Temperature (°C) | °C | - | - | - | 15 | - | - | - | 6 | 0 | 0 | 13.1 | 2.72 | 13.1 | 10.4 | 15.6 | - | - | - | - |
| Sp. Conductivity (field) (µS/cm) | µS/cm | 159 | - | - | - | - | - | - | 6 | 0 | 0 | 130 | 6.54 | 130 | 124 | 136 | - | - | - | - |
| pH (field) | pH units | 7 \| 8.2 | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | - | 6 | 0 | 0 | 7.9 | 0.085 | 7.93 | 7.74 | 7.98 | 0 | - | 0 | - |
| DO (mg/L) | mg/L | - | 6.5 | - | - | - | 6.5 | - | 6 | 0 | 0 | 10.3 | 1.03 | 10.4 | 9.21 | 11.7 | 0 | - | - | - |
| DO (%) | % | - | - | - | - | - | - | - | 6 | 0 | 0 | 96.8 | 3.3 | 98.4 | 92.6 | 99.7 | - | - | - | - |
| **Conventional Parameters (mg/L unless otherwise specified)** | | | | | | | | | | | | | | | | | | | | |
| Conductivity (lab, µS/cm) | uS/cm | - | - | - | - | - | - | - | 6 | 0 | 0 | 125 | 8.79 | 126 | 116 | 133 | - | - | - | - |
| Hardness | mg/L | 56 | - | - | - | - | - | - | 6 | 0 | 0 | 45.1 | 4.49 | 45 | 40.9 | 49.4 | - | - | - | - |
| pH (lab) | pH units | - | 6.5 \| 9.0 | - | 7.0 \| 10.5 | - | 6.5 \| 9.0 | - | 6 | 0 | 0 | 7.71 | 0.0163 | 7.72 | 7.69 | 7.73 | 0 | - | 0 | - |
| Total Dissolved Solids | mg/L | - | - | - | 500 | - | 500 | 375 | 6 | 0 | 0 | 73.3 | 8.76 | 75 | 57 | 82 | - | - | 0 | - |
| TDS (Calculated) | mg/L | 81 | - | - | 500 | - | 500 | 375 | 6 | 0 | 0 | 67.1 | 4.53 | 67.4 | 62.4 | 71.5 | - | - | 0 | - |
| Total Suspended Solids | mg/L | 2 | - | - | - | - | - | - | 6 | 1 | 17 | 1.53 | 0.592 | 1.75 | 1 | 2 | - | - | - | - |
| Turbidity (lab, NTU) | NTU | 1.1 | - | - | - | - | - | - | 6 | 0 | 0 | 0.833 | 0.0924 | 0.85 | 0.71 | 0.95 | - | - | - | - |
| **Major Ions (mg/L)** | | | | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 68 | - | - | - | - | - | - | 6 | 0 | 0 | 57.7 | 2.56 | 58.4 | 54.4 | 60.1 | - | - | - | - |
| Alkalinity, Carbonate | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.6 | 0.6 | 0.6 | - | - | - | - |
| Alkalinity, Hydroxide | mg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.34 | 0.34 | 0.34 | - | - | - | - |
| Alkalinity, Total | mg/L | 55 | - | - | - | - | - | - | 6 | 0 | 0 | 47.3 | 2.09 | 47.8 | 44.6 | 49.3 | - | - | - | - |
| Bromide | | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.1 | 0.1 | 0.1 | - | - | - | - |
| Calcium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 13.7 | 1.35 | 13.6 | 12.4 | 15 | - | - | - | - |
| Calcium (T) | mg/L | 17 | - | - | - | - | - | - | 6 | 0 | 0 | 13.8 | 1.09 | 13.8 | 12.7 | 14.9 | - | - | - | - |
| Chloride | mg/L | 25.000 | 120 | - | 250 | - | 120 | 90 | 6 | 0 | 0 | 9.6 | 0.628 | 9.58 | 8.96 | 10.2 | 0 | - | 0 | - |
| Fluoride | mg/L | 0.05 | 0.12 | 1.5 | - | 2.8 | 2.8 | 2.1 | 6 | 0 | 0 | 0.0415 | 0.00274 | 0.0415 | 0.039 | 0.044 | na | 0 | - | 0 |
| Magnesium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2.66 | 0.28 | 2.64 | 2.39 | 2.97 | - | - | - | - |
| Magnesium (T) | mg/L | 3.3 | - | - | - | - | - | - | 6 | 0 | 0 | 2.64 | 0.192 | 2.64 | 2.46 | 2.84 | - | - | - | - |
| Potassium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.25 | 0.0763 | 1.25 | 1.16 | 1.33 | - | - | - | - |
| Potassium (T) | mg/L | 1.8 | - | - | - | - | - | - | 6 | 0 | 0 | 1.27 | 0.0682 | 1.27 | 1.2 | 1.34 | - | - | - | - |
| Reactive Silica (SIO2) | | 0.28 | - | - | - | - | - | - | 6 | 0 | 0 | 0.385 | 0.119 | 0.385 | 0.269 | 0.499 | - | - | - | - |
| Sodium (D) | mg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 7.19 | 0.638 | 7.18 | 6.53 | 7.96 | - | - | - | - |
| Sodium (T) | mg/L | 17 | - | - | 200 | - | - | - | 6 | 0 | 0 | 7.29 | 0.672 | 7.2 | 6.65 | 8.37 | - | - | 0 | - |
| Sulphate | mg/L | 10 | - | - | 500 | - | 218 | 163.5 | 6 | 0 | 0 | 4.28 | 0.389 | 4.21 | 3.9 | 4.82 | - | - | 0 | - |
| **Nutrients (mg/L)** | | | | | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.009 | 0.141 | - | - | - | 0.141 | 0.106 | 6 | 1 | 17 | 0.0312 | 0.0274 | 0.0265 | 0.005 | 0.0719 | 0 | - | - | - |
| Nitrate (as N) | mg/L | 0.005 | 2.9 | 10 | - | - | 2.9 | 2.18 | 6 | 1 | 17 | 0.0118 | 0.0106 | 0.00745 | 0.005 | 0.0311 | 0 | 0 | - | - |
| Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | - | - | 6 | 1 | 17 | 0.012 | 0.0107 | 0.00745 | 0.0051 | 0.0311 | - | - | - | - |
| Nitrite (as N) | mg/L | 0.0005 | 0.06 | 1 | - | - | 0.06 | 0.045 | 6 | 5 | 83 | - | - | 0.001 | 0.001 | 0.0011 | 0 | 0 | - | - |
| Nitrogen | | - | - | - | - | - | | - | 6 | 0 | 0 | 0.392 | 0.0548 | 0.41 | 0.294 | 0.453 | - | - | - | - |
| Orthophosphate (PO4-P) | | 0.003 | - | - | - | - | | - | 6 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - |
| Total Diss Phosphorus | | 0.008 | - | - | - | - | | - | 6 | 0 | 0 | 0.00352 | 0.000232 | 0.00345 | 0.0033 | 0.0038 | - | - | - | - |
| Total Dissolved Nitrogen | | - | - | - | - | - | | - | 6 | 0 | 0 | 0.296 | 0.0558 | 0.311 | 0.207 | 0.349 | - | - | - | - |
| Total Kjeldahl Nitrogen | mg/L | 0.52 | - | - | - | - | - | - | 6 | 0 | 0 | 0.381 | 0.0644 | 0.398 | 0.263 | 0.453 | - | - | - | - |
| Total Kjeldahl Nitrogen (diss) | | - | - | - | - | - | | - | 6 | 0 | 0 | 0.284 | 0.0612 | 0.298 | 0.2 | 0.343 | - | - | - | - |
| Total Phosphorus | mg/L | 0.02 | - | - | - | - | - | - | 6 | 0 | 0 | 0.0107 | 0.000549 | 0.0107 | 0.0099 | 0.0113 | - | - | - | - |
| **Organic/Inorganic Carbon (mg/L)** | | | | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 5.1 | - | - | - | - | - | - | 6 | 0 | 0 | 4.76 | 0.188 | 4.7 | 4.6 | 5.1 | - | - | - | - |
| Total Organic Carbon | mg/L | 14 | - | - | - | - | - | - | 6 | 0 | 0 | 4.64 | 0.105 | 4.62 | 4.5 | 4.8 | - | - | - | - |

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake D7 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQG |
| **Total Metals (µg/L)** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (T) | µg/L | 6.7 | 100 | - | - | - | 100 | 75 | 6 | 0 | 0 | 7.15 | 1.04 | 7.25 | 5.7 | 8.2 | 0 | - | - | - |
| Antimony (T) | µg/L | 0.03 | 9 | 6 | - | - | 6 | 4.5 | 6 | 6 | 100 | - | - | 0.02 | 0.02 | 0.02 | - | 0 | - | - |
| Arsenic (T) | µg/L | 1.2 | 5 | 10 | - | 25 | 10 | 7.5 | 6 | 0 | 0 | 1.29 | 0.097 | 1.27 | 1.18 | 1.44 | na | 0 | - | 0 |
| Barium (T) | µg/L | 17 | - | 1000 | - | - | 1000 | 750 | 6 | 0 | 0 | 16.3 | 0.809 | 16.4 | 14.8 | 17.1 | - | 0 | - | - |
| Beryllium (T) | µg/L | 0.01 | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Bismuth (T) | µg/L | 0.01 | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Boron (T) | µg/L | 17 | 1500 | 5000 | - | - | 1500 | 1125 | 6 | 0 | 0 | 15.5 | 0.885 | 15.4 | 14.6 | 16.6 | 0 | 0 | - | - |
| Cadmium (T) | µg/L | 0.005 | 0.075 \| 0.088 | 5 | - | - | 0.0755 | 0.057 | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | 0 | 0 | - | - |
| Chromium (T) | µg/L | 0.06 | 1 | 50 | - | - | 1 | 0.75 | 6 | 6 | 100 | - | - | 0.1 | 0.1 | 0.1 | 0 | 0 | - | - |
| Cobalt (T) | µg/L | 0.05 | 0.78 | - | - | - | 0.78 | 0.585 | 6 | 0 | 0 | 0.0624 | 0.00436 | 0.0642 | 0.0542 | 0.0663 | 0 | - | - | - |
| Copper (T) | µg/L | 1 | 2 | 2000 | 1000 | - | 2 | 1.5 | 6 | 0 | 0 | 0.882 | 0.0595 | 0.878 | 0.818 | 0.955 | 0 | 0 | 0 | - |
| Iron (T) | µg/L | 112 | 300 | - | 300 | 1060 | 300 | 225 | 6 | 0 | 0 | 78.3 | 9.94 | 77.4 | 68.7 | 89.5 | na | - | 0 | 0 |
| Lead (T) | µg/L | 0.02 | - | 5 | - | - | 5 | 3.75 | 6 | 0 | 0 | 0.0238 | 0.00325 | 0.024 | 0.02 | 0.029 | - | 0 | - | - |
| Lithium (T) | µg/L | 1.9 | - | - | - | - | - | - | 6 | 0 | 0 | 1.42 | 0.0497 | 1.42 | 1.36 | 1.48 | - | - | - | - |
| Manganese (T) | µg/L | 13 | - | 120 | 20 | - | 320 | 240 | 6 | 0 | 0 | 12.9 | 0.638 | 12.8 | 12.2 | 13.6 | - | 0 | 0 | - |
| Mercury (T) | µg/L | 0.001 | 0.026 | 1 | - | - | 0.026 | 0.020 | 6 | 0 | 0 | 0.000587 | 5.89E-05 | 0.000575 | 0.00053 | 0.00069 | 0 | 0 | - | - |
| Molybdenum (T) | µg/L | 0.48 | 73 | - | - | - | 73 | 54.8 | 6 | 0 | 0 | 0.506 | 0.129 | 0.46 | 0.427 | 0.767 | 0 | - | - | - |
| Nickel (T) | µg/L | 0.75 | 25 | - | - | - | 25 | 18.75 | 6 | 0 | 0 | 0.77 | 0.0711 | 0.77 | 0.678 | 0.862 | 0 | - | - | - |
| Selenium (T) | µg/L | 0.06 | 1 | 50 | - | - | 1 | 0.75 | 6 | 0 | 0 | 0.0605 | 0.00782 | 0.0595 | 0.052 | 0.07 | 0 | 0 | - | - |
| Silicon (T) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 198 | 59.8 | 194 | 142 | 258 | - | - | - | - |
| Silver (T) | µg/L | 0.005 | 0.25 | - | - | - | 0.25 | 0.188 | 6 | 5 | 83 | - | - | 0.005 | 0.005 | 0.0095 | 0 | - | - | - |
| Strontium (T) | µg/L | 83 | 2500 | 7000 | - | - | 1700 | 1275 | 6 | 0 | 0 | 68 | 0.726 | 67.9 | 66.9 | 69.1 | 0 | 0 | - | - |
| Sulfur (T) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1510 | 203 | 1500 | 1310 | 1700 | - | - | - | - |
| Thallium (T) | µg/L | 0.005 | 0.8 | - | - | - | 0.8 | 0.6 | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | 0 | - | - | - |
| Tin (T) | µg/L | 0.05 | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.02 | 0.02 | 0.022 | - | - | - | - |
| Titanium (T) | µg/L | 0.34 | - | - | - | - | - | - | 6 | 2 | 33 | 0.344 | 0.153 | 0.403 | 0.3 | 0.536 | - | - | - | - |
| Uranium (T) | µg/L | 0.1 | 15 | 20 | - | - | 15 | 11.25 | 6 | 0 | 0 | 0.0556 | 0.00692 | 0.0556 | 0.0488 | 0.0635 | 0 | 0 | - | - |
| Vanadium (T) | µg/L | 0.07 | 120 | - | - | - | 120 | 90 | 6 | 0 | 0 | 0.0922 | 0.0103 | 0.0925 | 0.08 | 0.105 | - | - | - | - |
| Zinc (T) | µg/L | 2 | - | - | 5000 | - | 11.6 | 8.7 | 6 | 1 | 17 | 0.878 | 0.663 | 0.565 | 0.5 | 1.95 | - | - | 0 | - |
| Zirconium (T) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.01 | 0.01 | 0.025 | - | - | - | - |
| **Dissolved Metals (µg/L)** | | | | | | | | | | | | | | | | | | | | |
| Aluminum (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 2.45 | 0.517 | 2.35 | 1.9 | 3.4 | - | - | - | - |
| Antimony (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.02 | 0.02 | 0.02 | - | - | - | - |
| Arsenic (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.01 | 0.0688 | 1.01 | 0.918 | 1.11 | - | - | - | - |
| Barium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 15.8 | 0.464 | 15.6 | 15.2 | 16.4 | - | - | - | - |
| Beryllium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Bismuth (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Boron (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 15.1 | 0.601 | 15.2 | 14.2 | 15.8 | - | - | - | - |
| Cadmium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Chromium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.1 | 0.1 | 0.1 | - | - | - | - |
| Cobalt (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.0184 | 0.00134 | 0.0183 | 0.0168 | 0.0202 | - | - | - | - |
| Copper (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.807 | 0.0454 | 0.814 | 0.747 | 0.852 | - | - | - | - |
| Iron (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 26.3 | 5.42 | 26.4 | 20.2 | 32.1 | - | - | - | - |
| Lead (D) | µg/L | - | 7.35 \| 7.79 | - | - | - | 7.35 | 5.51 | 6 | 2 | 33 | 0.00917 | 0.00337 | 0.0105 | 0.01 | 0.013 | 0 | - | - | - |
| Lithium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.4 | 0.0753 | 1.4 | 1.33 | 1.48 | - | - | - | - |
| Manganese (D) | µg/L | - | 320 | - | - | - | 320 | 240 | 6 | 0 | 0 | 0.549 | 0.124 | 0.536 | 0.418 | 0.76 | 0 | - | - | - |
| Mercury (D) | µg/L | - | - | - | - | - | - | - | 6 | 3 | 50 | - | - | 0.0005 | 0.0005 | 0.00063 | - | - | - | - |
| Molybdenum (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1.96 | 2.29 | 0.536 | 0.443 | 5.33 | - | - | - | - |
| Nickel (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.711 | 0.0685 | 0.711 | 0.627 | 0.796 | - | - | - | - |
| Selenium (D) | µg/L | - | - | - | - | - | - | - | 6 | 1 | 17 | 0.0443 | 0.0145 | 0.0435 | 0.04 | 0.06 | - | - | - | - |

| Parameter | Units | Screening Criteria [a] | | | | | AEMP Benchmark[c] | AEMP Action Level | Lake D7 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Range (Upper Limit of Baseline) | Aquatic Life | Health Canada | | SSWQO | | | Summary Statistics [d] | | | | | | | | % of samples > screening criteria | | | |
| | | | CCME or FEQG Aquatic Life [b] | GCDWQ | Aesthetic Objective | | | | N | N<MDL | % <MDL | Mean | SD | Median | Min | Max | Chronic | HH | AO | SSWQG |
| Silicon (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 192 | 47.7 | 192 | 145 | 242 | - | - | - | - |
| Silver (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Strontium (D) | µg/L | - | 2500 | - | - | - | 2500 | 1875 | 6 | 0 | 0 | 68.6 | 2.29 | 68.6 | 66.1 | 72.5 | 0 | - | - | - |
| Sulfur (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 1510 | 198 | 1520 | 1270 | 1750 | - | - | - | - |
| Thallium (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.005 | 0.005 | 0.005 | - | - | - | - |
| Tin (D) | µg/L | - | - | - | - | - | - | - | 6 | 6 | 100 | - | - | 0.02 | 0.02 | 0.02 | - | - | - | - |
| Titanium (D) | µg/L | - | - | - | - | - | - | - | 6 | 4 | 67 | - | - | 0.05 | 0.05 | 0.056 | - | - | - | - |
| Uranium (D) | µg/L | - | - | - | - | - | - | - | 6 | 0 | 0 | 0.059 | 0.00421 | 0.0586 | 0.0537 | 0.064 | - | - | - | - |
| Vanadium (D) | µg/L | - | - | - | - | - | - | - | 6 | 4 | 67 | - | - | 0.05 | 0.05 | 0.053 | - | - | - | - |
| Zinc (D) | µg/L | 1.4 | 11.6 \| 14.3 | - | - | - | 11.6 | 8.7 | 6 | 3 | 50 | - | - | 0.53 | 0.5 | 1.16 | 0 | - | - | - |
| Zirconium (D) | µg/L | - | - | - | - | - | - | - | 6 | 5 | 83 | - | - | 0.01 | 0.01 | 0.016 | - | - | - | - |
| **Other (mg/L)** | | | | | | | | | | | | | | | | | | | | |
| Cyanide (Free) | mg/L | - | - | - | - | - | - | - | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - | - |
| Cyanide (Total) | mg/L | 0.001 | 0.005 | 0.2 | - | - | 0.005 | 0.00375 | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | 0 | 0 | - | - | 0 |
| Cyanide (WAD) | mg/L | - | - | - | - | - | - | - | 6 | 100 | - | - | 0.001 | 0.001 | 0.001 | - | - | - | - | - |

Notes
[a] Refer to **Table 2-2** for references to the various screening criteria.
[b] The range of acute and chronic guidelines calculated for the 2020 water quality data is shown for parameters with site-specific water quality guidelines (e.g., cadmium, dissolved zinc, and dissolved manganese).
[c] Refer to **Table 2-2** for the list of the AEMP Benchmarks. Benchmarks and corresponding Action Levels for dissolved Pb, Mn, Sr, and Zn were applied to the total (unfiltered fraction).
[d] Mean and SD were not calculated if >50% of the values were <MDL. 1/2 the MDL was used to calculate the mean and SD if >50% of the measurements were > MDL.
"na" refers to the chronic WQG screening results that don't apply to parameters with SSWQO (fluoride, arsenic, iron).

## Table 7-7. Lake A8 – Normal Range Screening Assessment, 2020

| Parameter | Current DL | Normal Range [a] | | Lake A8 | | | |
|---|---|---|---|---|---|---|---|
| | | Calculation Method [b] | Value | Summary Statistics [c] | | | |
| | | | | N | N<DL | Mean | Median |
| **Field Measurements** | | | | | | | |
| Sp. Conductivity (field) (µS/cm) | 0.1 | Percentile | 334 | 6 | 0 | 259 | 251 |
| pH (field) | 0.1 | PI | 7.7 \| 8.3 | 6 | 0 | 7.93 | 7.98 |
| **Conventional Parameters (mg/L unless otherwise specified)** | | | | | | | |
| Hardness | 0.2 | Percentile | 123 | 6 | 0 | 93.2 | 91.6 |
| TDS (Calculated) | - | Percentile | 152 | 6 | 0 | 123 | 121 |
| Total Suspended Solids | 1 | Percentile | 4 | 6 | 5 | - | 1 |
| Turbidity (lab, NTU) | 0.1 | PI (λ) | 0.87 | 6 | 0 | 0.47 | 0.47 |
| **Major Ions (mg/L)** | | | | | | | |
| Alkalinity, Bicarbonate | 1 | PI (λ) | 91 | 6 | 0 | 62.4 | 61.4 |
| Alkalinity, Total | 1 | PI (λ) | 83.6 | 6 | 0 | 51.1 | 50.3 |
| Calcium (T) | 0.01 | Percentile | 40 | 6 | 0 | 30.6 | 30.25 |
| Chloride | 0.1 | Percentile | 61 | 6 | 0 | 41.1 | 41.3 |
| Fluoride | 0.02 | PI | 0.04 | 6 | 0 | 0.034 | 0.034 |
| Magnesium (T) | 0.004 | Percentile | 5.6 | 6 | 0 | 4.24 | 4.12 |
| Potassium (T) | 0.02 | Percentile | 2.5 | 6 | 0 | 1.867 | 1.86 |
| Sodium (T) | 0.02 | Percentile | 8.4 | 6 | 0 | 7.68 | 7.49 |
| Sulphate | 0.3 | PI | 9.3 | 6 | 0 | 7.49 | 7.63 |
| **Nutrients (mg/L)** | | | | | | | |
| Ammonia (as N) | 0.005 | Percentile | 0.011 | 6 | 0 | 0.043 | 0.043 |
| Nitrate (as N) | 0.005 | Percentile | 0.015 | 6 | 3 | - | 0.0057 |
| Nitrite (as N) | 0.001 | DL | 0.001 | 6 | 6 | - | 0.001 |
| Total Kjeldahl Nitrogen | 0.05 | PI (λ) | 0.63 | 6 | 0 | 0.44 | 0.4305 |
| Total Phosphorus | 0.001 | PI | 0.009 | 6 | 0 | 0.0063 | 0.0062 |
| **Organic/Inorganic Carbon (mg/L)** | | | | | | | |
| Dissolved Organic Carbon | 0.5 | PI | 4.9 | 6 | 0 | 4.23 | 4.16 |
| Total Organic Carbon | 0.5 | PI | 4.7 | 6 | 0 | 4.19 | 4.02 |
| **Total Metals (µg/L)** | | | | | | | |
| Aluminum (T) | 1 | PI (λ) | 3 | 6 | 0 | 4.47 | 3.75 |
| Antimony (T) | 0.02 | Percentile | 0.4 | 6 | 0 | 0.090 | 0.05 |
| Arsenic (T) | 0.02 | PI | 2.4 | 6 | 0 | 5.39 | 5.78 |
| Barium (T) | 0.02 | PI | 32 | 6 | 0 | 25.0 | 24.9 |
| Beryllium (T) | 0.005 | DL | 0.005 | 6 | 6 | - | 0.005 |
| Bismuth (T) | 0.005 | DL | 0.005 | 6 | 6 | - | 0.005 |
| Boron (T) | 5 | Percentile | 5 | 6 | 2 | 4.6 | 5.6 |
| Cadmium (T) | 0.005 | DL | 0.005 | 6 | 5 | - | 0.005 |
| Chromium (T) | 0.1 | DL | 0.1 | 6 | 6 | - | 0.1 |
| Cobalt (T) | 0.005 | PI | 0.05 | 6 | 0 | 0.047683 | 0.046 |
| Copper (T) | 0.05 | PI | 0.89 | 6 | 0 | 1.30 | 1.3075 |
| Iron (T) | 1 | PI | 67 | 6 | 0 | **72.7** | 63.5 |
| Lead (T) | 0.01 | Percentile | 0.03 | 6 | 0 | 0.066 | 0.069 |
| Lithium (T) | 0.5 | Percentile | 10 | 6 | 0 | 7.26 | 7.51 |
| Manganese (T) | 0.05 | PI | 13 | 6 | 0 | 10.8 | 9.53 |
| Mercury (T) | 0.0005 | PI | 0.0012 | 6 | 3 | - | 0.00051 |
| Molybdenum (T) | 0.05 | Percentile | 0.22 | 6 | 0 | 0.27 | 0.27 |
| Nickel (T) | 0.05 | PI | 0.92 | 6 | 0 | 0.83 | 0.79 |
| Selenium (T) | 0.04 | DL | 0.04 | 6 | 4 | - | 0.04 |
| Silver (T) | 0.005 | DL | 0.005 | 6 | 6 | - | 0.005 |
| Strontium (T) | 0.02 | PI (λ) | 273 | 6 | 0 | 192 | 195 |
| Thallium (T) | 0.005 | Percentile | 0.005 | 6 | 6 | - | 0.005 |
| Tin (T) | 0.02 | Percentile | 0.05 | 6 | 5 | - | 0.02 |
| Titanium (T) | 0.05 | Percentile | 0.25 | 6 | 0 | 0.14 | 0.11 |
| Uranium (T) | 0.001 | PI (λ) | 0.054 | 6 | 0 | 0.048 | 0.047 |
| Vanadium (T) | 0.05 | DL | 0.05 | 6 | 3 | - | 0.051 |
| Zinc (T) | 0.5 | Percentile | 1.2 | 6 | 0 | 1.18 | 1.005 |

Notes:

[a] Refer to Golder (2019) for information on statistical methods used to calculate the normal ranges for the Peninsula Lakes.

[b] Upper limit (90th percentile or 90th prediction interval [PI]) of the normal range used for screening purposes, with the exception of pH which has a relevant lower limit.

[c] If the normal range was calculated using the PI or PI (λ) method, mean concentrations were screened against upper limit. If the percentile method was used to calculate the normal range, the median concentration was compared to the upper limit.

Orange highlighted cells indicate the mean/median concentration exceeds the upper limit of the normal range (baseline) by > 10%.

**Bold** values indicate the mean/median concentration is greater than the upper limit of the normal range.

### Table 7-8. Lake B7 – Normal Range Screening Assessment, 2020

| Parameter | Current DL | Normal Range [a] | | Lake B7 | | | |
|---|---|---|---|---|---|---|---|
| | | Calculation Method [b] | Value | Summary Statistics [c] | | | |
| | | | | N | N<MDL | Mean | Median |
| **Field Measurements** | | | | | | | |
| Sp. Conductivity (field) (µS/cm) | 0.1 | Percentile | 302 | 6 | 0 | 245 | 246 |
| pH (field) | 0.1 | PI (λ) | 7.0 \| 8.2 | 6 | 0 | 7.77 | 7.84 |
| **Conventional Parameters (mg/L unless otherwise specified)** | | | | | | | |
| Hardness | 0.2 | Percentile | 118 | 6 | 0 | 85.5 | 85 |
| TDS (Calculated) | - | Percentile | 171 | 6 | 0 | 115 | 115 |
| Total Suspended Solids | 1 | PI (λ) | 3 | 6 | 3 | - | 1.15 |
| Turbidity (lab, NTU) | 0.1 | PI (λ) | 0.69 | 6 | 0 | 0.39 | 0.41 |
| **Major Ions (mg/L)** | | | | | | | |
| Alkalinity, Bicarbonate | 1 | Percentile | 135 | 6 | 0 | 53.4 | 53.3 |
| Alkalinity, Total | 1 | Percentile | 110 | 6 | 0 | 43.7 | 43.65 |
| Calcium (T) | 0.01 | Percentile | 39 | 6 | 0 | 29.7 | 29.3 |
| Chloride | 0.1 | Percentile | 25 | 6 | 0 | 38.9 | 38.9 |
| Fluoride | 0.02 | PI (λ) | 0.04 | 6 | 0 | 0.032 | 0.032 |
| Magnesium (T) | 0.004 | Percentile | 5.3 | 6 | 0 | 2.92 | 2.9 |
| Potassium (T) | 0.02 | Percentile | 2.8 | 6 | 0 | 1.78 | 1.78 |
| Sodium (T) | 0.02 | Percentile | 7.5 | 6 | 0 | 6.86 | 6.8 |
| Sulphate | 0.3 | Percentile | 6 | 6 | 0 | 8.225 | 8.15 |
| **Nutrients (mg/L)** | | | | | | | |
| Ammonia (as N) | 0.005 | Percentile | 0.025 | 6 | 0 | 0.022 | 0.016 |
| Nitrate (as N) | 0.005 | Percentile | 0.005 | 6 | 4 | - | 0.005 |
| Nitrite (as N) | 0.001 | DL | 0.005 | 6 | 6 | - | 0.001 |
| Total Kjeldahl Nitrogen | 0.05 | PI (λ) | 0.73 | 6 | 0 | 0.424 | 0.428 |
| Total Phosphorus | 0.001 | | 0.01 | 6 | 0 | 0.0079 | 0.0068 |
| **Organic/Inorganic Carbon (mg/L)** | | | | | | | |
| Dissolved Organic Carbon | 0.5 | PI | 5.5 | 6 | 0 | 4.92 | 4.905 |
| Total Organic Carbon | 0.5 | PI (λ) | 7.6 | 6 | 0 | 4.83 | 4.86 |
| **Total Metals (µg/L)** | | | | | | | |
| Aluminum (T) | 1 | PI (λ) | 6.6 | 6 | 0 | 3.02 | 3.1 |
| Antimony (T) | 0.02 | DL | 0.02 | 6 | 0 | 0.069 | 0.043 |
| Arsenic (T) | 0.02 | PI (λ) | 1.8 | 6 | 0 | 5.45 | 5.13 |
| Barium (T) | 0.02 | Percentile | 20 | 6 | 0 | 24.7 | 24.6 |
| Beryllium (T) | 0.005 | DL | 0.01 | 6 | 6 | - | 0.005 |
| Bismuth (T) | 0.005 | DL | 0.01 | 6 | 6 | - | 0.005 |
| Boron (T) | 5 | Percentile | 8 | 6 | 0 | 15.0 | 14.9 |
| Cadmium (T) | 0.005 | Percentile | 0.007 | 6 | 6 | - | 0.005 |
| Chromium (T) | 0.1 | DL | 0.1 | 6 | 6 | - | 0.1 |
| Cobalt (T) | 0.005 | PI | 0.05 | 6 | 0 | 0.070 | 0.072 |
| Copper (T) | 0.05 | Percentile | 1.13 | 6 | 0 | 0.9095 | 0.91 |
| Iron (T) | 1 | PI | 103 | 6 | 0 | 59.65 | 60.9 |
| Lead (T) | 0.01 | Percentile | 0.08 | 6 | 0 | 0.056 | 0.057 |
| Lithium (T) | 0.5 | PI (λ) | 7.5 | 6 | 0 | 19.6 | 19.8 |
| Manganese (T) | 0.05 | Percentile | 8.6 | 6 | 0 | 6.13 | 6.17 |
| Mercury (T) | 0.0005 | PI (λ) | 0.004 | 6 | 4 | - | 0.0005 |
| Molybdenum (T) | 0.05 | PI (λ) | 0.24 | 6 | 0 | 1.42 | 0.27 |
| Nickel (T) | 0.05 | PI (λ) | 1.4 | 6 | 0 | 0.83 | 0.84 |
| Selenium (T) | 0.04 | Percentile | 0.04 | 6 | 3 | - | **0.043** |
| Silver (T) | 0.005 | DL | 0.005 | 6 | 6 | - | 0.005 |
| Strontium (T) | 0.02 | PI | 155 | 6 | 0 | 273 | 275.5 |
| Thallium (T) | 0.005 | DL | 0.005 | 6 | 3 | - | 0.0054 |
| Tin (T) | 0.02 | DL | 0.05 | 6 | 3 | - | 0.0205 |
| Titanium (T) | 0.05 | Percentile | 0.25 | 6 | 5 | - | 0.05 |
| Uranium (T) | 0.001 | PI | 0.03 | 6 | 0 | 0.044 | 0.043 |
| Vanadium (T) | 0.05 | DL | 0.05 | 6 | 2 | 0.046 | 0.051 |
| Zinc (T) | 0.5 | Percentile | 1.9 | 6 | 1 | 0.72 | 0.70 |

Notes:

[a] Refer to Golder (2019) for information on statistical methods used to calculate the normal ranges for the Peninsula Lakes.

[b] Upper limit (90th percentile or 90th prediction interval [PI]) of the normal range used for screening purposes, with the exception of pH which has a relevant lower limit.

[c] If the normal range was calculated using the PI or PI (λ) method, mean concentrations were screened against upper limit. If the percentile method was used to calculate the normal range, the median concentration was compared to the upper limit.

Orange highlighted cells indicate the mean/median concentration exceeds the upper limit of the normal range (baseline) by > 10%.

**Bold** values indicate the mean/median concentration is greater than the upper limit of the normal range.

### Table 7-9. Lake D7 – Normal Range Screening Assessment, 2020

| Parameter | Current DL | Normal Range | | Lake D7 | | | |
|---|---|---|---|---|---|---|---|
| | | Calculation Method [a] | Value | Summary Statistics [c] | | | |
| | | | | N | N<MDL | Mean | Median |
| **Field Measurements** | | | | | | | |
| Sp. Conductivity (µS/cm) | 0.1 | Percentile | 159 | 6 | 0 | 130 | 130 |
| pH (field) | 0.1 | PI (λ) | 7.0 \| 8.2 | 6 | 0 | 7.91 | 7.93 |
| **Conventional Parameters (mg/L unless otherwise specified)** | | | | | | | |
| Hardness | 0.2 | Percentile | 56 | 6 | 0 | 45.1 | 45 |
| TDS (Calculated) | - | Percentile | 81 | 6 | 0 | 67.1 | 67.5 |
| Total Suspended Solids | 1 | Percentile | 2 | 6 | 1 | 1.53 | 1.75 |
| Turbidity (lab, NTU) | 0.1 | PI | 1.1 | 6 | 0 | 0.83 | 0.85 |
| **Major Ions (mg/L)** | | | | | | | |
| Alkalinity, Bicarbonate | 1 | Percentile | 68 | 6 | 0 | 57.7 | 58.4 |
| Alkalinity, Total | 1 | Percentile | 55 | 6 | 0 | 47.3 | 47.8 |
| Calcium (T) | 0.01 | Percentile | 17 | 6 | 0 | 13.8 | 13.8 |
| Chloride | 0.1 | Percentile | 25 | 6 | 0 | 9.6 | 9.58 |
| Fluoride | 0.02 | Percentile | 0.05 | 6 | 0 | 0.042 | 0.042 |
| Magnesium (T) | 0.004 | Percentile | 3.3 | 6 | 0 | 2.65 | 2.64 |
| Potassium (T) | 0.02 | PI (λ) | 1.8 | 6 | 0 | 1.27 | 1.27 |
| Sodium (T) | 0.02 | Percentile | 17 | 6 | 0 | 7.29 | 7.21 |
| Sulphate | 0.3 | Percentile | 10 | 6 | 0 | 4.28 | 4.21 |
| **Nutrients (mg/L)** | | | | | | | |
| Ammonia (as N) | 0.005 | PI | 0.009 | 6 | 1 | 0.031 | 0.0265 |
| Nitrate (as N) | 0.005 | DL | 0.005 | 6 | 1 | 0.012 | 0.0075 |
| Nitrite (as N) | 0.001 | DL | 0.0005 | 6 | 5 | - | 0.001 |
| Total Kjeldahl Nitrogen | 0.05 | PI (λ) | 0.52 | 6 | 0 | 0.38 | 0.40 |
| Total Phosphorus | 0.001 | Percentile | 0.02 | 6 | 0 | 0.011 | 0.011 |
| **Organic/Inorganic Carbon (mg/L)** | | | | | | | |
| Dissolved Organic Carbon | 0.5 | PI (λ) | 5.1 | 6 | 0 | 4.76 | 4.71 |
| Total Organic Carbon | 0.5 | Percentile | 14 | 6 | 0 | 4.64 | 4.62 |
| **Total Metals (µg/L)** | | | | | | | |
| Aluminum (T) | 1 | PI | 6.7 | 6 | 0 | **7.15** | 7.25 |
| Antimony (T) | 0.02 | Percentile | 0.03 | 6 | 6 | - | 0.02 |
| Arsenic (T) | 0.02 | PI | 1.2 | 6 | 0 | **1.29** | 1.27 |
| Barium (T) | 0.02 | PI | 17 | 6 | 0 | 16.3 | 16.4 |
| Beryllium (T) | 0.005 | DL | 0.01 | 6 | 6 | - | 0.005 |
| Bismuth (T) | 0.005 | DL | 0.01 | 6 | 6 | - | 0.005 |
| Boron (T) | 5 | PI | 17 | 6 | 0 | 15.5 | 15.35 |
| Cadmium (T) | 0.005 | DL | 0.005 | 6 | 6 | - | 0.005 |
| Chromium (T) | 0.1 | DL | 0.1 | 6 | 6 | - | 0.1 |
| Cobalt (T) | 0.005 | Percentile | 0.05 | 6 | 0 | 0.062 | 0.064 |
| Copper (T) | 0.05 | PI | 1 | 6 | 0 | 0.88 | 0.88 |
| Iron (T) | 1 | PI (λ) | 112 | 6 | 0 | 78.2 | 77.4 |
| Lead (T) | 0.01 | Percentile | 0.02 | 6 | 0 | 0.024 | 0.024 |
| Lithium (T) | 0.5 | PI | 1.9 | 6 | 0 | 1.43 | 1.42 |
| Manganese (T) | 0.05 | PI | 13 | 6 | 0 | 12.9 | 12.8 |
| Mercury (T) | 0.0005 | PI | 0.001 | 6 | 0 | 0.00059 | 0.00058 |
| Molybdenum (T) | 0.05 | PI (λ) | 0.48 | 6 | 0 | **0.51** | 0.46 |
| Nickel (T) | 0.05 | PI | 0.75 | 6 | 0 | **0.77** | 0.77 |
| Selenium (T) | 0.04 | Percentile | 0.06 | 6 | 0 | 0.061 | 0.060 |
| Silver (T) | 0.005 | DL | 0.005 | 6 | 5 | - | 0.005 |
| Strontium (T) | 0.02 | PI (λ) | 83 | 6 | 0 | 68.0 | 67.9 |
| Thallium (T) | 0.005 | DL | 0.005 | 6 | 6 | - | 0.005 |
| Tin (T) | 0.02 | DL | 0.05 | 6 | 5 | - | 0.02 |
| Titanium (T) | 0.05 | PI (λ) | 0.34 | 6 | 2 | **0.34** | 0.40 |
| Uranium (T) | 0.001 | PI | 0.1 | 6 | 0 | 0.056 | 0.056 |
| Vanadium (T) | 0.05 | PI (λ) | 0.07 | 6 | 0 | 0.092 | 0.093 |
| Zinc (T) | 0.5 | Percentile | 2 | 6 | 1 | 0.88 | 0.57 |

Notes:

[a] Refer to Golder (2019) for information on statistical methods used to calculate the normal ranges for the Peninsula Lakes.

[b] Upper limit (90th percentile or 90th prediction interval [PI]) of the normal range used for screening purposes, with the exception of pH which has a relevant lower limit.

[c] If the normal range was calculated using the PI or PI (λ) method, mean concentrations were screened against upper limit. If the percentile method was used to calculate the normal range, the median concentration was compared to the upper limit.

Orange highlighted cells indicate the mean/median concentration exceeds the upper limit of the normal range (baseline) by > 10%.

**Bold** values indicate the mean/median concentration is greater than the upper limit of the normal range.

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# APPENDICES

# APPENDIX A
# QUALITY ASSURANCE / QUALITY CONTROL

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# A.1 INTRODUCTION

The objective of quality assurance and quality control (QA/QC) was to assure that the chemical and biological data collected were representative of the material or populations being sampled, were of known quality, have sufficient laboratory precision to be highly repeatable, were properly documented, and were scientifically defensible. Data quality was assured throughout the collection and analysis of samples using specified standardized procedures, by the employment of laboratories that have been certified for all applicable methods, and by staffing the program with experienced technicians.

A brief description of quality assurance and quality control practices are provided here.

- *Quality Assurance* (QA) are the practices employed (e.g., use of experienced field staff, standard operating procedures (SOPs), field data sheets, and certified laboratories) to collect scientifically defensible samples meeting pre-defined data quality objectives (DQOs).
- *Quality Control* (QC) are measures taken to verify that the specific DQOs are met.

There were two major components to the 2020 Meliadine AEMP program: water quality and phytoplankton. The field and laboratory QA/QC methods (**Section A.2**) and results and discussion (**Section A.4**) for each of these media are reported herein.

# A.2 WATER CHEMISTRY

## A.2.1 QA/QC Methods

An overview of the QA/QC methods in 2020 for the water chemistry component of the AEMP is provided below; refer to the *AEMP Design Plan* (Golder, 2016) for a complete description.

Field duplicates, laboratory duplicates, and blank samples were analyzed as part of the QA/QC program in each of the four AEMP sampling events in 2020 which occurred in March, July, August and September. Peninsula lakes A8, B7 and D7 were only sampled in July and August 2020.

### A.2.1.1 Field

#### Field Data and Sample Collection

Briefly, the standard QA procedures for the water chemistry program included thoroughly flushing the flexible tubing and pump to prevent cross-contamination between areas and thoroughly rinsing the sample containers with site water prior to sample collection. Field limnology data were collected using a multiprobe meter. The meter was calibrated before field measurements according to manufacturer instructions. Agnico Eagle Environment department maintains a calibration log for each field instrument used to collect field measurements. QA methods used to prevent cross-contamination between locations and contamination from the equipment itself included wearing nitrile gloves and rinsing the sample equipment with surface water prior to collecting samples.

Careful documentation and handling of all samples and data is a key component of QA/QC in any field program. Field data were recorded on customized field data sheets. Sample bottles were labeled appropriately with the sample ID, date and project identification and were stored according to laboratory handling instructions. Field data sheets were scanned after each field program. Information that was recorded in the field (e.g., field measurements, station information) was transcribed into an EQUIS database jointly administered by Agnico Eagle and Golder.

## Sample Shipping and Handling

Shipments of samples to the analytical laboratories were accompanied by chain-of-custody (CoC) forms detailing sample identification, reporting requirements, and sample handling information. CoC forms provide the laboratory with sample details, ensure that sample handling instructions are followed and that all samples are accounted for.

The Meliadine Environment Department plans water sampling events to minimize the amount of time that samples are in transit between the Site, Val d'Or, and the various laboratories in Vancouver, Alberta, Winnipeg and Colorado. The remote location of the mine will always present challenges with some analytes exceeding recommended hold-times, but the effect of slightly exceeding hold-times on the quality of the results is considered negligible. Correspondence with the lab regarding hold-time exceedance hasn't led to establishing definitive benchmarks for data quality. ALS recommends "professional judgement" when interpreting chemistry data for parameters that exceeded hold-times for analysis.

Recommended hold-times are provided by the laboratory for analytes and water quality parameters. The times vary from a low of 0.25 days for pH to six months for metals. Hold-times for water samples are regularly exceeded for turbidity, pH, nitrate, nitrite, total dissolved solids, total suspended solids and dissolved orthophosphate (as P). Occasionally, hold-times are exceeded for cyanides (free and total). Samples are generally shipped very soon after collection and the distances and logistics make it impossible to meet short hold-times. However, it is highly unlikely that results are affected for those parameters or analytes where hold-times were not met in 2020.

## Sample Blanks

Field QC procedures as part of the AEMP included collecting and analyzing three different types of *blank* samples; travel blanks, de-ionized water blanks (DB) and equipment blanks (EB). Blank sample collection, particularly equipment blanks, required careful planning, attention to detail, focuses on the importance of cleanliness and generally provided a good opportunity to refine sample collection skills. Furthermore, blank results provided context to help explain anomalous water chemistry results in the AEMP samples.

Blank samples were collected once per sample event, and were submitted *blind* to the laboratory, to ensure they were treated the same as field collected samples during analysis. Results from the field, equipment and travel blanks were examined for detectable concentrations of any of the parameters measured; no parameter in blanks should exceed laboratory method detection limits (DLs). If an analyte was detected in a blank, the results for the batch of samples submitted with the blank were compared with the measured concentration in the blank; results that were less than 10-times the detected analyte concentration in the equipment blank were flagged to examine the potential for cross-contamination to affect the results[1]. This threshold does not apply to pH measurements, as DLs are not available for the pH scale.

**Travel blanks (TB)** – Travel blanks provided by ALS consisted of deionized water in sampling bottles and received the same treatment as field samples during shipment, handling, storage, and laboratory analysis. Three travel blanks were provided by the analytical laboratory for the purpose of testing for contamination associated with travel (e.g., hold time, temperature, moisture, desiccation, leaching). The travel blanks were opened in the field only to collect a sample then sealed immediately afterwards. Travel blank results were treated the same as equipment blank results by the analytical laboratory. Travel blanks should (1) be included in sample container shipments, (2) come directly from the analytical laboratory and (3) be stored in a cool place (e.g., refrigerator).

**De-ionized water blanks (DB; aka field blanks)** – To obtain a DB blank, deionized water provided by the analytical laboratory was transferred to a sample bottle in the field. Field blanks were handled and analyzed using the same techniques as water samples collected in the field. Field blanks were used to detect potential contamination during sample collection, handling, shipping and laboratory analysis. Field blank results were treated the same as equipment blank results by the analytical laboratory.

**Equipment blanks (EB)** – To obtain an EB, deionized water provided by the analytical laboratory was transferred to the same equipment used to collect field samples. The deionized water was first run through the equipment and then transferred to a sample bottle. Equipment blanks were handled in the same way as field samples and used to detect potential contamination from sampling equipment. Results from equipment blanks were examined for detectable concentrations of any of the parameters measured; no parameter should exceed DLs. If an analyte was detected in a blank, the results for the

[1] This approach is consistent with how ALS flags unreliable results for the laboratory method blanks.

batch of samples submitted with the blank were compared with the measured concentration in the blank; results that were less than 10-times the detected analyte concentration in the equipment blank were flagged to examine the potential for cross-contamination to affect the results.

Collecting both field blanks and equipment blanks provided an opportunity to assess the potential for the sampling equipment to introduce contamination. If analytes were detected in both the field and equipment blanks the sample collection methods and equipment used to collect water was not likely to bias the water quality data.

## Field Duplicates

Additional samples (i.e., field duplicates) were collected as a subset of the field sampling locations for water. Field duplicates were collected at the same time and using the same methodology as field samples and with the intent of collecting the same media. Field duplicates were used to identify the precision of field sampling methods and laboratory analysis and within-station variability. Field duplicates were submitted *blind* to the laboratory and analysed using the same methods and equipment as original samples.

Results of the field duplicates were assessed by measuring the relative percent difference (RPD) as a percentage between original and duplicate measurements. The RPD was used as measure of precision by the laboratory and the magnitude of variability between original and field duplicate samples. The variability in field duplicates may be attributed to sampling procedures and/or natural conditions (i.e., spatial heterogeneity in the sampling media). The equation used to calculate the RPD is the following:

$$RPD = \frac{(A - B)}{(\frac{A + B}{2})} x\ 100$$

where: A = analytical result; B = duplicate result.

The DQOs for field duplicates were 1.5X the laboratory RPDs (RPDs can be negative or positive). If no RPD was provided by the laboratory, the field duplicate DQO was set to a default of 40%. The adjustment above laboratory RPDs is to reflect that field duplicates are inherently more variable compared to laboratory duplicates partly because field duplicate samples are collected from a large sample volume (i.e., the lake or stream) versus a small well-mixed sample volume (i.e., the single sample container in the laboratory). The Canadian Council of Ministers for the Environment (CCME) states that acceptance limits for field-based QC are broader than laboratory QC and are typically 1.5 to 2 times the laboratory QC limits (CCME 2016).

As stated, RPD values may be either positive or negative, and ideally should provide a mix of the two, clustered around zero. RPDs are not calculated when one of the samples (i.e., either A or B above) is below detection and the other is not. If an RPD value was outside the field duplicate DQO it was flagged for review. When analyte concentrations were less than 10-times the DL we expected a greater likelihood of not meeting the DQOs because laboratory precision was slightly further from the DLs and because smaller concentrations of analytes per volume tends to magnify variability between the original sample and the duplicate. These occurrences were still flagged for assessment in order to assess the implications for sampling protocol and data interpretation. However, given the higher potential to not meet DQOs for those reasons outlined above, they were not weighted as highly unless there was a relatively high percentage of RPD values that did not meet DQOs or if the RPD values themselves were very high. Analyte concentrations that were greater than 10-times DL and did not meet the DQOs were given more weight in the QA/QC assessment.

#### A.2.1.2 Laboratory

Water samples collected during the 2020 Meliadine AEMP, with the exception of the radium-226, were analyzed by ALS Environmental Laboratory (ALS; Vancouver, Edmonton and Winnipeg locations). Analysis of radium-226 was subcontracted by ALS Edmonton to ALS in Fort Collins, Colorado, US. ALS is an analytical laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Performance evaluations are conducted under CALA's accreditation program for laboratory methods, protocols, and QC.

The first step in the QC program involves documenting any issues with the sample submission. This step applies to all sampling components (i.e., water chemistry and phytoplankton). ALS reports concerns surrounding sample submission as *sample integrity* issues in the Sample Receipt Confirmation (SRC) email after the samples are received. For ALS reports, the results are typically recorded in the sample integrity assessment for one of three reasons: (1) samples were damaged during transport, (2) the temperature inside the cooler was above 10°C when received by the laboratory, or (3) the recommended hold-time was exceeded prior to analysis. Sample integrity issues don't necessarily mean the data are unusable; rather, this information is meant to help the client make an informed decision on how to proceed with analysis and use the results.

There are five main components of the water chemistry laboratory QC program to assess analytical precision, bias, and completeness:

**Laboratory Duplicate** – These samples provide insights into the precision of laboratory analyses. The laboratory randomly chooses samples to re-run as duplicates. Duplicate aliquots are taken from the samples and run through parts (aliquots taken post digestion) or all (aliquots taken from the sample bottle) of the laboratory analytical process. The difference between the two analyses is a measure of the variability associated with duplicate analyses of the same sample in the laboratory.

Results of the laboratory duplicates were assessed by measuring the RPD as a percentage between original and duplicate measurements which is referred to as the measure of precision by the laboratory.

For full discussion of the RPD calculation, see **Section A.2.1.1**. Laboratory duplicate DQOs are parameter-specific and depend on the concentration in the sample. The RPD DQOs for lab duplicates are lower than for field duplicates given that the same aliquot is split.

**Method Blank (MB)** – These samples are analyzed to assess background interference or contamination that exists in the analytical system that could lead to elevated concentrations or false positive data. An analyte-free matrix (e.g., DEIONIZED water) is subjected to the entire analytical process to demonstrate that the analytical system itself does not introduce contamination. Blanks are examined for detectable concentrations of any of the parameters measured; no parameter in blanks should exceed laboratory DLs. If an analyte is detected in a blank, the results for the batch of samples submitted with the blank are compared with the measured concentration in the blank. Results that are less than 10-times the detected analyte concentration in the blank are flagged to examine the potential for cross-contamination to affect the results.

**Matrix Spike (MS) / Matrix Duplicate (MD)** – A known amount of a compound chemically similar to the target analyte is added to samples to ascertain any matrix effects on recoveries and to determine the accuracy and precision of the method in this matrix. These samples provide insights into the degree that the sample matrix could interfere with analyses.

**Laboratory Control Sample (LCS)** – An LCS is a well-characterized sample of known analytes and concentration in water. A reference material (i.e., certified reference material) containing certified amounts of target analytes, may be used as an LCS. Percent recovery of the target analytes in the LCS is compared to established control limits and assists in determining whether the methodology is within control limits and whether the laboratory can make accurate and precise measurements at the required reporting limit.

**Certified Reference Material (CRM)** – These are parameters (e.g., metals, conductivity, etc.) with a known concentration against which the lab must achieve a precision of within ±10% of the CRM.

The lowest available DLs corresponding to each parameter were specified for all the chemical analyses conducted for the Meliadine AEMP water quality program. Changes in DLs for any given water quality parameter were reviewed, and confirmed with the laboratory. Changes in DLs by the laboratory could limit the ability to compare results across samples. Any changes in DLs that resulted in the DL being close to the result (i.e., less half the result) for any given parameter was flagged for further scrutiny.

In 2020, two preliminary analyses were conducted to assess the reliability of sample results from each sampling event. Samples failing either one of these tests have been flagged as uncertain, and require further assessment.

The first analysis compares dissolved and total concentrations for a given parameter at each location. If the dissolved concentration exceeded the corresponding total concentration, the parameter was re-analyzed by ALS. After re-analysis, samples in which dissolved concentrations are greater than total with a relative percent difference (RPD) of more than 30% are considered as requiring further scrutiny.

The second analysis compares parameter concentrations within each sampling area. In most cases, samples at stations in the same sampling area are expected to have similar concentrations, and outlying data points may be anomalous. Sampling areas where the maximum concentration was more than a factor of 5 greater than the median of all samples within the sampling area are highlighted here as requiring further scrutiny.

All samples failing to meet these reliability checks are summarized in the preliminary screening memos for each sampling event (See **Appendix Appendix** A).

## A.2.2 Results and Discussion

Results of the QA/QC analysis are discussed below, along with a discussion on the implications of the QA/QC assessment of the sample results from 2020.

### A.2.2.1 Field Results

**Table A-1** provides a field QC summary and summarizes the sample integrity observations (e.g., broken sample containers, mislabeled containers), the temperature in the shipping coolers upon arrival to the laboratory, and the parameters that exceeded their r recommended hold times for analysis.

#### Sample Shipping and Handling

The target temperature for samples arriving at ALS was between 5°C and 10°C. The range of temperatures reported in 2020 was between 4.2°C in September to a high of 23°C in July. These temperature ranges reflect the seasonal ambient temperatures. The effect on preserved samples is considered negligible. Except for a re-analysis of metals in samples from the March sampling event, no sample integrity observations were identified.

The sample shipping and handling QA/QC for water samples in 2020 was considered acceptable, and better than in 2019. The logistics, distances, and general challenges of collecting and shipping samples from a remote mine in Nunavut meant that hold times were exceeded for several parameters/analytes but the impact on results is considered negligible.

#### Field Duplicates

The target frequency of field duplicate sample collection was approximately 10% of the total number of samples collected. For this program, 83 original samples were collected over four events (i.e., one event in March, July, August and September) and ten duplicate samples were collected (12.1% of samples). In 2020, one field duplicate was collected in March, three in July, four in August and two were collected in

September. The field duplicate results are summarized in **Table A-2** and presented in more detail in **Appendix A** for each sampling event.

As mentioned in **Section A.2.1.1**, the DQOs for field duplicates were 1.5X the laboratory RPD for each analyte unless no RPD was available, in which case, a default 40% was used. The laboratory RPDs for water chemistry for most analytes were 20% and, as such, in 2020 the DQOs for field duplicate water samples were less than ±30%.

**Appendix A** summarizes the number of analytes from each sampling event for which the field duplicate RPDs did not meet the DQOs. In March, the RPDs for total molybdenum and nitrite (as N) did not meet the DQOs. In July, the RPDs were not met in at least one sample for total ammonia, Nitrite-N, Nitrate-N, aluminum, iron, dissolved and total manganese, molybdenum, dissolved silicon, dissolved tin, titanium and dissolved and total zinc. In August, RPDs did not meet DQOs for total ammonia (as N), total kjeldahl nitrogen (TKN), total nitrogen, total and dissolved antimony, dissolved manganese, and dissolved zirconium. All RPDs met the DQOs in September. Similar to 2019, total ammonia, measured as nitrogen, exceeded the DQOs in multiple samples collected in July and August. Some of the variability, as observed with nitrogen, may be attributed to increased plant (algae) growth in these months.

Only a few field duplicate RPDs did not meet DQOs in 2020, suggesting that sample collection and sample handling occurred at a high standard.

## QC Blanks

### *Travel Blanks*

Travel blanks were submitted for the March, August and September sampling events and none were submitted for the July sampling event.

Detectable concentrations of total ammonia (as N) were detected in the March, August, and September TB. Total zinc was detected in the August and September TB, and a turbidity was detect in the September TB (**Table A-2**). Total ammonia (as N) detected in the March travel blank was not detected in the EB, but was detected in both the TB and EB in August and September. Total zinc was detected in the August travel blank but not the equipment blank. All parameters detected in the travel blank were detected in the equipment blank in the September sampling event. In the travel blanks, all parameters were detected less than 10-times the DL, except for total ammonia (as N) in August which was detected at a concentration slightly higher than 10-times the DL.

The TB results for total ammonia suggest factors other than cross-contamination from sampling equipment as the underlying cause of detected concentrations in the blanks in 2020.

### *De-ionized Water Blanks*

The goal of these deionized water blanks (DB) is to test the quality of the de-ionized water batch and variability in laboratory analytical methods. DB with the full suite of analyses were submitted for all sampling events. DB were submitted for dissolved metals but not filtered in the field. Results of the blanks collected for the AEMP are summarized in **Table A-3** and details provided in **Appendix A**.

In March, the detected concentrations were close to respective DLs for conductivity, hardness, total and bicarbonate alkalinity, total and dissolved barium, total and dissolved copper, total and dissolved nickel, strontium, total and dissolved zinc, dissolved magnesium and dissolved manganese. The detected concentrations were higher than 10-times the DL for total and dissolved calcium, molybdenum, total and dissolved sodium, and dissolved strontium.

In July, the detected concentrations were close to respective DLs for total dissolved solids (TDS), TKN, total nitrogen, total phosphorus, reactive silica, zinc, dissolved aluminum and dissolved strontium. None of the parameters were detected at concentrations higher than 10-times the DL in the DB.

In August, the detected concentrations were close to respective DLs for total ammonia (as N), arsenic, barium, iron, strontium, and dissolved barium, calcium and zinc. None of the concentrations in the DB blank were higher than 10-times the DL.

In September, the detected concentrations were close to respective DLs for conductivity, total ammonia (as N), reactive silica, aluminum, arsenic, barium, calcium, iron, lead, manganese, potassium, rubidium, sodium, strontium, titanium, zinc and dissolved arsenic, barium, calcium, iron, lead, manganese, rubidium, sodium, strontium, zinc and Ra-226. Dissolved tin was the only parameter in the DB detected at concentrations higher than 10-times the DL.

### *Equipment Blanks*

Equipment blanks (DB) represent one of the best opportunities to assess not only the water sampling equipment but the skills of the sampling teams. Collecting these samples requires careful planning and closely following the sample collection methods as outlined in the *AEMP Design Plan* (Golder 2016; Golder 2018).

Several analytes were detected in each of the equipment blanks submitted in 2020. Equipment blank results are summarized in **Table A-3** and details provided in **Appendix A**. In general, results were acceptable for the 2020 sampling events.

In March, several analytes were detected at concentrations higher than 10-times their respective DLs including barium, calcium, copper, lead, molybdenum, strontium, dissolved lead and dissolved strontium. Several other analytes were detected at concentrations close to the DL.

In July, August and September, several analytes were detected at concentrations close to the DL. Only two analytes in August, antimony and dissolved strontium, were detected at concentrations higher than 10-times their respective DL.

There were several analytes detected in both the DB and equipment blanks. Other analytes were detected in the equipment blanks but not the DB at concentrations close to the detection limits. While there is less confidences in the results when concentrations of analytes are detected in the blanks, the 2020 results are not likely to impact the interpretation of water quality.

The implications of possible cross-contamination on interpreting the water quality data from the same event is considered inconsequential for each sampling event.

#### A.2.2.2 Laboratory Results

Laboratory detection limits were adjusted for a few analytes. While the changes aren't likely to affect the interpretation of certain analytes (e.g., TDS), the DLs for the following parameters were adjusted due to sample matrix effects: dissolved and total silver in March, silver, Ra-226 and cadmium in July, cadmium in August, and Ra-226 in September. Since results were close to the detection limit the precision of the results was reduced for these parameters.

ALS provides a thorough account of their QC assessment in each Certificate of Analysis (COA) that is issued[2]. These results are summarized in **Table A-4**. The various components of the QC assessment are provided to help make informed decisions when interpreting the data. The QC program is comprised of four main elements as outlined in **Section A.2.1.2**:

- **Laboratory Duplicates** – The laboratory DQO for most parameters is an RPD of less than 20%. All the laboratory duplicates met the DQOs for water chemistry in 2020.
- **Method blanks (MB)** – The MB is a blank matrix sample that is taken through the entire analytical procedure to test variability in the analytical method and report any bias in the analysis. MB results are equal to the limit of reporting (or DL as termed here). MB qualifiers are either:

[2] The COA may include data qualifiers that relate to the sample "batch". The sample batch may include samples that are from other projects and the qualifiers included in the COA may relate to those and not the AEMP samples. In general, this does not impact the assessment of laboratory QA; however, in some instances, data qualifiers in the COA related to sample heterogeneity may not relate to AEMP samples. The Microsoft Excel® report that accompanies the COA includes tabs with detailed assessments of laboratory QA that are project specific and can be reviewed in conjunction with the COAs.

- "B" – Method Blank exceeds ALS DQO. Associated sample results which are < DL or > 5 times blank level are considered reliable.
- "MB-LOR" – Method Blank exceeds ALS DQO. DLs have been adjusted for samples with positive hits below 5x blank levels.

The MB flag "B" was assigned for thorium (total or dissolved) in a few samples in July and August. The results indicate that the laboratory may have increased DLs in these cases. The DQO flags for MB samples were reviewed; the results do not affect the interpretation of the 2020 water quality data.

- **Matrix Spike (MS)** – MS recovery is on occasion flagged in the QC assessment due to high concentrations of the analyte in the sample. These instances are rare, and are typically associated with parameters such as major cations (e.g., magnesium) or certain metals with detected results above the DL (i.e., strontium). In 2020, MS recovery was flagged for a few analytes in March. The limited number of cases with DQO flags for MS samples were reviewed; the results do not affect the interpretation of the 2020 water quality data.
- **Laboratory Control Samples (LCS) / Certified Reference Material (CRM) / Internal Reference Material (IRM)** – Reference material analysis met the ALS DQOs for all samples analyzed as part of the 2020 except for; boron in March and bismuth in July. The results do not affect the interpretation of the 2020 water quality data.

### A.2.3 QA/QC Summary

The field and laboratory QA/QC assessment indicated the data collected in 2020 were reliable. Some issues with the blanks were identified, particularly related to the quality of deionized water used for DB and EB.

**Sample Integrity** — Sample temperatures received at the laboratory were variable depending on season and reflect the challenges with shipping from a remote mine site. Likewise hold time exceedances for parameters and analytes with short hold times are unavoidable but are not considered likely to impact data analysis and interpretation.

**Blanks** — There were several analytes detected in the DB and EB submitted in 2020. Apart from a few results, the magnitude of the detected concentrations in the various blanks was typically less than 10-times the DL. Detected concentrations of various parameters in the blanks indicates the potential for cross-contamination. Close examination of the water quality data from 2020 indicated concentrations were consistent with previously-reported results, and potential for cross-contamination to bias the interpretation of the 2020 water quality data is considered unlikely.

**Field Duplicates** — The 2020 field duplicate results were good with only a few of the calculated RPDs exceeding the DQOs. Periodic exceedances of DQOs for field duplicates is not uncommon for water quality programs.

**Laboratory QC Assessment** — The laboratory QC assessment completed by ALS indicated the 2020 water quality data were typically within the established DQOs. In the few instances where a DQO was exceeded, the lab concluded the results were reliable and fit for use in the water quality assessment.

# A.3 PHYTOPLANKTON STUDY

## A.3.1 QA/QC Methods

An overview of the QA/QC methods in 2020 for the phytoplankton component of the AEMP is provided below; refer to the *AEMP Design Plan* (Golder 2016) for a complete description.

### A.3.1.1 Field

In 2020, water samples for phytoplankton, chlorophyll-a and depth-integrated nutrients (DIN) were collected during the August sampling event. Standard procedures were used to collect the depth-integrate sample as a composite of water taken from surface to near-bottom in the water column (Golder, 2018). Sampling gear was thoroughly rinsed between sampling areas to ensure that there was no inadvertent introduction (i.e., cross-contamination) from one area to another.

#### Field Duplicates

Quality control procedures implemented during field operations during the August 2020 sampling event in Meliadine Lake included the collection of duplicate phytoplankton samples, triplicate chlorophyll-a samples and duplicate DIN water samples, all using the same methods and collected at the same time as respective field samples.

**Phytoplankton** — Three field duplicate phytoplankton samples were collected during the August sampling event at randomly selected stations. The duplicates were submitted *blind* to ALS for analysis in order to assess sampling variability and sample homogeneity. Duplicates represented 12% of the total number of phytoplankton samples collected for analysis. RPDs were calculated for field and laboratory duplicates by comparing the original sample and the duplicate result for total density and total biomass. RPD values were also calculated for the major taxa groups, however, these results are not relied on for QC purposes because of the tendency for small differences in abundance/biomass between the original and the duplicate to cause large differences in the RPDs. Thus, we evaluate the quality of these data based on total density and total biomass both for field and laboratory duplicates. For field duplicates, an RPD of 50% for total density and biomass concentrations is considered acceptable.

**Chlorophyll-a** — Triplicate samples of chlorophyll-a were collected in 2020 and RPDs were calculated for each triplicate sample. An RPD of 50% is considered acceptable.

**Depth-integrated nutrients (DIN)** — Duplicate DIN samples were collected in in 2020. Duplicates represented 11.5% of the total number of DIN samples collected for analysis. All duplicates were submitted blind to ALS for analysis. Field QA/QC methods for DIN samples were the same as the methods used for surface water (**Section A.2.1.1**).

For more information regarding the handling of field duplicates refer to **Section A.2.1.1**.

#### A.3.1.2 Laboratory

In 2020, water samples collected for DIN analyses were submitted to the University of Alberta Biogeochemical Analytical Service Laboratory (BASL). Water samples collected for chlorophyll-a analyses were submitted to ALS. Both BASL and ALS laboratories have CALA accreditation. Finally, samples collected for taxonomic analysis of phytoplankton were submitted to Plankton-R-Us Inc., a reputable taxonomic laboratory. Overall, the reliability of the analytical results is considered high.

As stated in **Section A.2.1.1**, the first step in the QC program involves documenting any issues with the sample submission. This step applies to all sampling components (e.g., chlorophyll-a, DIN samples and phytoplankton). Plankton-R-Us Inc. reports sample integrity concerns via email.

**Phytoplankton** — As a measure of laboratory QA/QC on the enumeration method replicate counts were performed on 12% of the samples. Replicate samples were randomly chosen and processed at different times from the original analysis to reduce bias (Golder, 2018). The laboratory replicate is an additional aliquot (10 mL) that is taken from the same sample jar as the original sample and analyzed in the same manner as the original. Laboratory QC results were reviewed to determine whether there were any laboratory DQOs that were not met in 2020. An RPD of 25% for total density and biomass concentrations is considered acceptable for laboratory replicates.

**Chlorophyll-a** —There were no errors, omissions or inconsistencies with the chlorophyll-a data in 2020.

**Depth-integrated Nutrients** — Laboratory QA/QC methods and RPD calculations for DIN samples were the same as the methods used for surface water (**Section A.2.1.1** and **A.2.1.2**). Nutrient parameters were analyzed at both Winnipeg and Edmonton ALS locations.

# A.4 RESULTS AND DISCUSSION

As described in **Section A.2**, QA measures were implemented to keep data quality within the program's DQOs. This section presents the QA/QC results for the phytoplankton portion of the AEMP program to verify data quality relative to the DQOs. The QA/QC results presented below for the 2020 AEMP program are summarized in **Section 3** of the main report.

## A.4.1 Field Results

### A.4.1.1 Sample Shipping and Handling

The sample shipping and handling QA/QC for samples in 2020 was acceptable, with no minor sample integrity issues identified by ALS. The logistics, distances, and general challenges of collecting and shipping samples from a remote mine in Nunavut meant that recommended hold times were exceeded for several parameters/analytes (e.g., nitrate, nitrite) but the impact on results is considered negligible (see **Section A.2.1.1**).

#### A.4.1.2 Field Duplicates

Results of the RPD analysis for phytoplankton and chlorophyll-a are presented in **Table A-5** and **Table A-7**:

**Phytoplankton** — All the field duplicate RPD's for total biomass and density met the DQOs indicating very good replicability in sample collection. See **Table A-5** for the complete phytoplankton and biomass field duplicate results, including RPDs calculated for major taxa groups.

**Chlorophyll-a** — No sample integrity issues were identified by the laboratory. None of the replicates collected at each station exceeded the DQO outlined in **Section A.3.1.2** (**Table A-7**). Pre-rinsed GF/C filters (pore size of 1.2 µm) were used in 2020 to be consistent with years prior to 2019. In 2019, MF Millipore filters with pore size of 0.45 µm were used resulting in uniformly lower than usual concentrations across samples relative to previous years.

**DIN** — For several parameters, the concentrations fell below the DL and therefore RPDs were not calculated. For the RPDs that were calculated, there were several RPDs that did not meet the DQOs. On one occasion, the RPD for total phosphorus exceeded the DQO with concentrations higher than 10-times the DL. In the same field duplicate, the RPDs exceeded the DQOs for several other parameters (**Table A-2** and **Appendix A** [August 2020 Sampling Event]). While all the cases where RPDs did not meet DQOs were flagged for assessment to review the implications on sampling protocol and data interpretation, total phosphorus was weighted more heavily since the reported concentrations were higher than 10-times the DL.

To improve sample shipping and handling for chlorophyll-a and DIN samples, ALS provided an updated CoC for the AEMP that explicitly states what samples bottles (and corresponding analyses) are sent to the different ALS locations. The updated CoC has a unique location code that identifies which analyses are done at Winnipeg, Edmonton, Vancouver, and Fort Collins.

### A.4.2 Laboratory Results

**Phytoplankton** — The DQOs for laboratory duplicates for phytoplankton is an RPD less than 25% for total biomass and total density (**Table A-6**). In 2020, no laboratory duplicates were above ±25% for total biomass or density. Therefore, data in 2020 was considered very high quality. At the major taxa group level, it's common for biomass and density to differ by more than 25% between the laboratory duplicate samples, particularly when biomass and density estimates are low.

**Chlorophyll-a** — There were no issues reported by BASL. For field blanks, the laboratory reported concentrations of chlorophyll-a ranging from the DL (i.e., 0.04 µg/L) to slightly above the DL (i.e., 0.05-0.06 µg/L).

**Depth Integrated Nutrients**— Silica ($SiO_2$) was assigned a laboratory qualifier in one sample since the matrix spike could not be calculated due to high analyte background in the sample. All other laboratory QC measures met the DQO's including the method blanks, the matrix spikes and laboratory control samples. Overall, the results do not affect the interpretation of the 2020 water quality data. Except for one RPD for total dissolved phosphorus, all RPDs were below the laboratory DQOs.

### A.4.3 QA/QC Summary

The field and laboratory QA/QC phytoplankton, chlorophyll-a and DIN results in 2020 were acceptable. This indicates good replicability and sample handling in the field and in the laboratory.

**Sample Integrity** — Samples reported at ambient temperatures received at the laboratory and reflect the challenges with shipping from a remote mine site. Likewise hold time exceedances for parameters and analytes with short hold times are unavoidable but are not considered likely to impact data analysis and interpretation.

**Blanks** — All chlorophyll-a laboratory blanks results were equal to or slightly higher than the reported detection limit. Blanks were not included for phytoplankton or DIN samples. Blank results for 2020 indicated reliable sample handling and that cross-contamination related to sampling equipment is unlikely.

**Field Duplicates** — The 2020 field duplicate results for phytoplankton and chlorophyll-a were very good with all calculated RPDs meeting DQOs. All the field duplicate RPDs for phytoplankton total biomass and density met the DQOs indicating very good replicability in sample collection. For several analytes in the field duplicate DIN sample results the RPDs did not meet the DQOs, however, it is uncertain whether the exceedances were attributed to sampling procedures and/or natural conditions (i.e., spatial heterogeneity in the sampling media). Future use of the depth-integrated sampling method to collected nutrient data for the phytoplankton study is not recommended (refer to discussion in the main document for more information).

**Laboratory QC Assessment** — The laboratory QC assessment completed by ALS indicated the 2020 data were typically within the established DQOs. In the one instance where a DQO was exceeded, the lab concluded the results were reliable and fit for use.

# QA/QC TABLES

**Table A-1. Sample Submission Records for Water Samples Submitted to ALS Analytical for the 2020 AEMP**

| Event | Lab ID(s) | Parameters Measured | Date Sampled | Date Received | Sample Integrity Observations | Temperature (°C) | Hold-time Exceedances | Data Qualifiers[1] |
|---|---|---|---|---|---|---|---|---|
| March | L2432715 | All parameters | 21-Mar-20 | 31-Mar-20 | Metals revised on sample fraction 8 | 8.9 | 7 hold-time exceedances | L2432715: DLM, DTC, HTA, RRV |
| July | L2482210<br>L2482216<br>L2484438<br>L2485199 | All parameters | Jul 22, 27, 28, 31 | Jul 31,<br>Aug 6 & 7 | None | 20.9, 20.9, 17.1, 23 | 12 hold-time exceedances. See lab reports. | L2482210: DLM, DLRC, DTC, OPF<br>L2482216: DLRC, OPF<br>L2484438: DLM, DTC, HTD, OPF, RRR, RRV<br>L2485199: DLM, HTD, OPF, RRR |
| August | L2492144<br>L2492826<br>L2492831<br>L2496250<br>L2496253<br>L2496258 | All parameters | Aug 15, 18, 19, 21, 23, 24 | Aug 21, 24, 31 | None | 22.8, 21.4, 21.4, 16.6, 16.6, 16.8 | 7 hold-time exceedances. See lab reports. | L2492144: OPF<br>L2492826: OPF<br>L2492831: DLM, DTC, OPF, RRV<br>L2496250: RRV<br>L2496253: DTC, RRV<br>L2496258: DTMF |
| | L2492185<br>L2492819<br>L2492840<br>L2496242 | Depth Integrated Nutrients | Aug 15, 18, 19, 23 | August 21, 24, 31 | None | 23.1, 21.4, 21.4, 17.1 | 3 hold-time exceedances. See lab reports. | L2492185: OPF, RRV |
| September | L2501979<br>L2502391<br>L2504254 | All parameters | Sep 7, 8, 11 | Sep 11, 14, 17 | None | 17.6, 15.9, 4.2 | 6 hold-time exceedances. See lab reports. | L2501979: HTD<br>L2502391: DLRC, DTC, RRV<br>L2504254: DLRC, DTC, DTMF, OPF, RRV |

**Data and Laboratory QC qualifiers**:

DLHM = Detection Limit Adjusted: Sample has high moisture content.

DLM = Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

DLRC = Detection Limit Raised for Radio Chemistry test due to sample matrix (e.g. high TDS) or instrument detector conditions.

DTMF = Dissolved concentration exceeds total for field-filtered samples. Metallic contaminants may have been introduced to dissolved sample during field filtration.

DTC = Dissolved concentration exceeds total. Results were confirmed by re-analysis.

DQO = Data quality objective.

HTA = Analytical holding time was exceeded.

HTD = Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.

OPF = Orthophosphate test was conducted on frozen (preserved) sample. CCME hold time (72 hrs) was exceeded, but freezing can extend hold time to 30 days according to ISO 5667-3 (2012).

RRV = Reported Result Verified By Repeat Analysis.

RRR = Refer to Report Remarks for issues regarding this analysis.

### Table A-2. Field QC Summary for the 2020 AEMP Water Samples

| Event | Parameters Measured | Field QC summary (number of parameters that exceeded data quality objectives [DQO])[1] | | | |
|---|---|---|---|---|---|
| | | Travel Blank | DI Blank | Equipment Blank | Duplicates |
| March | All parameters | Total Ammonia 1.6x DL | 21 results | 33 result | 2 results |
| July | All parameters | No travel blank collected | 8 results | 12 results | 12 results |
| August | All parameters | Total Ammonia 13x DL<br>Total Zinc 1.1x DL | 8 results | 22 results | 15 results |
| | Depth Integrated Nutrients | N/A | N/A | N/A | 12 results |
| September | All parameters | Turbidity 1.4x DL<br>Total Ammonia 2.5x DL<br>Total Zinc 2.2x DL | 28 results | 23 results | None |

Notes:

N/A = not collected

1. Refer to **Appendix A1** for information on which parameters exceed the data quality objectives (DQO).

### Table A-3. Parameters Detected in Deionized Water Blanks (DB) and Equipment Blanks (EB) in 2020

| Sampling Event | Blank | Analyte | Results | DL | Result ÷ DL | > 10 X DL? |
|---|---|---|---|---|---|---|
| March | DI | Conductivity | 2 | 1 | 2.0 | FALSE |
| | | Hardness (as CaCO3) | 0.72 | 0.2 | 3.6 | FALSE |
| | | Alkalinity, Total (as CaCO3) | 2.1 | 1 | 2.1 | FALSE |
| | | Bicarbonate (HCO3) | 2.6 | 1.2 | 2.2 | FALSE |
| | | Barium (Ba)-Total | 0.000021 | 0.00002 | 1.1 | FALSE |
| | | Calcium (Ca)-Total | 0.168 | 0.01 | 16.8 | TRUE |
| | | Copper (Cu)-Total | 0.000077 | 0.00005 | 1.5 | FALSE |
| | | Molybdenum (Mo)-Total | 0.00262 | 0.00005 | 52.4 | TRUE |
| | | Nickel (Ni)-Total | 0.000133 | 0.00005 | 2.7 | FALSE |
| | | Sodium (Na)-Total | 0.45 | 0.02 | 22.5 | TRUE |
| | | Strontium (Sr)-Total | 0.000126 | 0.00002 | 6.3 | FALSE |
| | | Zinc (Zn)-Total | 0.00166 | 0.0005 | 3.3 | FALSE |
| | | Barium (Ba)-Dissolved | 0.000051 | 0.00002 | 2.6 | FALSE |
| | | Calcium (Ca)-Dissolved | 0.278 | 0.01 | 27.8 | TRUE |
| | | Copper (Cu)-Dissolved | 0.000088 | 0.00005 | 1.8 | FALSE |
| | | Magnesium (Mg)-Dissolved | 0.0075 | 0.004 | 1.9 | FALSE |
| | | Manganese (Mn)-Dissolved | 0.000055 | 0.00005 | 1.1 | FALSE |
| | | Nickel (Ni)-Dissolved | 0.000107 | 0.00005 | 2.1 | FALSE |
| | | Sodium (Na)-Dissolved | 0.442 | 0.02 | 22.1 | TRUE |
| | | Strontium (Sr)-Dissolved | 0.000205 | 0.00002 | 10.3 | TRUE |
| | | Zinc (Zn)-Dissolved | 0.00341 | 0.0005 | 6.8 | FALSE |
| | EB | Conductivity | 1.6 | 1 | 1.6 | FALSE |
| | | Hardness (as CaCO3) | 0.27 | 0.2 | 1.4 | FALSE |
| | | Alkalinity, Total (as CaCO3) | 1.1 | 1 | 1.1 | FALSE |
| | | Bicarbonate (HCO3) | 1.3 | 1.2 | 1.1 | FALSE |
| | | Chloride (Cl) | 0.17 | 0.1 | 1.7 | FALSE |
| | | Aluminum (Al)-Total | 0.0016 | 0.001 | 1.6 | FALSE |
| | | Arsenic (As)-Total | 0.000105 | 0.00002 | 5.3 | FALSE |
| | | Barium (Ba)-Total | 0.000247 | 0.00002 | 12.4 | TRUE |
| | | Calcium (Ca)-Total | 0.12 | 0.01 | 12.0 | TRUE |
| | | Copper (Cu)-Total | 0.000519 | 0.00005 | 10.4 | TRUE |
| | | Iron (Fe)-Total | 0.0052 | 0.001 | 5.2 | FALSE |
| | | Lead (Pb)-Total | 0.000776 | 0.00001 | 77.6 | TRUE |
| | | Magnesium (Mg)-Total | 0.0168 | 0.004 | 4.2 | FALSE |
| | | Manganese (Mn)-Total | 0.000413 | 0.00005 | 8.3 | FALSE |
| | | Molybdenum (Mo)-Total | 0.00237 | 0.00005 | 47.4 | TRUE |
| | | Nickel (Ni)-Total | 0.000167 | 0.00005 | 3.3 | FALSE |
| | | Rubidium (Rb)-Total | 1.59E-05 | 5E-06 | 3.2 | FALSE |
| | | Sodium (Na)-Total | 0.092 | 0.02 | 4.6 | FALSE |
| | | Strontium (Sr)-Total | 0.000905 | 0.00002 | 45.3 | TRUE |
| | | Titanium (Ti)-Total | 0.000057 | 0.00005 | 1.1 | FALSE |
| | | Zinc (Zn)-Total | 0.00119 | 0.0005 | 2.4 | FALSE |
| | | Arsenic (As)-Dissolved | 0.000043 | 0.00002 | 2.2 | FALSE |
| | | Barium (Ba)-Dissolved | 0.00018 | 0.00002 | 9.0 | FALSE |
| | | Calcium (Ca)-Dissolved | 0.092 | 0.01 | 9.2 | FALSE |
| | | Copper (Cu)-Dissolved | 0.00026 | 0.00005 | 5.2 | FALSE |
| | | Lead (Pb)-Dissolved | 0.000285 | 0.00001 | 28.5 | TRUE |
| | | Magnesium (Mg)-Dissolved | 0.0096 | 0.004 | 2.4 | FALSE |
| | | Manganese (Mn)-Dissolved | 0.000273 | 0.00005 | 5.5 | FALSE |
| | | Nickel (Ni)-Dissolved | 0.000054 | 0.00005 | 1.1 | FALSE |
| | | Rubidium (Rb)-Dissolved | 1.09E-05 | 5E-06 | 2.2 | FALSE |
| | | Sodium (Na)-Dissolved | 0.051 | 0.02 | 2.6 | FALSE |
| | | Strontium (Sr)-Dissolved | 0.000662 | 0.00002 | 33.1 | TRUE |
| | | Zinc (Zn)-Dissolved | 0.00117 | 0.0005 | 2.3 | FALSE |

| Sampling Event | Blank | Analyte | Results | DL | Result ÷ DL | > 10 X DL? |
|---|---|---|---|---|---|---|
| July | DI | Total Dissolved Solids | 4.6 | 4 | 1.2 | FALSE |
| | | Total Kjeldahl Nitrogen | 0.072 | 0.05 | 1.4 | FALSE |
| | | Total Nitrogen | 0.072 | 0.05 | 1.4 | FALSE |
| | | Phosphorus (P)-Total | 0.0026 | 0.001 | 2.6 | FALSE |
| | | Silica, Reactive (as SiO2) | 0.037 | 0.01 | 3.7 | FALSE |
| | | Zinc (Zn)-Total | 0.00066 | 0.0005 | 1.3 | FALSE |
| | | Aluminum (Al)-Dissolved | 0.0047 | 0.001 | 4.7 | FALSE |
| | | Strontium (Sr)-Dissolved | 0.000029 | 0.00002 | 1.5 | FALSE |
| | EB | Turbidity | 0.15 | 0.1 | 1.5 | FALSE |
| | | Molybdenum (Mo)-Total | 0.000063 | 0.00005 | 1.3 | FALSE |
| | | Barium (Ba)-Dissolved | 0.000027 | 0.00002 | 1.4 | FALSE |
| | | Calcium (Ca)-Dissolved | 0.013 | 0.01 | 1.3 | FALSE |
| | | Iron (Fe)-Dissolved | 0.0013 | 0.001 | 1.3 | FALSE |
| | | Strontium (Sr)-Dissolved | 0.000041 | 0.00002 | 2.1 | FALSE |
| | | Zinc (Zn)-Dissolved | 0.00083 | 0.0005 | 1.7 | FALSE |
| August | DB | Ammonia, Total (as N) | 0.009 | 0.005 | 1.8 | FALSE |
| | | Arsenic (As)-Total | 0.00003 | 0.00002 | 1.5 | FALSE |
| | | Barium (Ba)-Total | 0.000025 | 0.00002 | 1.3 | FALSE |
| | | Iron (Fe)-Total | 0.0012 | 0.001 | 1.2 | FALSE |
| | | Strontium (Sr)-Total | 0.000024 | 0.00002 | 1.2 | FALSE |
| | | Barium (Ba)-Dissolved | 0.000035 | 0.00002 | 1.8 | FALSE |
| | | Calcium (Ca)-Dissolved | 0.017 | 0.01 | 1.7 | FALSE |
| | | Zinc (Zn)-Dissolved | 0.0013 | 0.0005 | 2.6 | FALSE |
| | EB | Alkalinity, Total (as CaCO3) | 1.3 | 1 | 1.3 | FALSE |
| | | Ammonia, Total (as N) | 0.0072 | 0.005 | 1.4 | FALSE |
| | | Bicarbonate (HCO3) | 1.6 | 1.2 | 1.3 | FALSE |
| | | Nitrate and Nitrite as N | 0.0075 | 0.0051 | 1.5 | FALSE |
| | | Nitrate (as N) | 0.0075 | 0.005 | 1.5 | FALSE |
| | | Antimony (Sb)-Total | 0.000421 | 0.00002 | 21.1 | TRUE |
| | | Barium (Ba)-Total | 0.000047 | 0.00002 | 2.4 | FALSE |
| | | Calcium (Ca)-Total | 0.031 | 0.01 | 3.1 | FALSE |
| | | Copper (Cu)-Total | 0.000083 | 0.00005 | 1.7 | FALSE |
| | | Magnesium (Mg)-Total | 0.0057 | 0.004 | 1.4 | FALSE |
| | | Rubidium (Rb)-Total | 0.0000065 | 0.000005 | 1.3 | FALSE |
| | | Sodium (Na)-Total | 0.035 | 0.02 | 1.8 | FALSE |
| | | Strontium (Sr)-Total | 0.000181 | 0.00002 | 9.1 | FALSE |
| | | Tin (Sn)-Total | 0.000034 | 0.00002 | 1.7 | FALSE |
| | | Antimony (Sb)-Dissolved | 0.000053 | 0.00002 | 2.7 | FALSE |
| | | Barium (Ba)-Dissolved | 0.000044 | 0.00002 | 2.2 | FALSE |
| | | Calcium (Ca)-Dissolved | 0.045 | 0.01 | 4.5 | FALSE |
| | | Copper (Cu)-Dissolved | 0.000085 | 0.00005 | 1.7 | FALSE |
| | | Magnesium (Mg)-Dissolved | 0.0088 | 0.004 | 2.2 | FALSE |
| | | Rubidium (Rb)-Dissolved | 0.0000063 | 0.000005 | 1.3 | FALSE |
| | | Sodium (Na)-Dissolved | 0.043 | 0.02 | 2.2 | FALSE |
| | | Strontium (Sr)-Dissolved | 0.000234 | 0.00002 | 11.7 | TRUE |
| September | DI | Conductivity | 1.5 | 1 | 1.5 | FALSE |
| | | Ammonia, Total (as N) | 0.0243 | 0.005 | 4.9 | FALSE |
| | | Silica, Reactive (as SiO2) | 0.039 | 0.01 | 3.9 | FALSE |
| | | Aluminum (Al)-Total | 0.0019 | 0.001 | 1.9 | FALSE |
| | | Arsenic (As)-Total | 0.000049 | 0.00002 | 2.5 | FALSE |
| | | Barium (Ba)-Total | 0.000036 | 0.00002 | 1.8 | FALSE |
| | | Calcium (Ca)-Total | 0.03 | 0.01 | 3.0 | FALSE |
| | | Iron (Fe)-Total | 0.0033 | 0.001 | 3.3 | FALSE |
| | | Lead (Pb)-Total | 0.000013 | 0.00001 | 1.3 | FALSE |
| | | Manganese (Mn)-Total | 0.000104 | 0.00005 | 2.1 | FALSE |
| | | Potassium (K)-Total | 0.048 | 0.02 | 2.4 | FALSE |
| | | Rubidium (Rb)-Total | 0.0000086 | 0.000005 | 1.7 | FALSE |

| Sampling Event | Blank | Analyte | Results | DL | Result ÷ DL | > 10 X DL? |
|---|---|---|---|---|---|---|
| September | DB | Sodium (Na)-Total | 0.044 | 0.02 | 2.2 | FALSE |
| | | Strontium (Sr)-Total | 0.000075 | 0.00002 | 3.8 | FALSE |
| | | Titanium (Ti)-Total | 0.000083 | 0.00005 | 1.7 | FALSE |
| | | Zinc (Zn)-Total | 0.00078 | 0.0005 | 1.6 | FALSE |
| | | Arsenic (As)-Dissolved | 0.000032 | 0.00002 | 1.6 | FALSE |
| | | Barium (Ba)-Dissolved | 0.000038 | 0.00002 | 1.9 | FALSE |
| | | Calcium (Ca)-Dissolved | 0.039 | 0.01 | 3.9 | FALSE |
| | | Iron (Fe)-Dissolved | 0.0012 | 0.001 | 1.2 | FALSE |
| | | Lead (Pb)-Dissolved | 0.000014 | 0.00001 | 1.4 | FALSE |
| | | Manganese (Mn)-Dissolved | 0.000091 | 0.00005 | 1.8 | FALSE |
| | | Rubidium (Rb)-Dissolved | 0.0000075 | 0.000005 | 1.5 | FALSE |
| | | Sodium (Na)-Dissolved | 0.041 | 0.02 | 2.1 | FALSE |
| | | Strontium (Sr)-Dissolved | 0.000096 | 0.00002 | 4.8 | FALSE |
| | | Tin (Sn)-Dissolved | 0.000228 | 0.00002 | 11.4 | TRUE |
| | | Zinc (Zn)-Dissolved | 0.00177 | 0.0005 | 3.5 | FALSE |
| | | Ra-226 | 0.011 | 0.0079 | 1.4 | FALSE |
| | EB | Turbidity | 0.11 | 0.1 | 1.1 | FALSE |
| | | Ammonia, Total (as N) | 0.0445 | 0.005 | 8.9 | FALSE |
| | | Aluminum (Al)-Total | 0.0024 | 0.001 | 2.4 | FALSE |
| | | Arsenic (As)-Total | 0.000043 | 0.00002 | 2.2 | FALSE |
| | | Barium (Ba)-Total | 0.000083 | 0.00002 | 4.2 | FALSE |
| | | Calcium (Ca)-Total | 0.048 | 0.01 | 4.8 | FALSE |
| | | Copper (Cu)-Total | 0.000056 | 0.00005 | 1.1 | FALSE |
| | | Iron (Fe)-Total | 0.0035 | 0.001 | 3.5 | FALSE |
| | | Lead (Pb)-Total | 0.000012 | 0.00001 | 1.2 | FALSE |
| | | Magnesium (Mg)-Total | 0.0075 | 0.004 | 1.9 | FALSE |
| | | Manganese (Mn)-Total | 0.000403 | 0.00005 | 8.1 | FALSE |
| | | Nickel (Ni)-Total | 0.000097 | 0.00005 | 1.9 | FALSE |
| | | Rubidium (Rb)-Total | 0.0000099 | 0.000005 | 2.0 | FALSE |
| | | Sodium (Na)-Total | 0.075 | 0.02 | 3.8 | FALSE |
| | | Strontium (Sr)-Total | 0.000198 | 0.00002 | 9.9 | FALSE |
| | | Titanium (Ti)-Total | 0.000094 | 0.00005 | 1.9 | FALSE |
| | | Zinc (Zn)-Total | 0.00084 | 0.0005 | 1.7 | FALSE |
| | | Barium (Ba)-Dissolved | 0.000032 | 0.00002 | 1.6 | FALSE |
| | | Calcium (Ca)-Dissolved | 0.027 | 0.01 | 2.7 | FALSE |
| | | Manganese (Mn)-Dissolved | 0.000194 | 0.00005 | 3.9 | FALSE |
| | | Rubidium (Rb)-Dissolved | 0.0000083 | 0.000005 | 1.7 | FALSE |
| | | Strontium (Sr)-Dissolved | 0.000124 | 0.00002 | 6.2 | FALSE |
| | | Zinc (Zn)-Dissolved | 0.00086 | 0.0005 | 1.7 | FALSE |

Notes
DI = deionized water blank; EB = equipment blank
Result ÷ DL indicated the magnitude of the difference in concentration in the blank compared to the detection limit
> 10x DL flags those parameters where the concentration in the DB or EB was greater than 10-times the detection limit

## Table A-4. Laboratory QC Summary for Water Samples Analyzed by ALS Environmental in 2020

| Event | Lab ID(s) | Parameters Measured | Laboratory QC Summary | | | | |
|---|---|---|---|---|---|---|---|
| | | | Detection Limits | Duplicates | Method Blanks | Matrix Spike | LCS / CRM |
| March | L2432715 | All parameters | None | None | None | L2432715: MS-B | L2432715: MES |
| July | L2482210<br>L2482216<br>L2484438<br>L2485199 | All parameters | None | None | L2482210 &<br>L2482216: B | None | L2482210: MES |
| August | L2492144<br>L2492826<br>L2492831<br>L2496250<br>L2496253<br>L2496258 | All parameters | None | None | L2492144: B | None | None |
| | L2492185<br>L2492819<br>L2492840<br>L2496242 | Depth Integrated Nutrients | None | None | None | L2492185,<br>L2492840 &<br>L2496242: MS-B | None |
| September | L2501979<br>L2502391<br>L2504254 | All parameters | None | None | None | None | None |

Notes:

"None" = there were not data quality objective exceedances

**Data and Laboratory QC qualifiers**

B = Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and 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.

## Table A-5. Field Duplicate Results for Phytoplankton Biomass and Density, August 2020

| Field QA | Date | Sample | Phytoplankton Biomass (mg/m$^3$) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | **TOTAL** |
| MEL-01-09-PC | 15-Aug-20 | Sample | 1.5 | 19 | 79 | 25 | 80 | 8 | 212 |
| | | Field dup | 1.8 | 23 | 65 | 26 | 80 | 14 | 210 |
| | | ***RPD (%)*** | -18 | -20 | 19 | -3 | 0 | **-53** | 1 |
| MEL-02-01-PC | 18-Aug-20 | Sample | 0.4 | 27 | 78 | 35 | 37 | 3 | 182 |
| | | Field dup | 1 | 10 | 86 | 28 | 34 | 9 | 167 |
| | | ***RPD (%)*** | -40 | **95** | -10 | 24 | 10 | **-93** | 8 |
| MEL-03-01-PC | 19-Aug-20 | Sample | 0.1 | 6 | 152 | 10 | 20 | 14 | 201 |
| | | Field dup | 0.1 | 2 | 129 | 11 | 20 | 11 | 173 |
| | | ***RPD (%)*** | 0 | **87** | 16 | -11 | 1 | 20 | 15 |

| Field QA | Date | Sample | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | **TOTAL** |
| MEL-01-09-PC | 15-Aug-20 | Sample | 3,000 | 540,000 | 1,094,168 | 252,952 | 413,568 | 2,000 | 2,305,688 |
| | | Field dup | 3,600 | 1,065,232 | 1,081,600 | 329,792 | 241,568 | 9,984 | 2,731,776 |
| | | ***RPD (%)*** | -18 | **-65** | 1.2 | -26 | **53** | **-133** | -17 |
| MEL-02-01-PC | 18-Aug-20 | Sample | 800 | 500,296 | 1,078,400 | 258,088 | 368,600 | 800 | 2,206,984 |
| | | Field dup | 1,200 | 195,568 | 1,567,312 | 251,736 | 277,408 | 2,200 | 2,295,424 |
| | | ***RPD (%)*** | -40 | **88** | -37 | 2 | 28.2 | **-93.3** | -3.9 |
| MEL-03-01-PC | 19-Aug-20 | Sample | 200 | 135,512 | 2,040,656 | 51,888 | 233,488 | 2,400 | 2,464,144 |
| | | Field dup | 200 | 100,976 | 2,019,304 | 143,680 | 233,688 | 2,200 | 2,500,048 |
| | | ***RPD (%)*** | 0.0 | 29 | 1 | **-94** | 0 | 9 | -1.4 |

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

Bolded RPD values exceed 50%.

RPDs have not been calculated for cases where one or both of the samples is "0".

## Table A-6. Laboratory Duplicate Results for Phytoplankton Biomass and Density, August 2020

| Area-Replicate | Date | Sample | Phytoplankton Biomass (mg/m$^3$) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | **TOTAL** |
| MEL -01-08 | 15-Aug-20 | Sample | 1.5 | 16 | 35 | 34 | 72 | 17 | 175 |
| | | Lab dup | 1.3 | 14 | 65 | 35 | 72 | 18 | 205 |
| | | ***RPD (%)*** | 14 | 10 | **-60** | -3 | 0 | -6 | -16 |
| MEL-02-04 | 18-Aug-20 | Sample | 0.50 | 5.7 | 101 | 32 | 43 | 6.5 | 189 |
| | | Lab dup | 0.20 | 5.2 | 111 | 31 | 50 | 2.4 | 200 |
| | | ***RPD (%)*** | **86** | 10 | -10 | 3 | -14 | **91** | -6 |
| MEL-05-03 | 23-Aug-20 | Sample | 3.6 | 2.6 | 104 | 12 | 13 | 15 | 150 |
| | | Lab dup | 3.8 | 4.2 | 86 | 16 | 17 | 3.3 | 129 |
| | | ***RPD (%)*** | -5 | **-48** | 19 | **-30** | -22 | **129** | 15 |

| Area-Replicate | Date | Date | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | **TOTAL** |
| MEL -01-08 | 15-Aug-20 | Sample | 3,000 | 460,976 | 441,224 | 330,024 | 229,784 | 10,384 | 1,475,392 |
| | | Lab dup | 2,600 | 453,992 | 793,640 | 292,720 | 200,648 | 10,384 | 1,753,984 |
| | | ***RPD (%)*** | 14 | 2 | **-57** | 12 | 14 | 0 | -17 |
| MEL-02-04 | 18-Aug-20 | Sample | 1,000 | 130,712 | 1,487,088 | 158,512 | 352,048 | 600 | 2,129,960 |
| | | Lab dup | 400 | 173,216 | 1,580,680 | 122,592 | 396,352 | 600 | 2,273,840 |
| | | ***RPD (%)*** | **86** | **-28** | -6.1 | **26** | -12 | 0 | -6.5 |
| MEL-05-03 | 23-Aug-20 | Sample | 28,736 | 252,440 | 1,243,432 | 175,216 | 146,480 | 1,000 | 1,847,304 |
| | | Lab dup | 29,136 | 231,888 | 1,330,040 | 190,584 | 168,832 | 600 | 1,951,080 |
| | | ***RPD (%)*** | | 8 | -6.7 | -8 | -14 | **50** | -5.5 |

Notes:

RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.

Bolded RPD values exceed 25%.

RPDs have not been calculated for cases where one or both of the samples is "0".

## Table A-7. Field duplicate results for chlorophyll-a samples collected in August 2020

| Chlorophyll-a (µg/L) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Replicate** | Sample = MEL-01-09-PC<br>Duplicate = AUG-DUP-01-PC | | | Sample = MEL-02-01-PC<br>Duplicate = AUG-DUP-02-PC | | | Sample = MEL-03-01-PC<br>Duplicate = AUG-DUP-03-PC | | |
| | Sample | Duplicate | **RPD** | Sample | Duplicate | **RPD** | Sample | Duplicate | **RPD** |
| 1 | 2.14 | 2.02 | 5.8 | 0.87 | 0.89 | -2.3 | 0.62 | 0.55 | 12.0 |
| 2 | 2.03 | 2.01 | 1.0 | 0.98 | 0.61 | 46.5 | 0.61 | 0.62 | -1.6 |
| 3 | 2.03 | 2.11 | -3.9 | 0.92 | 0.76 | 19.0 | 0.61 | 0.62 | -1.6 |

Notes
RPD = Relative Percent Difference (%) = ((original - duplicate) / (original + duplicate)/2) x 100.
RPDs are calculated when both samples are above detection.
The data quality objective (DQO) for field duplicates is an RPD of 50%.
Bolded RPD values exceed 50%.

# APPENDIX A1
# MONTHLY WATER QUALITY ASSESSMENT REPORTS

# MARCH 2020 SAMPLING EVENT:
# PRELIMINARY SCREENING AND QC ASSESSMENT

# Meliadine Mine - Water Quality Monitoring 2020

## Preliminary Screening of March, 2020 Water Quality Monitoring

Azimuth Consulting Group Inc.
on behalf of Agnico Eagle Mines Ltd.

Report Date: 2020-11-23

## Table of Contents

# 1 INTRODUCTION & SAMPLING OVERVIEW

This document was prepared by Azimuth Consulting Group Inc (Azimuth) to provide the Meliadine Environment Department with a brief overview of the water chemistry results collected in March, 2020 as part of the Aquatic Effects Monitoring Program (AEMP). AEMP water quality monitoringoccurs in March (MEL-01 and -02), July (MEL-01, -02, and -03), August (MEL-01, -02, -03, -04, and -05),and September (MEL-01, -02, and -03). In addition, peninsula lakes A8, B7, and D7 are sampled in Julyand August. The purpose of this memo is to:

1. Screen the water chemistry results from ALS against normal ranges and thresholds to keep the Environment Department informed about potential changes in water quality, including the early identification of potentially anomalous data (Section 2).
2. Review laboratory (blanks, duplicates, matrix spikes, etc.) and field quality control (QC) results, and identify potential issues in lab or field methods (Section 3).

Samples included in this report are shown in Table 1, while field blanks are shown in Table 2.

*Table 1: Summary of March, 2020 samples.*

| Sample ID | Area ID | Duplicate | Date_Sampled | ALS Sample ID |
|---|---|---|---|---|
| MEL-01-01 | MEL-01 | - | 2020-03-21 | L2432715-1 |
| MEL-01-06 | MEL-01 | - | 2020-03-21 | L2432715-2 |
| MEL-01-07 | MEL-01 | - | 2020-03-21 | L2432715-3 |
| MEL-01-08 | MEL-01 | - | 2020-03-21 | L2432715-4 |
| MEL-01-09 | MEL-01 | - | 2020-03-21 | L2432715-5 |
| MEL-02-02 | MEL-02 | - | 2020-03-21 | L2432715-6 |
| MEL-02-03 | MEL-02 | - | 2020-03-21 | L2432715-7 |
| MEL-02-05 | MEL-02 | - | 2020-03-21 | L2432715-8 |
| MEL-02-06 | MEL-02 | - | 2020-03-21 | L2432715-9 |
| MEL-02-08 | MEL-02 | DUP-MEL-MAR-01 | 2020-03-21 | L2432715-10 |

*Table 2: Summary of field blanks collected in March, 2020.*

| Client_Sample_ID | ID_Name | ALS Sample ID |
|---|---|---|
| DI-MAR-01 | DI Blank | L2432715-12 |
| EB-MAR-01 | Equipment Blank | L2432715-13 |
| TB-MAR-01 | Travel Blank | L2432715-14 |

# 2 TRIGGER SCREENING

Sampling results were screened relative to relevant normal ranges and thresholds. Normal range, as defined in the AEMP, numerically describes the natural range of baseline/reference conditions for the various components of the AEMP. In simple terms, the normal range is the instrument used to assess whether current conditions (e.g., the measured concentration of a particular metal) has changed relative to baseline/reference conditions. In the case of the March sampling event, results are screened relative to the thresholds only, as normal ranges are not applicable to winter lake conditions. A summary of trigger and threshold exceedances is provided in Table 3 (Refer to Azimuth 2020 for details on the normal range and threshold values used here). The subsequent table (Table 4) provides all sample results above trigger and threshold values in March, 2020.

Figures displaying all parameters with at least one sample above the relevant normal range or threshold are also provided.

*Table 3: Summary of trigger and threshold exceedances in March, 2020.*

| Area | Parameter | Samples Exceeding Threshold | Stations |
|---|---|---|---|
| Meliadine Lake | | | |
| | Copper (T) | 1 | MEL-01-06 |
| | Lead (T) | 1 | MEL-01-06* |
| | Zinc (D) | 3 | MEL-01-01*, MEL-01-07*, MEL-02-02* |

* Indicates samples which failed reliability checks and are consequently uncertain.

*Table 4: Meliadine trigger and threshold exceedances in March, 2020.*

| Area ID | Sample ID | Parameter | Results | DL | Units | MDL | Threshold | Reliability |
|---|---|---|---|---|---|---|---|---|
| MEL-01 | | | | | | | | |
| | MEL-01-01 | Zinc (D) | 0.012 | 5e-04 | mg/L | - | 0.0056 | Uncertain |
| | MEL-01-06 | Copper (T) | 0.0022 | 5e-05 | mg/L | - | 0.002 | - |
| | MEL-01-06 | Lead (T) | 0.001 | 1e-05 | mg/L | - | 0.001 | Uncertain |
| | MEL-01-07 | Zinc (D) | 0.024 | 5e-04 | mg/L | - | 0.0056 | Uncertain |
| MEL-02 | | | | | | | | |
| | MEL-02-02 | Zinc (D) | 0.0081 | 5e-04 | mg/L | - | 0.0056 | Uncertain |

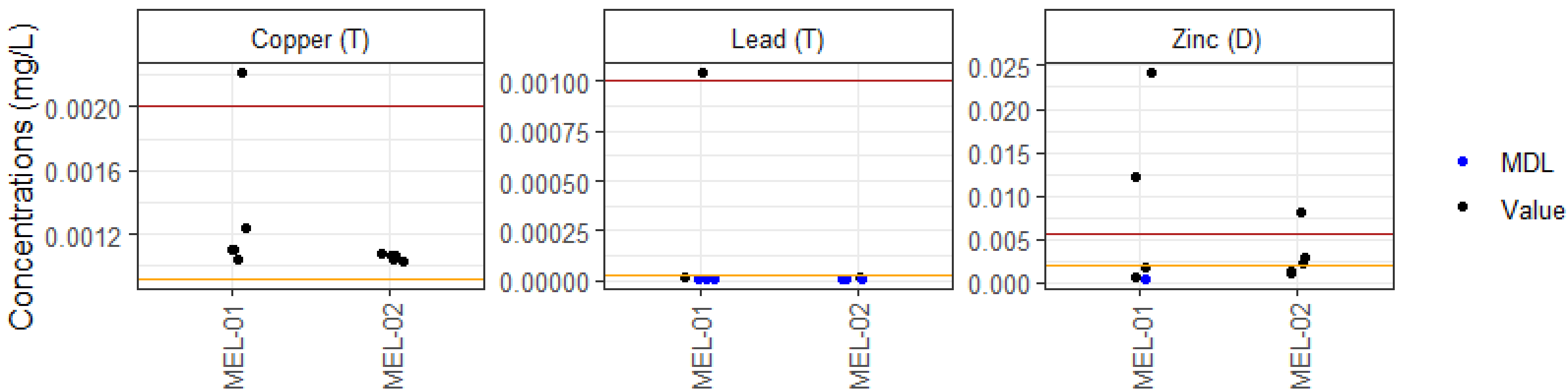


*Figure 1: Sampling event results for metals in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

## 2.1 Result Reliability Checks

Two preliminary analyses were conducted to assess the reliability of sample results. Samples failing either one of these tests have been flagged as uncertain, and warrant further evaluation.

The first analysis compares dissolved and total concentrations for a given parameters at each location. Samples in which dissolved concentrations are greater than total with a relative percent difference (RPD) of more than 30% are considered potentially unreliable. All samples failing to meet this reliability check are summarized in Table 5.

The second analysis compares parameter concentrations within each sampling area. In most cases, samples at stations in the same sampling area are expected to have similar concentrations, and outlying data points may be anomalous. Sampling areas where the maximum concentration was more than a factor of 5 greater than the median of all samples within the sampling area are highlighted here as potentially unreliable. All samples failing to meet this reliability check are summarized in Table 6.

*Table 5: Samples with uncertain reliability due to differences in dissolved and total parameter results.*

| Sample ID | Area ID | Parameter | Result (T) | Result (D) | MDL (T) | MDL (D) | RPD |
|---|---|---|---|---|---|---|---|
| MEL-01-07 | MEL-01 | Zinc | 0.00098 | 0.0241 | - | - | 184.4 |
| MEL-01-01 | MEL-01 | Zinc | 0.00198 | 0.0122 | - | - | 144.1 |
| MEL-02-06 | MEL-02 | Zinc | 0.00105 | 0.00296 | - | - | 95.3 |
| MEL-02-02 | MEL-02 | Zinc | 0.00322 | 0.00813 | - | - | 86.5 |
| MEL-01-01 | MEL-01 | Aluminum | 0.0021 | 0.005 | - | - | 81.7 |
| MEL-01-07 | MEL-01 | Lead | 1e-05 | 2.2e-05 | MDL | - | 75 |
| MEL-02-05 | MEL-02 | Zinc | 0.00099 | 0.00217 | - | - | 74.7 |
| MEL-02-08 | MEL-02 | Zinc | 0.00063 | 0.00135 | - | - | 72.7 |
| MEL-01-06 | MEL-01 | Silver | 5e-06 | 1e-05 | MDL | MDL | 66.7 |
| MEL-01-07 | MEL-01 | Aluminum | 0.0016 | 0.0028 | - | - | 54.5 |
| MEL-01-08 | MEL-01 | Mercury | 5e-07 | 7.6e-07 | - | - | 41.3 |

*Table 6: Samples with uncertain reliability due to differences between results from the same sampling area.*

| Area ID | Parameter | DL | Median | Max | Difference | Station_with_Max |
|---|---|---|---|---|---|---|
| MEL-01 | Lead (T) | 1e-05 | 0.000010 | 0.001040 | 104.0 | MEL-01-06 |
| MEL-02 | Molybdenum (T) | 5e-05 | 0.000132 | 0.007090 | 53.7 | MEL-02-06 |
| MEL-01 | Molybdenum (T) | 5e-05 | 0.000791 | 0.012200 | 15.4 | MEL-01-07 |
| MEL-01 | Zinc (D) | 5e-04 | 0.001660 | 0.024100 | 14.5 | MEL-01-07 |
| MEL-01 | Antimony (T) | 2e-05 | 0.000020 | 0.000157 | 7.8 | MEL-01-06 |
| MEL-02 | Tin (T) | 2e-05 | 0.000020 | 0.000135 | 6.7 | MEL-02-02 |
| MEL-01 | Zinc (T) | 5e-04 | 0.001980 | 0.012300 | 6.2 | MEL-01-06 |

# 3 LABORATORY & FIELD QUALITY CONTROL RESULTS

ALS' laboratory QC samples for water are:

- *Laboratory duplicates* (LD) - these samples provide insights into the precision of laboratory analyses. Duplicate aliquots are taken from the samples and run through part (aliquots taken post digestion) or all (aliquots taken from the sample bottle) the laboratory analytical process.
- *Laboratory control samples* (LCS) - these samples provide insights into whether the laboratory systems are working as intended. They are comprised of a mixture of analyte-free water to which known amounts of the method analytes are added. They are essentially an internal version of a certified reference material.
- *Matrix spikes* (MS) - these samples involve the analysis of actual samples, to which a known amount of method analytes are added in amounts high enough that the spikes are clearly discernable relative to existing concentrations. These samples provide insights into the degree that the sample matrix could interfere with analyses.
- *Matrix blanks* (MB) - these samples are analyzed to assess background interference or contamination that exists in the analytical system that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free water.

The following field QC samples were collected and submitted blind to ALS:

- *Field duplicates* (FD) - these samples provide insights into (a) variability in field conditions and (b) the precision of laboratory analyses. Duplicate samples are collected from the same location and treated independently through the sampling and analysis process.
- *Deionized blanks* (DB) - these samples are analyzed to verify the "analyte-free" status of the deionized water to help interpret the equipment blank results. These samples are comprised of deionized water poured directly into the sampling containers.
- *Equipment blanks* (EB) - these samples are analyzed to assess cross contamination in the sampling equipment that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free deionized water passed through the sampling equipment.
- *Travel blanks* (TB) - these samples are analyzed to assess cross contamination occurring during the transport of samples. These samples comprise analyte-free deionized water prepared in the lab by ALS, and travel to the site and back to the lab without being opened.

## 3.1 Overall QC Results

Overall laboratory and field QC results are summarized in Table 7.

*Table 7: Summary of laboratory and field QC results by sample type.*

| | QC_Element | Pass | Fail | ND |
|---|---|---|---|---|
| Laboratory | Lab Duplicate | 205 | 0 | 0 |
| | Lab Control Sample | 214 | 1 | 0 |
| | Matrix Spike | 102 | 0 | 8 |
| | Matrix Blank | 214 | 0 | 0 |
| Field | Field Duplicate | 121 | 2 | 1 |
| | Deionized Water Blank | 100 | 21 | 0 |
| | Equipment Blank | 88 | 33 | 0 |
| | Travel Blank | 101 | 1 | 0 |

## 3.2 Laboratory Duplicates

All laboratory duplicate results met laboratory QC objectives.

## 3.3 Laboratory Control Samples

In this sampling event, 1 laboratory control sample failed to meet the QC objectives. Laboratory control sample results not meeting QC objectives are summarized in Table 8.

*Table 8: Details for laboratory control sample results not meeting QC objectives.*

| QC_Lot | Analyte | Percent | Limit | LCS.QC |
|---|---|---|---|---|
| 1302039 | Boron (B)-Total | 68.2 | 80-120 | Fail |

## 3.4 Matrix Spike

All matrix spike results met laboratory QC objectives.

In addition, some parameters had spike levels too low to confidently quantify them relative to existing concentrations in the sample. Consequently, QC results for these results could not be calculated (see Table 9).

*Table 9: Analytes not determined for matrix spikes.*

| QC_Lot | Analyte | ALS_QC_ID[1] |
|---|---|---|
| 1288086 | Calcium (Ca)-Total | DUP-MEL-MAR-01 |
| 1288086 | Magnesium (Mg)-Total | DUP-MEL-MAR-01 |
| 1288086 | Sodium (Na)-Total | DUP-MEL-MAR-01 |
| 1288086 | Strontium (Sr)-Total | DUP-MEL-MAR-01 |
| 1288087 | Calcium (Ca)-Dissolved | MEL-01-06 |
| 1288087 | Magnesium (Mg)-Dissolved | MEL-01-06 |
| 1288087 | Sodium (Na)-Dissolved | MEL-01-06 |
| 1288087 | Strontium (Sr)-Dissolved | MEL-01-06 |

[1]ALS_QC_ID listing of 'Anonymous' indicates QC sample from another client used.

## 3.5 Matrix Blank

All matrix blank results met laboratory QC objectives.

## 3.6 Field Duplicates

In this sampling event, 2 field duplicate samples failed to meet the QC objectives. Field duplicate sample results not meeting QC objectives are summarized in Table 10.

In addition, some field duplicate samples could not be appropriately compared to other samples due to differences in detection limits. Consequently, QC results for these results could not be calculated (see Table 11).

*Table 10: Details for field duplicate results not meeting QC objectives.*

| QC_Lot.x | Analyte | RPD | DIFFx | FD.QC |
|---|---|---|---|---|
| 1288086 | Molybdenum (Mo)-Total | 191.7 | 104.7 | Fail |
| 1287910 | Nitrite (as N) | 156.5 | 7.2 | Fail |

*Table 11: Details for field duplicate results which could not be determined.*

| QC_Lot.x | Analyte | RPD | DIFFx | FD.QC |
|---|---|---|---|---|
| 1288086 | Silver (Ag)-Total | 66.7 | NA | ND |

## 3.7 DI Blank

In this sampling event, 21 deionized water blank samples failed to meet the QC objectives. Deionized water blank results not meeting QC objectives are summarized in Table 13.

*Table 13: Details for deionized water blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1287743 | DI | Conductivity | 2.000000 | 1.00000 | Fail |
| | DI | Hardness (as CaCO3) | 0.720000 | 0.20000 | Fail |
| 1287743 | DI | Alkalinity, Total (as CaCO3) | 2.100000 | 1.00000 | Fail |
| | DI | Bicarbonate (HCO3) | 2.600000 | 1.20000 | Fail |
| 1288575 | DI | Barium (Ba)-Total | 0.000021 | 0.00002 | Fail |
| 1288575 | DI | Calcium (Ca)-Total | 0.168000 | 0.01000 | Fail |
| 1288575 | DI | Copper (Cu)-Total | 0.000077 | 0.00005 | Fail |
| 1288575 | DI | Molybdenum (Mo)-Total | 0.002620 | 0.00005 | Fail |
| 1288575 | DI | Nickel (Ni)-Total | 0.000133 | 0.00005 | Fail |
| 1288575 | DI | Sodium (Na)-Total | 0.450000 | 0.02000 | Fail |
| 1288575 | DI | Strontium (Sr)-Total | 0.000126 | 0.00002 | Fail |
| 1288575 | DI | Zinc (Zn)-Total | 0.001660 | 0.00050 | Fail |
| 1288576 | DI | Barium (Ba)-Dissolved | 0.000051 | 0.00002 | Fail |
| 1288576 | DI | Calcium (Ca)-Dissolved | 0.278000 | 0.01000 | Fail |
| 1288576 | DI | Copper (Cu)-Dissolved | 0.000088 | 0.00005 | Fail |
| 1288576 | DI | Magnesium (Mg)-Dissolved | 0.007500 | 0.00400 | Fail |
| 1288576 | DI | Manganese (Mn)-Dissolved | 0.000055 | 0.00005 | Fail |
| 1288576 | DI | Nickel (Ni)-Dissolved | 0.000107 | 0.00005 | Fail |
| 1288576 | DI | Sodium (Na)-Dissolved | 0.442000 | 0.02000 | Fail |
| 1288576 | DI | Strontium (Sr)-Dissolved | 0.000205 | 0.00002 | Fail |
| 1288576 | DI | Zinc (Zn)-Dissolved | 0.003410 | 0.00050 | Fail |

## 3.8 Equipment Blank

In this sampling event, 33 equipment blank samples failed to meet the QC objectives. Equipment blank results not meeting QC objectives are summarized in Table 12.

*Table 12: Details for equipment blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1287743 | EB | Conductivity | 1.60e+00 | 1.0e+00 | Fail |
| | EB | Hardness (as CaCO3) | 2.70e-01 | 2.0e-01 | Fail |
| 1287743 | EB | Alkalinity, Total (as CaCO3) | 1.10e+00 | 1.0e+00 | Fail |
| | EB | Bicarbonate (HCO3) | 1.30e+00 | 1.2e+00 | Fail |
| 1287910 | EB | Chloride (Cl) | 1.70e-01 | 1.0e-01 | Fail |
| 1288575 | EB | Aluminum (Al)-Total | 1.60e-03 | 1.0e-03 | Fail |
| 1288575 | EB | Arsenic (As)-Total | 1.05e-04 | 2.0e-05 | Fail |
| 1288575 | EB | Barium (Ba)-Total | 2.47e-04 | 2.0e-05 | Fail |
| 1288575 | EB | Calcium (Ca)-Total | 1.20e-01 | 1.0e-02 | Fail |
| 1288575 | EB | Copper (Cu)-Total | 5.19e-04 | 5.0e-05 | Fail |
| 1288575 | EB | Iron (Fe)-Total | 5.20e-03 | 1.0e-03 | Fail |
| 1288575 | EB | Lead (Pb)-Total | 7.76e-04 | 1.0e-05 | Fail |
| 1288575 | EB | Magnesium (Mg)-Total | 1.68e-02 | 4.0e-03 | Fail |
| 1288575 | EB | Manganese (Mn)-Total | 4.13e-04 | 5.0e-05 | Fail |
| 1288575 | EB | Molybdenum (Mo)-Total | 2.37e-03 | 5.0e-05 | Fail |
| 1288575 | EB | Nickel (Ni)-Total | 1.67e-04 | 5.0e-05 | Fail |
| 1288575 | EB | Rubidium (Rb)-Total | 1.59e-05 | 5.0e-06 | Fail |
| 1288575 | EB | Sodium (Na)-Total | 9.20e-02 | 2.0e-02 | Fail |
| 1288575 | EB | Strontium (Sr)-Total | 9.05e-04 | 2.0e-05 | Fail |
| 1288575 | EB | Titanium (Ti)-Total | 5.70e-05 | 5.0e-05 | Fail |
| 1288575 | EB | Zinc (Zn)-Total | 1.19e-03 | 5.0e-04 | Fail |
| 1288576 | EB | Arsenic (As)-Dissolved | 4.30e-05 | 2.0e-05 | Fail |
| 1288576 | EB | Barium (Ba)-Dissolved | 1.80e-04 | 2.0e-05 | Fail |
| 1288576 | EB | Calcium (Ca)-Dissolved | 9.20e-02 | 1.0e-02 | Fail |
| 1288576 | EB | Copper (Cu)-Dissolved | 2.60e-04 | 5.0e-05 | Fail |
| 1288576 | EB | Lead (Pb)-Dissolved | 2.85e-04 | 1.0e-05 | Fail |
| 1288576 | EB | Magnesium (Mg)-Dissolved | 9.60e-03 | 4.0e-03 | Fail |
| 1288576 | EB | Manganese (Mn)-Dissolved | 2.73e-04 | 5.0e-05 | Fail |
| 1288576 | EB | Nickel (Ni)-Dissolved | 5.40e-05 | 5.0e-05 | Fail |
| 1288576 | EB | Rubidium (Rb)-Dissolved | 1.09e-05 | 5.0e-06 | Fail |
| 1288576 | EB | Sodium (Na)-Dissolved | 5.10e-02 | 2.0e-02 | Fail |
| 1288576 | EB | Strontium (Sr)-Dissolved | 6.62e-04 | 2.0e-05 | Fail |
| 1288576 | EB | Zinc (Zn)-Dissolved | 1.17e-03 | 5.0e-04 | Fail |

## 3.9 Travel Blank

In this sampling event, 1 travel blank sample failed to meet the QC objectives. Travel blank results not meeting QC objectives are summarized in Table 14.

*Table 14: Details for travel blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1289586 | TB | Ammonia, Total (as N) | 0.008 | 0.005 | Fail |

## 3.10 Holding Time Exceedances

In addition to those ALS laboratory QC samples described above, during QC screening samples were also assessed agianst recommended hold times. Parameters and associated sample numbers exceeding recommended hold times in this sampling event are shown in Table 15. Note that pH is included in the suite of field measurements and has a very short recommended hold time, so exceeding the hold time for laboratory analysis is expected and of little importance.

*Table 15: Analytes and associated number of samples exceeding holding times.*

| Analyte | n |
|---|---|
| Phosphate Ortho Dissolved in Water | 26 |
| Nitrate in Water by IC (Low Level) | 13 |
| Nitrite in Water by IC (Low Level) | 13 |
| pH | 13 |
| Total Dissolved Solids (TDS) | 13 |
| Total Suspended Solids by Grav. (1 mg/L) | 13 |
| Turbidity | 13 |

# JULY 2020 SAMPLING EVENT:
# PRELIMINARY SCREENING AND QC ASSESSMENT

# Meliadine Mine - Water Quality Monitoring 2020

## Preliminary Screening of July, 2020 Water Quality Monitoring

Azimuth Consulting Group Inc.
on behalf of Agnico Eagle Mines Ltd.

Report Date: 2020-11-23

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1. Screen the water chemistry results from ALS against normal ranges and thresholds to keep the Environment Department informed about potential changes in water quality, including the early identification of potentially anomalous data (Section 2).
2. Review laboratory (blanks, duplicates, matrix spikes, etc.) and field quality control (QC) results, and identify potential issues in lab or field methods (Section 3).

Samples included in this report are shown in Table 1, while field blanks are shown in Table 2.

*Table 1: Summary of July, 2020 samples.*

| Sample ID | Area ID | Duplicate | Date_Sampled | ALS Sample ID |
|---|---|---|---|---|
| A8-01 | A8 | JUL-DUP-03 | 2020-07-28 | L2484438-11 |
| A8-02 | A8 | - | 2020-07-28 | L2484438-12 |
| A8-03 | A8 | - | 2020-07-28 | L2484438-13 |
| B7-01 | B7 | - | 2020-07-27 | L2484438-14 |
| B7-02 | B7 | - | 2020-07-27 | L2484438-15 |
| B7-03 | B7 | - | 2020-07-27 | L2484438-16 |
| D7-01 | D7 | - | 2020-07-31 | L2485199-1 |
| D7-02 | D7 | - | 2020-07-31 | L2485199-2 |
| D7-03 | D7 | - | 2020-07-31 | L2485199-3 |
| MEL-01-01 | MEL-01 | - | 2020-07-22 | L2482210-1 |
| MEL-01-06 | MEL-01 | - | 2020-07-22 | L2482210-2 |
| MEL-01-07 | MEL-01 | JUL-DUP-01 | 2020-07-22 | L2482210-3 |
| MEL-01-08 | MEL-01 | - | 2020-07-22 | L2482210-4 |
| MEL-01-09 | MEL-01 | - | 2020-07-22 | L2482210-5 |
| MEL-02-01 | MEL-02 | - | 2020-07-27 | L2484438-1 |
| MEL-02-02 | MEL-02 | - | 2020-07-27 | L2484438-2 |
| MEL-02-03 | MEL-02 | - | 2020-07-27 | L2484438-3 |
| MEL-02-04 | MEL-02 | - | 2020-07-27 | L2484438-4 |
| MEL-02-05 | MEL-02 | - | 2020-07-27 | L2484438-5 |
| MEL-03-01 | MEL-03 | - | 2020-07-27 | L2484438-6 |
| MEL-03-02 | MEL-03 | - | 2020-07-27 | L2484438-7 |
| MEL-03-03 | MEL-03 | - | 2020-07-27 | L2484438-8 |
| MEL-03-04 | MEL-03 | - | 2020-07-27 | L2484438-9 |
| MEL-03-05 | MEL-03 | JUL-DUP-02 | 2020-07-27 | L2484438-10 |

*Table 2: Summary of field blanks collected in July, 2020.*

| Client_Sample_ID | ID_Name | ALS Sample ID |
|---|---|---|
| JUL-DI-01 | DI Blank | L2484438-19 |
| JUL-EB-01 | Equipment Blank | L2484438-20 |

# 2 TRIGGER SCREENING

Sampling results were screened relative to relevant normal ranges and thresholds. Normal range, as defined in the AEMP, numerically describes the natural range of baseline/reference conditions for the various components of the AEMP. In simple terms, the normal range is the instrument used to assess whether current conditions (e.g., the measured concentration of a particular metal) has changed relative to baseline/reference conditions. In the case of the March sampling event, results are screened relative to the thresholds only, as normal ranges are not applicable to winter lake conditions. A summary of trigger and threshold exceedances is provided in Table 3 (Refer to Azimuth 2020 for details on the normal range and threshold values used here). The subsequent table (Table 4) provides all sample results above trigger and threshold values in July, 2020.

Figures displaying all parameters with at least one sample above the relevant normal range or threshold are also provided.

*Table 3: Summary of trigger and threshold exceedances in July, 2020.*

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| Meliadine Lake | | | | |
| | Aluminum (T) | 7 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-03-05 |
| | Ammonia-N | 2 | 0 | MEL-02-05*, MEL-03-05 |
| | Arsenic (T) | 14 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-04, MEL-03-05 |
| | Barium (T) | 11 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-05 |
| | Bicarbonate alkalinity | 6 | 0 | MEL-02-01, MEL-02-02, MEL-02-04, MEL-02-05, MEL-03-03, MEL-03-04 |
| | Boron (T) | 6 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01 |
| | Cadmium (T) | 1 | 0 | MEL-02-01 |
| | Calcium (T) | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Chloride | 14 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Chromium (T) | 1 | 0 | MEL-02-03 |
| | Cobalt (T) | 11 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-05 |
| | Copper (T) | 1 | 0 | MEL-02-03 |
| | DOC | 9 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Hardness | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Iron (T) | 11 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-05 |
| | Lead (T) | 5 | 0 | MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Lithium (T) | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Magnesium (T) | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Manganese (T) | 11 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-05 |
| | Molybdenum (T) | 9 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-04, MEL-02-05* |
| | Nickel (T) | 14 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Nitrate-N | 7 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-03-05 |
| | Nitrite-N | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | Potassium (T) | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Reactive silica | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Selenium (T) | 3 | 0 | MEL-02-02, MEL-02-03, MEL-03-01 |
| | Silver (T) | 1 | 0 | MEL-01-09 |
| | Sodium (T) | 12 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-04, MEL-03-05 |
| | Strontium (T) | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Sulphate | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | TDS | 8 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-04, MEL-03-01, MEL-03-02 |
| | TDS (calculated) | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Tin (T) | 1 | 0 | MEL-02-05 |
| | Titanium (T) | 1 | 0 | MEL-03-05* |
| | TKN | 5 | 0 | MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | TOC | 9 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-05 |
| | Total Alkalinity | 6 | 0 | MEL-02-01, MEL-02-02, MEL-02-04, MEL-02-05, MEL-03-03, MEL-03-04 |
| | Total phosphorous | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-09, MEL-02-05 |
| | Uranium (T) | 7 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-03, MEL-02-04 |
| | Vanadium (T) | 1 | 0 | MEL-03-05 |
| | Zinc (D) | 6 | 1 | MEL-01-01*, MEL-01-06*, MEL-01-07*, MEL-01-08*, MEL-01-09*, MEL-03-02* |
| | Zinc (T) | 3 | 0 | MEL-01-07, MEL-02-01*, MEL-02-03 |
| Peninsula Lakes | | | | |
| | Aluminum (T) | 4 | 0 | A8-01, A8-02, A8-03, D7-01 |
| | Ammonia-N | 6 | 0 | A8-01, A8-02, A8-03, B7-01, D7-02, D7-03 |
| | Antimony (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Arsenic (T) | 9 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03, D7-01, D7-02, D7-03 |
| | Barium (T) | 4 | 0 | B7-01, B7-02, B7-03, D7-01 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Boron (T) | 6 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03 |
| | Cadmium (T) | 1 | 0 | B7-03 |
| | Chloride | 3 | 0 | B7-01, B7-02, B7-03 |
| | Chromium (T) | 9 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03, D7-01, D7-02, D7-03 |
| | Cobalt (T) | 6 | 0 | B7-01, B7-02, B7-03, D7-01, D7-02, D7-03 |
| | Copper (T) | 2 | 0 | A8-02, A8-03 |
| | Lead (T) | 5 | 0 | A8-01, A8-02, A8-03, D7-01, D7-03 |
| | Lithium (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Manganese (T) | 1 | 0 | D7-01 |
| | Molybdenum (T) | 7 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03, D7-01 |
| | Nitrate-N | 5 | 0 | B7-01, B7-02, D7-01, D7-02, D7-03 |
| | Nitrite-N | 6 | 0 | A8-01, A8-02, A8-03, D7-01, D7-02, D7-03 |
| | Reactive silica | 1 | 0 | D7-01 |
| | Selenium (T) | 6 | 0 | A8-01, A8-02, A8-03, B7-03, D7-02, D7-03 |
| | Silver (T) | 1 | 0 | D7-01 |
| | Strontium (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Sulphate | 3 | 0 | B7-01, B7-02, B7-03 |
| | Thallium (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Total nitrogen | 5 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02 |
| | Uranium (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Vanadium (T) | 9 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03, D7-01, D7-02, D7-03 |
| | Zinc (D) | 1 | 0 | B7-02* |
| | Zinc (T) | 1 | 0 | A8-02 |

* Indicates samples which failed reliability checks and are consequently uncertain.

*Table 4: Meliadine trigger and threshold exceedances in July, 2020.*

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| A8 | | | | | | | | | | |
| | A8-01 | Aluminum (T) | 0.0033 | 0.001 | mg/L | - | 0.1 | 0.003 | 10 | - |
| | A8-02 | Aluminum (T) | 0.0032 | 0.001 | mg/L | - | 0.1 | 0.003 | 6.7 | - |
| | A8-03 | Aluminum (T) | 0.0035 | 0.001 | mg/L | - | 0.1 | 0.003 | 16.7 | - |
| | A8-01 | Ammonia-N | 0.042 | 0.005 | mg/L | - | 1.8 | 0.011 | 282.7 | - |
| | A8-02 | Ammonia-N | 0.035 | 0.005 | mg/L | - | 1.8 | 0.011 | 220 | - |
| | A8-03 | Ammonia-N | 0.023 | 0.005 | mg/L | - | 1.8 | 0.011 | 106.4 | - |
| | A8-01 | Arsenic (T) | 0.0058 | 2e-05 | mg/L | - | 0.025 | 0.0024 | 141.7 | - |
| | A8-02 | Arsenic (T) | 0.0059 | 2e-05 | mg/L | - | 0.025 | 0.0024 | 146.3 | - |
| | A8-03 | Arsenic (T) | 0.0059 | 2e-05 | mg/L | - | 0.025 | 0.0024 | 146.7 | - |
| | A8-01 | Boron (T) | 0.0056 | 0.005 | mg/L | - | 1.5 | 0.005 | 12 | - |
| | A8-02 | Boron (T) | 0.0057 | 0.005 | mg/L | - | 1.5 | 0.005 | 14 | - |
| | A8-03 | Boron (T) | 0.0056 | 0.005 | mg/L | - | 1.5 | 0.005 | 12 | - |
| | A8-01 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | A8-02 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | A8-03 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | A8-02 | Copper (T) | 0.0017 | 5e-05 | mg/L | - | 0.002 | 0.00089 | 86.5 | - |
| | A8-03 | Copper (T) | 0.0017 | 5e-05 | mg/L | - | 0.002 | 0.00089 | 91 | - |
| | A8-01 | Lead (T) | 6.7e-05 | 1e-05 | mg/L | - | 0.001 | 3e-05 | 123.3 | - |
| | A8-02 | Lead (T) | 8.1e-05 | 1e-05 | mg/L | - | 0.001 | 3e-05 | 170 | - |
| | A8-03 | Lead (T) | 7e-05 | 1e-05 | mg/L | - | 0.001 | 3e-05 | 133.3 | - |
| | A8-01 | Molybdenum (T) | 0.00028 | 5e-05 | mg/L | - | 0.073 | 0.00022 | 25.5 | - |
| | A8-02 | Molybdenum (T) | 3e-04 | 5e-05 | mg/L | - | 0.073 | 0.00022 | 35 | - |
| | A8-03 | Molybdenum (T) | 0.00027 | 5e-05 | mg/L | - | 0.073 | 0.00022 | 22.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | A8-01 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | A8-02 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | A8-03 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | A8-01 | Selenium (T) | 4e-05 | 4e-05 | mg/L | MDL | 0.001 | 2e-05 | 100 | - |
| | A8-02 | Selenium (T) | 4e-05 | 4e-05 | mg/L | MDL | 0.001 | 2e-05 | 100 | - |
| | A8-03 | Selenium (T) | 4.2e-05 | 4e-05 | mg/L | - | 0.001 | 2e-05 | 110 | - |
| | A8-01 | Total nitrogen | 0.48 | 0.05 | mg/L | - | - | 0.37 | 30 | - |
| | A8-02 | Total nitrogen | 0.41 | 0.05 | mg/L | - | - | 0.37 | 11.9 | - |
| | A8-03 | Total nitrogen | 0.44 | 0.05 | mg/L | - | - | 0.37 | 19.7 | - |
| | A8-01 | Vanadium (T) | 5e-05 | 5e-05 | mg/L | MDL | 0.12 | 1e-05 | 400 | - |
| | A8-02 | Vanadium (T) | 5e-05 | 5e-05 | mg/L | MDL | 0.12 | 1e-05 | 400 | - |
| | A8-03 | Vanadium (T) | 5e-05 | 5e-05 | mg/L | MDL | 0.12 | 1e-05 | 400 | - |
| | A8-02 | Zinc (T) | 0.0018 | 5e-04 | mg/L | - | - | 0.0012 | 50 | - |
| B7 | | | | | | | | | | |
| | B7-01 | Ammonia-N | 0.04 | 0.005 | mg/L | - | 1.8 | 0.025 | 59.6 | - |
| | B7-01 | Antimony (T) | 3.5e-05 | 2e-05 | mg/L | - | 0.009 | 2e-05 | 75 | - |
| | B7-02 | Antimony (T) | 3.5e-05 | 2e-05 | mg/L | - | 0.009 | 2e-05 | 75 | - |
| | B7-03 | Antimony (T) | 3.8e-05 | 2e-05 | mg/L | - | 0.009 | 2e-05 | 90 | - |
| | B7-01 | Arsenic (T) | 0.0073 | 2e-05 | mg/L | - | 0.025 | 0.0018 | 307.2 | - |
| | B7-02 | Arsenic (T) | 0.0052 | 2e-05 | mg/L | - | 0.025 | 0.0018 | 189.4 | - |
| | B7-03 | Arsenic (T) | 0.005 | 2e-05 | mg/L | - | 0.025 | 0.0018 | 180.6 | - |
| | B7-01 | Barium (T) | 0.026 | 2e-05 | mg/L | - | 1 | 0.02 | 28.5 | - |
| | B7-02 | Barium (T) | 0.026 | 2e-05 | mg/L | - | 1 | 0.02 | 29 | - |
| | B7-03 | Barium (T) | 0.025 | 2e-05 | mg/L | - | 1 | 0.02 | 25.5 | - |
| | B7-01 | Boron (T) | 0.015 | 0.005 | mg/L | - | 1.5 | 0.008 | 86.2 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | B7-02 | Boron (T) | 0.016 | 0.005 | mg/L | - | 1.5 | 0.008 | 93.8 | - |
| | B7-03 | Boron (T) | 0.016 | 0.005 | mg/L | - | 1.5 | 0.008 | 95 | - |
| | B7-03 | Cadmium (T) | 2e-05 | 2e-05 | mg/L | MDL | 4e-05 | 7e-06 | 185.7 | - |
| | B7-01 | Chloride | 37 | 0.1 | mg/L | - | 120 | 25 | 49.2 | - |
| | B7-02 | Chloride | 37 | 0.1 | mg/L | - | 120 | 25 | 48.4 | - |
| | B7-03 | Chloride | 38 | 0.1 | mg/L | - | 120 | 25 | 50.4 | - |
| | B7-01 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | B7-02 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | B7-03 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | B7-01 | Cobalt (T) | 7.3e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 46.2 | - |
| | B7-02 | Cobalt (T) | 7.7e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 53.6 | - |
| | B7-03 | Cobalt (T) | 7.8e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 56.8 | - |
| | B7-01 | Lithium (T) | 0.019 | 5e-04 | mg/L | - | - | 0.0075 | 152 | - |
| | B7-02 | Lithium (T) | 0.02 | 5e-04 | mg/L | - | - | 0.0075 | 166.7 | - |
| | B7-03 | Lithium (T) | 0.02 | 5e-04 | mg/L | - | - | 0.0075 | 169.3 | - |
| | B7-01 | Molybdenum (T) | 0.00027 | 5e-05 | mg/L | - | 0.073 | 0.00024 | 11.3 | - |
| | B7-02 | Molybdenum (T) | 0.0022 | 5e-05 | mg/L | - | 0.073 | 0.00024 | 812.5 | - |
| | B7-03 | Molybdenum (T) | 0.0053 | 5e-05 | mg/L | - | 0.073 | 0.00024 | 2095.8 | - |
| | B7-01 | Nitrate-N | 0.0075 | 0.005 | mg/L | - | 2.9 | 0.005 | 50 | - |
| | B7-02 | Nitrate-N | 0.021 | 0.005 | mg/L | - | 2.9 | 0.005 | 312 | - |
| | B7-03 | Selenium (T) | 4.6e-05 | 4e-05 | mg/L | - | 0.001 | 4e-05 | 15 | - |
| | B7-01 | Strontium (T) | 0.28 | 2e-05 | mg/L | - | 1.7 | 0.16 | 82.6 | - |
| | B7-02 | Strontium (T) | 0.28 | 2e-05 | mg/L | - | 1.7 | 0.16 | 81.3 | - |
| | B7-03 | Strontium (T) | 0.28 | 2e-05 | mg/L | - | 1.7 | 0.16 | 83.9 | - |
| | B7-01 | Sulphate | 8.1 | 0.3 | mg/L | - | 130 | 6 | 35.7 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | B7-02 | Sulphate | 8.1 | 0.3 | mg/L | - | 130 | 6 | 35.5 | - |
| | B7-03 | Sulphate | 8.6 | 0.3 | mg/L | - | 130 | 6 | 42.7 | - |
| | B7-01 | Thallium (T) | 5.8e-06 | 5e-06 | mg/L | - | 8e-04 | 5e-06 | 16 | - |
| | B7-02 | Thallium (T) | 5.7e-06 | 5e-06 | mg/L | - | 8e-04 | 5e-06 | 14 | - |
| | B7-03 | Thallium (T) | 5.8e-06 | 5e-06 | mg/L | - | 8e-04 | 5e-06 | 16 | - |
| | B7-01 | Total nitrogen | 0.44 | 0.05 | mg/L | - | - | 0.42 | 4.5 | - |
| | B7-02 | Total nitrogen | 0.47 | 0.05 | mg/L | - | - | 0.42 | 11.7 | - |
| | B7-01 | Uranium (T) | 3.9e-05 | 1e-06 | mg/L | - | 0.015 | 3e-05 | 29.7 | - |
| | B7-02 | Uranium (T) | 4.2e-05 | 1e-06 | mg/L | - | 0.015 | 3e-05 | 39 | - |
| | B7-03 | Uranium (T) | 4e-05 | 1e-06 | mg/L | - | 0.015 | 3e-05 | 34.3 | - |
| | B7-01 | Vanadium (T) | 5e-05 | 5e-05 | mg/L | - | 0.12 | 1e-05 | 400 | - |
| | B7-02 | Vanadium (T) | 5e-05 | 5e-05 | mg/L | MDL | 0.12 | 1e-05 | 400 | - |
| | B7-03 | Vanadium (T) | 5e-05 | 5e-05 | mg/L | MDL | 0.12 | 1e-05 | 400 | - |
| | B7-02 | Zinc (D) | 0.0046 | 5e-04 | mg/L | - | 0.0056 | 0.0022 | 108.6 | Uncertain |
| D7 | | | | | | | | | | |
| | D7-01 | Aluminum (T) | 0.0068 | 0.001 | mg/L | - | 0.1 | 0.0067 | 1.5 | - |
| | D7-02 | Ammonia-N | 0.038 | 0.005 | mg/L | - | 1.8 | 0.009 | 318.9 | - |
| | D7-03 | Ammonia-N | 0.052 | 0.005 | mg/L | - | 1.8 | 0.009 | 476.7 | - |
| | D7-01 | Arsenic (T) | 0.0014 | 2e-05 | mg/L | - | 0.025 | 0.0012 | 20 | - |
| | D7-02 | Arsenic (T) | 0.0014 | 2e-05 | mg/L | - | 0.025 | 0.0012 | 12.5 | - |
| | D7-03 | Arsenic (T) | 0.0013 | 2e-05 | mg/L | - | 0.025 | 0.0012 | 9.2 | - |
| | D7-01 | Barium (T) | 0.017 | 2e-05 | mg/L | - | 1 | 0.017 | 0.6 | - |
| | D7-01 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | D7-02 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | D7-03 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | D7-01 | Cobalt (T) | 6.4e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 28.8 | - |
| | D7-02 | Cobalt (T) | 6.1e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 21.8 | - |
| | D7-03 | Cobalt (T) | 5.4e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 8.4 | - |
| | D7-01 | Lead (T) | 2.5e-05 | 1e-05 | mg/L | - | 0.001 | 2e-05 | 25 | - |
| | D7-03 | Lead (T) | 2.1e-05 | 1e-05 | mg/L | - | 0.001 | 2e-05 | 5 | - |
| | D7-01 | Manganese (T) | 0.013 | 5e-05 | mg/L | - | - | 0.013 | 1.5 | - |
| | D7-01 | Molybdenum (T) | 0.00077 | 5e-05 | mg/L | - | 0.073 | 0.00048 | 59.8 | - |
| | D7-01 | Nitrate-N | 0.031 | 0.005 | mg/L | - | 2.9 | 0.005 | 522 | - |
| | D7-02 | Nitrate-N | 0.017 | 0.005 | mg/L | - | 2.9 | 0.005 | 234 | - |
| | D7-03 | Nitrate-N | 0.0078 | 0.005 | mg/L | - | 2.9 | 0.005 | 56 | - |
| | D7-01 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | D7-02 | Nitrite-N | 0.0011 | 0.001 | mg/L | - | 0.06 | 5e-04 | 120 | - |
| | D7-03 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | D7-01 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.28 | 0.7 | - |
| | D7-02 | Selenium (T) | 6.2e-05 | 4e-05 | mg/L | - | 0.001 | 6e-05 | 3.3 | - |
| | D7-03 | Selenium (T) | 6.9e-05 | 4e-05 | mg/L | - | 0.001 | 6e-05 | 15 | - |
| | D7-01 | Silver (T) | 9.5e-06 | 5e-06 | mg/L | - | 0.00025 | 5e-06 | 90 | - |
| | D7-01 | Vanadium (T) | 8.8e-05 | 5e-05 | mg/L | - | 0.12 | 7e-05 | 25.7 | - |
| | D7-02 | Vanadium (T) | 8.2e-05 | 5e-05 | mg/L | - | 0.12 | 7e-05 | 17.1 | - |
| | D7-03 | Vanadium (T) | 8e-05 | 5e-05 | mg/L | - | 0.12 | 7e-05 | 14.3 | - |
| MEL-01 | | | | | | | | | | |
| | MEL-01-01 | Aluminum (T) | 0.0084 | 0.001 | mg/L | - | 0.1 | 0.0054 | 55.8 | - |
| | MEL-01-06 | Aluminum (T) | 0.0069 | 0.001 | mg/L | - | 0.1 | 0.0054 | 28 | - |
| | MEL-01-07 | Aluminum (T) | 0.0061 | 0.001 | mg/L | - | 0.1 | 0.0054 | 13.2 | - |
| | MEL-01-08 | Aluminum (T) | 0.0076 | 0.001 | mg/L | - | 0.1 | 0.0054 | 41 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | Aluminum (T) | 0.0073 | 0.001 | mg/L | - | 0.1 | 0.0054 | 35.4 | - |
| | MEL-01-01 | Arsenic (T) | 0.00052 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 107.6 | - |
| | MEL-01-06 | Arsenic (T) | 0.00052 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 108.8 | - |
| | MEL-01-07 | Arsenic (T) | 0.00054 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 115.9 | - |
| | MEL-01-08 | Arsenic (T) | 5e-04 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 100.8 | - |
| | MEL-01-09 | Arsenic (T) | 0.00047 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 88 | - |
| | MEL-01-01 | Barium (T) | 0.0086 | 2e-05 | mg/L | - | 1 | 0.0079 | 9.2 | - |
| | MEL-01-06 | Barium (T) | 0.0091 | 2e-05 | mg/L | - | 1 | 0.0079 | 15.2 | - |
| | MEL-01-07 | Barium (T) | 0.0088 | 2e-05 | mg/L | - | 1 | 0.0079 | 10.9 | - |
| | MEL-01-08 | Barium (T) | 0.0088 | 2e-05 | mg/L | - | 1 | 0.0079 | 11.8 | - |
| | MEL-01-09 | Barium (T) | 0.0084 | 2e-05 | mg/L | - | 1 | 0.0079 | 5.7 | - |
| | MEL-01-01 | Boron (T) | 0.0075 | 0.005 | mg/L | - | 1.5 | 0.0067 | 12.4 | - |
| | MEL-01-06 | Boron (T) | 0.008 | 0.005 | mg/L | - | 1.5 | 0.0067 | 19.9 | - |
| | MEL-01-07 | Boron (T) | 0.0074 | 0.005 | mg/L | - | 1.5 | 0.0067 | 10.9 | - |
| | MEL-01-08 | Boron (T) | 0.0081 | 0.005 | mg/L | - | 1.5 | 0.0067 | 21.4 | - |
| | MEL-01-09 | Boron (T) | 0.0075 | 0.005 | mg/L | - | 1.5 | 0.0067 | 12.4 | - |
| | MEL-01-01 | Calcium (T) | 8.9 | 0.01 | mg/L | - | - | 7.3 | 21.8 | - |
| | MEL-01-06 | Calcium (T) | 9.3 | 0.01 | mg/L | - | - | 7.3 | 26.7 | - |
| | MEL-01-07 | Calcium (T) | 8.9 | 0.01 | mg/L | - | - | 7.3 | 22.3 | - |
| | MEL-01-08 | Calcium (T) | 9.4 | 0.01 | mg/L | - | - | 7.3 | 28.5 | - |
| | MEL-01-09 | Calcium (T) | 8.8 | 0.01 | mg/L | - | - | 7.3 | 20.7 | - |
| | MEL-01-01 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 103.4 | - |
| | MEL-01-06 | Chloride | 20 | 0.1 | mg/L | - | 120 | 8.8 | 125.1 | - |
| | MEL-01-07 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 102.3 | - |
| | MEL-01-08 | Chloride | 20 | 0.1 | mg/L | - | 120 | 8.8 | 126.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 104.6 | - |
| | MEL-01-01 | Cobalt (T) | 3.6e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 123.8 | - |
| | MEL-01-06 | Cobalt (T) | 4e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 151.3 | - |
| | MEL-01-07 | Cobalt (T) | 3.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 101.2 | - |
| | MEL-01-08 | Cobalt (T) | 3.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 96.9 | - |
| | MEL-01-09 | Cobalt (T) | 3.8e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 135.6 | - |
| | MEL-01-01 | DOC | 3.4 | 1 | mg/L | - | - | 2.7 | 25.9 | - |
| | MEL-01-06 | DOC | 3.4 | 1 | mg/L | - | - | 2.7 | 25.9 | - |
| | MEL-01-07 | DOC | 3.4 | 1 | mg/L | - | - | 2.7 | 25.9 | - |
| | MEL-01-08 | DOC | 3.5 | 1 | mg/L | - | - | 2.7 | 29.6 | - |
| | MEL-01-09 | DOC | 3.8 | 1 | mg/L | - | - | 2.7 | 40.7 | - |
| | MEL-01-01 | Hardness | 30 | 0.2 | - | - | - | 23 | 28.6 | - |
| | MEL-01-06 | Hardness | 30 | 0.2 | - | - | - | 23 | 32 | - |
| | MEL-01-07 | Hardness | 30 | 0.2 | - | - | - | 23 | 29.4 | - |
| | MEL-01-08 | Hardness | 31 | 0.2 | - | - | - | 23 | 32.5 | - |
| | MEL-01-09 | Hardness | 30 | 0.2 | - | - | - | 23 | 27.7 | - |
| | MEL-01-01 | Iron (T) | 0.03 | 0.001 | mg/L | - | 1.1 | 0.015 | 98 | - |
| | MEL-01-06 | Iron (T) | 0.029 | 0.001 | mg/L | - | 1.1 | 0.015 | 91.4 | - |
| | MEL-01-07 | Iron (T) | 0.029 | 0.001 | mg/L | - | 1.1 | 0.015 | 94 | - |
| | MEL-01-08 | Iron (T) | 0.029 | 0.001 | mg/L | - | 1.1 | 0.015 | 93.4 | - |
| | MEL-01-09 | Iron (T) | 0.03 | 0.001 | mg/L | - | 1.1 | 0.015 | 96.7 | - |
| | MEL-01-01 | Lithium (T) | 0.0016 | 5e-04 | mg/L | - | - | 7e-04 | 130 | - |
| | MEL-01-06 | Lithium (T) | 0.0018 | 5e-04 | mg/L | - | - | 7e-04 | 154.3 | - |
| | MEL-01-07 | Lithium (T) | 0.0016 | 5e-04 | mg/L | - | - | 7e-04 | 122.9 | - |
| | MEL-01-08 | Lithium (T) | 0.0018 | 5e-04 | mg/L | - | - | 7e-04 | 158.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | Lithium (T) | 0.0016 | 5e-04 | mg/L | - | - | 7e-04 | 127.1 | - |
| | MEL-01-01 | Magnesium (T) | 1.7 | 0.004 | mg/L | - | - | 1.2 | 47.9 | - |
| | MEL-01-06 | Magnesium (T) | 1.8 | 0.004 | mg/L | - | - | 1.2 | 54.7 | - |
| | MEL-01-07 | Magnesium (T) | 1.7 | 0.004 | mg/L | - | - | 1.2 | 45.3 | - |
| | MEL-01-08 | Magnesium (T) | 1.8 | 0.004 | mg/L | - | - | 1.2 | 54.7 | - |
| | MEL-01-09 | Magnesium (T) | 1.7 | 0.004 | mg/L | - | - | 1.2 | 46.2 | - |
| | MEL-01-01 | Manganese (T) | 0.0095 | 5e-05 | mg/L | - | - | 0.0032 | 200.6 | - |
| | MEL-01-06 | Manganese (T) | 0.0098 | 5e-05 | mg/L | - | - | 0.0032 | 211.7 | - |
| | MEL-01-07 | Manganese (T) | 0.0092 | 5e-05 | mg/L | - | - | 0.0032 | 193.3 | - |
| | MEL-01-08 | Manganese (T) | 0.0097 | 5e-05 | mg/L | - | - | 0.0032 | 208.6 | - |
| | MEL-01-09 | Manganese (T) | 0.0096 | 5e-05 | mg/L | - | - | 0.0032 | 203.8 | - |
| | MEL-01-01 | Molybdenum (T) | 1e-04 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 23.3 | - |
| | MEL-01-06 | Molybdenum (T) | 9.1e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 10 | - |
| | MEL-01-07 | Molybdenum (T) | 9.6e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 16.1 | - |
| | MEL-01-08 | Molybdenum (T) | 9.4e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 13.7 | - |
| | MEL-01-09 | Molybdenum (T) | 9.1e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 10 | - |
| | MEL-01-01 | Nickel (T) | 0.00082 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 97.4 | - |
| | MEL-01-06 | Nickel (T) | 0.00085 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 104.8 | - |
| | MEL-01-07 | Nickel (T) | 0.00089 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 112.9 | - |
| | MEL-01-08 | Nickel (T) | 0.00083 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 99.8 | - |
| | MEL-01-09 | Nickel (T) | 0.00085 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 103.6 | - |
| | MEL-01-01 | Nitrate-N | 0.13 | 0.005 | mg/L | - | 2.9 | 0.021 | 528 | - |
| | MEL-01-06 | Nitrate-N | 0.17 | 0.005 | mg/L | - | 2.9 | 0.021 | 735.7 | - |
| | MEL-01-07 | Nitrate-N | 0.15 | 0.005 | mg/L | - | 2.9 | 0.021 | 639.1 | - |
| | MEL-01-08 | Nitrate-N | 0.16 | 0.005 | mg/L | - | 2.9 | 0.021 | 692.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | Nitrate-N | 0.14 | 0.005 | mg/L | - | 2.9 | 0.021 | 571.5 | - |
| | MEL-01-01 | Nitrite-N | 0.0011 | 0.001 | mg/L | - | 0.06 | 0.001 | 10 | - |
| | MEL-01-06 | Nitrite-N | 0.0013 | 0.001 | mg/L | - | 0.06 | 0.001 | 30 | - |
| | MEL-01-07 | Nitrite-N | 0.0011 | 0.001 | mg/L | - | 0.06 | 0.001 | 10 | - |
| | MEL-01-08 | Nitrite-N | 0.0019 | 0.001 | mg/L | - | 0.06 | 0.001 | 90 | - |
| | MEL-01-09 | Nitrite-N | 0.0012 | 0.001 | mg/L | - | 0.06 | 0.001 | 20 | - |
| | MEL-01-01 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 20.6 | - |
| | MEL-01-06 | Potassium (T) | 1.2 | 0.02 | mg/L | - | - | 0.94 | 25.9 | - |
| | MEL-01-07 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 19.5 | - |
| | MEL-01-08 | Potassium (T) | 1.2 | 0.02 | mg/L | - | - | 0.94 | 24.9 | - |
| | MEL-01-09 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 20.6 | - |
| | MEL-01-01 | Reactive silica | 0.44 | 0.01 | mg/L | - | - | 0.26 | 65.3 | - |
| | MEL-01-06 | Reactive silica | 0.45 | 0.01 | mg/L | - | - | 0.26 | 68.7 | - |
| | MEL-01-07 | Reactive silica | 0.42 | 0.01 | mg/L | - | - | 0.26 | 60.4 | - |
| | MEL-01-08 | Reactive silica | 0.44 | 0.01 | mg/L | - | - | 0.26 | 66.4 | - |
| | MEL-01-09 | Reactive silica | 0.39 | 0.01 | mg/L | - | - | 0.26 | 48.7 | - |
| | MEL-01-09 | Silver (T) | 2.5e-05 | 2.5e-05 | mg/L | MDL | 0.00025 | 5e-06 | 400 | - |
| | MEL-01-01 | Sodium (T) | 9 | 0.02 | mg/L | - | - | 4.6 | 97.4 | - |
| | MEL-01-06 | Sodium (T) | 9.6 | 0.02 | mg/L | - | - | 4.6 | 109.9 | - |
| | MEL-01-07 | Sodium (T) | 8.7 | 0.02 | mg/L | - | - | 4.6 | 90.5 | - |
| | MEL-01-08 | Sodium (T) | 9.4 | 0.02 | mg/L | - | - | 4.6 | 107.3 | - |
| | MEL-01-09 | Sodium (T) | 8.9 | 0.02 | mg/L | - | - | 4.6 | 94.9 | - |
| | MEL-01-01 | Strontium (T) | 0.074 | 2e-05 | mg/L | - | 1.7 | 0.034 | 115.2 | - |
| | MEL-01-06 | Strontium (T) | 0.082 | 2e-05 | mg/L | - | 1.7 | 0.034 | 139.4 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-07 | Strontium (T) | 0.072 | 2e-05 | mg/L | - | 1.7 | 0.034 | 110.5 | - |
| | MEL-01-08 | Strontium (T) | 0.082 | 2e-05 | mg/L | - | 1.7 | 0.034 | 138.8 | - |
| | MEL-01-09 | Strontium (T) | 0.074 | 2e-05 | mg/L | - | 1.7 | 0.034 | 114.6 | - |
| | MEL-01-01 | Sulphate | 5.6 | 0.3 | mg/L | - | 130 | 3.7 | 53.2 | - |
| | MEL-01-06 | Sulphate | 6 | 0.3 | mg/L | - | 130 | 3.7 | 62.1 | - |
| | MEL-01-07 | Sulphate | 5.6 | 0.3 | mg/L | - | 130 | 3.7 | 51 | - |
| | MEL-01-08 | Sulphate | 5.9 | 0.3 | mg/L | - | 130 | 3.7 | 61.3 | - |
| | MEL-01-09 | Sulphate | 5.6 | 0.3 | mg/L | - | 130 | 3.7 | 52.1 | - |
| | MEL-01-01 | TDS | 88 | 13 | mg/L | - | 500 | 51 | 71.9 | - |
| | MEL-01-06 | TDS | 89 | 13 | mg/L | - | 500 | 51 | 73.8 | - |
| | MEL-01-07 | TDS | 78 | 13 | mg/L | - | 500 | 51 | 52.3 | - |
| | MEL-01-08 | TDS | 84 | 13 | mg/L | - | 500 | 51 | 64.1 | - |
| | MEL-01-09 | TDS | 78 | 13 | mg/L | - | 500 | 51 | 52.3 | - |
| | MEL-01-01 | TDS (calculated) | 54 | - | mg/L | - | 500 | 38 | 42.1 | - |
| | MEL-01-06 | TDS (calculated) | 58 | - | mg/L | - | 500 | 38 | 50.4 | - |
| | MEL-01-07 | TDS (calculated) | 54 | - | mg/L | - | 500 | 38 | 41.3 | - |
| | MEL-01-08 | TDS (calculated) | 58 | - | mg/L | - | 500 | 38 | 50.2 | - |
| | MEL-01-09 | TDS (calculated) | 54 | - | mg/L | - | 500 | 38 | 41 | - |
| | MEL-01-01 | TOC | 3.4 | 1 | mg/L | - | - | 3 | 13.3 | - |
| | MEL-01-06 | TOC | 3.6 | 1 | mg/L | - | - | 3 | 20 | - |
| | MEL-01-07 | TOC | 3.8 | 1 | mg/L | - | - | 3 | 26.7 | - |
| | MEL-01-08 | TOC | 3.6 | 1 | mg/L | - | - | 3 | 20 | - |
| | MEL-01-09 | TOC | 3.6 | 1 | mg/L | - | - | 3 | 20 | - |
| | MEL-01-01 | Total phosphorous | 0.0066 | 0.001 | mg/L | - | - | 0.006 | 10 | - |
| | MEL-01-06 | Total phosphorous | 0.0065 | 0.001 | mg/L | - | - | 0.006 | 8.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-07 | Total phosphorous | 0.0078 | 0.001 | mg/L | - | - | 0.006 | 30 | - |
| | MEL-01-09 | Total phosphorous | 0.0066 | 0.001 | mg/L | - | - | 0.006 | 10 | - |
| | MEL-01-01 | Uranium (T) | 1.9e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 15 | - |
| | MEL-01-06 | Uranium (T) | 2.3e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 35.9 | - |
| | MEL-01-07 | Uranium (T) | 1.9e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 16.2 | - |
| | MEL-01-08 | Uranium (T) | 1.9e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 11.4 | - |
| | MEL-01-09 | Uranium (T) | 1.9e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 16.2 | - |
| | MEL-01-01 | Zinc (D) | 0.0037 | 5e-04 | mg/L | - | 0.0056 | 0.002 | 88.3 | Uncertain |
| | MEL-01-06 | Zinc (D) | 0.0048 | 5e-04 | mg/L | - | 0.0056 | 0.002 | 144.9 | Uncertain |
| | MEL-01-07 | Zinc (D) | 0.0036 | 5e-04 | mg/L | - | 0.0056 | 0.002 | 82.1 | Uncertain |
| | MEL-01-08 | Zinc (D) | 0.0028 | 5e-04 | mg/L | - | 0.0056 | 0.002 | 42.3 | Uncertain |
| | MEL-01-09 | Zinc (D) | 0.0029 | 5e-04 | mg/L | - | 0.0056 | 0.002 | 49 | Uncertain |
| | MEL-01-07 | Zinc (T) | 0.0025 | 5e-04 | mg/L | - | - | 0.0022 | 13.8 | - |
| MEL-02 | | | | | | | | | | |
| | MEL-02-01 | Aluminum (T) | 0.0063 | 0.001 | mg/L | - | 0.1 | 0.0054 | 16.9 | - |
| | MEL-02-05 | Ammonia-N | 0.047 | 0.005 | mg/L | - | 1.8 | 0.015 | 217.4 | Uncertain |
| | MEL-02-01 | Arsenic (T) | 0.00057 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 125.9 | - |
| | MEL-02-02 | Arsenic (T) | 0.00055 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 118.7 | - |
| | MEL-02-03 | Arsenic (T) | 0.00051 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 103.2 | - |
| | MEL-02-04 | Arsenic (T) | 0.00054 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 113.5 | - |
| | MEL-02-05 | Arsenic (T) | 5e-04 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 99.2 | - |
| | MEL-02-01 | Barium (T) | 0.0088 | 2e-05 | mg/L | - | 1 | 0.0079 | 11.6 | - |
| | MEL-02-02 | Barium (T) | 0.0088 | 2e-05 | mg/L | - | 1 | 0.0079 | 10.9 | - |
| | MEL-02-03 | Barium (T) | 0.0087 | 2e-05 | mg/L | - | 1 | 0.0079 | 10.2 | - |
| | MEL-02-04 | Barium (T) | 0.0091 | 2e-05 | mg/L | - | 1 | 0.0079 | 14.4 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-05 | Barium (T) | 0.0088 | 2e-05 | mg/L | - | 1 | 0.0079 | 10.9 | - |
| | MEL-02-01 | Bicarbonate alkalinity | 27 | 1.2 | mg/L | - | - | 24 | 11.9 | - |
| | MEL-02-02 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 3.7 | - |
| | MEL-02-04 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 6.1 | - |
| | MEL-02-05 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 6.1 | - |
| | MEL-02-01 | Boron (T) | 0.007 | 0.005 | mg/L | - | 1.5 | 0.0067 | 4.9 | - |
| | MEL-02-01 | Cadmium (T) | 7.1e-06 | 5e-06 | mg/L | - | 4e-05 | 5e-06 | 42 | - |
| | MEL-02-01 | Calcium (T) | 7.5 | 0.01 | mg/L | - | - | 7.3 | 2.3 | - |
| | MEL-02-02 | Calcium (T) | 7.5 | 0.01 | mg/L | - | - | 7.3 | 2.1 | - |
| | MEL-02-03 | Calcium (T) | 7.5 | 0.01 | mg/L | - | - | 7.3 | 3 | - |
| | MEL-02-04 | Calcium (T) | 7.4 | 0.01 | mg/L | - | - | 7.3 | 1.6 | - |
| | MEL-02-05 | Calcium (T) | 7.4 | 0.01 | mg/L | - | - | 7.3 | 1.4 | - |
| | MEL-02-01 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 37.1 | - |
| | MEL-02-02 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 34.9 | - |
| | MEL-02-03 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 34.9 | - |
| | MEL-02-04 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 33.7 | - |
| | MEL-02-05 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 36 | - |
| | MEL-02-03 | Chromium (T) | 0.00019 | 1e-04 | mg/L | - | 0.001 | 0.00013 | 45 | - |
| | MEL-02-01 | Cobalt (T) | 2.1e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 33.1 | - |
| | MEL-02-02 | Cobalt (T) | 1.8e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 11.9 | - |
| | MEL-02-03 | Cobalt (T) | 2.3e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 45.6 | - |
| | MEL-02-04 | Cobalt (T) | 2.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 37.5 | - |
| | MEL-02-05 | Cobalt (T) | 2.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 37.5 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-03 | Copper (T) | 0.0016 | 5e-05 | mg/L | - | 0.002 | 0.00092 | 74.4 | - |
| | MEL-02-01 | DOC | 4.3 | 1 | mg/L | - | - | 2.7 | 59.3 | - |
| | MEL-02-03 | DOC | 3.3 | 1 | mg/L | - | - | 2.7 | 22.2 | - |
| | MEL-02-04 | DOC | 3.1 | 1 | mg/L | - | - | 2.7 | 14.8 | - |
| | MEL-02-05 | DOC | 3.1 | 1 | mg/L | - | - | 2.7 | 14.8 | - |
| | MEL-02-01 | Hardness | 24 | 0.2 | mg/L | - | - | 23 | 3 | - |
| | MEL-02-02 | Hardness | 24 | 0.2 | - | - | - | 23 | 2.6 | - |
| | MEL-02-03 | Hardness | 24 | 0.2 | - | - | - | 23 | 2.2 | - |
| | MEL-02-04 | Hardness | 24 | 0.2 | - | - | - | 23 | 5.2 | - |
| | MEL-02-05 | Hardness | 24 | 0.2 | - | - | - | 23 | 4.8 | - |
| | MEL-02-01 | Iron (T) | 0.023 | 0.001 | mg/L | - | 1.1 | 0.015 | 51.7 | - |
| | MEL-02-02 | Iron (T) | 0.021 | 0.001 | mg/L | - | 1.1 | 0.015 | 39.1 | - |
| | MEL-02-03 | Iron (T) | 0.023 | 0.001 | mg/L | - | 1.1 | 0.015 | 54.3 | - |
| | MEL-02-04 | Iron (T) | 0.024 | 0.001 | mg/L | - | 1.1 | 0.015 | 59.6 | - |
| | MEL-02-05 | Iron (T) | 0.024 | 0.001 | mg/L | - | 1.1 | 0.015 | 61.6 | - |
| | MEL-02-01 | Lead (T) | 0.00012 | 1e-05 | mg/L | - | 0.001 | 2.6e-05 | 376.7 | - |
| | MEL-02-02 | Lead (T) | 7.6e-05 | 1e-05 | mg/L | - | 0.001 | 2.6e-05 | 194.6 | - |
| | MEL-02-03 | Lead (T) | 2.7e-05 | 1e-05 | mg/L | - | 0.001 | 2.6e-05 | 4.7 | - |
| | MEL-02-04 | Lead (T) | 3.2e-05 | 1e-05 | mg/L | - | 0.001 | 2.6e-05 | 24 | - |
| | MEL-02-05 | Lead (T) | 3.2e-05 | 1e-05 | mg/L | - | 0.001 | 2.6e-05 | 24 | - |
| | MEL-02-01 | Lithium (T) | 0.001 | 5e-04 | mg/L | - | - | 7e-04 | 44.3 | - |
| | MEL-02-02 | Lithium (T) | 0.001 | 5e-04 | mg/L | - | - | 7e-04 | 44.3 | - |
| | MEL-02-03 | Lithium (T) | 0.001 | 5e-04 | mg/L | - | - | 7e-04 | 42.9 | - |
| | MEL-02-04 | Lithium (T) | 0.00098 | 5e-04 | mg/L | - | - | 7e-04 | 40 | - |
| | MEL-02-05 | Lithium (T) | 0.001 | 5e-04 | mg/L | - | - | 7e-04 | 42.9 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-01 | Magnesium (T) | 1.4 | 0.004 | mg/L | - | - | 1.2 | 17.1 | - |
| | MEL-02-02 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 13.7 | - |
| | MEL-02-03 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 14.5 | - |
| | MEL-02-04 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 14.5 | - |
| | MEL-02-05 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 14.5 | - |
| | MEL-02-01 | Manganese (T) | 0.004 | 5e-05 | mg/L | - | - | 0.0032 | 27.6 | - |
| | MEL-02-02 | Manganese (T) | 0.0039 | 5e-05 | mg/L | - | - | 0.0032 | 22.5 | - |
| | MEL-02-03 | Manganese (T) | 0.0044 | 5e-05 | mg/L | - | - | 0.0032 | 39.4 | - |
| | MEL-02-04 | Manganese (T) | 0.0043 | 5e-05 | mg/L | - | - | 0.0032 | 37.8 | - |
| | MEL-02-05 | Manganese (T) | 0.0044 | 5e-05 | mg/L | - | - | 0.0032 | 40.3 | - |
| | MEL-02-01 | Molybdenum (T) | 1e-04 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 27 | - |
| | MEL-02-02 | Molybdenum (T) | 0.00014 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 72.9 | - |
| | MEL-02-04 | Molybdenum (T) | 9.4e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 13.7 | - |
| | MEL-02-05 | Molybdenum (T) | 0.0052 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 6175.7 | Uncertain |
| | MEL-02-01 | Nickel (T) | 0.00073 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 74.1 | - |
| | MEL-02-02 | Nickel (T) | 0.00068 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 62.6 | - |
| | MEL-02-03 | Nickel (T) | 0.00069 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 64.7 | - |
| | MEL-02-04 | Nickel (T) | 0.00067 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 59.7 | - |
| | MEL-02-05 | Nickel (T) | 0.00075 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 79.4 | - |
| | MEL-02-01 | Nitrate-N | 0.05 | 0.005 | mg/L | - | 2.9 | 0.021 | 143.5 | - |
| | MEL-02-01 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 9.9 | - |
| | MEL-02-02 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 6.3 | - |
| | MEL-02-03 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 6.7 | - |
| | MEL-02-04 | Potassium (T) | 0.99 | 0.02 | mg/L | - | - | 0.94 | 5.9 | - |
| | MEL-02-05 | Potassium (T) | 0.99 | 0.02 | mg/L | - | - | 0.94 | 5.8 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-01 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 4.9 | - |
| | MEL-02-02 | Reactive silica | 0.29 | 0.01 | mg/L | - | - | 0.26 | 7.9 | - |
| | MEL-02-03 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 6.8 | - |
| | MEL-02-04 | Reactive silica | 0.31 | 0.01 | mg/L | - | - | 0.26 | 16.6 | - |
| | MEL-02-05 | Reactive silica | 0.29 | 0.01 | mg/L | - | - | 0.26 | 8.7 | - |
| | MEL-02-02 | Selenium (T) | 6.5e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 40.1 | - |
| | MEL-02-03 | Selenium (T) | 4.8e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 3.4 | - |
| | MEL-02-01 | Sodium (T) | 6 | 0.02 | mg/L | - | - | 4.6 | 31.4 | - |
| | MEL-02-02 | Sodium (T) | 5.7 | 0.02 | mg/L | - | - | 4.6 | 25.9 | - |
| | MEL-02-03 | Sodium (T) | 5.7 | 0.02 | mg/L | - | - | 4.6 | 25.7 | - |
| | MEL-02-04 | Sodium (T) | 5.8 | 0.02 | mg/L | - | - | 4.6 | 26.8 | - |
| | MEL-02-05 | Sodium (T) | 5.7 | 0.02 | mg/L | - | - | 4.6 | 24.4 | - |
| | MEL-02-01 | Strontium (T) | 0.046 | 2e-05 | mg/L | - | 1.7 | 0.034 | 32.7 | - |
| | MEL-02-02 | Strontium (T) | 0.045 | 2e-05 | mg/L | - | 1.7 | 0.034 | 32.1 | - |
| | MEL-02-03 | Strontium (T) | 0.044 | 2e-05 | mg/L | - | 1.7 | 0.034 | 29.2 | - |
| | MEL-02-04 | Strontium (T) | 0.047 | 2e-05 | mg/L | - | 1.7 | 0.034 | 35.9 | - |
| | MEL-02-05 | Strontium (T) | 0.046 | 2e-05 | mg/L | - | 1.7 | 0.034 | 33.2 | - |
| | MEL-02-01 | Sulphate | 4.4 | 0.3 | mg/L | - | 130 | 3.7 | 19.8 | - |
| | MEL-02-02 | Sulphate | 4.7 | 0.3 | mg/L | - | 130 | 3.7 | 27.6 | - |
| | MEL-02-03 | Sulphate | 4.3 | 0.3 | mg/L | - | 130 | 3.7 | 17.6 | - |
| | MEL-02-04 | Sulphate | 4.3 | 0.3 | mg/L | - | 130 | 3.7 | 17.1 | - |
| | MEL-02-05 | Sulphate | 4.3 | 0.3 | mg/L | - | 130 | 3.7 | 16.2 | - |
| | MEL-02-04 | TDS | 53 | 13 | mg/L | - | 500 | 51 | 3.5 | - |
| | MEL-02-01 | TDS (calculated) | 46 | - | mg/L | - | 500 | 38 | 18.9 | - |
| | MEL-02-02 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 15.7 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-03 | TDS (calculated) | 43 | - | mg/L | - | 500 | 38 | 12.4 | - |
| | MEL-02-04 | TDS (calculated) | 45 | - | mg/L | - | 500 | 38 | 16.3 | - |
| | MEL-02-05 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 15.7 | - |
| | MEL-02-05 | Tin (T) | 4.5e-05 | 2e-05 | mg/L | - | - | 4.4e-05 | 1.1 | - |
| | MEL-02-01 | TKN | 0.32 | 0.05 | mg/L | - | - | 0.25 | 26.5 | - |
| | MEL-02-02 | TKN | 0.32 | 0.05 | mg/L | - | - | 0.25 | 26.9 | - |
| | MEL-02-03 | TKN | 0.31 | 0.05 | mg/L | - | - | 0.25 | 24.1 | - |
| | MEL-02-04 | TKN | 0.42 | 0.05 | mg/L | - | - | 0.25 | 70.3 | - |
| | MEL-02-05 | TKN | 0.31 | 0.05 | mg/L | - | - | 0.25 | 22.9 | - |
| | MEL-02-01 | TOC | 4.1 | 1 | mg/L | - | - | 3 | 36.7 | - |
| | MEL-02-02 | TOC | 4 | 1 | mg/L | - | - | 3 | 33.3 | - |
| | MEL-02-03 | TOC | 3.5 | 1 | mg/L | - | - | 3 | 16.7 | - |
| | MEL-02-05 | TOC | 3.3 | 1 | mg/L | - | - | 3 | 10 | - |
| | MEL-02-01 | Total Alkalinity | 22 | 1 | mg/L | - | - | 20 | 12 | - |
| | MEL-02-02 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3.5 | - |
| | MEL-02-04 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 6 | - |
| | MEL-02-05 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 6 | - |
| | MEL-02-05 | Total phosphorous | 0.014 | 0.001 | mg/L | - | - | 0.006 | 128.3 | - |
| | MEL-02-03 | Uranium (T) | 1.7e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 3 | - |
| | MEL-02-04 | Uranium (T) | 1.7e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 4.2 | - |
| | MEL-02-01 | Zinc (T) | 0.024 | 5e-04 | mg/L | - | - | 0.0022 | 987.6 | Uncertain |
| | MEL-02-03 | Zinc (T) | 0.0064 | 5e-04 | mg/L | - | - | 0.0022 | 197.2 | - |
| MEL-03 | | | | | | | | | | |
| | MEL-03-05 | Aluminum (T) | 0.0074 | 0.001 | mg/L | - | 0.1 | 0.0054 | 37.3 | - |
| | MEL-03-05 | Ammonia-N | 0.016 | 0.005 | mg/L | - | 1.8 | 0.015 | 4.7 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-03-01 | Arsenic (T) | 0.00029 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 14.7 | - |
| | MEL-03-02 | Arsenic (T) | 0.00025 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 1.2 | - |
| | MEL-03-04 | Arsenic (T) | 3e-04 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 17.9 | - |
| | MEL-03-05 | Arsenic (T) | 0.00027 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 9.2 | - |
| | MEL-03-05 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.4 | - |
| | MEL-03-03 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.5 | - |
| | MEL-03-04 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.5 | - |
| | MEL-03-01 | Chloride | 9 | 0.1 | mg/L | - | 120 | 8.8 | 2.4 | - |
| | MEL-03-03 | Chloride | 8.8 | 0.1 | mg/L | - | 120 | 8.8 | 0.5 | - |
| | MEL-03-04 | Chloride | 8.9 | 0.1 | mg/L | - | 120 | 8.8 | 1.4 | - |
| | MEL-03-05 | Chloride | 9.3 | 0.1 | mg/L | - | 120 | 8.8 | 5.8 | - |
| | MEL-03-05 | Cobalt (T) | 2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 23.1 | - |
| | MEL-03-05 | Iron (T) | 0.027 | 0.001 | mg/L | - | 1.1 | 0.015 | 78.8 | - |
| | MEL-03-05 | Manganese (T) | 0.0047 | 5e-05 | mg/L | - | - | 0.0032 | 48.3 | - |
| | MEL-03-01 | Nickel (T) | 0.00043 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 3.6 | - |
| | MEL-03-03 | Nickel (T) | 0.00042 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 1.7 | - |
| | MEL-03-04 | Nickel (T) | 0.00045 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 7 | - |
| | MEL-03-05 | Nickel (T) | 0.00044 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 5.8 | - |
| | MEL-03-05 | Nitrate-N | 0.027 | 0.005 | mg/L | - | 2.9 | 0.021 | 30.9 | - |
| | MEL-03-01 | Selenium (T) | 4.7e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 1.3 | - |
| | MEL-03-04 | Sodium (T) | 4.6 | 0.02 | mg/L | - | - | 4.6 | 0.7 | - |
| | MEL-03-05 | Sodium (T) | 4.7 | 0.02 | mg/L | - | - | 4.6 | 2.4 | - |
| | MEL-03-01 | Strontium (T) | 0.037 | 2e-05 | mg/L | - | 1.7 | 0.034 | 6.7 | - |
| | MEL-03-02 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 5.2 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-03-03 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 4.4 | - |
| | MEL-03-04 | Strontium (T) | 0.035 | 2e-05 | mg/L | - | 1.7 | 0.034 | 2.9 | - |
| | MEL-03-05 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 4.1 | - |
| | MEL-03-01 | TDS | 55 | 13 | mg/L | - | 500 | 51 | 7.4 | - |
| | MEL-03-02 | TDS | 54 | 13 | mg/L | - | 500 | 51 | 5.5 | - |
| | MEL-03-05 | Titanium (T) | 5e-04 | 5e-05 | mg/L | - | - | 0.00019 | 162.3 | Uncertain |
| | MEL-03-03 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2.5 | - |
| | MEL-03-04 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2.5 | - |
| | MEL-03-05 | Vanadium (T) | 5.5e-05 | 5e-05 | mg/L | - | 0.12 | 5e-05 | 10 | - |
| | MEL-03-02 | Zinc (D) | ***0.0057*** | 5e-04 | mg/L | - | 0.0056 | 0.002 | 190.8 | Uncertain |

[1]Bold values are above the threshold as well as above the trigger value.
[2]Calculated as Result - Normal Range Limit / Normal Range Limit * 100. Darker red colours indicate a greater difference between results and normal range.

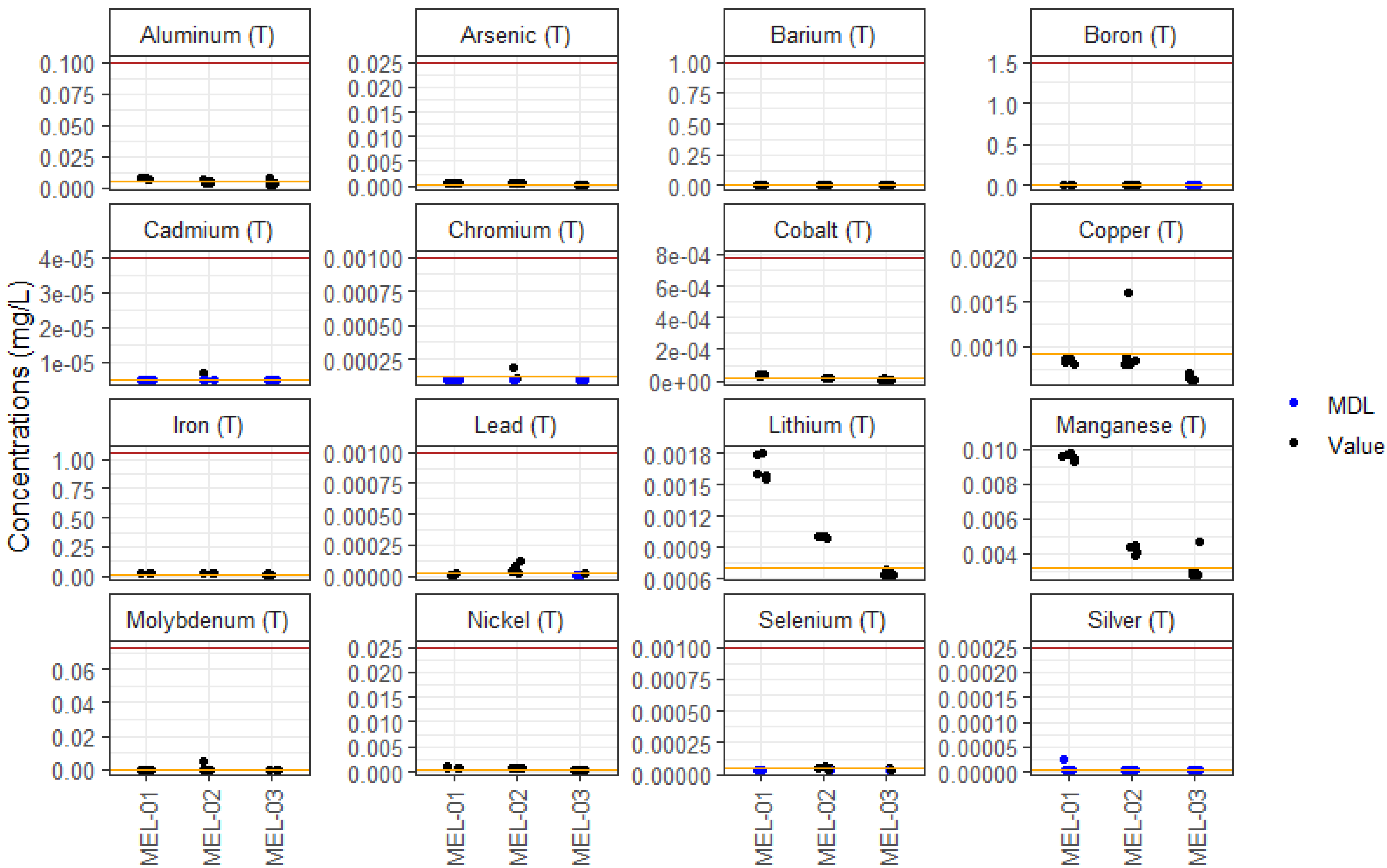



*Figure 1: Sampling event results for metals in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

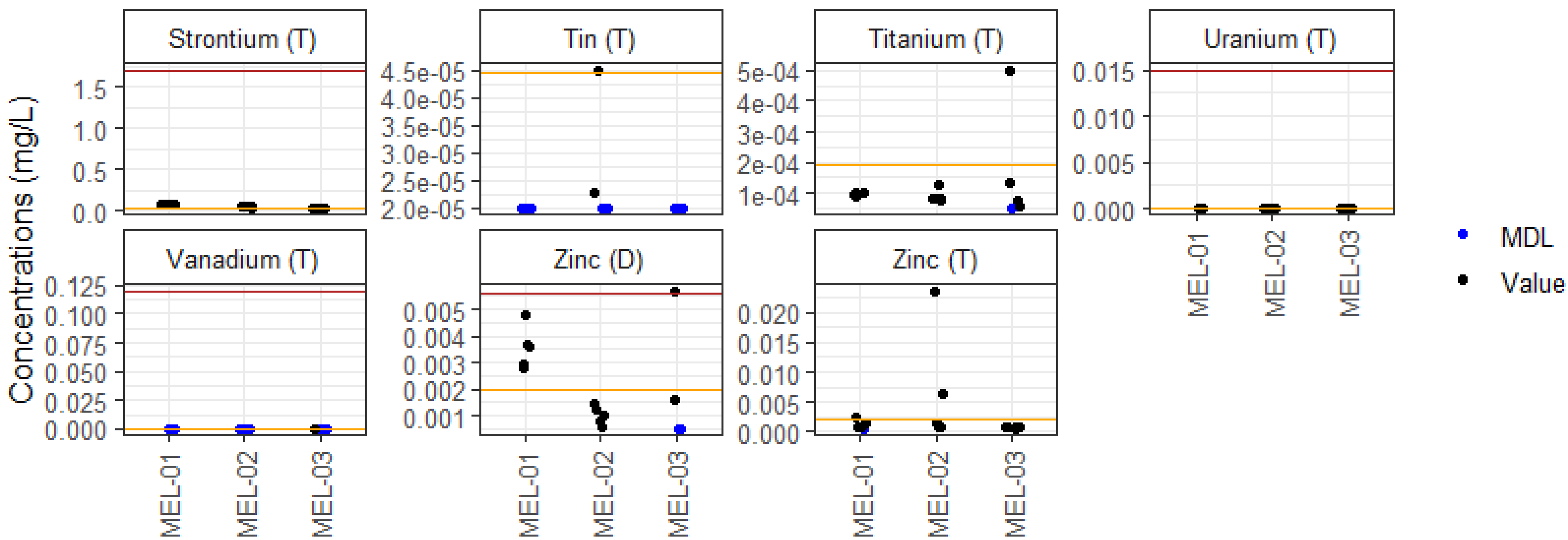



*Figure 2: Sampling event results for metals in Meliadine Lake with at least one sample above the upper limit of the normal range (Part 2). The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

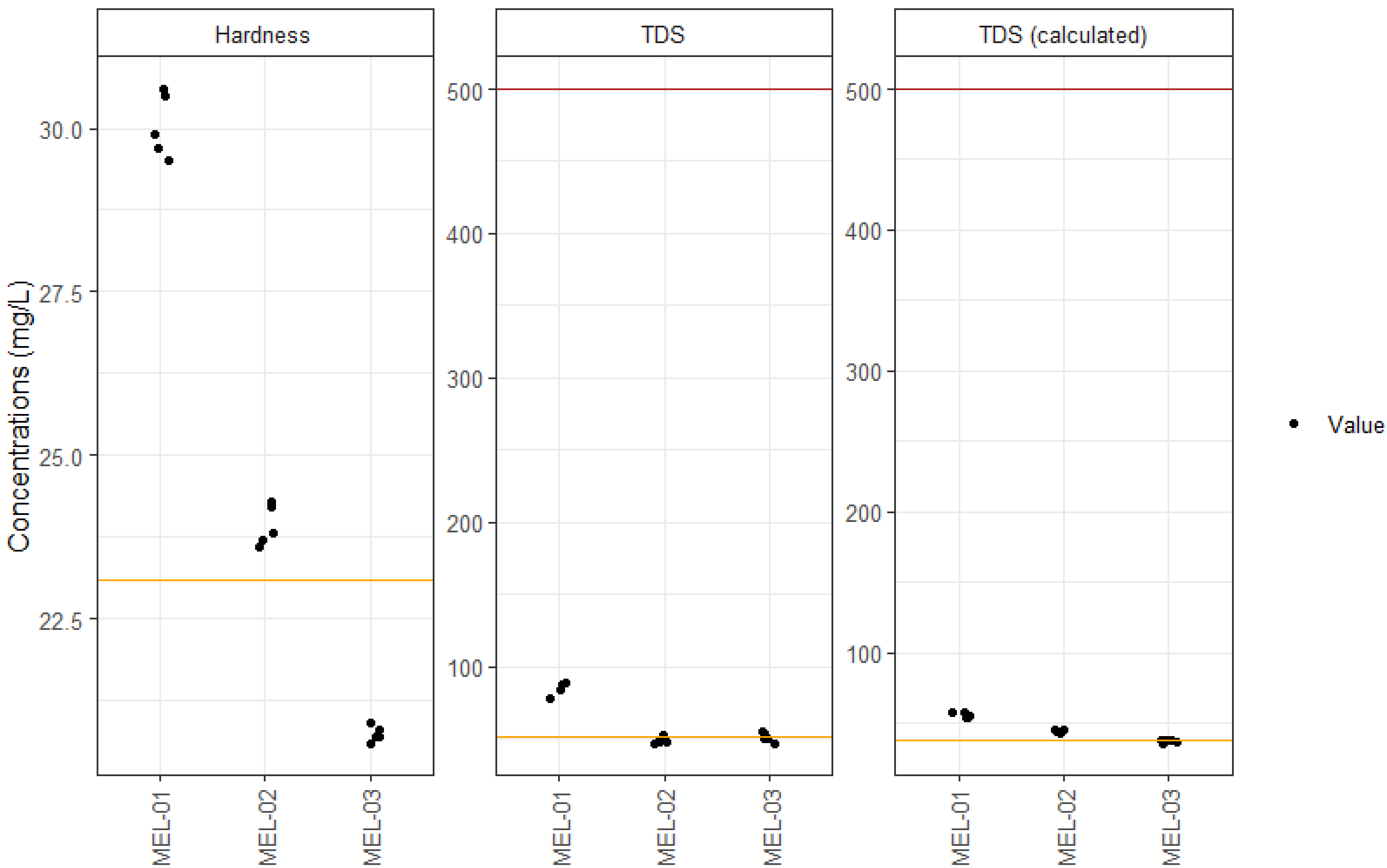



*Figure 3: Sampling event results for conventional parameters in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

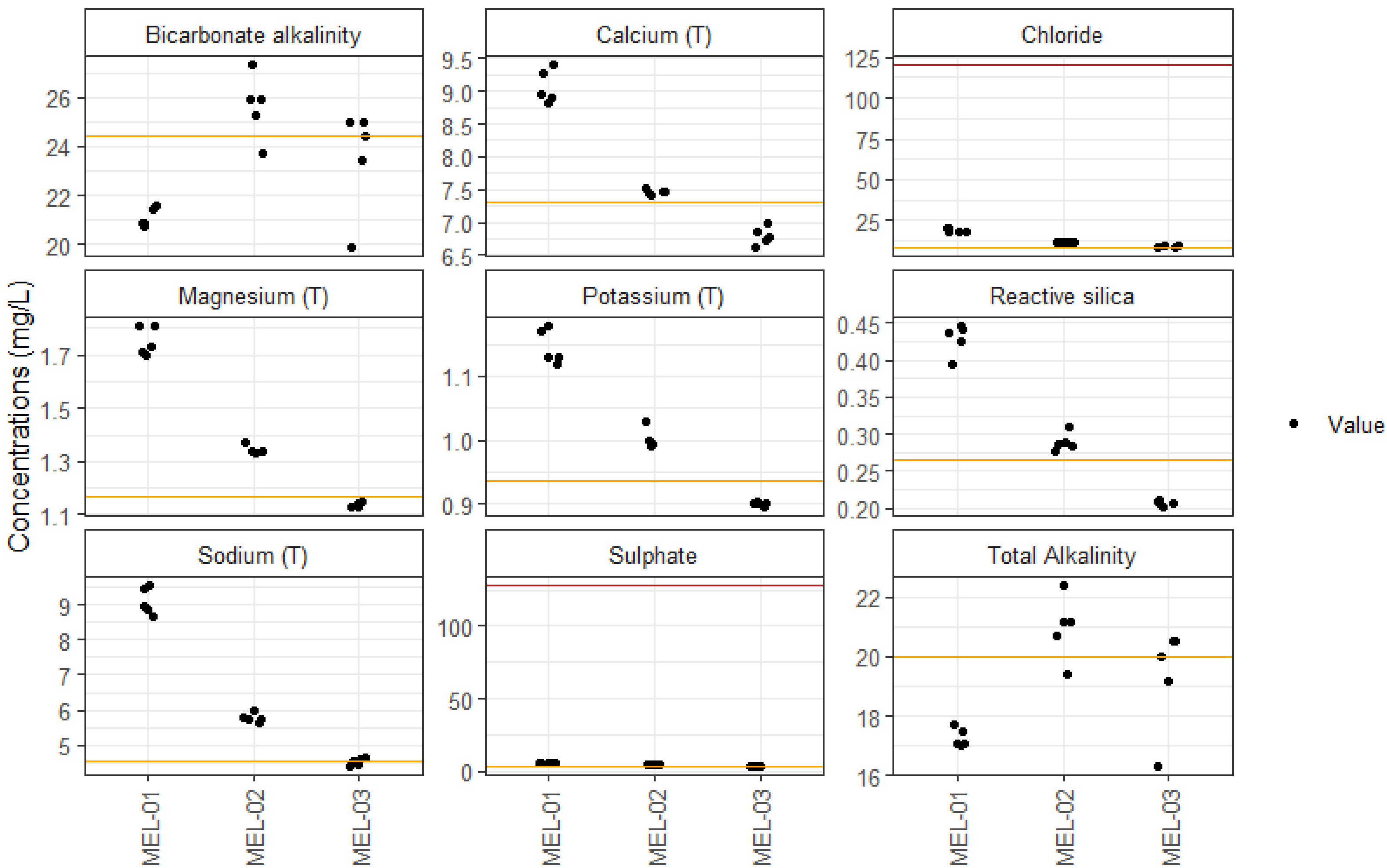



*Figure 4: Sampling event results for major ions in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

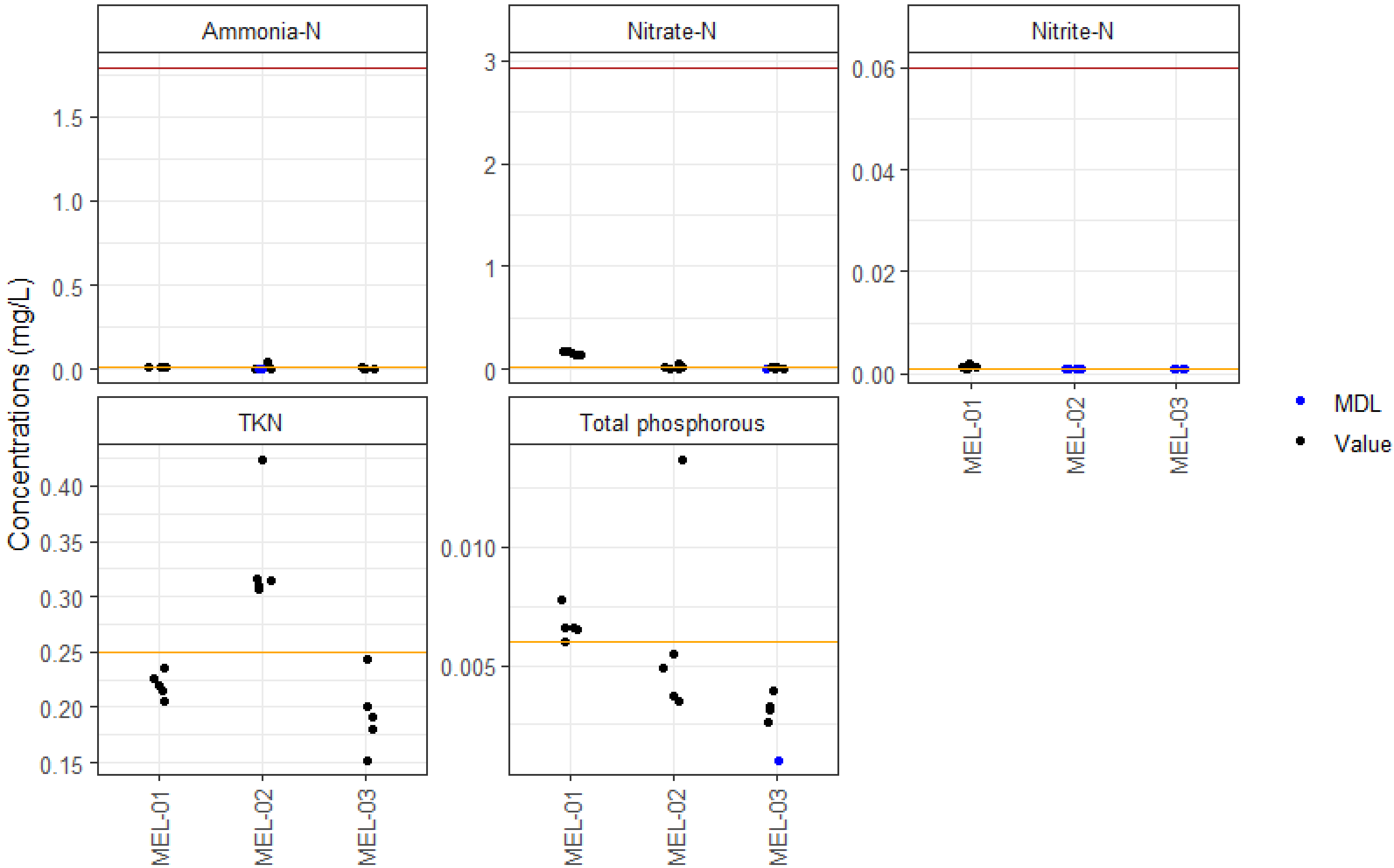



*Figure 5: Sampling event results for nutrients in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

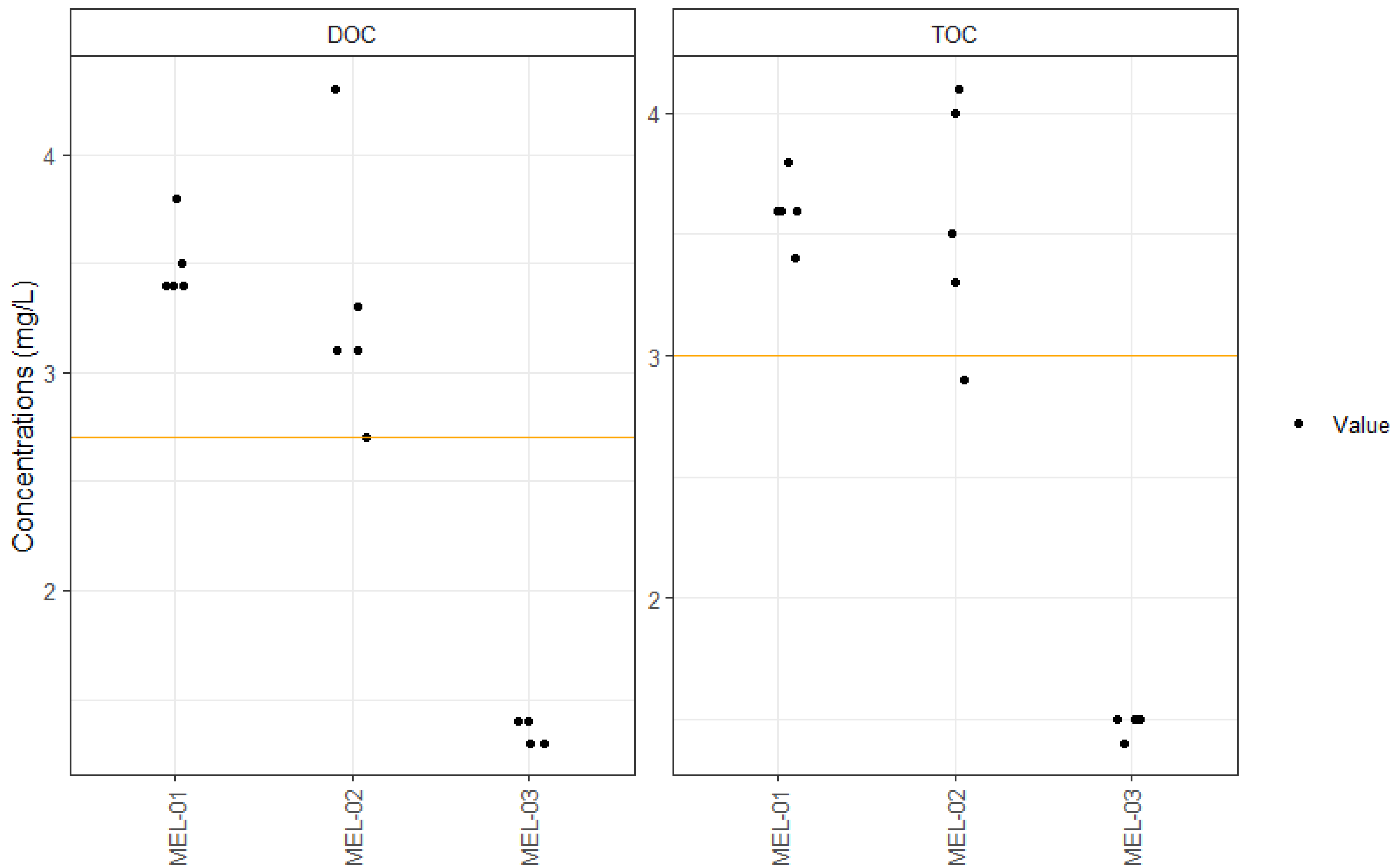



*Figure 6: Sampling event results for other parameters in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

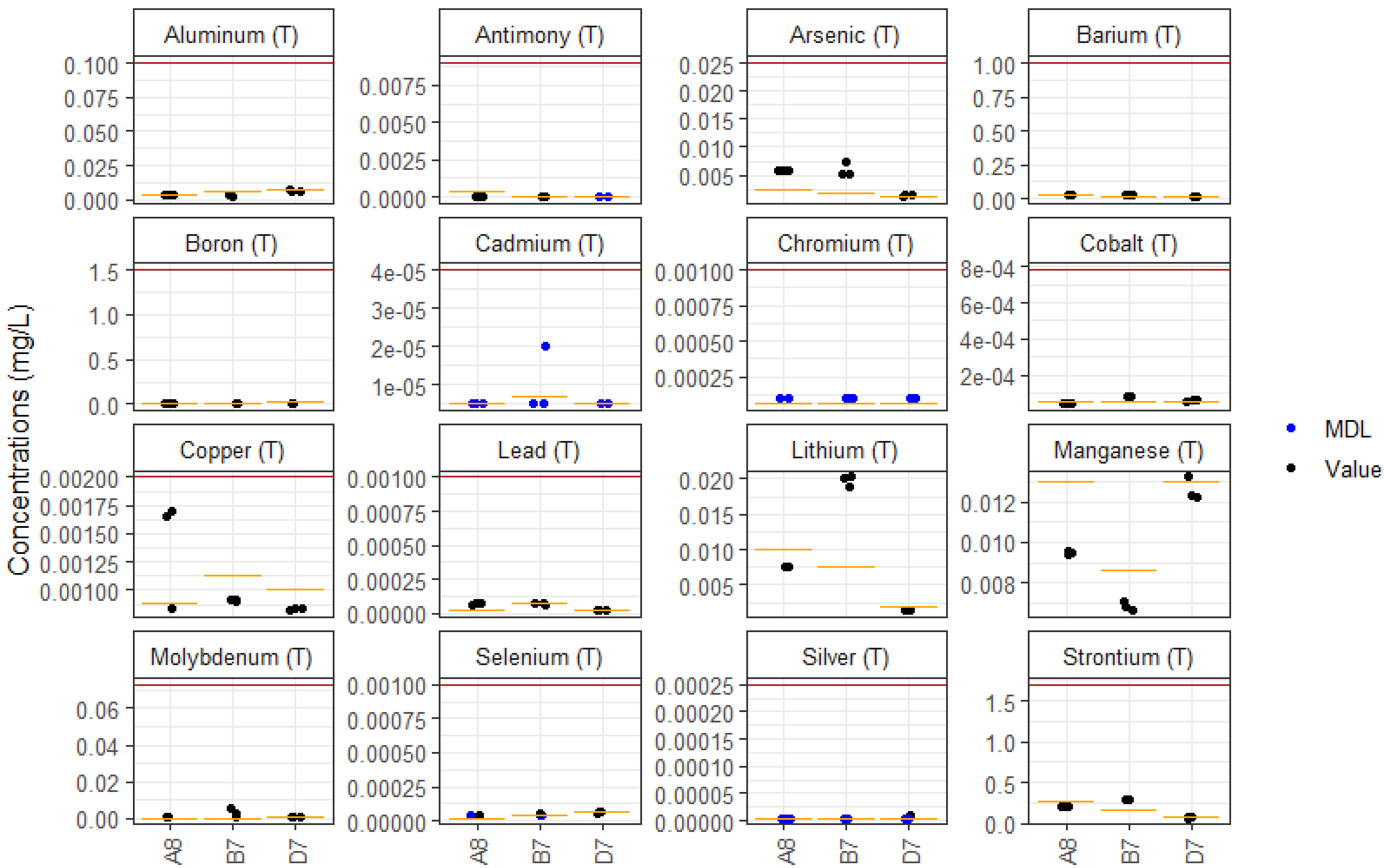



*Figure 7: Sampling event results for metals in the Peninsula Lakes with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

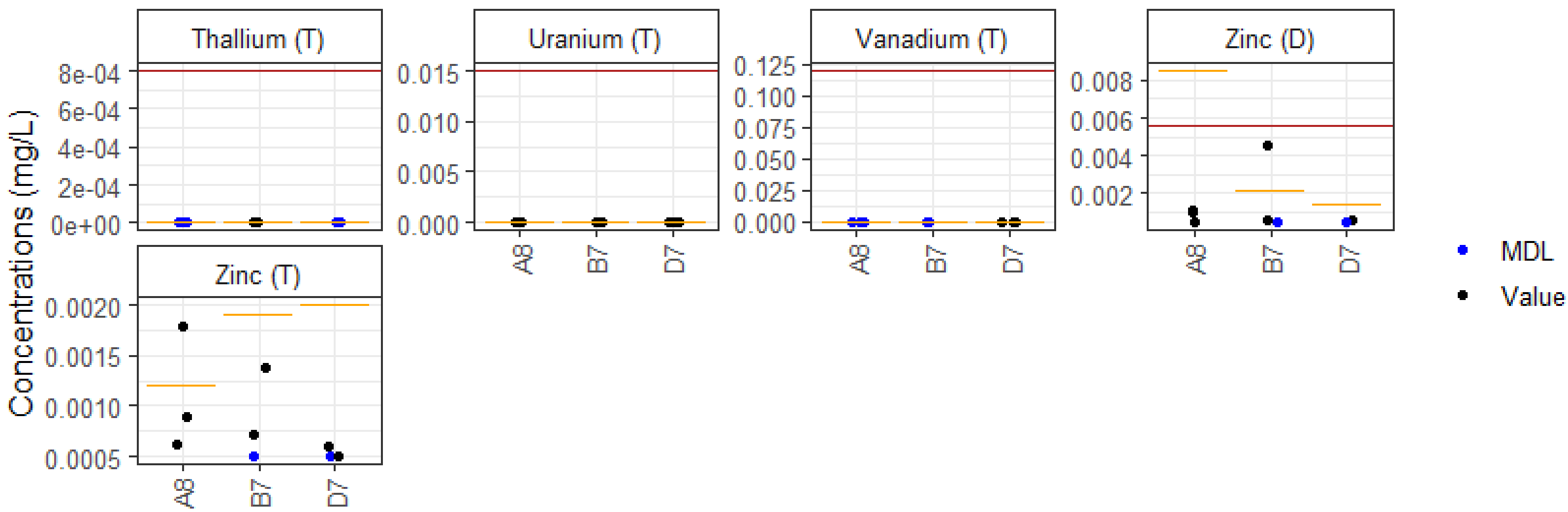



*Figure 8: Sampling event results for metals in the Peninsula Lakes with at least one sample above the upper limit of the normal range (Part 2). The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

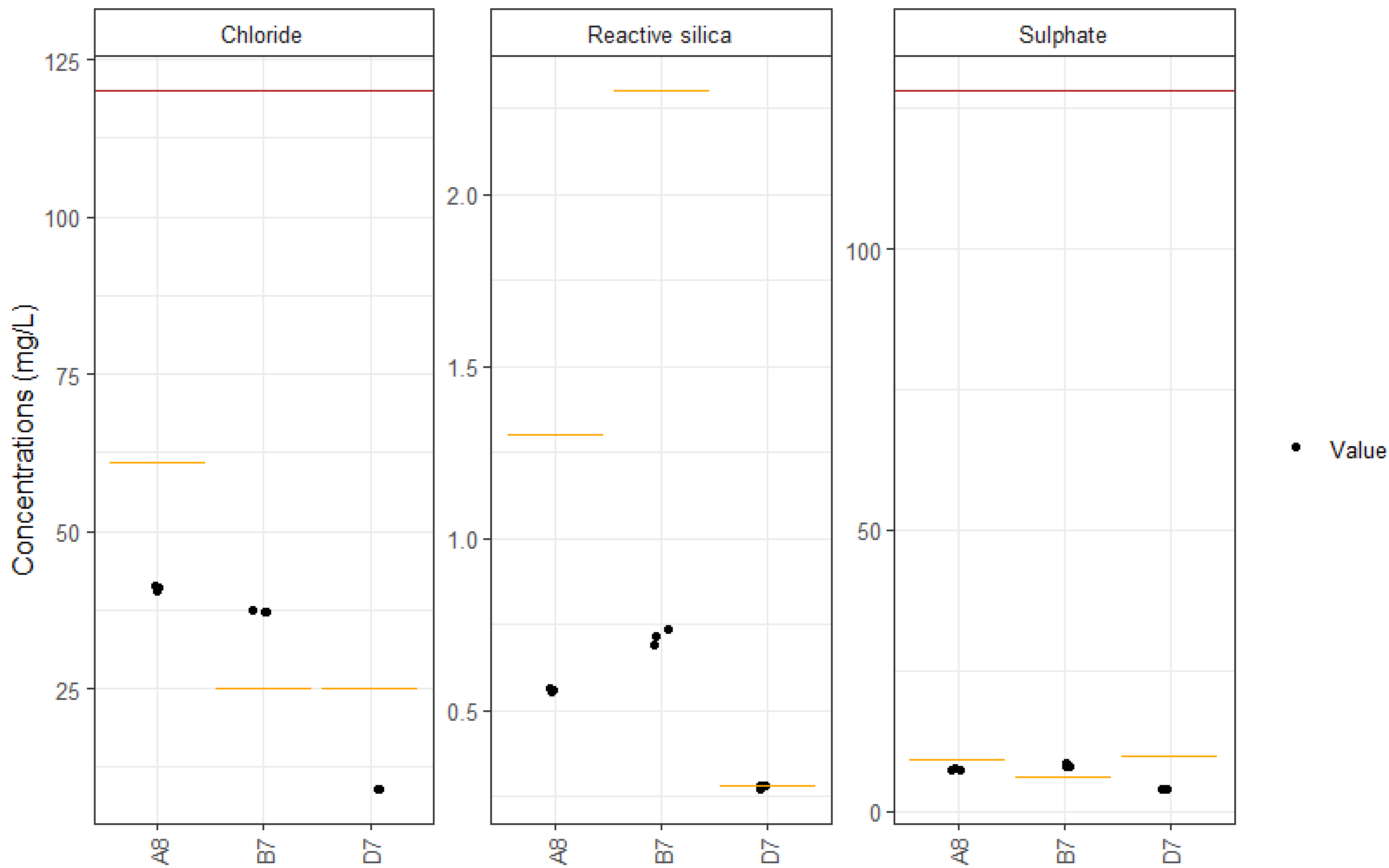



*Figure 9: Sampling event results for major ions in the Peninsula Lakes with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

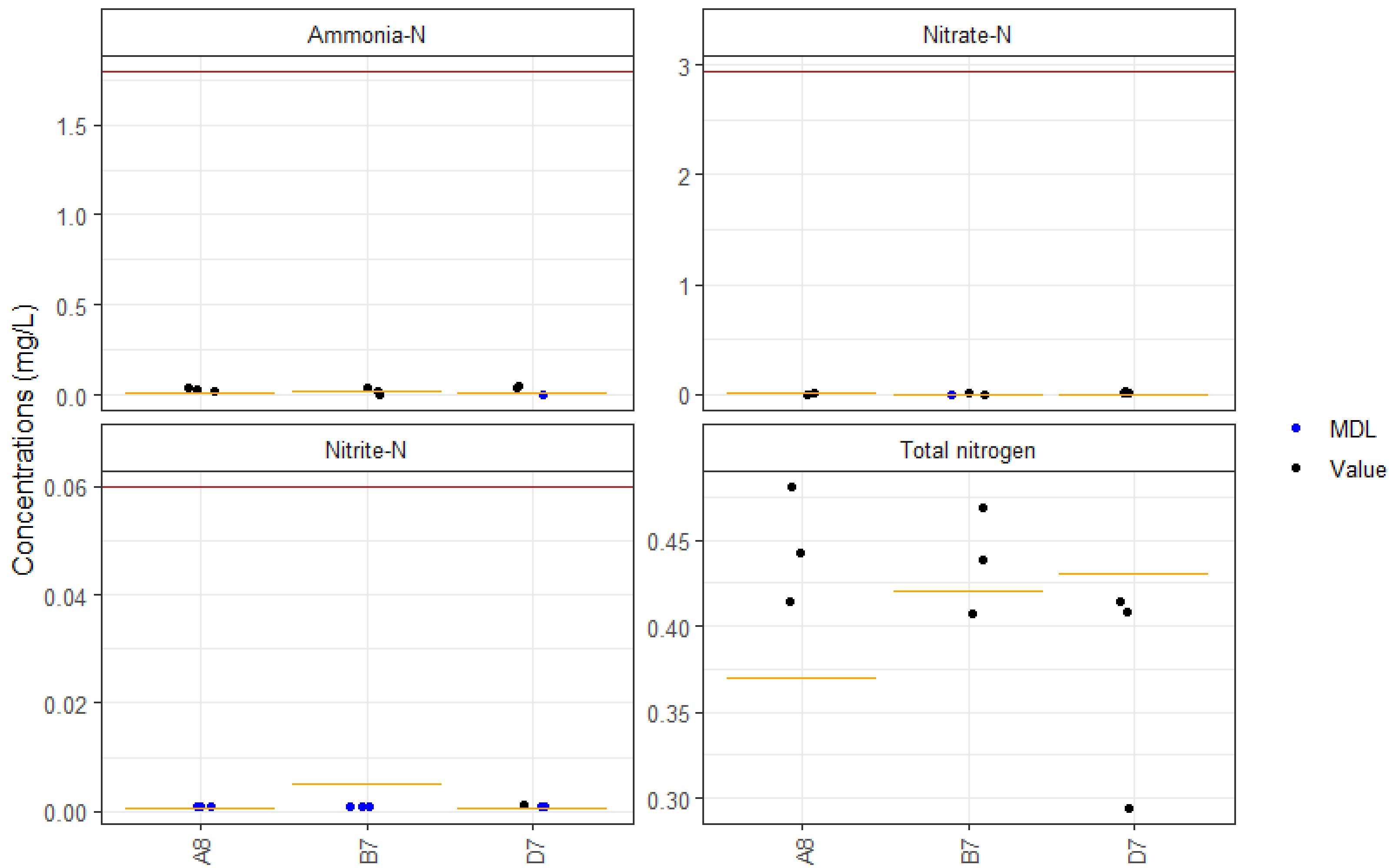



*Figure 10: Sampling event results for nutrients in the Peninsula Lakes with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

## 2.1 Result Reliability Checks

Two preliminary analyses were conducted to assess the reliability of sample results. Samples failing either one of these tests have been flagged as uncertain, and warrant further evaluation.

The first analysis compares dissolved and total concentrations for a given parameters at each location. Samples in which dissolved concentrations are greater than total with a relative percent difference (RPD) of more than 30% are considered potentially unreliable. All samples failing to meet this reliability check are summarized in Table 5.

The second analysis compares parameter concentrations within each sampling area. In most cases, samples at stations in the same sampling area are expected to have similar concentrations, and outlying data points may be anomalous. Sampling areas where the maximum concentration was more than a factor of 5 greater than the median of all samples within the sampling area are highlighted here as potentially unreliable. All samples failing to meet this reliability check are summarized in Table 6.

*Table 5: Samples with uncertain reliability due to differences in dissolved and total parameter results.*

| Sample ID | Area ID | Parameter | Result (T) | Result (D) | MDL (T) | MDL (D) | RPD |
|---|---|---|---|---|---|---|---|
| MEL-01-06 | MEL-01 | Zinc | 5e-04 | 0.0048 | MDL | - | 162.3 |
| MEL-03-02 | MEL-03 | Zinc | 0.00084 | 0.0057 | - | - | 148.6 |
| MEL-01-01 | MEL-01 | Zinc | 7e-04 | 0.00369 | - | - | 136.2 |
| MEL-01-08 | MEL-01 | Zinc | 0.00067 | 0.00279 | - | - | 122.5 |
| B7-02 | B7 | Zinc | 0.00139 | 0.00459 | - | - | 107 |
| B7-02 | B7 | Chromium | 1e-04 | 0.00023 | MDL | - | 78.8 |
| MEL-03-05 | MEL-03 | Zinc | 0.00074 | 0.00163 | - | - | 75.1 |
| MEL-01-09 | MEL-01 | Zinc | 0.00135 | 0.00292 | - | - | 73.5 |
| MEL-01-09 | MEL-01 | Titanium | 9.3e-05 | 0.000151 | - | - | 47.5 |
| MEL-02-04 | MEL-02 | Chromium | 1e-04 | 0.00016 | MDL | - | 46.2 |
| MEL-03-03 | MEL-03 | Selenium | 4e-05 | 6.2e-05 | - | - | 43.1 |
| MEL-02-05 | MEL-02 | Zinc | 0.00083 | 0.00127 | - | - | 41.9 |
| MEL-01-07 | MEL-01 | Zinc | 0.00247 | 0.00357 | - | - | 36.4 |
| MEL-01-09 | MEL-01 | Lead | 1.4e-05 | 2e-05 | - | - | 35.3 |
| MEL-01-08 | MEL-01 | Lead | 1.2e-05 | 1.7e-05 | - | - | 34.5 |
| MEL-01-08 | MEL-01 | Selenium | 4e-05 | 5.6e-05 | MDL | - | 33.3 |

*Table 6: Samples with uncertain reliability due to differences between results from the same sampling area.*

| Area ID | Parameter | DL | Median | Max | Difference | Station_with_Max |
|---|---|---|---|---|---|---|
| MEL-02 | Molybdenum (T) | 5e-05 | 0.000105 | 0.005190 | 49.4 | MEL-02-05 |
| B7 | Molybdenum (D) | 5e-05 | 0.000290 | 0.005260 | 18.1 | B7-03 |
| MEL-02 | Zinc (T) | 5e-04 | 0.001570 | 0.023600 | 15.0 | MEL-02-01 |
| B7 | Manganese (D) | 5e-05 | 0.000512 | 0.006610 | 12.9 | B7-03 |
| MEL-03 | Zinc (D) | 5e-04 | 0.000500 | 0.005700 | 11.4 | MEL-03-02 |
| MEL-02 | Ammonia-N | 5e-03 | 0.005600 | 0.047300 | 8.4 | MEL-02-05 |
| B7 | Zinc (D) | 5e-04 | 0.000620 | 0.004590 | 7.4 | B7-02 |
| MEL-03 | Titanium (T) | 5e-05 | 0.000074 | 0.000501 | 6.8 | MEL-03-05 |

# 3 LABORATORY & FIELD QUALITY CONTROL RESULTS

ALS' laboratory QC samples for water are:

- *Laboratory duplicates* (LD) - these samples provide insights into the precision of laboratory analyses. Duplicate aliquots are taken from the samples and run through part (aliquots taken post digestion) or all (aliquots taken from the sample bottle) the laboratory analytical process.
- *Laboratory control samples* (LCS) - these samples provide insights into whether the laboratory systems are working as intended. They are comprised of a mixture of analyte-free water to which known amounts of the method analytes are added. They are essentially an internal version of a certified reference material.
- *Matrix spikes* (MS) - these samples involve the analysis of actual samples, to which a known amount of method analytes are added in amounts high enough that the spikes are clearly discernable relative to existing concentrations. These samples provide insights into the degree that the sample matrix could interfere with analyses.
- *Matrix blanks* (MB) - these samples are analyzed to assess background interference or contamination that exists in the analytical system that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free water.

The following field QC samples were collected and submitted blind to ALS:

- *Field duplicates* (FD) - these samples provide insights into (a) variability in field conditions and (b) the precision of laboratory analyses. Duplicate samples are collected from the same location and treated independently through the sampling and analysis process.
- *Deionized blanks* (DB) - these samples are analyzed to verify the "analyte-free" status of the deionized water to help interpret the equipment blank results. These samples are comprised of deionized water poured directly into the sampling containers.
- *Equipment blanks* (EB) - these samples are analyzed to assess cross contamination in the sampling equipment that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free deionized water passed through the sampling equipment.
- *Travel blanks* (TB) - these samples are analyzed to assess cross contamination occurring during the transport of samples. These samples comprise analyte-free deionized water prepared in the lab by ALS, and travel to the site and back to the lab without being opened.

## 3.1 Overall QC Results

Overall laboratory and field QC results are summarized in Table 7.

*Table 7: Summary of laboratory and field QC results by sample type.*

| | QC_Element | Pass | Fail | ND |
|---|---|---|---|---|
| Laboratory | Lab Duplicate | 318 | 0 | 0 |
| | Lab Control Sample | 544 | 1 | 0 |
| | Matrix Spike | 297 | 0 | 18 |
| | Matrix Blank | 539 | 2 | 0 |
| Field | Field Duplicate | 360 | 12 | 0 |
| | Deionized Water Blank | 114 | 8 | 0 |
| | Equipment Blank | 115 | 7 | 0 |

## 3.2 Laboratory Duplicates

All laboratory duplicate results met laboratory QC objectives.

## 3.3 Laboratory Control Samples

In this sampling event, 1 laboratory control sample failed to meet the QC objectives. Laboratory control sample results not meeting QC objectives are summarized in Table 8.

*Table 8: Details for laboratory control sample results not meeting QC objectives.*

| QC_Lot | Analyte | Percent | Limit | LCS.QC |
|---|---|---|---|---|
| 1347675 | Bismuth (Bi)-Total | 122.7 | 80-120 | Fail |

## 3.4 Matrix Spike

All matrix spike results met laboratory QC objectives.

In addition, some parameters had spike levels too low to confidently quantify them relative to existing concentrations in the sample. Consequently, QC results for these results could not be calculated (see Table 9).

*Table 9: Analytes not determined for matrix spikes.*

| QC_Lot | Analyte | ALS_QC_ID[1] |
|---|---|---|
| 1347675 | Calcium (Ca)-Total | MEL-01-09 |
| 1347675 | Magnesium (Mg)-Total | MEL-01-09 |
| 1347675 | Sodium (Na)-Total | MEL-01-09 |
| 1347675 | Strontium (Sr)-Total | MEL-01-09 |
| 1355571 | Calcium (Ca)-Dissolved | JUL-DUP-01 |
| 1355571 | Magnesium (Mg)-Dissolved | JUL-DUP-01 |
| 1355571 | Sodium (Na)-Dissolved | JUL-DUP-01 |
| 1355571 | Strontium (Sr)-Dissolved | JUL-DUP-01 |
| 1356270 | Barium (Ba)-Total | JUL-DUP-03 |
| 1356270 | Calcium (Ca)-Total | JUL-DUP-03 |
| 1356270 | Magnesium (Mg)-Total | JUL-DUP-03 |
| 1356270 | Sodium (Na)-Total | JUL-DUP-03 |
| 1356270 | Strontium (Sr)-Total | JUL-DUP-03 |
| 1351348 | Silica, Reactive (as SiO2) | D7-03 |
| 1356273 | Calcium (Ca)-Dissolved | D7-03 |
| 1356273 | Magnesium (Mg)-Dissolved | D7-03 |
| 1356273 | Sodium (Na)-Dissolved | D7-03 |
| 1356273 | Strontium (Sr)-Dissolved | D7-03 |

[1]ALS_QC_ID listing of 'Anonymous' indicates QC sample from another client used.

## 3.5 Matrix Blank

In this sampling event, 2 matrix blanks results failed to meet the QC objectives. Matrix blank results not meeting QC objectives are summarized in Table 10.

*Table 10: Details for matrix blank results not meeting QC objectives.*

| QC_Lot | Analyte | Result | Limit | MDL | MB.QC |
|---|---|---|---|---|---|
| 1347675 | Thorium (Th)-Total | 5.6e-06 | 5e-06 | - | Fail |
| 1356273 | Iron (Fe)-Dissolved | 1.3e-03 | 1e-03 | - | Fail |

## 3.6 Field Duplicates

In this sampling event, 12 field duplicate samples failed to meet the QC objectives. Field duplicate sample results not meeting QC objectives are summarized in Table 11.

*Table 11: Details for field duplicate results not meeting QC objectives.*

| QC_Lot.x | Analyte | RPD | DIFFx | FD.QC |
|---|---|---|---|---|
| 1358655 | Aluminum (Al)-Total | 87.4 | 4.5 | Fail |
| 1352975 | Ammonia, Total (as N) | 75.6 | 4.6 | Fail |
| 1358655 | Iron (Fe)-Total | 81.2 | 15.6 | Fail |
| 1358592 | Manganese (Mn)-Dissolved | 92.6 | 18.1 | Fail |
| 1358655 | Manganese (Mn)-Total | 52.8 | 39.0 | Fail |
| 1351344 | Nitrate (as N) | 126.5 | 4.2 | Fail |
| | Nitrate and Nitrite as N | 126.5 | 4.1 | Fail |
| 1355571 | Silicon (Si)-Dissolved | 80.2 | 6.1 | Fail |
| 1358592 | Tin (Sn)-Dissolved | 166.7 | 10.0 | Fail |
| 1358655 | Titanium (Ti)-Total | 154.7 | 8.7 | Fail |
| 1355571 | Zinc (Zn)-Dissolved | 150.9 | 6.1 | Fail |
| 1347675 | Zinc (Zn)-Total | 132.7 | 3.9 | Fail |

## 3.7 DI Blank

In this sampling event, 8 deionized water blank samples failed to meet the QC objectives. Deionized water blank results not meeting QC objectives are summarized in Table 13.

*Table 13: Details for deionized water blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1355829 | DI | Total Dissolved Solids | 4.6e+00 | 4e+00 | Fail |
| 1360330 | DI | Total Kjeldahl Nitrogen | 7.2e-02 | 5e-02 | Fail |
| | DI | Total Nitrogen | 7.2e-02 | 5e-02 | Fail |
| 1360147 | DI | Phosphorus (P)-Total | 2.6e-03 | 1e-03 | Fail |
| 1349679 | DI | Silica, Reactive (as SiO2) | 3.7e-02 | 1e-02 | Fail |
| 1359486 | DI | Zinc (Zn)-Total | 6.6e-04 | 5e-04 | Fail |
| 1359372 | DI | Aluminum (Al)-Dissolved | 4.7e-03 | 1e-03 | Fail |
| 1359372 | DI | Strontium (Sr)-Dissolved | 2.9e-05 | 2e-05 | Fail |

## 3.8 Equipment Blank

In this sampling event, 7 equipment blank samples failed to meet the QC objectives. Equipment blank results not meeting QC objectives are summarized in Table 12.

*Table 12: Details for equipment blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1351079 | EB | Turbidity | 1.5e-01 | 1e-01 | Fail |
| 1359486 | EB | Molybdenum (Mo)-Total | 6.3e-05 | 5e-05 | Fail |
| 1359372 | EB | Barium (Ba)-Dissolved | 2.7e-05 | 2e-05 | Fail |
| 1359372 | EB | Calcium (Ca)-Dissolved | 1.3e-02 | 1e-02 | Fail |
| 1359372 | EB | Iron (Fe)-Dissolved | 1.3e-03 | 1e-03 | Fail |
| 1359372 | EB | Strontium (Sr)-Dissolved | 4.1e-05 | 2e-05 | Fail |
| 1359372 | EB | Zinc (Zn)-Dissolved | 8.3e-04 | 5e-04 | Fail |

## 3.9 Travel Blank

Travel blank results were not analyzed in this sampling event.

## 3.10 Holding Time Exceedances

In addition to those ALS laboratory QC samples described above, during QC screening samples were also assessed agianst recommended hold times. Parameters and associated sample numbers exceeding recommended hold times in this sampling event are shown in Table 14. Note that pH is included in the suite of field measurements and has a very short recommended hold time, so exceeding the hold time for laboratory analysis is expected and of little importance.

*Table 14: Analytes and associated number of samples exceeding holding times.*

| Analyte | n |
|---|---|
| Phosphate Ortho Dissolved in Water | 58 |
| Nitrate in Water by IC (Low Level) | 29 |
| Nitrite in Water by IC (Low Level) | 29 |
| pH | 29 |
| Turbidity | 29 |
| Total Dissolved Solids (TDS) | 27 |
| Total Suspended Solids | 26 |
| DKN (as N) by Fluorescence | 14 |
| TKN (as N) by Fluorescence | 14 |
| Total Dissolved P in Water by Colour | 9 |
| Total P in Water by Colour | 9 |
| Alkalinity, Total (as CaCO3) | 5 |

# AUGUST 2020 SAMPLING EVENT:
# PRELIMINARY SCREENING AND QC ASSESSMENT

# Meliadine Mine - Water Quality Monitoring 2020

## Preliminary Screening of August, 2020 Water Quality Monitoring

Azimuth Consulting Group Inc.
on behalf of Agnico Eagle Mines Ltd.

Report Date: 2020-11-20

## Table of Contents

# 1 INTRODUCTION & SAMPLING OVERVIEW

This document was prepared by Azimuth Consulting Group Inc (Azimuth) to provide the Meliadine Environment Department with a brief overview of the water chemistry results collected in August, 2020 as part of the Aquatic Effects Monitoring Program (AEMP). AEMP water quality monitoringoccurs in March (MEL-01 and -02), July (MEL-01, -02, and -03), August (MEL-01, -02, -03, -04, and -05),and September (MEL-01, -02, and -03). In addition, peninsula lakes A8, B7, and D7 are sampled in Julyand August. The purpose of this memo is to:

1. Screen the water chemistry results from ALS against normal ranges and thresholds to keep the Environment Department informed about potential changes in water quality, including the early identification of potentially anomalous data (Section 2).
2. Review laboratory (blanks, duplicates, matrix spikes, etc.) and field quality control (QC) results, and identify potential issues in lab or field methods (Section 3).

Samples included in this report are shown in Table 1, while field blanks are shown in Table 2.

*Table 1: Summary of August, 2020 samples.*

| Sample ID | Area ID | Duplicate | Date_Sampled | ALS Sample ID |
|---|---|---|---|---|
| A8-01 | A8 | - | 2020-08-21 | L2496246-1 |
| A8-02 | A8 | - | 2020-08-21 | L2496246-2 |
| A8-03 | A8 | - | 2020-08-21 | L2496246-3 |
| B7-01 | B7 | - | 2020-08-22 | L2496246-4 |
| B7-02 | B7 | - | 2020-08-22 | L2496246-5 |
| B7-03 | B7 | - | 2020-08-22 | L2496246-6 |
| D7-01 | D7 | - | 2020-08-24 | L2496238-1 |
| D7-02 | D7 | DUP-MEL-AUG-04 | 2020-08-24 | L2496238-2 |
| D7-03 | D7 | - | 2020-08-24 | L2496238-3 |
| MEL-01-01 | MEL-01 | - | 2020-08-15 | L2492144-1 |
| MEL-01-06 | MEL-01 | - | 2020-08-15 | L2492144-2 |
| MEL-01-07 | MEL-01 | - | 2020-08-15 | L2492144-3 |
| MEL-01-08 | MEL-01 | - | 2020-08-15 | L2492144-4 |
| MEL-01-09 | MEL-01 | DUP-MEL-AUG-01 | 2020-08-15 | L2492144-5 |
| MEL-02-01 | MEL-02 | DUP-MEL-AUG-02 | 2020-08-18 | L2492826-1 |
| MEL-02-02 | MEL-02 | - | 2020-08-18 | L2492826-2 |
| MEL-02-03 | MEL-02 | - | 2020-08-18 | L2492826-3 |
| MEL-02-04 | MEL-02 | - | 2020-08-18 | L2492826-4 |
| MEL-02-05 | MEL-02 | - | 2020-08-18 | L2492826-5 |
| MEL-03-01 | MEL-03 | DUP-MEL-AUG-03 | 2020-08-19 | L2492831-1 |
| MEL-03-02 | MEL-03 | - | 2020-08-19 | L2492831-2 |
| MEL-03-03 | MEL-03 | - | 2020-08-19 | L2492831-3 |
| MEL-03-04 | MEL-03 | - | 2020-08-19 | L2492831-4 |
| MEL-03-05 | MEL-03 | - | 2020-08-19 | L2492831-5 |
| MEL-04-01 | MEL-04 | - | 2020-08-19 | L2492831-7 |
| MEL-04-02 | MEL-04 | - | 2020-08-19 | L2492831-8 |
| MEL-04-03 | MEL-04 | - | 2020-08-19 | L2492831-9 |
| MEL-04-04 | MEL-04 | - | 2020-08-19 | L2492831-10 |
| MEL-04-05 | MEL-04 | - | 2020-08-19 | L2492831-11 |
| MEL-05-01 | MEL-05 | - | 2020-08-23 | L2496258-1 |
| MEL-05-02 | MEL-05 | - | 2020-08-23 | L2496258-2 |
| MEL-05-03 | MEL-05 | - | 2020-08-23 | L2496258-3 |
| MEL-05-04 | MEL-05 | - | 2020-08-23 | L2496258-4 |
| MEL-05-05 | MEL-05 | - | 2020-08-23 | L2496258-5 |

*Table 2: Summary of field blanks collected in August, 2020.*

| Client_Sample_ID | ID_Name | ALS Sample ID |
|---|---|---|
| DI-AUG-01 | DI Blank | L2496253-1 |
| EB-AUG-01 | Equipment Blank | L2496253-2 |
| TB-AUG-01 | Travel Blank | L2496250-1 |

# 2 TRIGGER SCREENING

Sampling results were screened relative to relevant normal ranges and thresholds. Normal range, as defined in the AEMP, numerically describes the natural range of baseline/reference conditions for the various components of the AEMP. In simple terms, the normal range is the instrument used to assess whether current conditions (e.g., the measured concentration of a particular metal) has changed relative to baseline/reference conditions. In the case of the March sampling event, results are screened relative to the thresholds only, as normal ranges are not applicable to winter lake conditions. A summary of trigger and threshold exceedances is provided in Table 3 (Refer to Azimuth 2020 for details on the normal range and threshold values used here). The subsequent table (Table 4) provides all sample results above trigger and threshold values in August, 2020.

Figures displaying all parameters with at least one sample above the relevant normal range or threshold are also provided.

*Table 3: Summary of trigger and threshold exceedances in August, 2020.*

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| Meliadine Lake | | | | |
| | Ammonia-N | 13 | 0 | MEL-01-06, MEL-01-08, MEL-01-09, MEL-02-02, MEL-02-03, MEL-02-04, MEL-03-01, MEL-03-02, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-03, MEL-04-05 |
| | Antimony (T) | 1 | 0 | MEL-03-05 |
| | Arsenic (T) | 22 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-04-01, MEL-04-03, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Barium (T) | 12 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-04, MEL-02-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Bicarbonate alkalinity | 25 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Boron (T) | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | Cadmium (T) | 1 | 0 | MEL-04-01 |
| | Calcium (T) | 14 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Chloride | 25 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Cobalt (T) | 8 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-03, MEL-02-04, MEL-02-05 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Copper (T) | 4 | 0 | MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04 |
| | DOC | 12 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-05-04 |
| | Hardness | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Iron (T) | 7 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-03, MEL-02-04 |
| | Lead (T) | 1 | 0 | MEL-03-02* |
| | Lithium (T) | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Magnesium (T) | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-03, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-05 |
| | Manganese (T) | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Molybdenum (T) | 25 | 0 | MEL-01-01, MEL-01-06, MEL-01-07*, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05*, MEL-03-01, MEL-03-02, MEL-03-03*, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Nickel (T) | 17 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05 |
| | Potassium (T) | 22 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Reactive silica | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Selenium (T) | 6 | 0 | MEL-02-01, MEL-04-05, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Sodium (T) | 24 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-05 |
| | Strontium (T) | 25 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Sulphate | 25 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | TDS | 9 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-02, MEL-02-04, MEL-04-01, MEL-05-05 |
| | TDS (calculated) | 25 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | TKN | 5 | 0 | MEL-01-06, MEL-01-08, MEL-03-04, MEL-04-01, MEL-04-03 |
| | TOC | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | Total Alkalinity | 25 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05, MEL-04-01, MEL-04-02, MEL-04-03, MEL-04-04, MEL-04-05, MEL-05-01, MEL-05-02, MEL-05-03, MEL-05-04, MEL-05-05 |
| | Total diss phosphorous | 4 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-03-01* |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Total phosphorous | 9 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-05, MEL-03-03 |
| | TSS | 1 | 0 | MEL-01-06 |
| | Uranium (T) | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| Peninsula Lakes | | | | |
| | Aluminum (T) | 6 | 0 | A8-01, A8-02, A8-03, D7-01, D7-02, D7-03 |
| | Ammonia-N | 6 | 0 | A8-01, A8-02, A8-03, B7-03, D7-01, D7-02 |
| | Antimony (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Arsenic (T) | 8 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03, D7-01, D7-02 |
| | Barium (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Boron (T) | 4 | 0 | A8-01, B7-01, B7-02, B7-03 |
| | Cadmium (T) | 1 | 0 | A8-03 |
| | Chloride | 3 | 0 | B7-01, B7-02, B7-03 |
| | Chromium (T) | 9 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03, D7-01, D7-02, D7-03 |
| | Cobalt (T) | 7 | 0 | A8-03, B7-01, B7-02, B7-03, D7-01, D7-02, D7-03 |
| | Copper (T) | 2 | 0 | A8-01, A8-03 |
| | DOC | 1 | 0 | A8-03 |
| | Iron (T) | 2 | 0 | A8-01, A8-03 |
| | Lead (T) | 6 | 0 | A8-01, A8-02, A8-03, D7-01, D7-02, D7-03 |
| | Lithium (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Manganese (T) | 3 | 0 | A8-03, D7-01, D7-02 |
| | Molybdenum (T) | 6 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03 |
| | Nickel (T) | 4 | 0 | A8-03, D7-01, D7-02, D7-03 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Nitrate-N | 2 | 0 | D7-01, D7-03 |
| | Nitrite-N | 6 | 0 | A8-01, A8-02, A8-03, D7-01, D7-02, D7-03 |
| | Reactive silica | 3 | 0 | D7-01, D7-02, D7-03 |
| | Selenium (T) | 6 | 0 | A8-01, A8-02, A8-03, B7-01, B7-03, D7-01 |
| | Sodium (T) | 1 | 0 | A8-01 |
| | Strontium (T) | 3 | 0 | B7-01, B7-02, B7-03 |
| | Sulphate | 3 | 0 | B7-01, B7-02, B7-03 |
| | Titanium (T) | 5 | 0 | A8-03, B7-02, D7-01, D7-02, D7-03 |
| | TOC | 1 | 0 | A8-03 |
| | Total nitrogen | 6 | 0 | A8-01, A8-02, A8-03, B7-01, B7-03, D7-02 |
| | Total phosphorous | 1 | 0 | B7-01 |
| | Uranium (T) | 4 | 0 | A8-01, B7-01, B7-02, B7-03 |
| | Vanadium (T) | 9 | 0 | A8-01, A8-02, A8-03, B7-01, B7-02, B7-03, D7-01, D7-02, D7-03 |
| | Zinc (T) | 1 | 0 | A8-03 |

* Indicates samples which failed reliability checks and are consequently uncertain.

*Table 4: Meliadine trigger and threshold exceedances in August, 2020.*

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| A8 | | | | | | | | | | |
| | A8-01 | Aluminum (T) | 0.004 | 0.001 | mg/L | - | 0.1 | 0.003 | 33.3 | - |
| | A8-02 | Aluminum (T) | 0.0049 | 0.001 | mg/L | - | 0.1 | 0.003 | 63.3 | - |
| | A8-03 | Aluminum (T) | 0.0079 | 0.001 | mg/L | - | 0.1 | 0.003 | 163.3 | - |
| | A8-01 | Ammonia-N | 0.051 | 0.005 | mg/L | - | 1.8 | 0.011 | 360 | - |
| | A8-02 | Ammonia-N | 0.044 | 0.005 | mg/L | - | 1.8 | 0.011 | 298.2 | - |
| | A8-03 | Ammonia-N | 0.066 | 0.005 | mg/L | - | 1.8 | 0.011 | 496.4 | - |
| | A8-01 | Arsenic (T) | 0.0058 | 2e-05 | mg/L | - | 0.025 | 0.0024 | 139.6 | - |
| | A8-02 | Arsenic (T) | 0.0054 | 2e-05 | mg/L | - | 0.025 | 0.0024 | 125 | - |
| | A8-03 | Arsenic (T) | 0.0036 | 2e-05 | mg/L | - | 0.025 | 0.0024 | 49.2 | - |
| | A8-01 | Boron (T) | 0.0057 | 0.005 | mg/L | - | 1.5 | 0.005 | 14 | - |
| | A8-03 | Cadmium (T) | 7.6e-06 | 5e-06 | mg/L | - | 4e-05 | 5e-06 | 52 | - |
| | A8-01 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | A8-02 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | A8-03 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | A8-03 | Cobalt (T) | 6.3e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 26.6 | - |
| | A8-01 | Copper (T) | 0.00096 | 5e-05 | mg/L | - | 0.002 | 0.00089 | 7.3 | - |
| | A8-03 | Copper (T) | 0.0019 | 5e-05 | mg/L | - | 0.002 | 0.00089 | 113.5 | - |
| | A8-03 | DOC | 5.1 | 0.5 | mg/L | - | - | 4.9 | 4.3 | - |
| | A8-01 | Iron (T) | 0.072 | 0.001 | mg/L | - | 1.1 | 0.067 | 7.9 | - |
| | A8-03 | Iron (T) | 0.11 | 0.001 | mg/L | - | 1.1 | 0.067 | 68.7 | - |
| | A8-01 | Lead (T) | 7.2e-05 | 1e-05 | mg/L | - | 0.001 | 3e-05 | 140 | - |
| | A8-02 | Lead (T) | 5.9e-05 | 1e-05 | mg/L | - | 0.001 | 3e-05 | 96.7 | - |
| | A8-03 | Lead (T) | 4.9e-05 | 1e-05 | mg/L | - | 0.001 | 3e-05 | 63.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | A8-03 | Manganese (T) | 0.018 | 5e-05 | mg/L | - | - | 0.013 | 41.5 | - |
| | A8-01 | Molybdenum (T) | 0.00028 | 5e-05 | mg/L | - | 0.073 | 0.00022 | 25 | - |
| | A8-02 | Molybdenum (T) | 0.00026 | 5e-05 | mg/L | - | 0.073 | 0.00022 | 18.6 | - |
| | A8-03 | Molybdenum (T) | 0.00026 | 5e-05 | mg/L | - | 0.073 | 0.00022 | 19.5 | - |
| | A8-03 | Nickel (T) | 0.001 | 5e-05 | mg/L | - | 0.025 | 0.00092 | 8.7 | - |
| | A8-01 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | A8-02 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | A8-03 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | A8-01 | Selenium (T) | 4e-05 | 4e-05 | mg/L | MDL | 0.001 | 2e-05 | 100 | - |
| | A8-02 | Selenium (T) | 4e-05 | 4e-05 | mg/L | MDL | 0.001 | 2e-05 | 100 | - |
| | A8-03 | Selenium (T) | 4.3e-05 | 4e-05 | mg/L | - | 0.001 | 2e-05 | 115 | - |
| | A8-01 | Sodium (T) | 8.4 | 0.02 | mg/L | - | - | 8.4 | 0.1 | - |
| | A8-03 | Titanium (T) | 0.00035 | 5e-05 | mg/L | - | - | 0.00025 | 38.4 | - |
| | A8-03 | TOC | 5 | 0.5 | mg/L | - | - | 4.7 | 7.4 | - |
| | A8-01 | Total nitrogen | 0.41 | 0.05 | mg/L | - | - | 0.37 | 9.7 | - |
| | A8-02 | Total nitrogen | 0.44 | 0.05 | mg/L | - | - | 0.37 | 18.1 | - |
| | A8-03 | Total nitrogen | 0.47 | 0.05 | mg/L | - | - | 0.37 | 26.8 | - |
| | A8-01 | Uranium (T) | 5.6e-05 | 1e-06 | mg/L | - | 0.015 | 5.4e-05 | 3.1 | - |
| | A8-01 | Vanadium (T) | 5.3e-05 | 5e-05 | mg/L | - | 0.12 | 1e-05 | 430 | - |
| | A8-02 | Vanadium (T) | 5.1e-05 | 5e-05 | mg/L | - | 0.12 | 1e-05 | 410 | - |
| | A8-03 | Vanadium (T) | 6.4e-05 | 5e-05 | mg/L | - | 0.12 | 1e-05 | 540 | - |
| | A8-03 | Zinc (T) | 0.0016 | 5e-04 | mg/L | - | - | 0.0012 | 30.8 | - |
| B7 | | | | | | | | | | |
| | B7-03 | Ammonia-N | 0.044 | 0.005 | mg/L | - | 1.8 | 0.025 | 77.6 | - |
| | B7-01 | Antimony (T) | 0.00012 | 2e-05 | mg/L | - | 0.009 | 2e-05 | 485 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | B7-02 | Antimony (T) | 0.00014 | 2e-05 | mg/L | - | 0.009 | 2e-05 | 620 | - |
| | B7-03 | Antimony (T) | 4.7e-05 | 2e-05 | mg/L | - | 0.009 | 2e-05 | 135 | - |
| | B7-01 | Arsenic (T) | 0.0057 | 2e-05 | mg/L | - | 0.025 | 0.0018 | 215.6 | - |
| | B7-02 | Arsenic (T) | 0.0048 | 2e-05 | mg/L | - | 0.025 | 0.0018 | 167.8 | - |
| | B7-03 | Arsenic (T) | 0.0046 | 2e-05 | mg/L | - | 0.025 | 0.0018 | 156.7 | - |
| | B7-01 | Barium (T) | 0.023 | 2e-05 | mg/L | - | 1 | 0.02 | 17 | - |
| | B7-02 | Barium (T) | 0.024 | 2e-05 | mg/L | - | 1 | 0.02 | 20 | - |
| | B7-03 | Barium (T) | 0.024 | 2e-05 | mg/L | - | 1 | 0.02 | 20 | - |
| | B7-01 | Boron (T) | 0.014 | 0.005 | mg/L | - | 1.5 | 0.008 | 81.2 | - |
| | B7-02 | Boron (T) | 0.015 | 0.005 | mg/L | - | 1.5 | 0.008 | 85 | - |
| | B7-03 | Boron (T) | 0.015 | 0.005 | mg/L | - | 1.5 | 0.008 | 82.5 | - |
| | B7-01 | Chloride | 41 | 0.1 | mg/L | - | 120 | 25 | 64 | - |
| | B7-02 | Chloride | 40 | 0.1 | mg/L | - | 120 | 25 | 61.2 | - |
| | B7-03 | Chloride | 40 | 0.1 | mg/L | - | 120 | 25 | 60.4 | - |
| | B7-01 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | B7-02 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | B7-03 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | B7-01 | Cobalt (T) | 7.1e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 41.2 | - |
| | B7-02 | Cobalt (T) | 6.1e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 21.4 | - |
| | B7-03 | Cobalt (T) | 5.8e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 17 | - |
| | B7-01 | Lithium (T) | 0.02 | 5e-04 | mg/L | - | - | 0.0075 | 166.7 | - |
| | B7-02 | Lithium (T) | 0.02 | 5e-04 | mg/L | - | - | 0.0075 | 160 | - |
| | B7-03 | Lithium (T) | 0.019 | 5e-04 | mg/L | - | - | 0.0075 | 153.3 | - |
| | B7-01 | Molybdenum (T) | 0.00026 | 5e-05 | mg/L | - | 0.073 | 0.00024 | 9.6 | - |
| | B7-02 | Molybdenum (T) | 0.00028 | 5e-05 | mg/L | - | 0.073 | 0.00024 | 14.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | B7-03 | Molybdenum (T) | 0.00024 | 5e-05 | mg/L | - | 0.073 | 0.00024 | 0.4 | - |
| | B7-01 | Selenium (T) | 5.4e-05 | 4e-05 | mg/L | - | 0.001 | 4e-05 | 35 | - |
| | B7-03 | Selenium (T) | 5.2e-05 | 4e-05 | mg/L | - | 0.001 | 4e-05 | 30 | - |
| | B7-01 | Strontium (T) | 0.25 | 2e-05 | mg/L | - | 1.7 | 0.16 | 63.9 | - |
| | B7-02 | Strontium (T) | 0.27 | 2e-05 | mg/L | - | 1.7 | 0.16 | 74.2 | - |
| | B7-03 | Strontium (T) | 0.26 | 2e-05 | mg/L | - | 1.7 | 0.16 | 69.7 | - |
| | B7-01 | Sulphate | 8.2 | 0.3 | mg/L | - | 130 | 6 | 37.2 | - |
| | B7-02 | Sulphate | 8.2 | 0.3 | mg/L | - | 130 | 6 | 35.8 | - |
| | B7-03 | Sulphate | 8.1 | 0.3 | mg/L | - | 130 | 6 | 35.7 | - |
| | B7-02 | Titanium (T) | 3e-04 | 5e-05 | mg/L | - | - | 0.00025 | 21.2 | - |
| | B7-01 | Total nitrogen | 0.44 | 0.05 | mg/L | - | - | 0.42 | 4.3 | - |
| | B7-03 | Total nitrogen | 0.42 | 0.05 | mg/L | - | - | 0.42 | 0.7 | - |
| | B7-01 | Total phosphorous | 0.013 | 0.003 | mg/L | - | - | 0.01 | 33 | - |
| | B7-01 | Uranium (T) | 4.8e-05 | 1e-06 | mg/L | - | 0.015 | 3e-05 | 59 | - |
| | B7-02 | Uranium (T) | 4.9e-05 | 1e-06 | mg/L | - | 0.015 | 3e-05 | 62.7 | - |
| | B7-03 | Uranium (T) | 4.4e-05 | 1e-06 | mg/L | - | 0.015 | 3e-05 | 46.3 | - |
| | B7-01 | Vanadium (T) | 5.9e-05 | 5e-05 | mg/L | - | 0.12 | 1e-05 | 490 | - |
| | B7-02 | Vanadium (T) | 6.3e-05 | 5e-05 | mg/L | - | 0.12 | 1e-05 | 530 | - |
| | B7-03 | Vanadium (T) | 5.1e-05 | 5e-05 | mg/L | - | 0.12 | 1e-05 | 410 | - |
| D7 | | | | | | | | | | |
| | D7-01 | Aluminum (T) | 0.0077 | 0.001 | mg/L | - | 0.1 | 0.0067 | 14.9 | - |
| | D7-02 | Aluminum (T) | 0.0082 | 0.001 | mg/L | - | 0.1 | 0.0067 | 22.4 | - |
| | D7-03 | Aluminum (T) | 0.0082 | 0.001 | mg/L | - | 0.1 | 0.0067 | 22.4 | - |
| | D7-01 | Ammonia-N | 0.015 | 0.005 | mg/L | - | 1.8 | 0.009 | 70 | - |
| | D7-02 | Ammonia-N | 0.072 | 0.005 | mg/L | - | 1.8 | 0.009 | 698.9 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | D7-01 | Arsenic (T) | 0.0012 | 2e-05 | mg/L | - | 0.025 | 0.0012 | 1.7 | - |
| | D7-02 | Arsenic (T) | 0.0012 | 2e-05 | mg/L | - | 0.025 | 0.0012 | 2.5 | - |
| | D7-01 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | D7-02 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | D7-03 | Chromium (T) | 1e-04 | 1e-04 | mg/L | MDL | 0.001 | 6e-05 | 66.7 | - |
| | D7-01 | Cobalt (T) | 6.4e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 27.8 | - |
| | D7-02 | Cobalt (T) | 6.4e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 28.8 | - |
| | D7-03 | Cobalt (T) | 6.6e-05 | 5e-06 | mg/L | - | 0.00078 | 5e-05 | 32.6 | - |
| | D7-01 | Lead (T) | 2.5e-05 | 1e-05 | mg/L | - | 0.001 | 2e-05 | 25 | - |
| | D7-02 | Lead (T) | 2.9e-05 | 1e-05 | mg/L | - | 0.001 | 2e-05 | 45 | - |
| | D7-03 | Lead (T) | 2.3e-05 | 1e-05 | mg/L | - | 0.001 | 2e-05 | 15 | - |
| | D7-01 | Manganese (T) | 0.014 | 5e-05 | mg/L | - | - | 0.013 | 3.8 | - |
| | D7-02 | Manganese (T) | 0.014 | 5e-05 | mg/L | - | - | 0.013 | 4.6 | - |
| | D7-01 | Nickel (T) | 0.00082 | 5e-05 | mg/L | - | 0.025 | 0.00075 | 9.3 | - |
| | D7-02 | Nickel (T) | 0.00086 | 5e-05 | mg/L | - | 0.025 | 0.00075 | 14.9 | - |
| | D7-03 | Nickel (T) | 0.00081 | 5e-05 | mg/L | - | 0.025 | 0.00075 | 7.9 | - |
| | D7-01 | Nitrate-N | 0.0071 | 0.005 | mg/L | - | 2.9 | 0.005 | 42 | - |
| | D7-03 | Nitrate-N | 0.0058 | 0.005 | mg/L | - | 2.9 | 0.005 | 16 | - |
| | D7-01 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | D7-02 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | D7-03 | Nitrite-N | 0.001 | 0.001 | mg/L | MDL | 0.06 | 5e-04 | 100 | - |
| | D7-01 | Reactive silica | 0.49 | 0.05 | mg/L | - | - | 0.28 | 74.3 | - |
| | D7-02 | Reactive silica | 0.5 | 0.01 | mg/L | - | - | 0.28 | 76.8 | - |
| | D7-03 | Reactive silica | 0.5 | 0.01 | mg/L | - | - | 0.28 | 78.2 | - |
| | D7-01 | Selenium (T) | 7e-05 | 4e-05 | mg/L | - | 0.001 | 6e-05 | 16.7 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | D7-01 | Titanium (T) | 0.00052 | 5e-05 | mg/L | - | - | 0.00034 | 52.4 | - |
| | D7-02 | Titanium (T) | 5e-04 | 5e-04 | mg/L | MDL | - | 0.00034 | 47.1 | - |
| | D7-03 | Titanium (T) | 0.00054 | 5e-05 | mg/L | - | - | 0.00034 | 57.6 | - |
| | D7-02 | Total nitrogen | 0.45 | 0.05 | mg/L | - | - | 0.43 | 5.3 | - |
| | D7-01 | Vanadium (T) | 9.7e-05 | 5e-05 | mg/L | - | 0.12 | 7e-05 | 38.6 | - |
| | D7-02 | Vanadium (T) | 1e-04 | 5e-05 | mg/L | - | 0.12 | 7e-05 | 50 | - |
| | D7-03 | Vanadium (T) | 1e-04 | 5e-05 | mg/L | - | 0.12 | 7e-05 | 44.3 | - |
| MEL-01 | | | | | | | | | | |
| | MEL-01-06 | Ammonia-N | 0.039 | 0.005 | mg/L | - | 1.8 | 0.015 | 161.1 | - |
| | MEL-01-08 | Ammonia-N | 0.026 | 0.005 | mg/L | - | 1.8 | 0.015 | 77.9 | - |
| | MEL-01-09 | Ammonia-N | 0.03 | 0.005 | mg/L | - | 1.8 | 0.015 | 104.7 | - |
| | MEL-01-01 | Arsenic (T) | 0.00051 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 104 | - |
| | MEL-01-06 | Arsenic (T) | 0.00051 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 103.2 | - |
| | MEL-01-07 | Arsenic (T) | 0.00052 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 108 | - |
| | MEL-01-08 | Arsenic (T) | 5e-04 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 99.2 | - |
| | MEL-01-09 | Arsenic (T) | 5e-04 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 98.4 | - |
| | MEL-01-01 | Barium (T) | 0.0087 | 2e-05 | mg/L | - | 1 | 0.0079 | 9.5 | - |
| | MEL-01-06 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.6 | - |
| | MEL-01-07 | Barium (T) | 0.0084 | 2e-05 | mg/L | - | 1 | 0.0079 | 6.7 | - |
| | MEL-01-08 | Barium (T) | 0.0084 | 2e-05 | mg/L | - | 1 | 0.0079 | 5.6 | - |
| | MEL-01-09 | Barium (T) | 0.0081 | 2e-05 | mg/L | - | 1 | 0.0079 | 2.9 | - |
| | MEL-01-01 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.5 | - |
| | MEL-01-06 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.9 | - |
| | MEL-01-07 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.9 | - |
| | MEL-01-08 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 1.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 1.6 | - |
| | MEL-01-01 | Boron (T) | 0.0067 | 0.005 | mg/L | - | 1.5 | 0.0067 | 0.4 | - |
| | MEL-01-06 | Boron (T) | 0.0068 | 0.005 | mg/L | - | 1.5 | 0.0067 | 1.9 | - |
| | MEL-01-07 | Boron (T) | 0.0071 | 0.005 | mg/L | - | 1.5 | 0.0067 | 6.4 | - |
| | MEL-01-08 | Boron (T) | 0.0071 | 0.005 | mg/L | - | 1.5 | 0.0067 | 6.4 | - |
| | MEL-01-09 | Boron (T) | 0.0069 | 0.005 | mg/L | - | 1.5 | 0.0067 | 3.4 | - |
| | MEL-01-01 | Calcium (T) | 8.2 | 0.01 | mg/L | - | - | 7.3 | 12.6 | - |
| | MEL-01-06 | Calcium (T) | 8.4 | 0.01 | mg/L | - | - | 7.3 | 14.4 | - |
| | MEL-01-07 | Calcium (T) | 8.6 | 0.01 | mg/L | - | - | 7.3 | 17.8 | - |
| | MEL-01-08 | Calcium (T) | 8.7 | 0.01 | mg/L | - | - | 7.3 | 19.2 | - |
| | MEL-01-09 | Calcium (T) | 8.2 | 0.01 | mg/L | - | - | 7.3 | 12.2 | - |
| | MEL-01-01 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 104.6 | - |
| | MEL-01-06 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 104.6 | - |
| | MEL-01-07 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 105.7 | - |
| | MEL-01-08 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 104.6 | - |
| | MEL-01-09 | Chloride | 18 | 0.1 | mg/L | - | 120 | 8.8 | 102.3 | - |
| | MEL-01-01 | Cobalt (T) | 2.6e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 65 | - |
| | MEL-01-06 | Cobalt (T) | 2.6e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 60 | - |
| | MEL-01-07 | Cobalt (T) | 2.8e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 77.5 | - |
| | MEL-01-08 | Cobalt (T) | 2.6e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 65.6 | - |
| | MEL-01-09 | Cobalt (T) | 3.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 98.1 | - |
| | MEL-01-01 | DOC | 3.8 | 0.5 | mg/L | - | - | 2.7 | 40 | - |
| | MEL-01-06 | DOC | 3.6 | 0.5 | mg/L | - | - | 2.7 | 31.9 | - |
| | MEL-01-07 | DOC | 3.4 | 0.5 | mg/L | - | - | 2.7 | 26.7 | - |
| | MEL-01-08 | DOC | 3.7 | 0.5 | mg/L | - | - | 2.7 | 38.1 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | DOC | 3.4 | 0.5 | mg/L | - | - | 2.7 | 25.6 | - |
| | MEL-01-01 | Hardness | 28 | 0.2 | - | - | - | 23 | 22.1 | - |
| | MEL-01-06 | Hardness | 28 | 0.2 | - | - | - | 23 | 21.2 | - |
| | MEL-01-07 | Hardness | 28 | 0.2 | - | - | - | 23 | 20.8 | - |
| | MEL-01-08 | Hardness | 28 | 0.2 | - | - | - | 23 | 23.4 | - |
| | MEL-01-09 | Hardness | 28 | 0.2 | - | - | - | 23 | 20.3 | - |
| | MEL-01-01 | Iron (T) | 0.026 | 0.001 | mg/L | - | 1.1 | 0.015 | 75.5 | - |
| | MEL-01-06 | Iron (T) | 0.025 | 0.001 | mg/L | - | 1.1 | 0.015 | 62.9 | - |
| | MEL-01-07 | Iron (T) | 0.026 | 0.001 | mg/L | - | 1.1 | 0.015 | 68.9 | - |
| | MEL-01-08 | Iron (T) | 0.023 | 0.001 | mg/L | - | 1.1 | 0.015 | 53 | - |
| | MEL-01-09 | Iron (T) | 0.024 | 0.001 | mg/L | - | 1.1 | 0.015 | 55.6 | - |
| | MEL-01-01 | Lithium (T) | 0.0014 | 5e-04 | mg/L | - | - | 7e-04 | 102.9 | - |
| | MEL-01-06 | Lithium (T) | 0.0014 | 5e-04 | mg/L | - | - | 7e-04 | 101.4 | - |
| | MEL-01-07 | Lithium (T) | 0.0015 | 5e-04 | mg/L | - | - | 7e-04 | 111.4 | - |
| | MEL-01-08 | Lithium (T) | 0.0015 | 5e-04 | mg/L | - | - | 7e-04 | 112.9 | - |
| | MEL-01-09 | Lithium (T) | 0.0014 | 5e-04 | mg/L | - | - | 7e-04 | 100 | - |
| | MEL-01-01 | Magnesium (T) | 1.7 | 0.004 | mg/L | - | - | 1.2 | 45.3 | - |
| | MEL-01-06 | Magnesium (T) | 1.7 | 0.004 | mg/L | - | - | 1.2 | 42.7 | - |
| | MEL-01-07 | Magnesium (T) | 1.6 | 0.004 | mg/L | - | - | 1.2 | 41 | - |
| | MEL-01-08 | Magnesium (T) | 1.6 | 0.004 | mg/L | - | - | 1.2 | 41 | - |
| | MEL-01-09 | Magnesium (T) | 1.7 | 0.004 | mg/L | - | - | 1.2 | 44.4 | - |
| | MEL-01-01 | Manganese (T) | 0.0094 | 5e-05 | mg/L | - | - | 0.0032 | 199.7 | - |
| | MEL-01-06 | Manganese (T) | 0.0087 | 5e-05 | mg/L | - | - | 0.0032 | 175.2 | - |
| | MEL-01-07 | Manganese (T) | 0.0094 | 5e-05 | mg/L | - | - | 0.0032 | 198.7 | - |
| | MEL-01-08 | Manganese (T) | 0.0082 | 5e-05 | mg/L | - | - | 0.0032 | 160.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | Manganese (T) | 0.0085 | 5e-05 | mg/L | - | - | 0.0032 | 170.2 | - |
| | MEL-01-01 | Molybdenum (T) | 9.5e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 14.9 | - |
| | MEL-01-06 | Molybdenum (T) | 1e-04 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 23.3 | - |
| | MEL-01-07 | Molybdenum (T) | 0.00068 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 722.2 | Uncertain |
| | MEL-01-08 | Molybdenum (T) | 3e-04 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 264 | - |
| | MEL-01-09 | Molybdenum (T) | 1e-04 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 24.5 | - |
| | MEL-01-01 | Nickel (T) | 0.00078 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 87.5 | - |
| | MEL-01-06 | Nickel (T) | 0.00077 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 84.4 | - |
| | MEL-01-07 | Nickel (T) | 0.00074 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 77.7 | - |
| | MEL-01-08 | Nickel (T) | 0.00078 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 86.1 | - |
| | MEL-01-09 | Nickel (T) | 0.00078 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 87.3 | - |
| | MEL-01-01 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 21.7 | - |
| | MEL-01-06 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 19.5 | - |
| | MEL-01-07 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 18.5 | - |
| | MEL-01-08 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 19.5 | - |
| | MEL-01-09 | Potassium (T) | 1.1 | 0.02 | mg/L | - | - | 0.94 | 20.6 | - |
| | MEL-01-01 | Reactive silica | 0.33 | 0.01 | mg/L | - | - | 0.26 | 23.4 | - |
| | MEL-01-06 | Reactive silica | 0.32 | 0.01 | mg/L | - | - | 0.26 | 20.4 | - |
| | MEL-01-07 | Reactive silica | 0.33 | 0.01 | mg/L | - | - | 0.26 | 24.2 | - |
| | MEL-01-08 | Reactive silica | 0.33 | 0.01 | mg/L | - | - | 0.26 | 24.9 | - |
| | MEL-01-09 | Reactive silica | 0.33 | 0.01 | mg/L | - | - | 0.26 | 23.4 | - |
| | MEL-01-01 | Sodium (T) | 7.9 | 0.02 | mg/L | - | - | 4.6 | 72.7 | - |
| | MEL-01-06 | Sodium (T) | 7.6 | 0.02 | mg/L | - | - | 4.6 | 66.8 | - |
| | MEL-01-07 | Sodium (T) | 7.5 | 0.02 | mg/L | - | - | 4.6 | 64.6 | - |
| | MEL-01-08 | Sodium (T) | 7.5 | 0.02 | mg/L | - | - | 4.6 | 64.4 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-09 | Sodium (T) | 7.5 | 0.02 | mg/L | - | - | 4.6 | 65.7 | - |
| | MEL-01-01 | Strontium (T) | 0.059 | 2e-05 | mg/L | - | 1.7 | 0.034 | 72.6 | - |
| | MEL-01-06 | Strontium (T) | 0.06 | 2e-05 | mg/L | - | 1.7 | 0.034 | 74.3 | - |
| | MEL-01-07 | Strontium (T) | 0.06 | 2e-05 | mg/L | - | 1.7 | 0.034 | 76.1 | - |
| | MEL-01-08 | Strontium (T) | 0.059 | 2e-05 | mg/L | - | 1.7 | 0.034 | 72.3 | - |
| | MEL-01-09 | Strontium (T) | 0.058 | 2e-05 | mg/L | - | 1.7 | 0.034 | 70.6 | - |
| | MEL-01-01 | Sulphate | 5.8 | 0.3 | mg/L | - | 130 | 3.7 | 58.6 | - |
| | MEL-01-06 | Sulphate | 5.8 | 0.3 | mg/L | - | 130 | 3.7 | 57.5 | - |
| | MEL-01-07 | Sulphate | 5.8 | 0.3 | mg/L | - | 130 | 3.7 | 58.9 | - |
| | MEL-01-08 | Sulphate | 5.8 | 0.3 | mg/L | - | 130 | 3.7 | 57.8 | - |
| | MEL-01-09 | Sulphate | 5.8 | 0.3 | mg/L | - | 130 | 3.7 | 56.4 | - |
| | MEL-01-01 | TDS | 64 | 13 | mg/L | - | 500 | 51 | 25 | - |
| | MEL-01-06 | TDS | 66 | 13 | mg/L | - | 500 | 51 | 28.9 | - |
| | MEL-01-07 | TDS | 53 | 13 | mg/L | - | 500 | 51 | 3.5 | - |
| | MEL-01-08 | TDS | 63 | 13 | mg/L | - | 500 | 51 | 23 | - |
| | MEL-01-09 | TDS | 59 | 13 | mg/L | - | 500 | 51 | 15.2 | - |
| | MEL-01-01 | TDS (calculated) | 55 | - | mg/L | - | 500 | 38 | 43.6 | - |
| | MEL-01-06 | TDS (calculated) | 55 | - | mg/L | - | 500 | 38 | 44.2 | - |
| | MEL-01-07 | TDS (calculated) | 55 | - | mg/L | - | 500 | 38 | 44.2 | - |
| | MEL-01-08 | TDS (calculated) | 55 | - | mg/L | - | 500 | 38 | 43.9 | - |
| | MEL-01-09 | TDS (calculated) | 54 | - | mg/L | - | 500 | 38 | 41.8 | - |
| | MEL-01-06 | TKN | 0.3 | 0.05 | mg/L | - | - | 0.25 | 22.1 | - |
| | MEL-01-08 | TKN | 0.26 | 0.05 | mg/L | - | - | 0.25 | 2.4 | - |
| | MEL-01-01 | TOC | 3.4 | 0.5 | mg/L | - | - | 3 | 13.3 | - |
| | MEL-01-06 | TOC | 3.4 | 0.5 | mg/L | - | - | 3 | 13 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-07 | TOC | 3.4 | 0.5 | mg/L | - | - | 3 | 14 | - |
| | MEL-01-08 | TOC | 3.6 | 0.5 | mg/L | - | - | 3 | 20.7 | - |
| | MEL-01-09 | TOC | 3.3 | 0.5 | mg/L | - | - | 3 | 10.3 | - |
| | MEL-01-01 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2.5 | - |
| | MEL-01-06 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3 | - |
| | MEL-01-07 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3 | - |
| | MEL-01-08 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1.5 | - |
| | MEL-01-09 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1.5 | - |
| | MEL-01-01 | Total diss phosphorous | 0.0046 | 0.001 | mg/L | - | - | 0.0034 | 36.5 | - |
| | MEL-01-06 | Total diss phosphorous | 0.0041 | 0.001 | mg/L | - | - | 0.0034 | 21.7 | - |
| | MEL-01-07 | Total diss phosphorous | 0.0036 | 0.001 | mg/L | - | - | 0.0034 | 6.8 | - |
| | MEL-01-01 | Total phosphorous | 0.01 | 0.001 | mg/L | - | - | 0.006 | 66.7 | - |
| | MEL-01-06 | Total phosphorous | 0.0076 | 0.001 | mg/L | - | - | 0.006 | 26.7 | - |
| | MEL-01-07 | Total phosphorous | 0.0097 | 0.001 | mg/L | - | - | 0.006 | 61.7 | - |
| | MEL-01-08 | Total phosphorous | 0.0066 | 0.001 | mg/L | - | - | 0.006 | 10 | - |
| | MEL-01-09 | Total phosphorous | 0.0087 | 0.001 | mg/L | - | - | 0.006 | 45 | - |
| | MEL-01-06 | TSS | 1.3 | 1 | mg/L | - | - | 1.1 | 18.2 | - |
| | MEL-01-01 | Uranium (T) | 1.8e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 4.8 | - |
| | MEL-01-06 | Uranium (T) | 2e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 19.2 | - |
| | MEL-01-07 | Uranium (T) | 1.9e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 15 | - |
| | MEL-01-08 | Uranium (T) | 1.9e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 12 | - |
| | MEL-01-09 | Uranium (T) | 1.8e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 9.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| MEL-02 | | | | | | | | | | |
| | MEL-02-02 | Ammonia-N | 0.016 | 0.005 | mg/L | - | 1.8 | 0.015 | 8.7 | - |
| | MEL-02-03 | Ammonia-N | 0.068 | 0.005 | mg/L | - | 1.8 | 0.015 | 357.7 | - |
| | MEL-02-04 | Ammonia-N | 0.029 | 0.005 | mg/L | - | 1.8 | 0.015 | 96 | - |
| | MEL-02-01 | Arsenic (T) | 0.00042 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 67.7 | - |
| | MEL-02-02 | Arsenic (T) | 0.00044 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 74.9 | - |
| | MEL-02-03 | Arsenic (T) | 0.00044 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 74.5 | - |
| | MEL-02-04 | Arsenic (T) | 0.00043 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 71.7 | - |
| | MEL-02-05 | Arsenic (T) | 0.00042 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 69.3 | - |
| | MEL-02-04 | Barium (T) | 0.008 | 2e-05 | mg/L | - | 1 | 0.0079 | 1.4 | - |
| | MEL-02-05 | Barium (T) | 0.0079 | 2e-05 | mg/L | - | 1 | 0.0079 | 0.4 | - |
| | MEL-02-01 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 4.1 | - |
| | MEL-02-02 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2 | - |
| | MEL-02-03 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2 | - |
| | MEL-02-04 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 3.7 | - |
| | MEL-02-05 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 4.1 | - |
| | MEL-02-02 | Calcium (T) | 7.5 | 0.01 | mg/L | - | - | 7.3 | 2.6 | - |
| | MEL-02-03 | Calcium (T) | 7.6 | 0.01 | mg/L | - | - | 7.3 | 4.1 | - |
| | MEL-02-04 | Calcium (T) | 7.6 | 0.01 | mg/L | - | - | 7.3 | 4.4 | - |
| | MEL-02-05 | Calcium (T) | 7.6 | 0.01 | mg/L | - | - | 7.3 | 3.7 | - |
| | MEL-02-01 | Chloride | 13 | 0.1 | mg/L | - | 120 | 8.8 | 45.1 | - |
| | MEL-02-02 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 40.6 | - |
| | MEL-02-03 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 40.6 | - |
| | MEL-02-04 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 38.3 | - |
| | MEL-02-05 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 38.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-03 | Cobalt (T) | 1.7e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 3.8 | - |
| | MEL-02-04 | Cobalt (T) | 1.7e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 3.8 | - |
| | MEL-02-05 | Cobalt (T) | 1.8e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 10 | - |
| | MEL-02-01 | Copper (T) | 0.0011 | 5e-05 | mg/L | - | 0.002 | 0.00092 | 21.3 | - |
| | MEL-02-02 | Copper (T) | 0.0011 | 5e-05 | mg/L | - | 0.002 | 0.00092 | 19.2 | - |
| | MEL-02-03 | Copper (T) | 0.0015 | 5e-05 | mg/L | - | 0.002 | 0.00092 | 58.2 | - |
| | MEL-02-04 | Copper (T) | 0.0012 | 5e-05 | mg/L | - | 0.002 | 0.00092 | 35.4 | - |
| | MEL-02-01 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 4.8 | - |
| | MEL-02-03 | DOC | 3 | 0.5 | mg/L | - | - | 2.7 | 9.6 | - |
| | MEL-02-04 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 5.2 | - |
| | MEL-02-05 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 2.6 | - |
| | MEL-02-01 | Hardness | 24 | 0.2 | - | - | - | 23 | 4.8 | - |
| | MEL-02-02 | Hardness | 24 | 0.2 | - | - | - | 23 | 4.3 | - |
| | MEL-02-03 | Hardness | 24 | 0.2 | - | - | - | 23 | 4.3 | - |
| | MEL-02-04 | Hardness | 24 | 0.2 | - | - | - | 23 | 4.8 | - |
| | MEL-02-05 | Hardness | 24 | 0.2 | - | - | - | 23 | 3 | - |
| | MEL-02-03 | Iron (T) | 0.016 | 0.001 | mg/L | - | 1.1 | 0.015 | 4.6 | - |
| | MEL-02-04 | Iron (T) | 0.018 | 0.001 | mg/L | - | 1.1 | 0.015 | 17.9 | - |
| | MEL-02-01 | Lithium (T) | 0.00088 | 5e-04 | mg/L | - | - | 7e-04 | 25.7 | - |
| | MEL-02-02 | Lithium (T) | 0.00091 | 5e-04 | mg/L | - | - | 7e-04 | 30 | - |
| | MEL-02-03 | Lithium (T) | 0.00094 | 5e-04 | mg/L | - | - | 7e-04 | 34.3 | - |
| | MEL-02-04 | Lithium (T) | 0.00093 | 5e-04 | mg/L | - | - | 7e-04 | 32.9 | - |
| | MEL-02-05 | Lithium (T) | 0.00094 | 5e-04 | mg/L | - | - | 7e-04 | 34.3 | - |
| | MEL-02-01 | Magnesium (T) | 1.4 | 0.004 | mg/L | - | - | 1.2 | 15.4 | - |
| | MEL-02-02 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 11.1 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-03 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 12 | - |
| | MEL-02-04 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 14.5 | - |
| | MEL-02-05 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 13.7 | - |
| | MEL-02-01 | Manganese (T) | 0.0039 | 5e-05 | mg/L | - | - | 0.0032 | 22.9 | - |
| | MEL-02-02 | Manganese (T) | 0.004 | 5e-05 | mg/L | - | - | 0.0032 | 28.6 | - |
| | MEL-02-03 | Manganese (T) | 0.0042 | 5e-05 | mg/L | - | - | 0.0032 | 33.7 | - |
| | MEL-02-04 | Manganese (T) | 0.0045 | 5e-05 | mg/L | - | - | 0.0032 | 42.9 | - |
| | MEL-02-05 | Manganese (T) | 0.0041 | 5e-05 | mg/L | - | - | 0.0032 | 30.2 | - |
| | MEL-02-01 | Molybdenum (T) | 8.8e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 6.4 | - |
| | MEL-02-02 | Molybdenum (T) | 1e-04 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 23.3 | - |
| | MEL-02-03 | Molybdenum (T) | 9.6e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 16.1 | - |
| | MEL-02-04 | Molybdenum (T) | 0.00011 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 36.6 | - |
| | MEL-02-05 | Molybdenum (T) | 0.00065 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 686 | Uncertain |
| | MEL-02-01 | Nickel (T) | 0.00059 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 41.7 | - |
| | MEL-02-02 | Nickel (T) | 0.00059 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 40.5 | - |
| | MEL-02-03 | Nickel (T) | 0.00061 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 45.6 | - |
| | MEL-02-04 | Nickel (T) | 0.00061 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 45.8 | - |
| | MEL-02-05 | Nickel (T) | 6e-04 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 42.7 | - |
| | MEL-02-01 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-02-02 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-02-03 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-02-04 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-02-05 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 11 | - |
| | MEL-02-01 | Reactive silica | 0.31 | 0.01 | mg/L | - | - | 0.26 | 17.4 | - |
| | MEL-02-02 | Reactive silica | 0.31 | 0.01 | mg/L | - | - | 0.26 | 15.5 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-03 | Reactive silica | 0.32 | 0.01 | mg/L | - | - | 0.26 | 20.4 | - |
| | MEL-02-04 | Reactive silica | 0.32 | 0.01 | mg/L | - | - | 0.26 | 18.9 | - |
| | MEL-02-05 | Reactive silica | 0.31 | 0.01 | mg/L | - | - | 0.26 | 17.4 | - |
| | MEL-02-01 | Selenium (T) | 5.1e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 9.9 | - |
| | MEL-02-01 | Sodium (T) | 6.1 | 0.02 | mg/L | - | - | 4.6 | 34.5 | - |
| | MEL-02-02 | Sodium (T) | 5.7 | 0.02 | mg/L | - | - | 4.6 | 25.1 | - |
| | MEL-02-03 | Sodium (T) | 5.8 | 0.02 | mg/L | - | - | 4.6 | 27.7 | - |
| | MEL-02-04 | Sodium (T) | 5.6 | 0.02 | mg/L | - | - | 4.6 | 23.1 | - |
| | MEL-02-05 | Sodium (T) | 5.8 | 0.02 | mg/L | - | - | 4.6 | 27.9 | - |
| | MEL-02-01 | Strontium (T) | 0.042 | 2e-05 | mg/L | - | 1.7 | 0.034 | 23 | - |
| | MEL-02-02 | Strontium (T) | 0.044 | 2e-05 | mg/L | - | 1.7 | 0.034 | 28.3 | - |
| | MEL-02-03 | Strontium (T) | 0.044 | 2e-05 | mg/L | - | 1.7 | 0.034 | 26.8 | - |
| | MEL-02-04 | Strontium (T) | 0.043 | 2e-05 | mg/L | - | 1.7 | 0.034 | 25.1 | - |
| | MEL-02-05 | Strontium (T) | 0.044 | 2e-05 | mg/L | - | 1.7 | 0.034 | 27.1 | - |
| | MEL-02-01 | Sulphate | 4.6 | 0.3 | mg/L | - | 130 | 3.7 | 25.2 | - |
| | MEL-02-02 | Sulphate | 4.7 | 0.3 | mg/L | - | 130 | 3.7 | 26.6 | - |
| | MEL-02-03 | Sulphate | 4.6 | 0.3 | mg/L | - | 130 | 3.7 | 24.1 | - |
| | MEL-02-04 | Sulphate | 4.6 | 0.3 | mg/L | - | 130 | 3.7 | 23.8 | - |
| | MEL-02-05 | Sulphate | 4.6 | 0.3 | mg/L | - | 130 | 3.7 | 24.1 | - |
| | MEL-02-02 | TDS | 53 | 13 | mg/L | - | 500 | 51 | 3.5 | - |
| | MEL-02-04 | TDS | 53 | 13 | mg/L | - | 500 | 51 | 3.5 | - |
| | MEL-02-01 | TDS (calculated) | 46 | - | mg/L | - | 500 | 38 | 19.1 | - |
| | MEL-02-02 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 16 | - |
| | MEL-02-03 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 16 | - |
| | MEL-02-04 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 16 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-05 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 15 | - |
| | MEL-02-01 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 4 | - |
| | MEL-02-02 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2 | - |
| | MEL-02-03 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2 | - |
| | MEL-02-04 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3.5 | - |
| | MEL-02-05 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 4 | - |
| | MEL-02-01 | Total phosphorous | 0.0064 | 0.003 | mg/L | - | - | 0.006 | 6.7 | - |
| | MEL-02-02 | Total phosphorous | 0.0067 | 0.003 | mg/L | - | - | 0.006 | 11.7 | - |
| | MEL-02-05 | Total phosphorous | 0.0063 | 0.003 | mg/L | - | - | 0.006 | 5 | - |
| MEL-03 | | | | | | | | | | |
| | MEL-03-01 | Ammonia-N | 0.059 | 0.005 | mg/L | - | 1.8 | 0.015 | 298.7 | - |
| | MEL-03-02 | Ammonia-N | 0.028 | 0.005 | mg/L | - | 1.8 | 0.015 | 86.6 | - |
| | MEL-03-04 | Ammonia-N | 0.079 | 0.005 | mg/L | - | 1.8 | 0.015 | 432.2 | - |
| | MEL-03-05 | Ammonia-N | 0.036 | 0.005 | mg/L | - | 1.8 | 0.015 | 138.9 | - |
| | MEL-03-05 | Antimony (T) | 2.1e-05 | 2e-05 | mg/L | - | 0.009 | 2e-05 | 5 | - |
| | MEL-03-01 | Arsenic (T) | 0.00027 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 6.8 | - |
| | MEL-03-02 | Arsenic (T) | 0.00027 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 7.2 | - |
| | MEL-03-03 | Arsenic (T) | 0.00027 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 9.2 | - |
| | MEL-03-04 | Arsenic (T) | 0.00026 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 3.2 | - |
| | MEL-03-01 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 0.8 | - |
| | MEL-03-02 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 3.7 | - |
| | MEL-03-03 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2 | - |
| | MEL-03-04 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.5 | - |
| | MEL-03-05 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 0.8 | - |
| | MEL-03-01 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 10.1 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-03-02 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.9 | - |
| | MEL-03-03 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.6 | - |
| | MEL-03-04 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.8 | - |
| | MEL-03-05 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.9 | - |
| | MEL-03-01 | DOC | 2.7 | 0.5 | mg/L | - | - | 2.7 | 0.7 | - |
| | MEL-03-02 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 2.2 | - |
| | MEL-03-02 | Lead (T) | 6.2e-05 | 1e-05 | mg/L | - | 0.001 | 2.6e-05 | 140.3 | Uncertain |
| | MEL-03-03 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 0.9 | - |
| | MEL-03-01 | Molybdenum (T) | 9.9e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 19.7 | - |
| | MEL-03-02 | Molybdenum (T) | 9.8e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 18.5 | - |
| | MEL-03-03 | Molybdenum (T) | 0.014 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 16465.9 | Uncertain |
| | MEL-03-04 | Molybdenum (T) | 0.00013 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 59.6 | - |
| | MEL-03-05 | Molybdenum (T) | 0.00011 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 28.2 | - |
| | MEL-03-01 | Nickel (T) | 0.00045 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 7.2 | - |
| | MEL-03-02 | Nickel (T) | 0.00042 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 0.2 | - |
| | MEL-03-01 | Potassium (T) | 0.95 | 0.02 | mg/L | - | - | 0.94 | 1.8 | - |
| | MEL-03-02 | Potassium (T) | 0.95 | 0.02 | mg/L | - | - | 0.94 | 1.1 | - |
| | MEL-03-03 | Potassium (T) | 0.96 | 0.02 | mg/L | - | - | 0.94 | 2.5 | - |
| | MEL-03-05 | Potassium (T) | 0.95 | 0.02 | mg/L | - | - | 0.94 | 1.1 | - |
| | MEL-03-01 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 6.6 | - |
| | MEL-03-02 | Sodium (T) | 4.9 | 0.02 | mg/L | - | - | 4.6 | 8.6 | - |
| | MEL-03-03 | Sodium (T) | 4.9 | 0.02 | mg/L | - | - | 4.6 | 7 | - |
| | MEL-03-04 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 4.8 | - |
| | MEL-03-05 | Sodium (T) | 4.9 | 0.02 | mg/L | - | - | 4.6 | 8.4 | - |
| | MEL-03-01 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 5 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-03-02 | Strontium (T) | 0.037 | 2e-05 | mg/L | - | 1.7 | 0.034 | 7.6 | - |
| | MEL-03-03 | Strontium (T) | 0.035 | 2e-05 | mg/L | - | 1.7 | 0.034 | 0.9 | - |
| | MEL-03-04 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 6.4 | - |
| | MEL-03-05 | Strontium (T) | 0.035 | 2e-05 | mg/L | - | 1.7 | 0.034 | 2.3 | - |
| | MEL-03-01 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.4 | - |
| | MEL-03-02 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 4.8 | - |
| | MEL-03-03 | Sulphate | 3.8 | 0.3 | mg/L | - | 130 | 3.7 | 4.6 | - |
| | MEL-03-04 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.6 | - |
| | MEL-03-05 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 6.7 | - |
| | MEL-03-01 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 3 | - |
| | MEL-03-02 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 3.2 | - |
| | MEL-03-03 | TDS (calculated) | 39 | - | mg/L | - | 500 | 38 | 1.9 | - |
| | MEL-03-04 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 3.2 | - |
| | MEL-03-05 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 3 | - |
| | MEL-03-04 | TKN | 0.27 | 0.05 | mg/L | - | - | 0.25 | 7.6 | - |
| | MEL-03-01 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1 | - |
| | MEL-03-02 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3.5 | - |
| | MEL-03-03 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2 | - |
| | MEL-03-04 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2.5 | - |
| | MEL-03-05 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1 | - |
| | MEL-03-01 | Total diss phosphorous | 0.01 | 0.003 | mg/L | - | - | 0.0034 | 208.6 | Uncertain |
| | MEL-03-03 | Total phosphorous | 0.0071 | 0.003 | mg/L | - | - | 0.006 | 18.3 | - |
| MEL-04 | | | | | | | | | | |
| | MEL-04-01 | Ammonia-N | 0.04 | 0.005 | mg/L | - | 1.8 | 0.015 | 171.8 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-04-03 | Ammonia-N | 0.072 | 0.005 | mg/L | - | 1.8 | 0.015 | 385.2 | - |
| | MEL-04-05 | Ammonia-N | 0.025 | 0.005 | mg/L | - | 1.8 | 0.015 | 65.1 | - |
| | MEL-04-01 | Arsenic (T) | 0.00026 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 3.2 | - |
| | MEL-04-03 | Arsenic (T) | 0.00026 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 2.8 | - |
| | MEL-04-05 | Arsenic (T) | 0.00026 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 2 | - |
| | MEL-04-01 | Bicarbonate alkalinity | 24 | 1.2 | mg/L | - | - | 24 | 0.4 | - |
| | MEL-04-02 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 1.6 | - |
| | MEL-04-03 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 0.8 | - |
| | MEL-04-04 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 0.8 | - |
| | MEL-04-05 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 1.6 | - |
| | MEL-04-01 | Cadmium (T) | 2e-05 | 2e-05 | mg/L | MDL | 4e-05 | 5e-06 | 300 | - |
| | MEL-04-01 | Chloride | 9.5 | 0.1 | mg/L | - | 120 | 8.8 | 8.7 | - |
| | MEL-04-02 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.1 | - |
| | MEL-04-03 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.5 | - |
| | MEL-04-04 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.4 | - |
| | MEL-04-05 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.6 | - |
| | MEL-04-01 | Molybdenum (T) | 0.014 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 16224.1 | - |
| | MEL-04-02 | Molybdenum (T) | 0.0096 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 11471.9 | - |
| | MEL-04-03 | Molybdenum (T) | 0.00012 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 41.5 | - |
| | MEL-04-04 | Molybdenum (T) | 1e-04 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 20.9 | - |
| | MEL-04-05 | Molybdenum (T) | 0.0078 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 9283.3 | - |
| | MEL-04-01 | Nickel (T) | 0.00042 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 1 | - |
| | MEL-04-02 | Nickel (T) | 0.00042 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 1.9 | - |
| | MEL-04-03 | Nickel (T) | 0.00044 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 5.5 | - |
| | MEL-04-04 | Nickel (T) | 0.00043 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 2.2 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-04-05 | Nickel (T) | 0.00044 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 6 | - |
| | MEL-04-01 | Potassium (T) | 0.95 | 0.02 | mg/L | - | - | 0.94 | 1.5 | - |
| | MEL-04-02 | Potassium (T) | 0.94 | 0.02 | mg/L | - | - | 0.94 | 0.2 | - |
| | MEL-04-05 | Potassium (T) | 0.94 | 0.02 | mg/L | - | - | 0.94 | 0.5 | - |
| | MEL-04-05 | Selenium (T) | 4.8e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 3.4 | - |
| | MEL-04-01 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 5.5 | - |
| | MEL-04-02 | Sodium (T) | 4.7 | 0.02 | mg/L | - | - | 4.6 | 4.2 | - |
| | MEL-04-03 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 4.6 | - |
| | MEL-04-04 | Sodium (T) | 4.7 | 0.02 | mg/L | - | - | 4.6 | 2.9 | - |
| | MEL-04-05 | Sodium (T) | 4.9 | 0.02 | mg/L | - | - | 4.6 | 6.8 | - |
| | MEL-04-01 | Strontium (T) | 0.038 | 2e-05 | mg/L | - | 1.7 | 0.034 | 9.3 | - |
| | MEL-04-02 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 5 | - |
| | MEL-04-03 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 5.8 | - |
| | MEL-04-04 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 6.4 | - |
| | MEL-04-05 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 5.2 | - |
| | MEL-04-01 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.1 | - |
| | MEL-04-02 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.4 | - |
| | MEL-04-03 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 7 | - |
| | MEL-04-04 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.6 | - |
| | MEL-04-05 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.6 | - |
| | MEL-04-01 | TDS | 54 | 13 | mg/L | - | 500 | 51 | 5.5 | - |
| | MEL-04-01 | TDS (calculated) | 39 | - | mg/L | - | 500 | 38 | 1.4 | - |
| | MEL-04-02 | TDS (calculated) | 39 | - | mg/L | - | 500 | 38 | 2.5 | - |
| | MEL-04-03 | TDS (calculated) | 39 | - | mg/L | - | 500 | 38 | 1.9 | - |
| | MEL-04-04 | TDS (calculated) | 39 | - | mg/L | - | 500 | 38 | 1.9 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-04-05 | TDS (calculated) | 39 | - | mg/L | - | 500 | 38 | 2.5 | - |
| | MEL-04-01 | TKN | 0.31 | 0.05 | mg/L | - | - | 0.25 | 26.1 | - |
| | MEL-04-03 | TKN | 0.28 | 0.05 | mg/L | - | - | 0.25 | 13.7 | - |
| | MEL-04-01 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 0.5 | - |
| | MEL-04-02 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1.5 | - |
| | MEL-04-03 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1 | - |
| | MEL-04-04 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1 | - |
| | MEL-04-05 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1.5 | - |
| MEL-05 | | | | | | | | | | |
| | MEL-05-01 | Arsenic (T) | 3e-04 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 20.7 | - |
| | MEL-05-02 | Arsenic (T) | 0.00034 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 33.9 | - |
| | MEL-05-03 | Arsenic (T) | 0.00031 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 23.5 | - |
| | MEL-05-04 | Arsenic (T) | 0.00033 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 31.5 | - |
| | MEL-05-05 | Arsenic (T) | 0.00032 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 25.9 | - |
| | MEL-05-01 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.7 | - |
| | MEL-05-02 | Barium (T) | 0.0082 | 2e-05 | mg/L | - | 1 | 0.0079 | 4 | - |
| | MEL-05-03 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.8 | - |
| | MEL-05-04 | Barium (T) | 0.0085 | 2e-05 | mg/L | - | 1 | 0.0079 | 7.8 | - |
| | MEL-05-05 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 5.1 | - |
| | MEL-05-01 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 7 | - |
| | MEL-05-02 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 6.1 | - |
| | MEL-05-03 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 4.9 | - |
| | MEL-05-04 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 6.1 | - |
| | MEL-05-05 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 6.6 | - |
| | MEL-05-01 | Calcium (T) | 7.7 | 0.01 | mg/L | - | - | 7.3 | 5.9 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-05-02 | Calcium (T) | 7.5 | 0.01 | mg/L | - | - | 7.3 | 3 | - |
| | MEL-05-03 | Calcium (T) | 7.5 | 0.01 | mg/L | - | - | 7.3 | 3 | - |
| | MEL-05-04 | Calcium (T) | 7.8 | 0.01 | mg/L | - | - | 7.3 | 7.4 | - |
| | MEL-05-05 | Calcium (T) | 7.7 | 0.01 | mg/L | - | - | 7.3 | 5.6 | - |
| | MEL-05-01 | Chloride | 9.4 | 0.1 | mg/L | - | 120 | 8.8 | 7.9 | - |
| | MEL-05-02 | Chloride | 9.4 | 0.1 | mg/L | - | 120 | 8.8 | 7.7 | - |
| | MEL-05-03 | Chloride | 9.4 | 0.1 | mg/L | - | 120 | 8.8 | 7.9 | - |
| | MEL-05-04 | Chloride | 9.4 | 0.1 | mg/L | - | 120 | 8.8 | 7.5 | - |
| | MEL-05-05 | Chloride | 9.4 | 0.1 | mg/L | - | 120 | 8.8 | 7.4 | - |
| | MEL-05-04 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 2.6 | - |
| | MEL-05-01 | Hardness | 24 | 0.2 | - | - | - | 23 | 5.2 | - |
| | MEL-05-02 | Hardness | 24 | 0.2 | - | - | - | 23 | 6.1 | - |
| | MEL-05-03 | Hardness | 24 | 0.2 | - | - | - | 23 | 5.6 | - |
| | MEL-05-04 | Hardness | 24 | 0.2 | - | - | - | 23 | 5.2 | - |
| | MEL-05-05 | Hardness | 24 | 0.2 | - | - | - | 23 | 4.3 | - |
| | MEL-05-01 | Lithium (T) | 0.00074 | 5e-04 | mg/L | - | - | 7e-04 | 5.7 | - |
| | MEL-05-02 | Lithium (T) | 0.00072 | 5e-04 | mg/L | - | - | 7e-04 | 2.9 | - |
| | MEL-05-03 | Lithium (T) | 0.00073 | 5e-04 | mg/L | - | - | 7e-04 | 4.3 | - |
| | MEL-05-04 | Lithium (T) | 0.00076 | 5e-04 | mg/L | - | - | 7e-04 | 8.6 | - |
| | MEL-05-05 | Lithium (T) | 0.00074 | 5e-04 | mg/L | - | - | 7e-04 | 5.7 | - |
| | MEL-05-01 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 0.9 | - |
| | MEL-05-02 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 1.7 | - |
| | MEL-05-03 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 2.6 | - |
| | MEL-05-05 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 1.7 | - |
| | MEL-05-01 | Molybdenum (T) | 0.00012 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 39.1 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-05-02 | Molybdenum (T) | 9.9e-05 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 19.7 | - |
| | MEL-05-03 | Molybdenum (T) | 0.00014 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 66.9 | - |
| | MEL-05-04 | Molybdenum (T) | 0.00013 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 54.8 | - |
| | MEL-05-05 | Molybdenum (T) | 0.00027 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 221.6 | - |
| | MEL-05-01 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 8.9 | - |
| | MEL-05-02 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 8.9 | - |
| | MEL-05-03 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 9.9 | - |
| | MEL-05-04 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 6.7 | - |
| | MEL-05-05 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-05-01 | Reactive silica | 0.29 | 0.01 | mg/L | - | - | 0.26 | 9.1 | - |
| | MEL-05-02 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 6.4 | - |
| | MEL-05-03 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 5.7 | - |
| | MEL-05-04 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 4.5 | - |
| | MEL-05-05 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 4.2 | - |
| | MEL-05-02 | Selenium (T) | 6.4e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 37.9 | - |
| | MEL-05-03 | Selenium (T) | 5e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 7.8 | - |
| | MEL-05-04 | Selenium (T) | 4.9e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 5.6 | - |
| | MEL-05-05 | Selenium (T) | 4.9e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 5.6 | - |
| | MEL-05-01 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 4.6 | - |
| | MEL-05-02 | Sodium (T) | 4.7 | 0.02 | mg/L | - | - | 4.6 | 3.3 | - |
| | MEL-05-03 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 4.4 | - |
| | MEL-05-05 | Sodium (T) | 4.6 | 0.02 | mg/L | - | - | 4.6 | 0.7 | - |
| | MEL-05-01 | Strontium (T) | 0.037 | 2e-05 | mg/L | - | 1.7 | 0.034 | 7.9 | - |
| | MEL-05-02 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 6.4 | - |
| | MEL-05-03 | Strontium (T) | 0.037 | 2e-05 | mg/L | - | 1.7 | 0.034 | 7 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-05-04 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 4.7 | - |
| | MEL-05-05 | Strontium (T) | 0.037 | 2e-05 | mg/L | - | 1.7 | 0.034 | 6.7 | - |
| | MEL-05-01 | Sulphate | 3.8 | 0.3 | mg/L | - | 130 | 3.7 | 4.3 | - |
| | MEL-05-02 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 4.8 | - |
| | MEL-05-03 | Sulphate | 3.8 | 0.3 | mg/L | - | 130 | 3.7 | 4.3 | - |
| | MEL-05-04 | Sulphate | 3.8 | 0.3 | mg/L | - | 130 | 3.7 | 3.7 | - |
| | MEL-05-05 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 4.8 | - |
| | MEL-05-05 | TDS | 59 | 13 | mg/L | - | 500 | 51 | 15.2 | - |
| | MEL-05-01 | TDS (calculated) | 41 | - | mg/L | - | 500 | 38 | 6.4 | - |
| | MEL-05-02 | TDS (calculated) | 41 | - | mg/L | - | 500 | 38 | 7.7 | - |
| | MEL-05-03 | TDS (calculated) | 41 | - | mg/L | - | 500 | 38 | 6.9 | - |
| | MEL-05-04 | TDS (calculated) | 41 | - | mg/L | - | 500 | 38 | 7.1 | - |
| | MEL-05-05 | TDS (calculated) | 41 | - | mg/L | - | 500 | 38 | 6.6 | - |
| | MEL-05-01 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 7 | - |
| | MEL-05-02 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 6 | - |
| | MEL-05-03 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 5 | - |
| | MEL-05-04 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 6 | - |
| | MEL-05-05 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 6.5 | - |

[1]Bold values are above the threshold as well as above the trigger value.
[2]Calculated as Result - Normal Range Limit / Normal Range Limit * 100. Darker red colours indicate a greater difference between results and normal range.

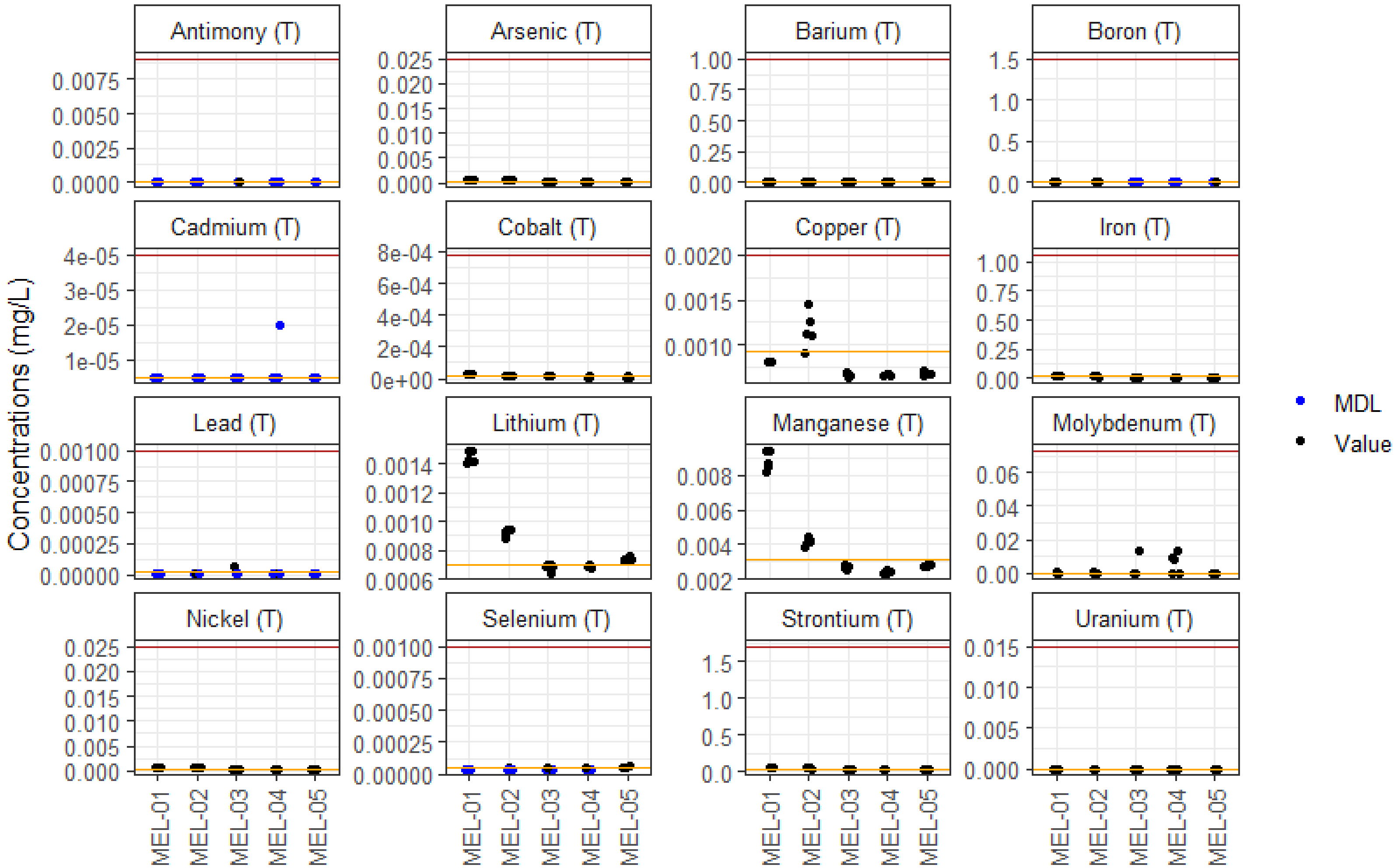



*Figure 1: Sampling event results for metals in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

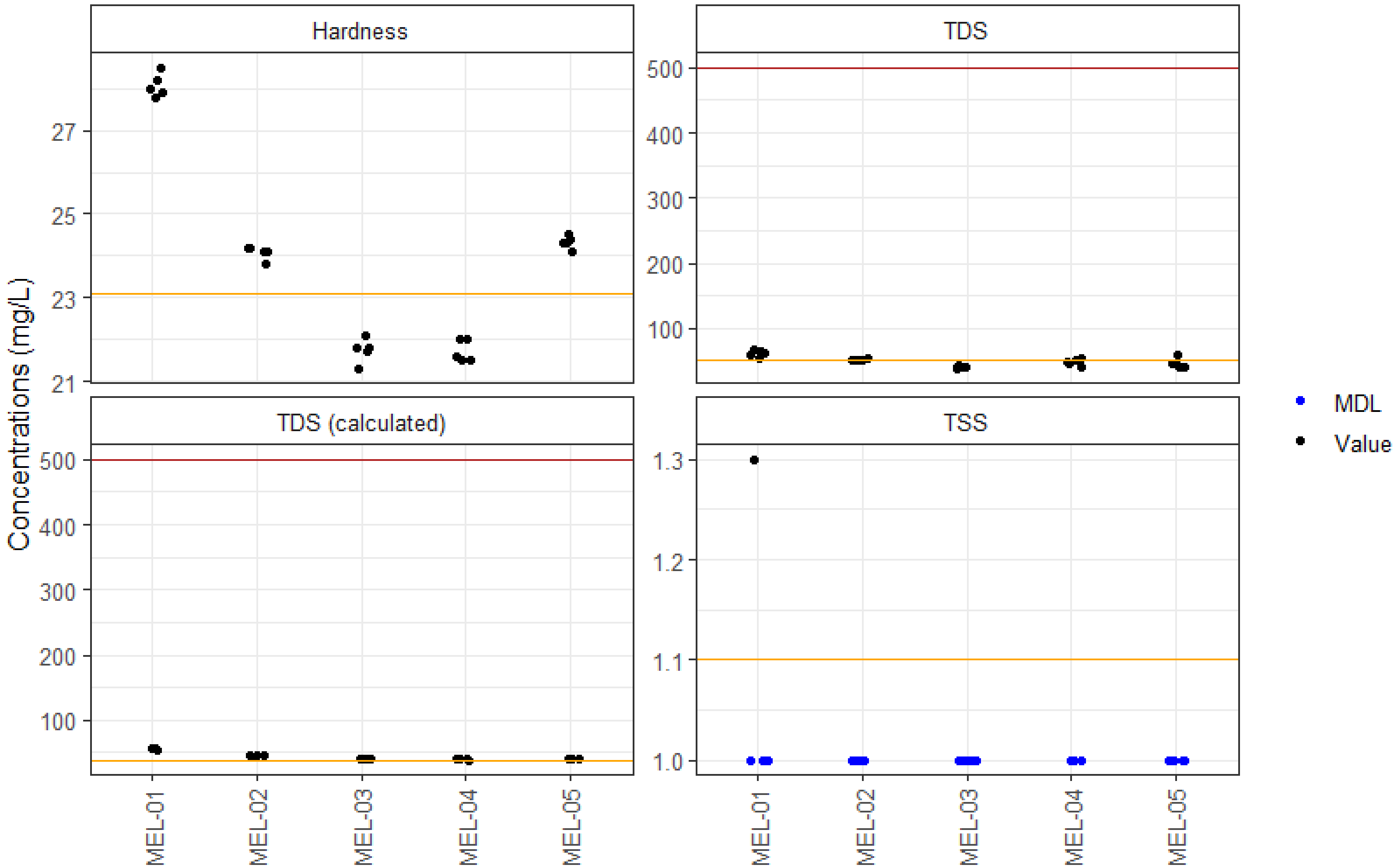



*Figure 2: Sampling event results for conventional parameters in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

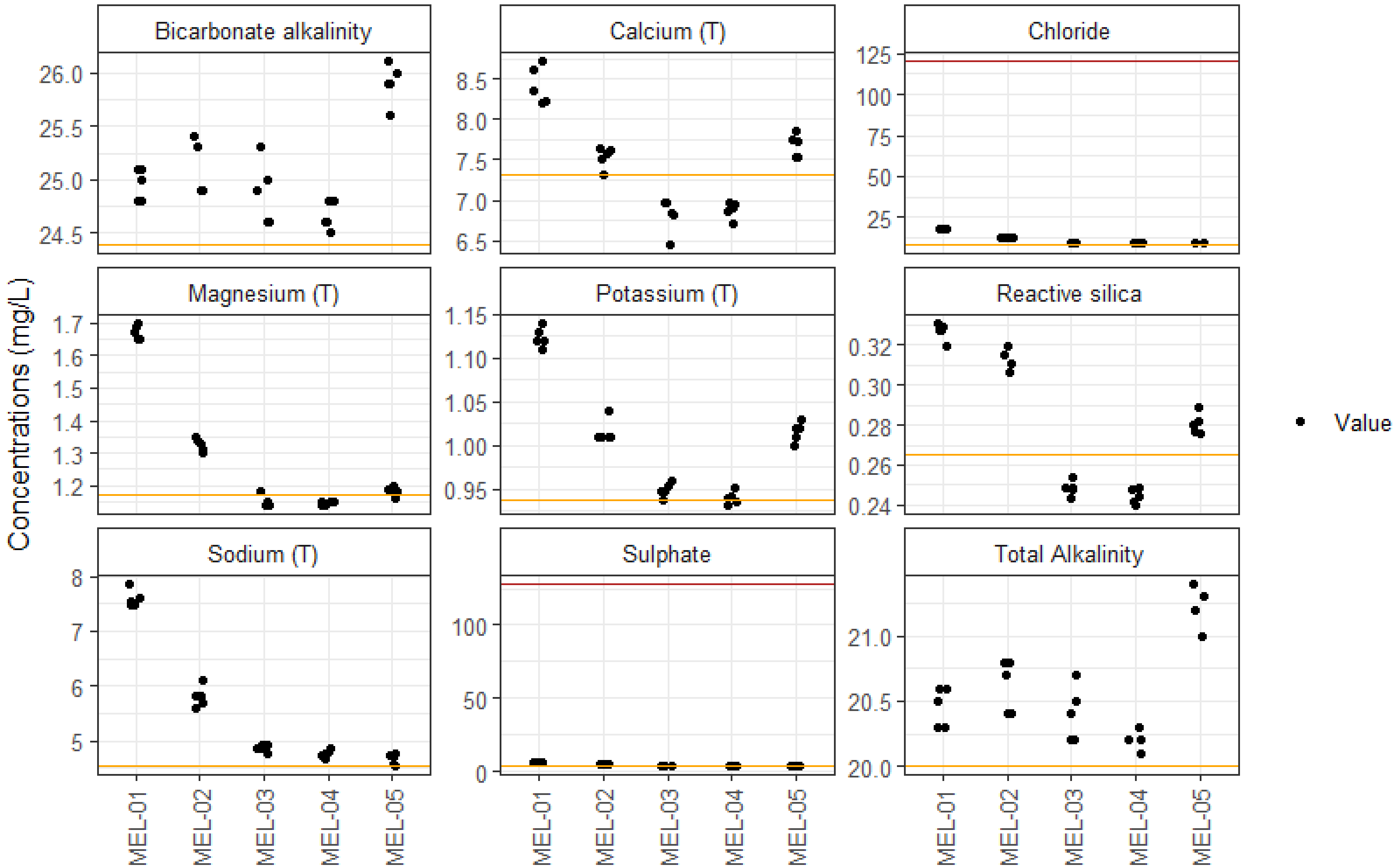



*Figure 3: Sampling event results for major ions in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

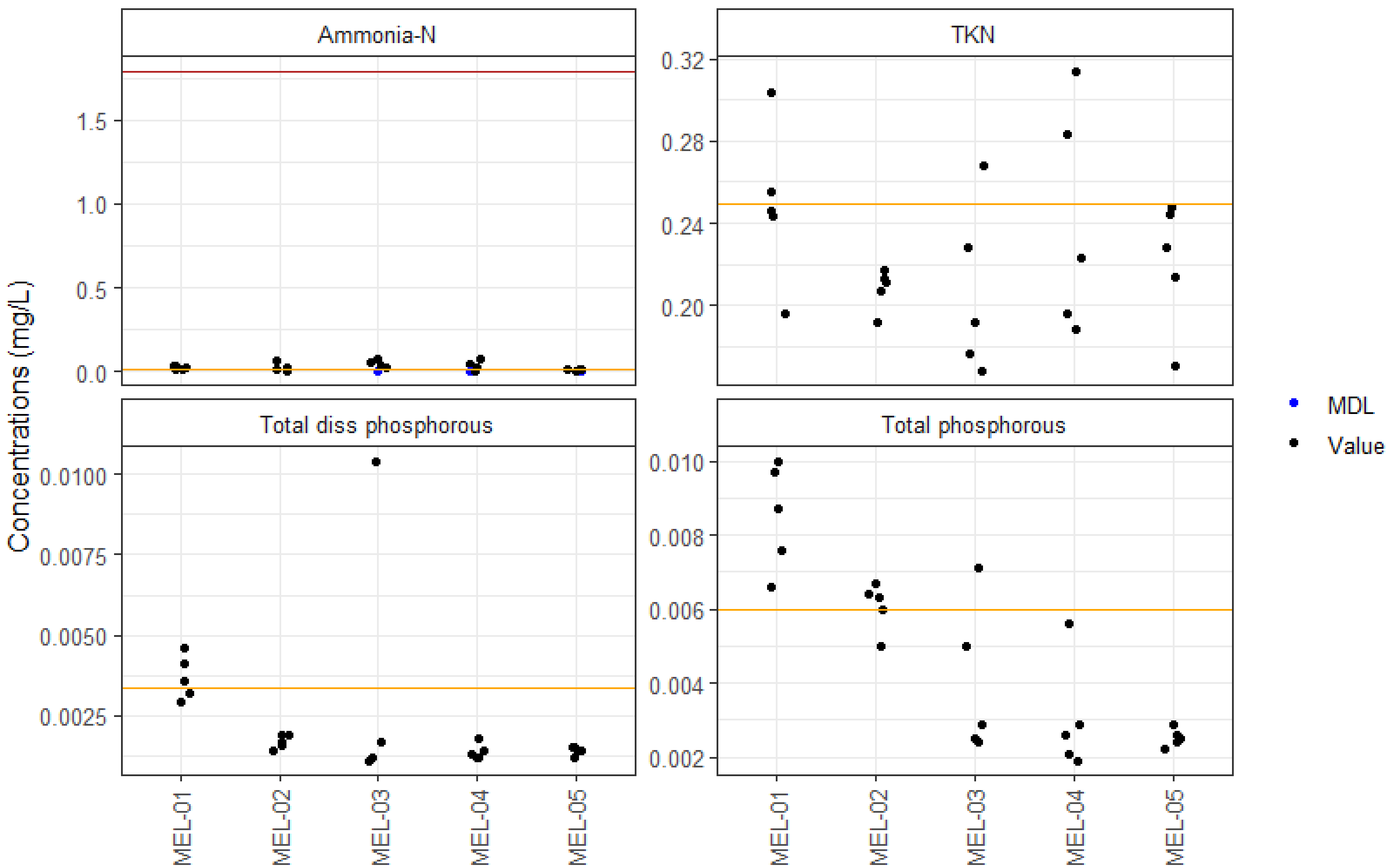



*Figure 4: Sampling event results for nutrients in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

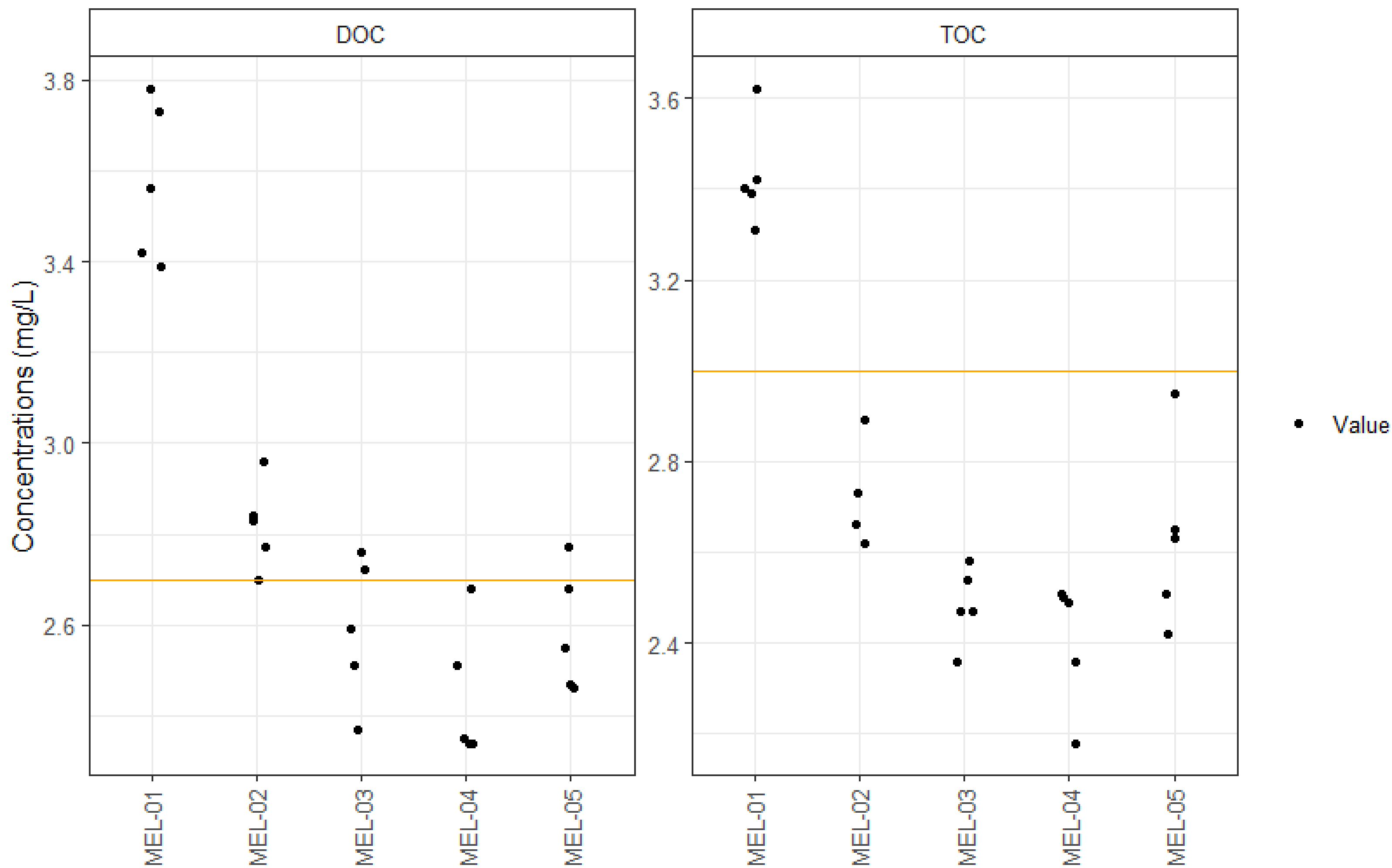



*Figure 5: Sampling event results for other parameters in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

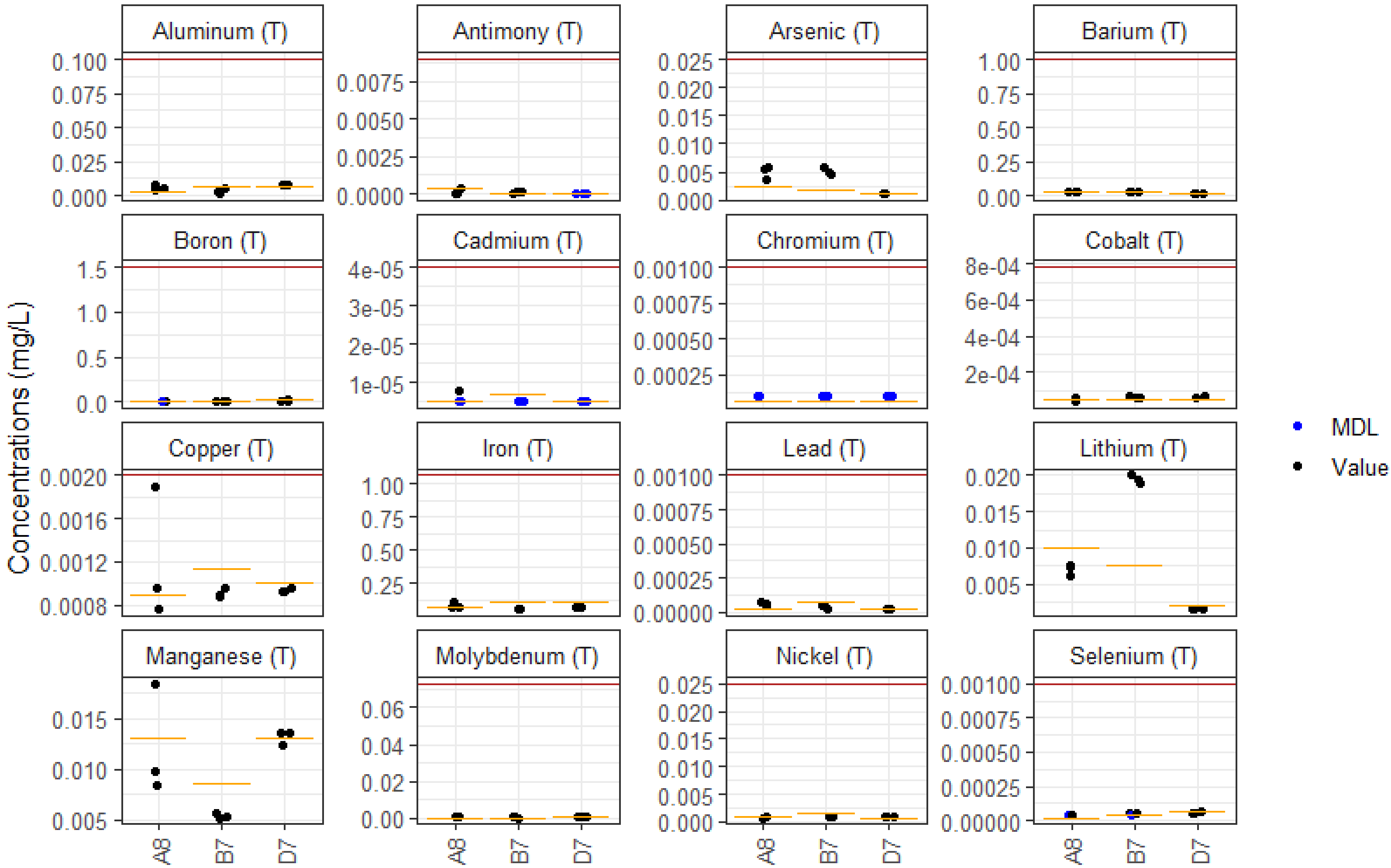



*Figure 6: Sampling event results for metals in the Peninsula Lakes with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

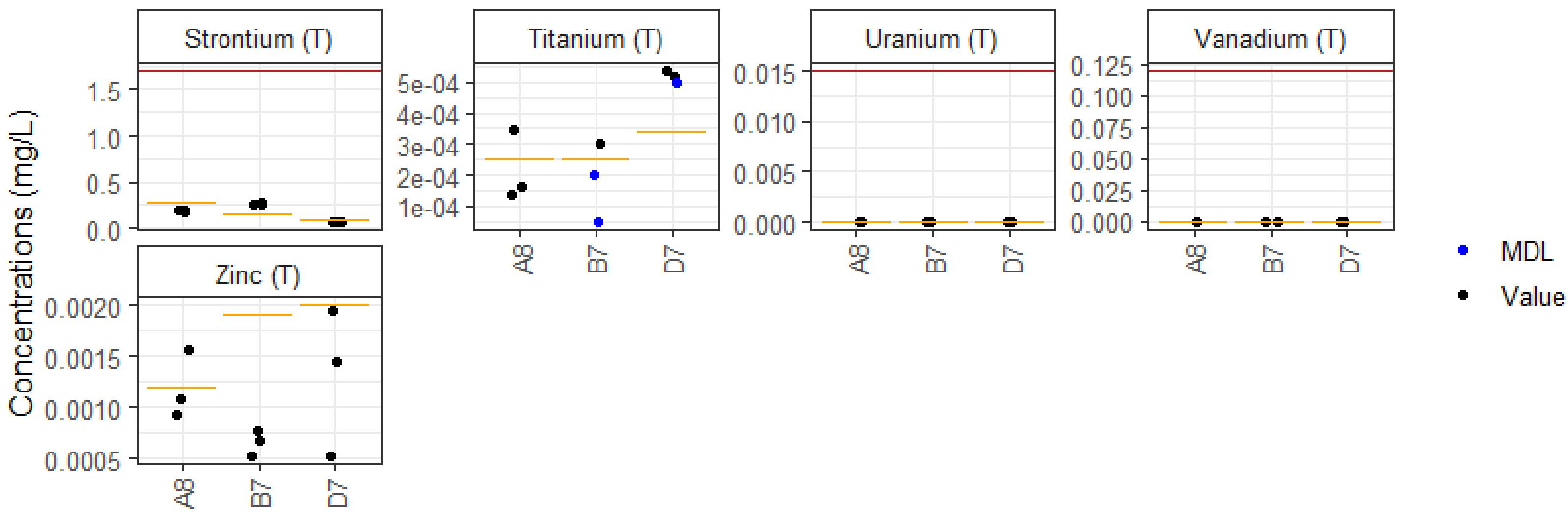



*Figure 7: Sampling event results for metals in the Peninsula Lakes with at least one sample above the upper limit of the normal range (Part 2). The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

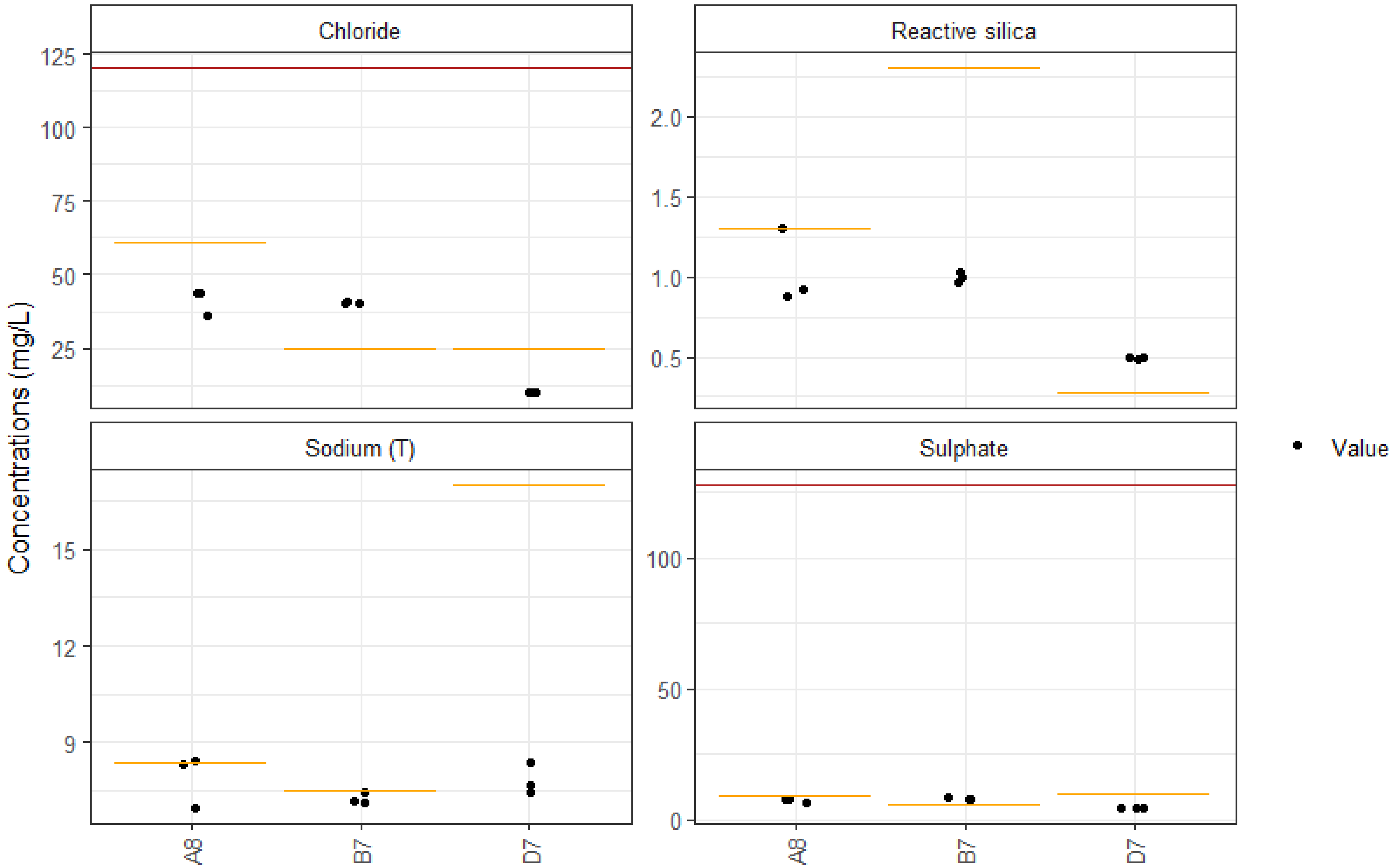



*Figure 8: Sampling event results for major ions in the Peninsula Lakes with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

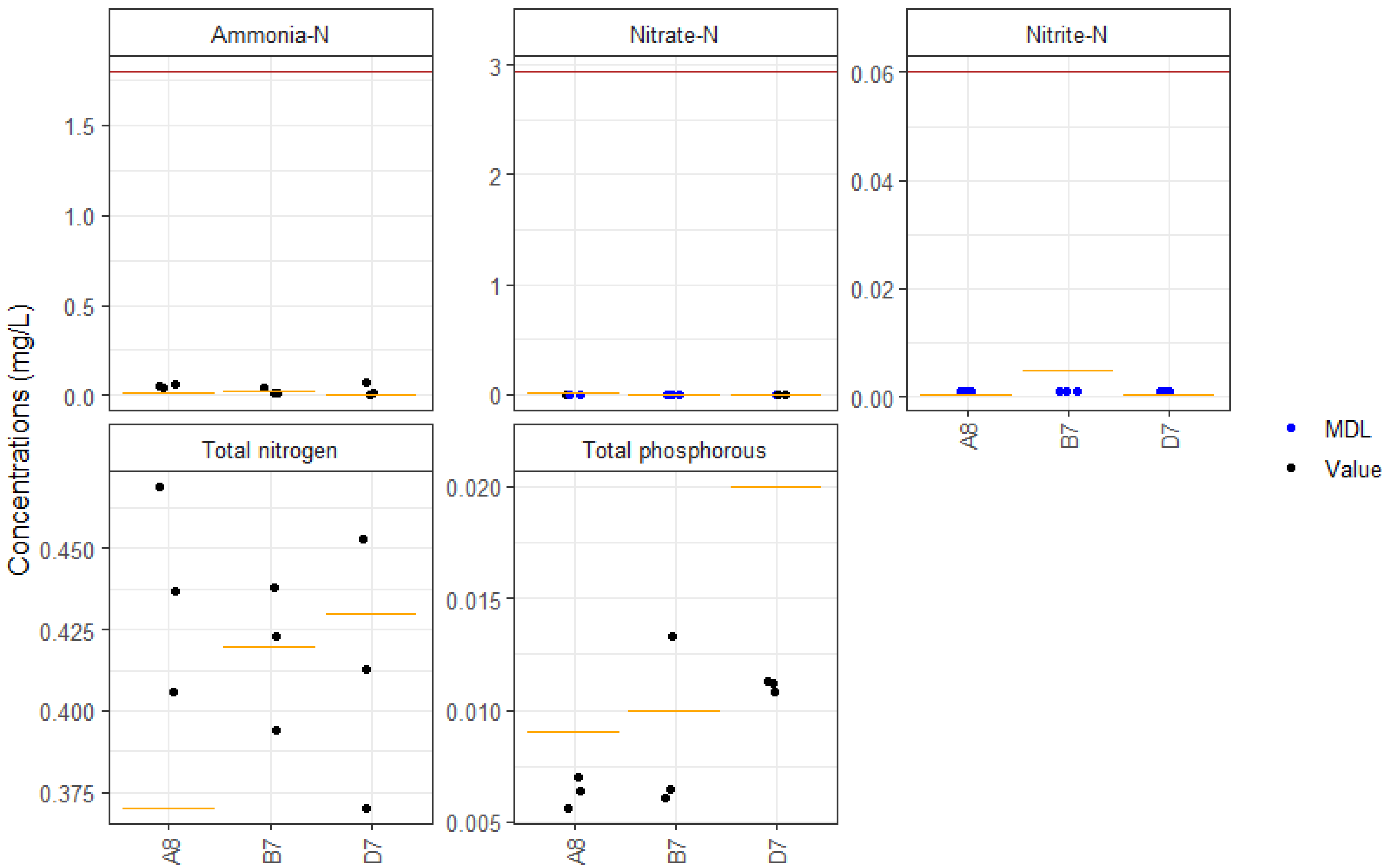



*Figure 9: Sampling event results for nutrients in the Peninsula Lakes with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

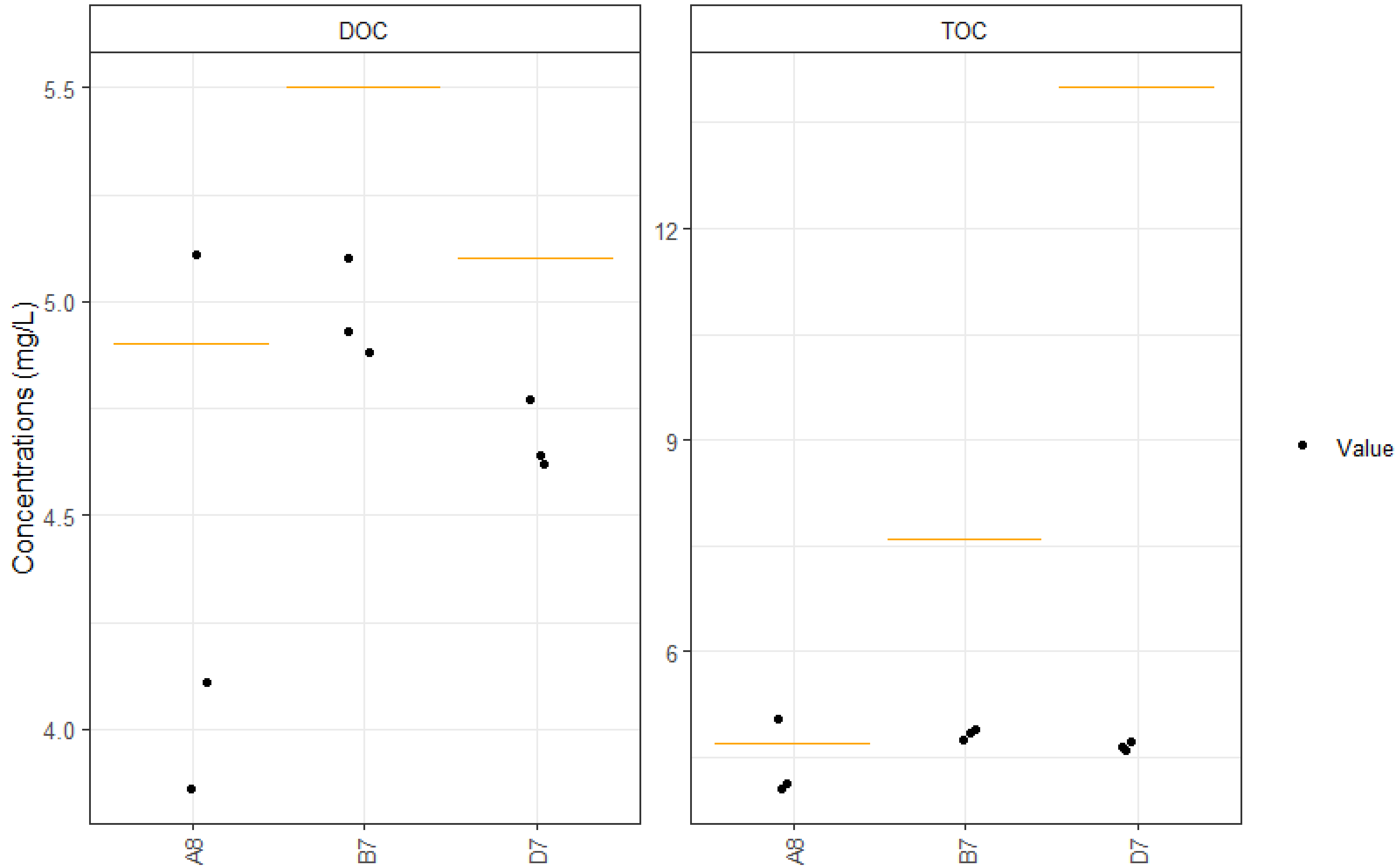



*Figure 10: Sampling event results for other parameters in the Peninsula Lakes with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

## 2.1 Result Reliability Checks

Two preliminary analyses were conducted to assess the reliability of sample results. Samples failing either one of these tests have been flagged as uncertain, and warrant further evaluation.

The first analysis compares dissolved and total concentrations for a given parameters at each location. Samples in which dissolved concentrations are greater than total with a relative percent difference (RPD) of more than 30% are considered potentially unreliable. All samples failing to meet this reliability check are summarized in Table 5.

The second analysis compares parameter concentrations within each sampling area. In most cases, samples at stations in the same sampling area are expected to have similar concentrations, and outlying data points may be anomalous. Sampling areas where the maximum concentration was more than a factor of 5 greater than the median of all samples within the sampling area are highlighted here as potentially unreliable. All samples failing to meet this reliability check are summarized in Table 6.

*Table 5: Samples with uncertain reliability due to differences in dissolved and total parameter results.*

| Sample ID | Area ID | Parameter | Result (T) | Result (D) | MDL (T) | MDL (D) | RPD |
|---|---|---|---|---|---|---|---|
| D7-03 | D7 | Molybdenum | 0.000452 | 0.00533 | - | - | 168.7 |
| D7-01 | D7 | Molybdenum | 0.000468 | 0.00444 | - | - | 161.9 |
| A8-03 | A8 | Mercury | 5.9e-07 | 2.16e-06 | - | - | 114.2 |
| A8-01 | A8 | Antimony | 4.3e-05 | 0.000106 | - | - | 84.6 |
| A8-02 | A8 | Mercury | 5e-07 | 1.08e-06 | MDL | - | 73.4 |
| B7-02 | B7 | Tin | 3.5e-05 | 6.5e-05 | - | - | 60 |
| MEL-04-01 | MEL-04 | Selenium | 4e-05 | 6.8e-05 | MDL | - | 51.9 |
| MEL-01-07 | MEL-01 | Zinc | 5e-04 | 0.00083 | MDL | - | 49.6 |
| MEL-02-01 | MEL-02 | Zinc | 5e-04 | 0.00077 | MDL | - | 42.5 |
| MEL-02-05 | MEL-02 | Aluminum | 0.0034 | 0.0051 | - | - | 40 |
| B7-01 | B7 | Mercury | 5e-07 | 7.5e-07 | MDL | - | 40 |
| B7-02 | B7 | Antimony | 0.000144 | 0.000208 | - | - | 36.4 |
| MEL-05-05 | MEL-05 | Uranium | 1.15e-05 | 1.58e-05 | - | - | 31.5 |

*Table 6: Samples with uncertain reliability due to differences between results from the same sampling area.*

| Area ID | Parameter | DL | Median | Max | Difference | Station_with_Max |
|---|---|---|---|---|---|---|
| MEL-03 | Molybdenum (T) | 0.00005 | 0.000106 | 0.013700 | 129.2 | MEL-03-03 |
| MEL-04 | Molybdenum (D) | 0.00005 | 0.000083 | 0.002970 | 35.8 | MEL-04-05 |
| MEL-03 | Total diss phosphorous | 0.00140 | 0.001200 | 0.010400 | 8.7 | MEL-03-01 |
| MEL-01 | Molybdenum (T) | 0.00005 | 0.000103 | 0.000680 | 6.6 | MEL-01-07 |
| MEL-02 | Molybdenum (T) | 0.00005 | 0.000102 | 0.000650 | 6.4 | MEL-02-05 |
| MEL-03 | Lead (T) | 0.00001 | 0.000010 | 0.000062 | 6.2 | MEL-03-02 |
| A8 | Antimony (T) | 0.00002 | 0.000057 | 0.000312 | 5.5 | A8-02 |

# 3 LABORATORY & FIELD QUALITY CONTROL RESULTS

ALS' laboratory QC samples for water are:

- *Laboratory duplicates* (LD) - these samples provide insights into the precision of laboratory analyses. Duplicate aliquots are taken from the samples and run through part (aliquots taken post digestion) or all (aliquots taken from the sample bottle) the laboratory analytical process.
- *Laboratory control samples* (LCS) - these samples provide insights into whether the laboratory systems are working as intended. They are comprised of a mixture of analyte-free water to which known amounts of the method analytes are added. They are essentially an internal version of a certified reference material.
- *Matrix spikes* (MS) - these samples involve the analysis of actual samples, to which a known amount of method analytes are added in amounts high enough that the spikes are clearly discernable relative to existing concentrations. These samples provide insights into the degree that the sample matrix could interfere with analyses.
- *Matrix blanks* (MB) - these samples are analyzed to assess background interference or contamination that exists in the analytical system that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free water.

The following field QC samples were collected and submitted blind to ALS:

- *Field duplicates* (FD) - these samples provide insights into (a) variability in field conditions and (b) the precision of laboratory analyses. Duplicate samples are collected from the same location and treated independently through the sampling and analysis process.
- *Deionized blanks* (DB) - these samples are analyzed to verify the "analyte-free" status of the deionized water to help interpret the equipment blank results. These samples are comprised of deionized water poured directly into the sampling containers.
- *Equipment blanks* (EB) - these samples are analyzed to assess cross contamination in the sampling equipment that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free deionized water passed through the sampling equipment.
- *Travel blanks* (TB) - these samples are analyzed to assess cross contamination occurring during the transport of samples. These samples comprise analyte-free deionized water prepared in the lab by ALS, and travel to the site and back to the lab without being opened.

## 3.1 Overall QC Results

Overall laboratory and field QC results are summarized in Table 7.

*Table 7: Summary of laboratory and field QC results by sample type.*

| | QC_Element | Pass | Fail | ND |
|---|---|---|---|---|
| Laboratory | Lab Duplicate | 351 | 0 | 0 |
| | Lab Control Sample | 542 | 0 | 0 |
| | Matrix Spike | 315 | 0 | 26 |
| | Matrix Blank | 533 | 3 | 0 |
| Field | Field Duplicate | 483 | 15 | 2 |
| | Deionized Water Blank | 114 | 8 | 0 |
| | Equipment Blank | 100 | 22 | 0 |
| | Travel Blank | 75 | 2 | 0 |

## 3.2 Laboratory Duplicates

All laboratory duplicate results met laboratory QC objectives.

## 3.3 Laboratory Control Samples

All laboratory control sample results met laboratory QC objectives.

## 3.4 Matrix Spike

All matrix spike results met laboratory QC objectives.

In addition, some parameters had spike levels too low to confidently quantify them relative to existing concentrations in the sample. Consequently, QC results for these results could not be calculated (see Table 8).

*Table 8: Analytes not determined for matrix spikes.*

| QC_Lot | Analyte | ALS_QC_ID[1] |
|---|---|---|
| 1362325 | Calcium (Ca)-Dissolved | DUP-MEL-AUG-01 |
| 1362325 | Magnesium (Mg)-Dissolved | DUP-MEL-AUG-01 |
| 1362325 | Sodium (Na)-Dissolved | DUP-MEL-AUG-01 |
| 1362325 | Strontium (Sr)-Dissolved | DUP-MEL-AUG-01 |
| 1358518 | Silica, Reactive (as SiO2) | DUP-MEL-AUG-02 |
| 1362333 | Calcium (Ca)-Total | MEL-04-05-PC |
| 1362333 | Magnesium (Mg)-Total | MEL-04-05-PC |
| 1362333 | Sodium (Na)-Total | MEL-04-05-PC |
| 1362333 | Strontium (Sr)-Total | MEL-04-05-PC |
| 1362324 | Calcium (Ca)-Dissolved | MEL-04-05-PC |
| 1362324 | Magnesium (Mg)-Dissolved | MEL-04-05-PC |
| 1362324 | Sodium (Na)-Dissolved | MEL-04-05-PC |
| 1362324 | Strontium (Sr)-Dissolved | MEL-04-05-PC |
| 1363494 | Calcium (Ca)-Total | DUP-MEL-AUG-04 |
| 1363494 | Magnesium (Mg)-Total | DUP-MEL-AUG-04 |
| 1363494 | Sodium (Na)-Total | DUP-MEL-AUG-04 |
| 1363494 | Strontium (Sr)-Total | DUP-MEL-AUG-04 |
| 1368820 | Silica, Reactive (as SiO2) | MEL-05-04 |
| 1365002 | Calcium (Ca)-Total | MEL-05-05 |
| 1365002 | Magnesium (Mg)-Total | MEL-05-05 |
| 1365002 | Sodium (Na)-Total | MEL-05-05 |
| 1365002 | Strontium (Sr)-Total | MEL-05-05 |
| 1363505 | Calcium (Ca)-Dissolved | MEL-05-05 |
| 1363505 | Magnesium (Mg)-Dissolved | MEL-05-05 |
| 1363505 | Sodium (Na)-Dissolved | MEL-05-05 |
| 1363505 | Strontium (Sr)-Dissolved | MEL-05-05 |

[1]ALS_QC_ID listing of 'Anonymous' indicates QC sample from another client used.

## 3.5 Matrix Blank

In this sampling event, 3 matrix blanks results failed to meet the QC objectives. Matrix blank results not meeting QC objectives are summarized in Table 9.

*Table 9: Details for matrix blank results not meeting QC objectives.*

| QC_Lot | Analyte | Result | Limit | MDL | MB.QC |
|---|---|---|---|---|---|
| 1362325 | Aluminum (Al)-Dissolved | 7.0e-03 | 1e-03 | MDL | Fail |
| 1362325 | Chromium (Cr)-Dissolved | 6.0e-04 | 1e-04 | MDL | Fail |
| 1362325 | Thorium (Th)-Dissolved | 8.6e-06 | 5e-06 | - | Fail |

## 3.6 Field Duplicates

In this sampling event, 15 field duplicate samples failed to meet the QC objectives. Field duplicate sample results not meeting QC objectives are summarized in Table 10.

In addition, some field duplicate samples could not be appropriately compared to other samples due to differences in detection limits. Consequently, QC results for these results could not be calculated (see Table 11).

*Table 10: Details for field duplicate results not meeting QC objectives.*

| QC_Lot.x | Analyte | RPD | DIFFx | FD.QC |
|---|---|---|---|---|
| 1365616 | Ammonia, Total (as N) | 185.8 | 39.7 | Fail |
| 1365616 | Ammonia, Total (as N) | 168.9 | 10.9 | Fail |
| 1365617 | Ammonia, Total (as N) | 69.0 | 7.4 | Fail |
| 1362325 | Antimony (Sb)-Dissolved | 169.0 | 10.9 | Fail |
| 1362324 | Antimony (Sb)-Dissolved | 129.8 | 3.7 | Fail |
| 1363505 | Antimony (Sb)-Dissolved | 164.1 | 9.1 | Fail |
| 1362331 | Antimony (Sb)-Total | 182.0 | 20.2 | Fail |
| 1362333 | Antimony (Sb)-Total | 160.6 | 8.2 | Fail |
| 1362324 | Manganese (Mn)-Dissolved | 68.6 | 9.1 | Fail |
| 1368906 | Total Kjeldahl Nitrogen | 58.7 | 3.5 | Fail |
| | Total Nitrogen | 54.9 | 3.4 | Fail |
| | Total Nitrogen | 54.9 | 3.4 | Fail |
| | Total Nitrogen | 54.9 | 3.4 | Fail |
| | Total Nitrogen | 54.9 | 3.4 | Fail |
| 1362324 | Zirconium (Zr)-Dissolved | 167.5 | 10.3 | Fail |

*Table 11: Details for field duplicate results which could not be determined.*

| QC_Lot.x | Analyte | RPD | DIFFx | FD.QC |
|---|---|---|---|---|
| 1361164 | Phosphorus (P)-Total | 80.4 | NA | ND |
| 1360087 | Phosphorus (P)-Total Dissolved | 164.9 | NA | ND |

## 3.7 DI Blank

In this sampling event, 8 deionized water blank samples failed to meet the QC objectives. Deionized water blank results not meeting QC objectives are summarized in Table 13.

*Table 13: Details for deionized water blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1370683 | DI | Ammonia, Total (as N) | 9.0e-03 | 5e-03 | Fail |
| 1365002 | DI | Arsenic (As)-Total | 3.0e-05 | 2e-05 | Fail |
| 1365002 | DI | Barium (Ba)-Total | 2.5e-05 | 2e-05 | Fail |
| 1365002 | DI | Iron (Fe)-Total | 1.2e-03 | 1e-03 | Fail |
| 1365002 | DI | Strontium (Sr)-Total | 2.4e-05 | 2e-05 | Fail |
| 1366838 | DI | Barium (Ba)-Dissolved | 3.5e-05 | 2e-05 | Fail |
| 1366838 | DI | Calcium (Ca)-Dissolved | 1.7e-02 | 1e-02 | Fail |
| 1366838 | DI | Zinc (Zn)-Dissolved | 1.3e-03 | 5e-04 | Fail |

## 3.8 Equipment Blank

In this sampling event, 22 equipment blank samples failed to meet the QC objectives. Equipment blank results not meeting QC objectives are summarized in Table 12.

*Table 12: Details for equipment blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1362852 | EB | Alkalinity, Total (as CaCO3) | 1.30e+00 | 1.0e+00 | Fail |
| 1370683 | EB | Ammonia, Total (as N) | 7.20e-03 | 5.0e-03 | Fail |
| | EB | Bicarbonate (HCO3) | 1.60e+00 | 1.2e+00 | Fail |
| | EB | Nitrate and Nitrite as N | 7.50e-03 | 5.1e-03 | Fail |
| 1365263 | EB | Nitrate (as N) | 7.50e-03 | 5.0e-03 | Fail |
| 1365002 | EB | Antimony (Sb)-Total | 4.21e-04 | 2.0e-05 | Fail |
| 1365002 | EB | Barium (Ba)-Total | 4.70e-05 | 2.0e-05 | Fail |
| 1365002 | EB | Calcium (Ca)-Total | 3.10e-02 | 1.0e-02 | Fail |

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1365002 | EB | Copper (Cu)-Total | 8.30e-05 | 5.0e-05 | Fail |
| 1365002 | EB | Magnesium (Mg)-Total | 5.70e-03 | 4.0e-03 | Fail |
| 1365002 | EB | Rubidium (Rb)-Total | 6.50e-06 | 5.0e-06 | Fail |
| 1365002 | EB | Sodium (Na)-Total | 3.50e-02 | 2.0e-02 | Fail |
| 1365002 | EB | Strontium (Sr)-Total | 1.81e-04 | 2.0e-05 | Fail |
| 1365002 | EB | Tin (Sn)-Total | 3.40e-05 | 2.0e-05 | Fail |
| 1366838 | EB | Antimony (Sb)-Dissolved | 5.30e-05 | 2.0e-05 | Fail |
| 1366838 | EB | Barium (Ba)-Dissolved | 4.40e-05 | 2.0e-05 | Fail |
| 1366838 | EB | Calcium (Ca)-Dissolved | 4.50e-02 | 1.0e-02 | Fail |
| 1366838 | EB | Copper (Cu)-Dissolved | 8.50e-05 | 5.0e-05 | Fail |
| 1366838 | EB | Magnesium (Mg)-Dissolved | 8.80e-03 | 4.0e-03 | Fail |
| 1366838 | EB | Rubidium (Rb)-Dissolved | 6.30e-06 | 5.0e-06 | Fail |
| 1366838 | EB | Sodium (Na)-Dissolved | 4.30e-02 | 2.0e-02 | Fail |
| 1366838 | EB | Strontium (Sr)-Dissolved | 2.34e-04 | 2.0e-05 | Fail |

## 3.9 Travel Blank

In this sampling event, 2 travel blank samples failed to meet the QC objectives. Travel blank results not meeting QC objectives are summarized in Table 14.

*Table 14: Details for travel blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1374645 | TB | Ammonia, Total (as N) | 0.06490 | 5e-03 | Fail |
| | TB | Zinc (Zn)-Total | 0.00053 | 5e-04 | Fail |

## 3.10 Holding Time Exceedances

In addition to those ALS laboratory QC samples described above, during QC screening samples were also assessed agianst recommended hold times. Parameters and associated sample numbers exceeding recommended hold times in this sampling event are shown in Table 15. Note that pH is included in the suite of field measurements and has a very short recommended hold time, so exceeding the hold time for laboratory analysis is expected and of little importance.

*Table 15: Analytes and associated number of samples exceeding holding times.*

| Analyte | n |
|---|---|
| Phosphate Ortho Dissolved in Water | 82 |
| Nitrate in Water by IC (Low Level) | 41 |
| Nitrite in Water by IC (Low Level) | 41 |
| pH | 41 |
| Turbidity | 41 |
| Total Dissolved Solids (TDS) | 14 |
| Total Suspended Solids | 14 |
| Diss. Mercury in Water by CVAFS (Ultra) | 1 |

# SEPTEMBER 2020 SAMPLING EVENT:
# PRELIMINARY SCREENING AND QC ASSESSMENT

# Meliadine Mine - Water Quality Monitoring 2020

## Preliminary Screening of September, 2020 Water Quality Monitoring

Azimuth Consulting Group Inc.
on behalf of Agnico Eagle Mines Ltd.

Report Date: 2020-11-20

## Table of Contents

# 1 INTRODUCTION & SAMPLING OVERVIEW

This document was prepared by Azimuth Consulting Group Inc (Azimuth) to provide the Meliadine Environment Department with a brief overview of the water chemistry results collected inSeptember, 2020 as part of the Aquatic Effects Monitoring Program (AEMP). AEMP water qualitymonitoring occurs in March (MEL-01 and -02), July (MEL-01, -02, and -03), August (MEL-01, -02, -03, -04,and -05), and September (MEL-01, -02, and -03). In addition, peninsula lakes A8, B7, and D7 are sampledin July and August. The purpose of this memo is to:

1. Screen the water chemistry results from ALS against normal ranges and thresholds to keep the Environment Department informed about potential changes in water quality, including the early identification of potentially anomalous data (Section 2).
2. Review laboratory (blanks, duplicates, matrix spikes, etc.) and field quality control (QC) results, and identify potential issues in lab or field methods (Section 3).

Samples included in this report are shown in Table 1, while field blanks are shown in Table 2.

*Table 1: Summary of September, 2020 samples.*

| Sample ID | Area ID | Duplicate | Date_Sampled | ALS Sample ID |
|---|---|---|---|---|
| MEL-01-01 | MEL-01 | - | 2020-09-11 | L2504254-1 |
| MEL-01-06 | MEL-01 | - | 2020-09-11 | L2504254-2 |
| MEL-01-07 | MEL-01 | - | 2020-09-11 | L2504254-3 |
| MEL-01-08 | MEL-01 | - | 2020-09-11 | L2504254-4 |
| MEL-01-09 | MEL-01 | DUP-MEL-SEP-01 | 2020-09-11 | L2504254-5 |
| MEL-02-01 | MEL-02 | - | 2020-09-07 | L2501979-1 |
| MEL-02-02 | MEL-02 | DUP-MEL-SEP-02 | 2020-09-07 | L2501979-2 |
| MEL-02-03 | MEL-02 | - | 2020-09-07 | L2501979-3 |
| MEL-02-04 | MEL-02 | - | 2020-09-07 | L2501979-4 |
| MEL-02-05 | MEL-02 | - | 2020-09-07 | L2501979-5 |
| MEL-03-01 | MEL-03 | - | 2020-09-08 | L2502391-1 |
| MEL-03-02 | MEL-03 | - | 2020-09-08 | L2502391-2 |
| MEL-03-03 | MEL-03 | - | 2020-09-08 | L2502391-3 |
| MEL-03-04 | MEL-03 | - | 2020-09-08 | L2502391-4 |
| MEL-03-05 | MEL-03 | - | 2020-09-08 | L2502391-5 |

*Table 2: Summary of field blanks collected in September, 2020.*

| Client_Sample_ID | ID_Name | ALS Sample ID |
|---|---|---|
| DI-SEP-01 | DI Blank | L2504254-7 |
| EB-SEP-01 | Equipment Blank | L2504254-9 |
| TB-SEP-01 | Travel Blank | L2504254-8 |

# 2 TRIGGER SCREENING

Sampling results were screened relative to relevant normal ranges and thresholds. Normal range, as defined in the AEMP, numerically describes the natural range of baseline/reference conditions for the various components of the AEMP. In simple terms, the normal range is the instrument used to assess whether current conditions (e.g., the measured concentration of a particular metal) has changed relative to baseline/reference conditions. In the case of the March sampling event, results are screened relative to the thresholds only, as normal ranges are not applicable to winter lake conditions. A summary of trigger and threshold exceedances is provided in Table 3 (Refer to Azimuth 2020 for details on the normal range and threshold values used here). The subsequent table (Table 4) provides all sample results above trigger and threshold values in September, 2020.

Figures displaying all parameters with at least one sample above the relevant normal range or threshold are also provided.

*Table 3: Summary of trigger and threshold exceedances in September, 2020.*

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| Meliadine Lake | | | | |
| | Aluminum (T) | 1 | 0 | MEL-01-01 |
| | Ammonia-N | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-08, MEL-01-09, MEL-02-02 |
| | Arsenic (T) | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Barium (T) | 14 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Beryllium (T) | 1 | 0 | MEL-01-01 |
| | Bicarbonate alkalinity | 11 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-03, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03 |
| | Boron (T) | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | Calcium (T) | 8 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-02, MEL-02-03, MEL-02-04 |
| | Chloride | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Cobalt (T) | 8 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03 |
| | Copper (T) | 2 | 0 | MEL-01-01, MEL-02-01 |
| | DOC | 12 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-02, MEL-03-04 |
| | Fluoride | 3 | 0 | MEL-03-01, MEL-03-02, MEL-03-03 |
| | Hardness | 11 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | Iron (T) | 7 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-03 |
| | Lithium (T) | 12 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-03, MEL-03-04 |
| | Magnesium (T) | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Manganese (T) | 10 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Mercury (T) | 1 | 0 | MEL-02-01 |
| | Molybdenum (T) | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | Nickel (T) | 12 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-03, MEL-03-04 |
| | Potassium (T) | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Reactive silica | 5 | 0 | MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05 |
| | Selenium (T) | 7 | 0 | MEL-01-01, MEL-02-04, MEL-02-05, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Sodium (T) | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |
| | Strontium (T) | 14 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-05 |
| | Sulphate | 15 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-04, MEL-03-05 |

| Area | Parameter | Samples Exceeding Normal Range | Samples Exceeding Threshold | Stations |
|---|---|---|---|---|
| | TDS | 6 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-03-02 |
| | TDS (calculated) | 14 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-02, MEL-02-03, MEL-02-04, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03, MEL-03-05 |
| | TKN | 7 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-02, MEL-02-03 |
| | TOC | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | Total Alkalinity | 11 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09, MEL-02-01, MEL-02-03, MEL-02-05, MEL-03-01, MEL-03-02, MEL-03-03 |
| | Total phosphorous | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | TSS | 2 | 0 | MEL-01-06, MEL-02-02 |
| | Uranium (T) | 5 | 0 | MEL-01-01, MEL-01-06, MEL-01-07, MEL-01-08, MEL-01-09 |
| | Vanadium (T) | 1 | 0 | MEL-01-01 |
| | Zinc (D) | 2 | 0 | MEL-01-06*, MEL-01-07* |

* Indicates samples which failed reliability checks and are consequently uncertain.

*Table 4: Meliadine trigger and threshold exceedances in September, 2020.*

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| MEL-01 | | | | | | | | | | |
| | MEL-01-01 | Aluminum (T) | 0.0056 | 0.001 | mg/L | - | 0.1 | 0.0054 | 3.9 | - |
| | MEL-01-01 | Ammonia-N | 0.018 | 0.005 | mg/L | - | 1.8 | 0.015 | 24.2 | - |
| | MEL-01-06 | Ammonia-N | 0.028 | 0.005 | mg/L | - | 1.8 | 0.015 | 84.6 | - |
| | MEL-01-08 | Ammonia-N | 0.025 | 0.005 | mg/L | - | 1.8 | 0.015 | 67.8 | - |
| | MEL-01-09 | Ammonia-N | 0.021 | 0.005 | mg/L | - | 1.8 | 0.015 | 42.3 | - |
| | MEL-01-01 | Arsenic (T) | 0.00055 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 119.5 | - |
| | MEL-01-06 | Arsenic (T) | 0.00054 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 117.1 | - |
| | MEL-01-07 | Arsenic (T) | 0.00054 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 113.9 | - |
| | MEL-01-08 | Arsenic (T) | 0.00055 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 118.7 | - |
| | MEL-01-09 | Arsenic (T) | 0.00056 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 123.5 | - |
| | MEL-01-01 | Barium (T) | 0.0087 | 2e-05 | mg/L | - | 1 | 0.0079 | 9.5 | - |
| | MEL-01-06 | Barium (T) | 0.0084 | 2e-05 | mg/L | - | 1 | 0.0079 | 5.8 | - |
| | MEL-01-07 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.8 | - |
| | MEL-01-08 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.6 | - |
| | MEL-01-09 | Barium (T) | 0.0082 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.2 | - |
| | MEL-01-01 | Beryllium (T) | 6.1e-06 | 5e-06 | mg/L | - | - | 5e-06 | 22 | - |
| | MEL-01-01 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 3.7 | - |
| | MEL-01-06 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 5.3 | - |
| | MEL-01-07 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 3.7 | - |
| | MEL-01-08 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.5 | - |
| | MEL-01-09 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 5.3 | - |
| | MEL-01-01 | Boron (T) | 0.009 | 0.005 | mg/L | - | 1.5 | 0.0067 | 34.9 | - |
| | MEL-01-06 | Boron (T) | 0.0085 | 0.005 | mg/L | - | 1.5 | 0.0067 | 27.4 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-07 | Boron (T) | 0.008 | 0.005 | mg/L | - | 1.5 | 0.0067 | 19.9 | - |
| | MEL-01-08 | Boron (T) | 0.008 | 0.005 | mg/L | - | 1.5 | 0.0067 | 19.9 | - |
| | MEL-01-09 | Boron (T) | 0.0074 | 0.005 | mg/L | - | 1.5 | 0.0067 | 10.9 | - |
| | MEL-01-01 | Calcium (T) | 9 | 0.01 | mg/L | - | - | 7.3 | 22.4 | - |
| | MEL-01-06 | Calcium (T) | 8.9 | 0.01 | mg/L | - | - | 7.3 | 22 | - |
| | MEL-01-07 | Calcium (T) | 8.8 | 0.01 | mg/L | - | - | 7.3 | 20.5 | - |
| | MEL-01-08 | Calcium (T) | 9 | 0.01 | mg/L | - | - | 7.3 | 23.4 | - |
| | MEL-01-09 | Calcium (T) | 8.8 | 0.01 | mg/L | - | - | 7.3 | 20 | - |
| | MEL-01-01 | Chloride | 17 | 0.1 | mg/L | - | 120 | 8.8 | 92 | - |
| | MEL-01-06 | Chloride | 17 | 0.1 | mg/L | - | 120 | 8.8 | 94.3 | - |
| | MEL-01-07 | Chloride | 17 | 0.1 | mg/L | - | 120 | 8.8 | 96.6 | - |
| | MEL-01-08 | Chloride | 17 | 0.1 | mg/L | - | 120 | 8.8 | 93.1 | - |
| | MEL-01-09 | Chloride | 17 | 0.1 | mg/L | - | 120 | 8.8 | 92 | - |
| | MEL-01-01 | Cobalt (T) | 3.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 97.5 | - |
| | MEL-01-06 | Cobalt (T) | 3.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 100.6 | - |
| | MEL-01-07 | Cobalt (T) | 2.5e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 58.1 | - |
| | MEL-01-08 | Cobalt (T) | 2.2e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 40 | - |
| | MEL-01-09 | Cobalt (T) | 2.6e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 63.8 | - |
| | MEL-01-01 | Copper (T) | 0.00093 | 5e-05 | mg/L | - | 0.002 | 0.00092 | 0.8 | - |
| | MEL-01-01 | DOC | 3.2 | 0.5 | mg/L | - | - | 2.7 | 19.3 | - |
| | MEL-01-06 | DOC | 3.4 | 0.5 | mg/L | - | - | 2.7 | 25.2 | - |
| | MEL-01-07 | DOC | 3.1 | 0.5 | mg/L | - | - | 2.7 | 15.9 | - |
| | MEL-01-08 | DOC | 3.4 | 0.5 | mg/L | - | - | 2.7 | 24.8 | - |
| | MEL-01-09 | DOC | 3.2 | 0.5 | mg/L | - | - | 2.7 | 18.1 | - |
| | MEL-01-01 | Hardness | 30 | 0.2 | mg/L | - | - | 23 | 29.9 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-06 | Hardness | 31 | 0.2 | mg/L | - | - | 23 | 33.8 | - |
| | MEL-01-07 | Hardness | 31 | 0.2 | mg/L | - | - | 23 | 35.5 | - |
| | MEL-01-08 | Hardness | 31 | 0.2 | mg/L | - | - | 23 | 34.6 | - |
| | MEL-01-09 | Hardness | 29 | 0.2 | mg/L | - | - | 23 | 23.8 | - |
| | MEL-01-01 | Iron (T) | 0.024 | 0.001 | mg/L | - | 1.1 | 0.015 | 58.3 | - |
| | MEL-01-06 | Iron (T) | 0.024 | 0.001 | mg/L | - | 1.1 | 0.015 | 58.3 | - |
| | MEL-01-07 | Iron (T) | 0.023 | 0.001 | mg/L | - | 1.1 | 0.015 | 51.7 | - |
| | MEL-01-08 | Iron (T) | 0.024 | 0.001 | mg/L | - | 1.1 | 0.015 | 60.9 | - |
| | MEL-01-09 | Iron (T) | 0.024 | 0.001 | mg/L | - | 1.1 | 0.015 | 58.3 | - |
| | MEL-01-01 | Lithium (T) | 0.0015 | 5e-04 | mg/L | - | - | 7e-04 | 115.7 | - |
| | MEL-01-06 | Lithium (T) | 0.0015 | 5e-04 | mg/L | - | - | 7e-04 | 114.3 | - |
| | MEL-01-07 | Lithium (T) | 0.0015 | 5e-04 | mg/L | - | - | 7e-04 | 111.4 | - |
| | MEL-01-08 | Lithium (T) | 0.0015 | 5e-04 | mg/L | - | - | 7e-04 | 111.4 | - |
| | MEL-01-09 | Lithium (T) | 0.0015 | 5e-04 | mg/L | - | - | 7e-04 | 108.6 | - |
| | MEL-01-01 | Magnesium (T) | 1.8 | 0.004 | mg/L | - | - | 1.2 | 54.7 | - |
| | MEL-01-06 | Magnesium (T) | 1.8 | 0.004 | mg/L | - | - | 1.2 | 54.7 | - |
| | MEL-01-07 | Magnesium (T) | 1.8 | 0.004 | mg/L | - | - | 1.2 | 55.6 | - |
| | MEL-01-08 | Magnesium (T) | 1.8 | 0.004 | mg/L | - | - | 1.2 | 53.8 | - |
| | MEL-01-09 | Magnesium (T) | 1.8 | 0.004 | mg/L | - | - | 1.2 | 53 | - |
| | MEL-01-01 | Manganese (T) | 0.0065 | 5e-05 | mg/L | - | - | 0.0032 | 107 | - |
| | MEL-01-06 | Manganese (T) | 0.0066 | 5e-05 | mg/L | - | - | 0.0032 | 110.8 | - |
| | MEL-01-07 | Manganese (T) | 0.0066 | 5e-05 | mg/L | - | - | 0.0032 | 108.3 | - |
| | MEL-01-08 | Manganese (T) | 0.0063 | 5e-05 | mg/L | - | - | 0.0032 | 101.3 | - |
| | MEL-01-09 | Manganese (T) | 0.0066 | 5e-05 | mg/L | - | - | 0.0032 | 110.2 | - |
| | MEL-01-01 | Molybdenum (T) | 0.00012 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 46.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-06 | Molybdenum (T) | 0.00011 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 29.4 | - |
| | MEL-01-07 | Molybdenum (T) | 0.00012 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 42.7 | - |
| | MEL-01-08 | Molybdenum (T) | 0.00012 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 40.3 | - |
| | MEL-01-09 | Molybdenum (T) | 0.00011 | 5e-05 | mg/L | - | 0.073 | 8.3e-05 | 35.4 | - |
| | MEL-01-01 | Nickel (T) | 0.00072 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 72.7 | - |
| | MEL-01-06 | Nickel (T) | 0.00073 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 74.8 | - |
| | MEL-01-07 | Nickel (T) | 0.00076 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 82 | - |
| | MEL-01-08 | Nickel (T) | 7e-04 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 69.1 | - |
| | MEL-01-09 | Nickel (T) | 7e-04 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 68.1 | - |
| | MEL-01-01 | Potassium (T) | 1.2 | 0.02 | mg/L | - | - | 0.94 | 28.1 | - |
| | MEL-01-06 | Potassium (T) | 1.2 | 0.02 | mg/L | - | - | 0.94 | 29.1 | - |
| | MEL-01-07 | Potassium (T) | 1.2 | 0.02 | mg/L | - | - | 0.94 | 28.1 | - |
| | MEL-01-08 | Potassium (T) | 1.2 | 0.02 | mg/L | - | - | 0.94 | 28.1 | - |
| | MEL-01-09 | Potassium (T) | 1.2 | 0.02 | mg/L | - | - | 0.94 | 27 | - |
| | MEL-01-01 | Selenium (T) | 5.5e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 18.5 | - |
| | MEL-01-01 | Sodium (T) | 7.8 | 0.02 | mg/L | - | - | 4.6 | 71 | - |
| | MEL-01-06 | Sodium (T) | 8 | 0.02 | mg/L | - | - | 4.6 | 74.9 | - |
| | MEL-01-07 | Sodium (T) | 7.8 | 0.02 | mg/L | - | - | 4.6 | 71 | - |
| | MEL-01-08 | Sodium (T) | 7.7 | 0.02 | mg/L | - | - | 4.6 | 69.5 | - |
| | MEL-01-09 | Sodium (T) | 7.8 | 0.02 | mg/L | - | - | 4.6 | 71.9 | - |
| | MEL-01-01 | Strontium (T) | 0.064 | 2e-05 | mg/L | - | 1.7 | 0.034 | 86.9 | - |
| | MEL-01-06 | Strontium (T) | 0.063 | 2e-05 | mg/L | - | 1.7 | 0.034 | 84 | - |
| | MEL-01-07 | Strontium (T) | 0.065 | 2e-05 | mg/L | - | 1.7 | 0.034 | 89.5 | - |
| | MEL-01-08 | Strontium (T) | 0.066 | 2e-05 | mg/L | - | 1.7 | 0.034 | 91 | - |
| | MEL-01-09 | Strontium (T) | 0.068 | 2e-05 | mg/L | - | 1.7 | 0.034 | 98 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-01 | Sulphate | 5.4 | 0.3 | mg/L | - | 130 | 3.7 | 47.5 | - |
| | MEL-01-06 | Sulphate | 5.5 | 0.3 | mg/L | - | 130 | 3.7 | 48.8 | - |
| | MEL-01-07 | Sulphate | 5.5 | 0.3 | mg/L | - | 130 | 3.7 | 50.5 | - |
| | MEL-01-08 | Sulphate | 5.5 | 0.3 | mg/L | - | 130 | 3.7 | 48.8 | - |
| | MEL-01-09 | Sulphate | 5.5 | 0.3 | mg/L | - | 130 | 3.7 | 48.3 | - |
| | MEL-01-01 | TDS | 68 | 13 | mg/L | - | 500 | 51 | 32.8 | - |
| | MEL-01-06 | TDS | 62 | 13 | mg/L | - | 500 | 51 | 21.1 | - |
| | MEL-01-07 | TDS | 65 | 13 | mg/L | - | 500 | 51 | 27 | - |
| | MEL-01-08 | TDS | 68 | 13 | mg/L | - | 500 | 51 | 32.8 | - |
| | MEL-01-09 | TDS | 74 | 13 | mg/L | - | 500 | 51 | 44.5 | - |
| | MEL-01-01 | TDS (calculated) | 55 | - | mg/L | - | 500 | 38 | 43.1 | - |
| | MEL-01-06 | TDS (calculated) | 56 | - | mg/L | - | 500 | 38 | 45.2 | - |
| | MEL-01-07 | TDS (calculated) | 56 | - | mg/L | - | 500 | 38 | 46 | - |
| | MEL-01-08 | TDS (calculated) | 55 | - | mg/L | - | 500 | 38 | 44.2 | - |
| | MEL-01-09 | TDS (calculated) | 54 | - | mg/L | - | 500 | 38 | 41.3 | - |
| | MEL-01-01 | TKN | 0.34 | 0.05 | mg/L | - | - | 0.25 | 35.3 | - |
| | MEL-01-06 | TKN | 0.4 | 0.05 | mg/L | - | - | 0.25 | 59.8 | - |
| | MEL-01-07 | TKN | 0.31 | 0.05 | mg/L | - | - | 0.25 | 26.1 | - |
| | MEL-01-08 | TKN | 0.34 | 0.05 | mg/L | - | - | 0.25 | 36.5 | - |
| | MEL-01-09 | TKN | 0.28 | 0.05 | mg/L | - | - | 0.25 | 10.8 | - |
| | MEL-01-01 | TOC | 3.8 | 0.5 | mg/L | - | - | 3 | 26 | - |
| | MEL-01-06 | TOC | 3 | 0.5 | mg/L | - | - | 3 | 1.3 | - |
| | MEL-01-07 | TOC | 3.1 | 0.5 | mg/L | - | - | 3 | 4.7 | - |
| | MEL-01-08 | TOC | 3.2 | 0.5 | mg/L | - | - | 3 | 6.3 | - |
| | MEL-01-09 | TOC | 3.2 | 0.5 | mg/L | - | - | 3 | 8.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-01-01 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3.5 | - |
| | MEL-01-06 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 5.5 | - |
| | MEL-01-07 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3.5 | - |
| | MEL-01-08 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2.5 | - |
| | MEL-01-09 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 5.5 | - |
| | MEL-01-01 | Total phosphorous | 0.0087 | 0.003 | mg/L | - | - | 0.006 | 45 | - |
| | MEL-01-06 | Total phosphorous | 0.0077 | 0.003 | mg/L | - | - | 0.006 | 28.3 | - |
| | MEL-01-07 | Total phosphorous | 0.0085 | 0.003 | mg/L | - | - | 0.006 | 41.7 | - |
| | MEL-01-08 | Total phosphorous | 0.0076 | 0.003 | mg/L | - | - | 0.006 | 26.7 | - |
| | MEL-01-09 | Total phosphorous | 0.0092 | 0.003 | mg/L | - | - | 0.006 | 53.3 | - |
| | MEL-01-06 | TSS | 1.2 | 1 | mg/L | - | - | 1.1 | 9.1 | - |
| | MEL-01-01 | Uranium (T) | 2e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 20.4 | - |
| | MEL-01-06 | Uranium (T) | 1.8e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 7.8 | - |
| | MEL-01-07 | Uranium (T) | 1.8e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 5.4 | - |
| | MEL-01-08 | Uranium (T) | 1.8e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 6.6 | - |
| | MEL-01-09 | Uranium (T) | 1.8e-05 | 1e-06 | mg/L | - | 0.015 | 1.7e-05 | 4.8 | - |
| | MEL-01-01 | Vanadium (T) | 6.1e-05 | 5e-05 | mg/L | - | 0.12 | 5e-05 | 22 | - |
| | MEL-01-06 | Zinc (D) | 0.0028 | 5e-04 | mg/L | - | 0.0056 | 0.002 | 42.9 | Uncertain |
| | MEL-01-07 | Zinc (D) | 0.0034 | 5e-04 | mg/L | - | 0.0056 | 0.002 | 73.5 | Uncertain |
| MEL-02 | | | | | | | | | | |
| | MEL-02-02 | Ammonia-N | 0.016 | 0.005 | mg/L | - | 1.8 | 0.015 | 6 | - |
| | MEL-02-01 | Arsenic (T) | 0.00046 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 82.9 | - |
| | MEL-02-02 | Arsenic (T) | 0.00048 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 90.4 | - |
| | MEL-02-03 | Arsenic (T) | 0.00045 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 78.5 | - |
| | MEL-02-04 | Arsenic (T) | 0.00045 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 78.9 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-05 | Arsenic (T) | 0.00042 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 67.7 | - |
| | MEL-02-01 | Barium (T) | 0.0082 | 2e-05 | mg/L | - | 1 | 0.0079 | 4.3 | - |
| | MEL-02-02 | Barium (T) | 0.0084 | 2e-05 | mg/L | - | 1 | 0.0079 | 5.6 | - |
| | MEL-02-03 | Barium (T) | 0.0084 | 2e-05 | mg/L | - | 1 | 0.0079 | 6.3 | - |
| | MEL-02-04 | Barium (T) | 0.0083 | 2e-05 | mg/L | - | 1 | 0.0079 | 5.2 | - |
| | MEL-02-05 | Barium (T) | 0.0084 | 2e-05 | mg/L | - | 1 | 0.0079 | 5.8 | - |
| | MEL-02-01 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 1.6 | - |
| | MEL-02-03 | Bicarbonate alkalinity | 26 | 1.2 | mg/L | - | - | 24 | 7 | - |
| | MEL-02-05 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.5 | - |
| | MEL-02-02 | Calcium (T) | 7.4 | 0.01 | mg/L | - | - | 7.3 | 0.7 | - |
| | MEL-02-03 | Calcium (T) | 7.4 | 0.01 | mg/L | - | - | 7.3 | 1 | - |
| | MEL-02-04 | Calcium (T) | 7.4 | 0.01 | mg/L | - | - | 7.3 | 1.8 | - |
| | MEL-02-01 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 33.7 | - |
| | MEL-02-02 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 31.4 | - |
| | MEL-02-03 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 33.7 | - |
| | MEL-02-04 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 33.7 | - |
| | MEL-02-05 | Chloride | 12 | 0.1 | mg/L | - | 120 | 8.8 | 32.6 | - |
| | MEL-02-01 | Cobalt (T) | 1.7e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 3.8 | - |
| | MEL-02-02 | Cobalt (T) | 1.7e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 5.6 | - |
| | MEL-02-03 | Cobalt (T) | 1.7e-05 | 5e-06 | mg/L | - | 0.00078 | 1.6e-05 | 4.4 | - |
| | MEL-02-01 | Copper (T) | 0.00094 | 5e-05 | mg/L | - | 0.002 | 0.00092 | 2.1 | - |
| | MEL-02-01 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 4.8 | - |
| | MEL-02-02 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 1.9 | - |
| | MEL-02-03 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 2.6 | - |
| | MEL-02-04 | DOC | 3 | 0.5 | mg/L | - | - | 2.7 | 10.7 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-05 | DOC | 2.8 | 0.5 | mg/L | - | - | 2.7 | 4.8 | - |
| | MEL-02-01 | Hardness | 25 | 0.2 | mg/L | - | - | 23 | 7.4 | - |
| | MEL-02-02 | Hardness | 25 | 0.2 | mg/L | - | - | 23 | 6.9 | - |
| | MEL-02-03 | Hardness | 25 | 0.2 | mg/L | - | - | 23 | 8.2 | - |
| | MEL-02-04 | Hardness | 25 | 0.2 | mg/L | - | - | 23 | 8.2 | - |
| | MEL-02-05 | Hardness | 25 | 0.2 | mg/L | - | - | 23 | 9.1 | - |
| | MEL-02-01 | Iron (T) | 0.016 | 0.001 | mg/L | - | 1.1 | 0.015 | 4.6 | - |
| | MEL-02-03 | Iron (T) | 0.015 | 0.001 | mg/L | - | 1.1 | 0.015 | 1.3 | - |
| | MEL-02-01 | Lithium (T) | 0.00091 | 5e-04 | mg/L | - | - | 7e-04 | 30 | - |
| | MEL-02-02 | Lithium (T) | 9e-04 | 5e-04 | mg/L | - | - | 7e-04 | 28.6 | - |
| | MEL-02-03 | Lithium (T) | 0.00091 | 5e-04 | mg/L | - | - | 7e-04 | 30 | - |
| | MEL-02-04 | Lithium (T) | 0.00091 | 5e-04 | mg/L | - | - | 7e-04 | 30 | - |
| | MEL-02-05 | Lithium (T) | 9e-04 | 5e-04 | mg/L | - | - | 7e-04 | 28.6 | - |
| | MEL-02-01 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 14.5 | - |
| | MEL-02-02 | Magnesium (T) | 1.3 | 0.004 | mg/L | - | - | 1.2 | 13.7 | - |
| | MEL-02-03 | Magnesium (T) | 1.4 | 0.004 | mg/L | - | - | 1.2 | 16.2 | - |
| | MEL-02-04 | Magnesium (T) | 1.4 | 0.004 | mg/L | - | - | 1.2 | 17.1 | - |
| | MEL-02-05 | Magnesium (T) | 1.4 | 0.004 | mg/L | - | - | 1.2 | 15.4 | - |
| | MEL-02-01 | Manganese (T) | 0.0035 | 5e-05 | mg/L | - | - | 0.0032 | 10.2 | - |
| | MEL-02-02 | Manganese (T) | 0.0034 | 5e-05 | mg/L | - | - | 0.0032 | 9.2 | - |
| | MEL-02-03 | Manganese (T) | 0.0035 | 5e-05 | mg/L | - | - | 0.0032 | 9.8 | - |
| | MEL-02-04 | Manganese (T) | 0.0035 | 5e-05 | mg/L | - | - | 0.0032 | 11.4 | - |
| | MEL-02-05 | Manganese (T) | 0.0035 | 5e-05 | mg/L | - | - | 0.0032 | 10.2 | - |
| | MEL-02-01 | Mercury (T) | 1.6e-06 | 5e-07 | mg/L | - | 2.6e-05 | 8e-07 | 97.5 | - |
| | MEL-02-01 | Nickel (T) | 0.00056 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 35.3 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-02 | Nickel (T) | 0.00058 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 38.4 | - |
| | MEL-02-03 | Nickel (T) | 0.00054 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 30.5 | - |
| | MEL-02-04 | Nickel (T) | 0.00055 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 31.2 | - |
| | MEL-02-05 | Nickel (T) | 0.00055 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 32.1 | - |
| | MEL-02-01 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-02-02 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-02-03 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 9.9 | - |
| | MEL-02-04 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 9.9 | - |
| | MEL-02-05 | Potassium (T) | 1 | 0.02 | mg/L | - | - | 0.94 | 7.8 | - |
| | MEL-02-01 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 6 | - |
| | MEL-02-02 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 6.8 | - |
| | MEL-02-03 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 4.5 | - |
| | MEL-02-04 | Reactive silica | 0.28 | 0.01 | mg/L | - | - | 0.26 | 5.7 | - |
| | MEL-02-05 | Reactive silica | 0.27 | 0.01 | mg/L | - | - | 0.26 | 3 | - |
| | MEL-02-04 | Selenium (T) | 6.6e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 42.2 | - |
| | MEL-02-05 | Selenium (T) | 5.8e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 25 | - |
| | MEL-02-01 | Sodium (T) | 5.6 | 0.02 | mg/L | - | - | 4.6 | 24.2 | - |
| | MEL-02-02 | Sodium (T) | 5.5 | 0.02 | mg/L | - | - | 4.6 | 20.9 | - |
| | MEL-02-03 | Sodium (T) | 5.7 | 0.02 | mg/L | - | - | 4.6 | 25.3 | - |
| | MEL-02-04 | Sodium (T) | 5.7 | 0.02 | mg/L | - | - | 4.6 | 25.3 | - |
| | MEL-02-05 | Sodium (T) | 5.7 | 0.02 | mg/L | - | - | 4.6 | 24.8 | - |
| | MEL-02-01 | Strontium (T) | 0.041 | 2e-05 | mg/L | - | 1.7 | 0.034 | 19.8 | - |
| | MEL-02-02 | Strontium (T) | 0.042 | 2e-05 | mg/L | - | 1.7 | 0.034 | 21.3 | - |
| | MEL-02-03 | Strontium (T) | 0.042 | 2e-05 | mg/L | - | 1.7 | 0.034 | 23.3 | - |
| | MEL-02-04 | Strontium (T) | 0.042 | 2e-05 | mg/L | - | 1.7 | 0.034 | 23.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-02-05 | Strontium (T) | 0.042 | 2e-05 | mg/L | - | 1.7 | 0.034 | 22.7 | - |
| | MEL-02-01 | Sulphate | 4.3 | 0.3 | mg/L | - | 130 | 3.7 | 16.5 | - |
| | MEL-02-02 | Sulphate | 4.3 | 0.3 | mg/L | - | 130 | 3.7 | 15.7 | - |
| | MEL-02-03 | Sulphate | 4.3 | 0.3 | mg/L | - | 130 | 3.7 | 17.3 | - |
| | MEL-02-04 | Sulphate | 4.3 | 0.3 | mg/L | - | 130 | 3.7 | 16.2 | - |
| | MEL-02-05 | Sulphate | 4.2 | 0.3 | mg/L | - | 130 | 3.7 | 14.6 | - |
| | MEL-02-01 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 14.2 | - |
| | MEL-02-02 | TDS (calculated) | 42 | - | mg/L | - | 500 | 38 | 9 | - |
| | MEL-02-03 | TDS (calculated) | 45 | - | mg/L | - | 500 | 38 | 16.8 | - |
| | MEL-02-04 | TDS (calculated) | 42 | - | mg/L | - | 500 | 38 | 8.2 | - |
| | MEL-02-05 | TDS (calculated) | 44 | - | mg/L | - | 500 | 38 | 15 | - |
| | MEL-02-02 | TKN | 0.26 | 0.05 | mg/L | - | - | 0.25 | 6 | - |
| | MEL-02-03 | TKN | 0.33 | 0.05 | mg/L | - | - | 0.25 | 30.9 | - |
| | MEL-02-01 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1.5 | - |
| | MEL-02-03 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 7 | - |
| | MEL-02-05 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 2.5 | - |
| | MEL-02-02 | TSS | 2.2 | 1 | mg/L | - | - | 1.1 | 100 | - |
| MEL-03 | | | | | | | | | | |
| | MEL-03-01 | Arsenic (T) | 0.00028 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 11.2 | - |
| | MEL-03-02 | Arsenic (T) | 0.00028 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 13.1 | - |
| | MEL-03-03 | Arsenic (T) | 0.00031 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 22.3 | - |
| | MEL-03-04 | Arsenic (T) | 0.00029 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 15.1 | - |
| | MEL-03-05 | Arsenic (T) | 0.00026 | 2e-05 | mg/L | - | 0.025 | 0.00025 | 1.6 | - |
| | MEL-03-01 | Barium (T) | 0.008 | 2e-05 | mg/L | - | 1 | 0.0079 | 1.1 | - |
| | MEL-03-03 | Barium (T) | 0.008 | 2e-05 | mg/L | - | 1 | 0.0079 | 0.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-03-04 | Barium (T) | 0.0079 | 2e-05 | mg/L | - | 1 | 0.0079 | 0.4 | - |
| | MEL-03-05 | Barium (T) | 0.0081 | 2e-05 | mg/L | - | 1 | 0.0079 | 2.8 | - |
| | MEL-03-01 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 2.9 | - |
| | MEL-03-02 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 1.6 | - |
| | MEL-03-03 | Bicarbonate alkalinity | 25 | 1.2 | mg/L | - | - | 24 | 0.8 | - |
| | MEL-03-01 | Chloride | 9.7 | 0.1 | mg/L | - | 120 | 8.8 | 11.3 | - |
| | MEL-03-02 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.8 | - |
| | MEL-03-03 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.9 | - |
| | MEL-03-04 | Chloride | 9.5 | 0.1 | mg/L | - | 120 | 8.8 | 9 | - |
| | MEL-03-05 | Chloride | 9.6 | 0.1 | mg/L | - | 120 | 8.8 | 9.8 | - |
| | MEL-03-02 | DOC | 2.9 | 0.5 | mg/L | - | - | 2.7 | 7.8 | - |
| | MEL-03-04 | DOC | 2.7 | 0.5 | mg/L | - | - | 2.7 | 0.7 | - |
| | MEL-03-01 | Fluoride | 0.032 | 0.02 | mg/L | - | 2.8 | 0.028 | 14.3 | - |
| | MEL-03-02 | Fluoride | 0.031 | 0.02 | mg/L | - | 2.8 | 0.028 | 10.7 | - |
| | MEL-03-03 | Fluoride | 0.032 | 0.02 | mg/L | - | 2.8 | 0.028 | 14.3 | - |
| | MEL-03-01 | Hardness | 23 | 0.2 | mg/L | - | - | 23 | 0.4 | - |
| | MEL-03-03 | Lithium (T) | 0.00072 | 5e-04 | mg/L | - | - | 7e-04 | 2.9 | - |
| | MEL-03-04 | Lithium (T) | 0.00071 | 5e-04 | mg/L | - | - | 7e-04 | 1.4 | - |
| | MEL-03-01 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 1.7 | - |
| | MEL-03-02 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 1.7 | - |
| | MEL-03-03 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 1.7 | - |
| | MEL-03-04 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 2.6 | - |
| | MEL-03-05 | Magnesium (T) | 1.2 | 0.004 | mg/L | - | - | 1.2 | 1.7 | - |
| | MEL-03-03 | Nickel (T) | 0.00042 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 1.4 | - |
| | MEL-03-04 | Nickel (T) | 0.00045 | 5e-05 | mg/L | - | 0.025 | 0.00042 | 7.4 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-03-01 | Potassium (T) | 0.97 | 0.02 | mg/L | - | - | 0.94 | 3.2 | - |
| | MEL-03-02 | Potassium (T) | 0.95 | 0.02 | mg/L | - | - | 0.94 | 1.4 | - |
| | MEL-03-03 | Potassium (T) | 0.95 | 0.02 | mg/L | - | - | 0.94 | 1.6 | - |
| | MEL-03-04 | Potassium (T) | 0.97 | 0.02 | mg/L | - | - | 0.94 | 3.1 | - |
| | MEL-03-05 | Potassium (T) | 0.96 | 0.02 | mg/L | - | - | 0.94 | 2.2 | - |
| | MEL-03-02 | Selenium (T) | 6.8e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 46.6 | - |
| | MEL-03-03 | Selenium (T) | 5.2e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 12.1 | - |
| | MEL-03-04 | Selenium (T) | 6.1e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 31.5 | - |
| | MEL-03-05 | Selenium (T) | 5.7e-05 | 4e-05 | mg/L | - | 0.001 | 4.6e-05 | 22.8 | - |
| | MEL-03-01 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 4.4 | - |
| | MEL-03-02 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 6.6 | - |
| | MEL-03-03 | Sodium (T) | 4.9 | 0.02 | mg/L | - | - | 4.6 | 6.8 | - |
| | MEL-03-04 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 6.6 | - |
| | MEL-03-05 | Sodium (T) | 4.8 | 0.02 | mg/L | - | - | 4.6 | 6.4 | - |
| | MEL-03-01 | Strontium (T) | 0.036 | 2e-05 | mg/L | - | 1.7 | 0.034 | 3.5 | - |
| | MEL-03-02 | Strontium (T) | 0.035 | 2e-05 | mg/L | - | 1.7 | 0.034 | 2 | - |
| | MEL-03-03 | Strontium (T) | 0.035 | 2e-05 | mg/L | - | 1.7 | 0.034 | 2.9 | - |
| | MEL-03-05 | Strontium (T) | 0.035 | 2e-05 | mg/L | - | 1.7 | 0.034 | 1.7 | - |
| | MEL-03-01 | Sulphate | 4 | 0.3 | mg/L | - | 130 | 3.7 | 7.3 | - |
| | MEL-03-02 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.4 | - |
| | MEL-03-03 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 5.1 | - |
| | MEL-03-04 | Sulphate | 3.8 | 0.3 | mg/L | - | 130 | 3.7 | 4.6 | - |
| | MEL-03-05 | Sulphate | 3.9 | 0.3 | mg/L | - | 130 | 3.7 | 6.7 | - |
| | MEL-03-02 | TDS | 54 | 13 | mg/L | - | 500 | 51 | 5.5 | - |
| | MEL-03-01 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 5.6 | - |

| Area ID | Sample ID | Parameter | Results[1] | DL | Units | MDL | Threshold | Normal Range Limit | % Above NR[2] | Reliability |
|---|---|---|---|---|---|---|---|---|---|---|
| | MEL-03-02 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 3.8 | - |
| | MEL-03-03 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 4 | - |
| | MEL-03-05 | TDS (calculated) | 40 | - | mg/L | - | 500 | 38 | 3.5 | - |
| | MEL-03-01 | Total Alkalinity | 21 | 1 | mg/L | - | - | 20 | 3 | - |
| | MEL-03-02 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1.5 | - |
| | MEL-03-03 | Total Alkalinity | 20 | 1 | mg/L | - | - | 20 | 1 | - |

[1]Bold values are above the threshold as well as above the trigger value.

[2]Calculated as Result - Normal Range Limit / Normal Range Limit * 100. Darker red colours indicate a greater difference between results and normal range.

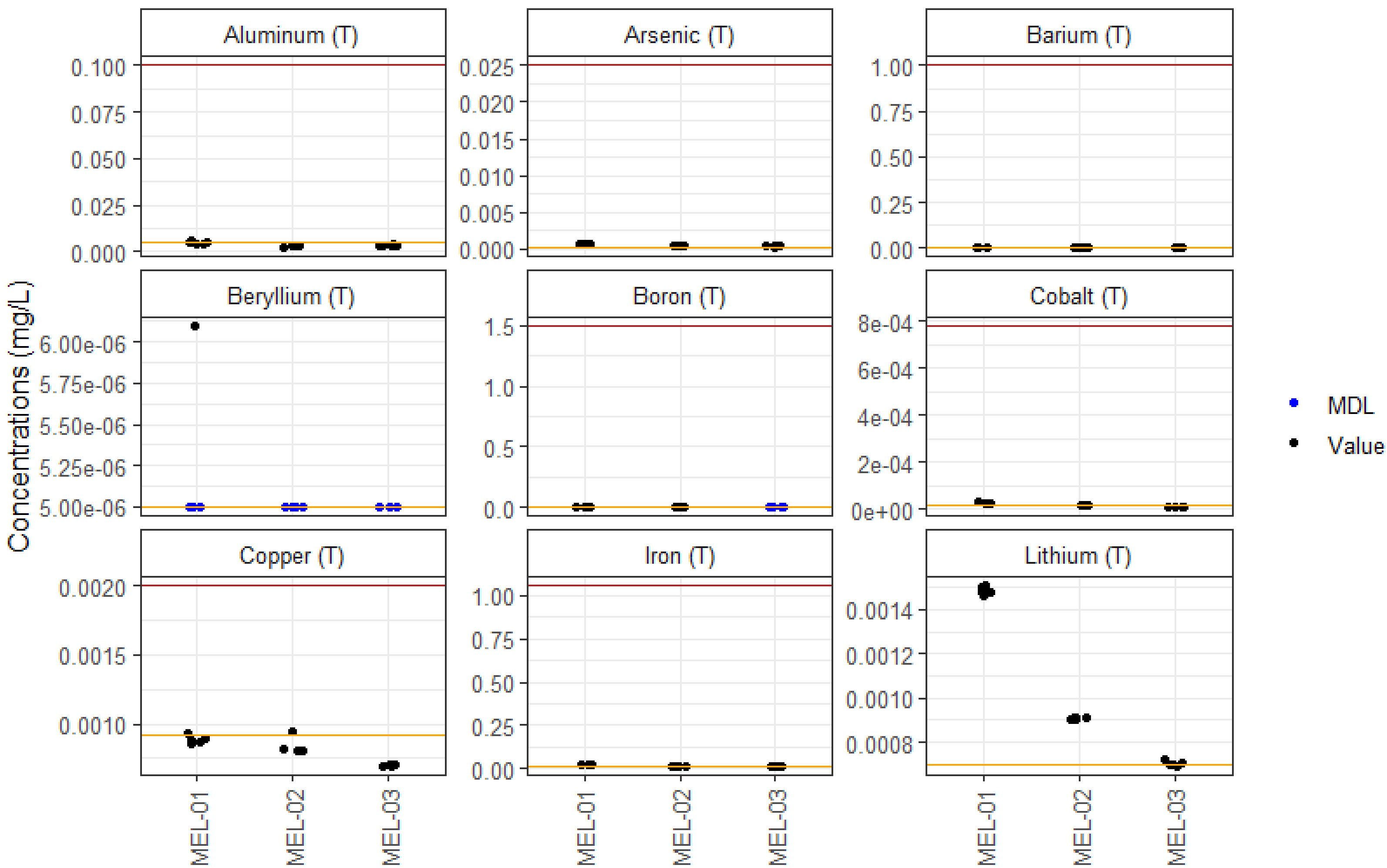



*Figure 1: Sampling event results for metals in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

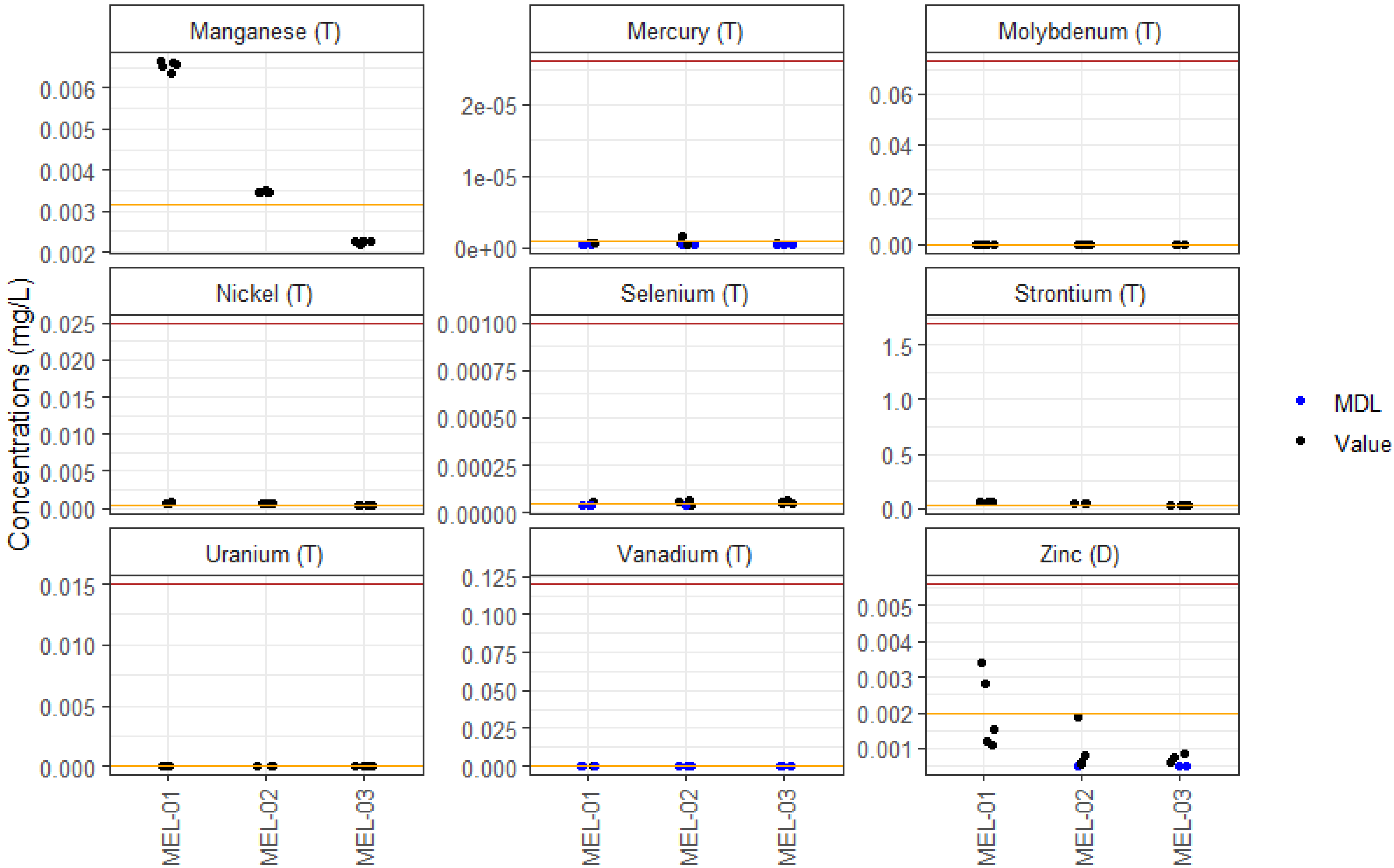



*Figure 2: Sampling event results for metals in Meliadine Lake with at least one sample above the upper limit of the normal range (Part 2). The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

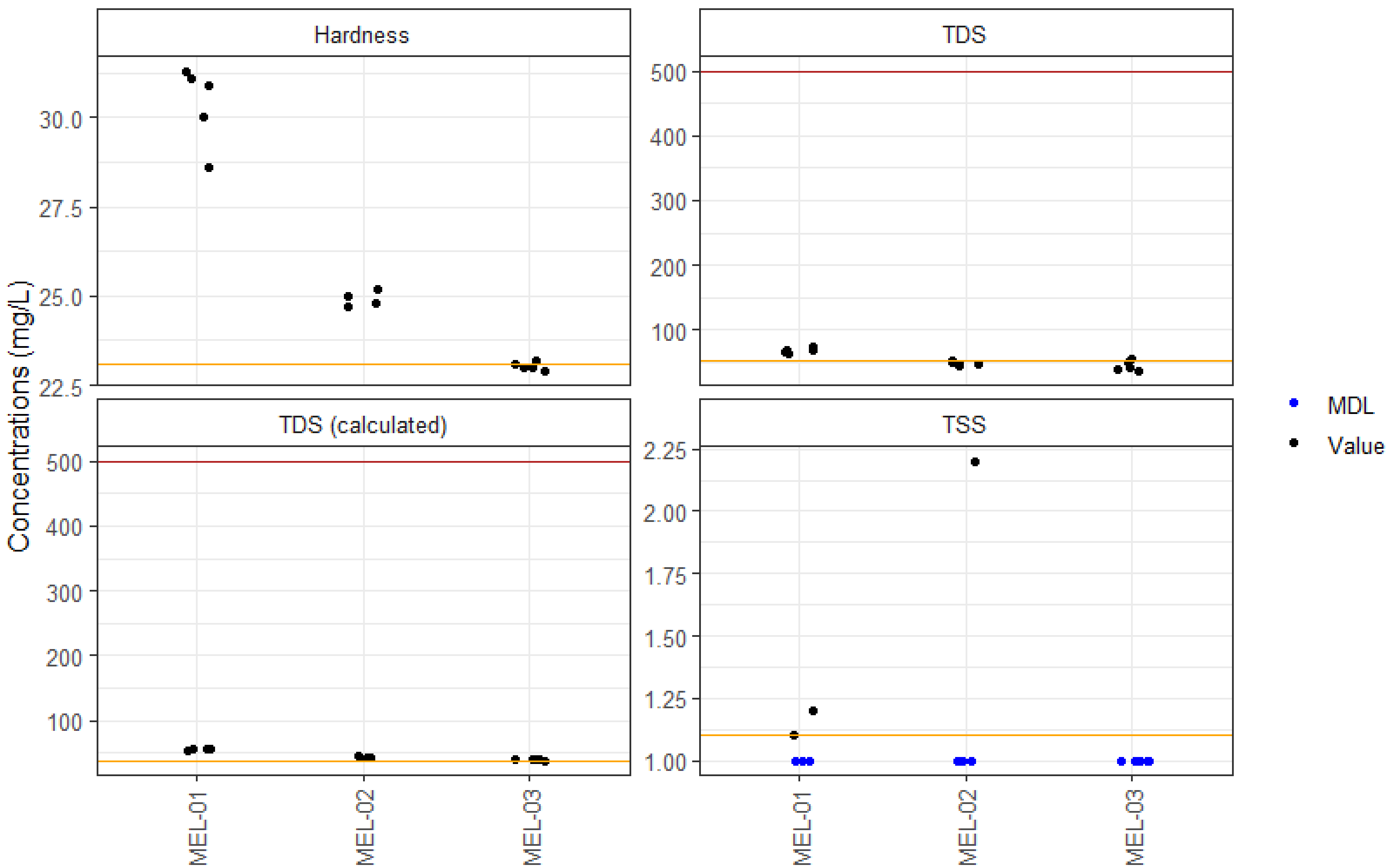



*Figure 3: Sampling event results for conventional parameters in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

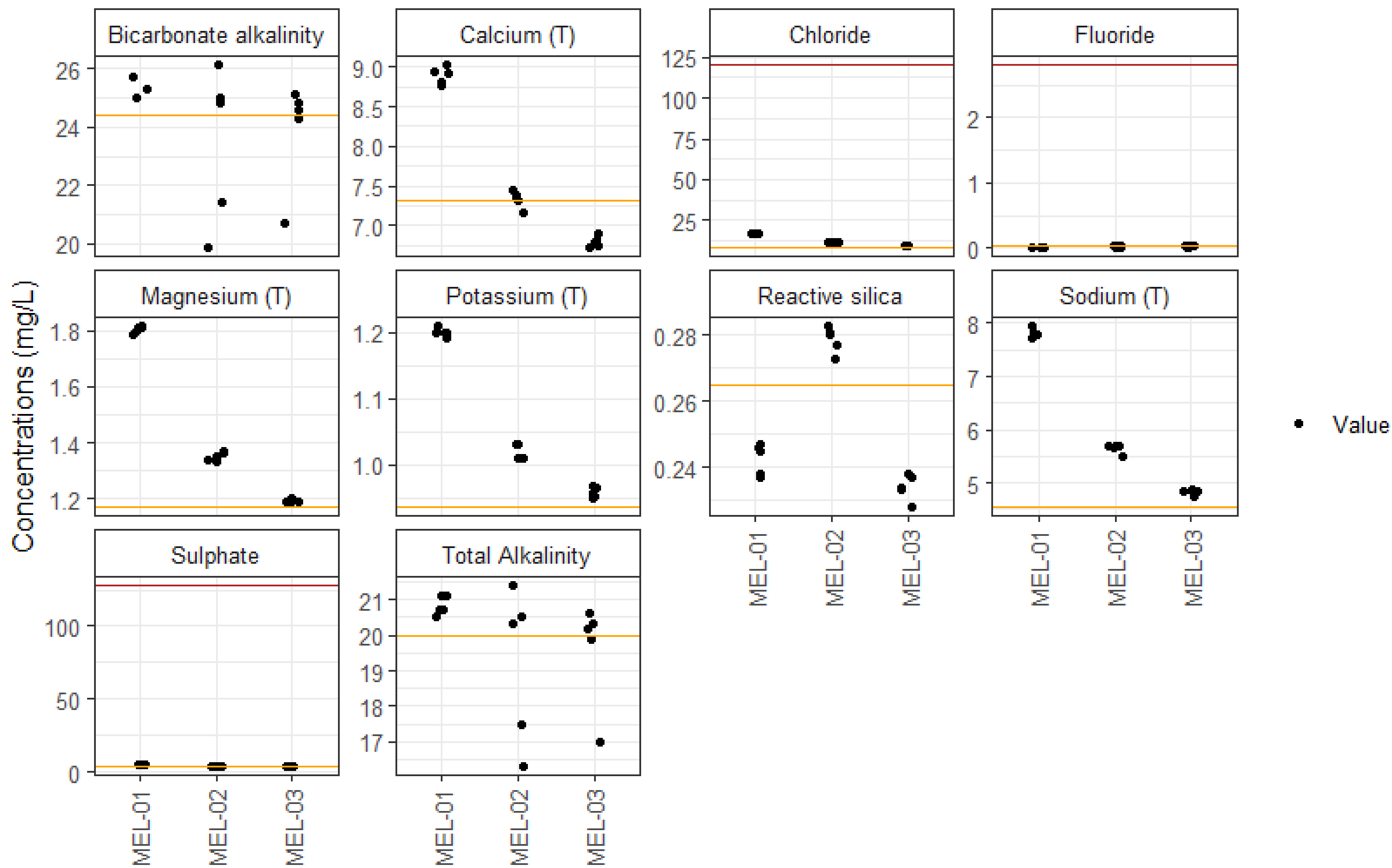



*Figure 4: Sampling event results for major ions in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

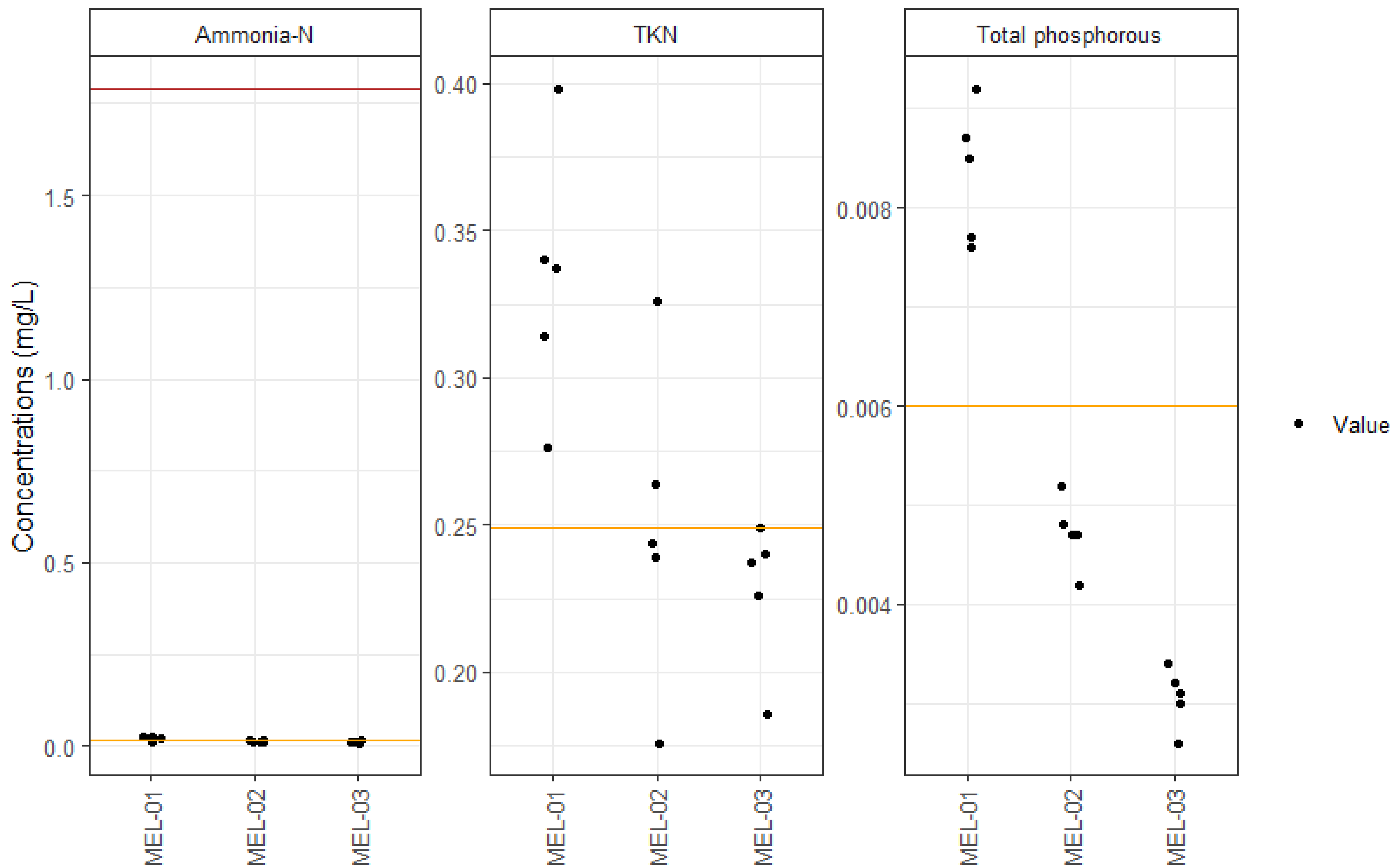



*Figure 5: Sampling event results for nutrients in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

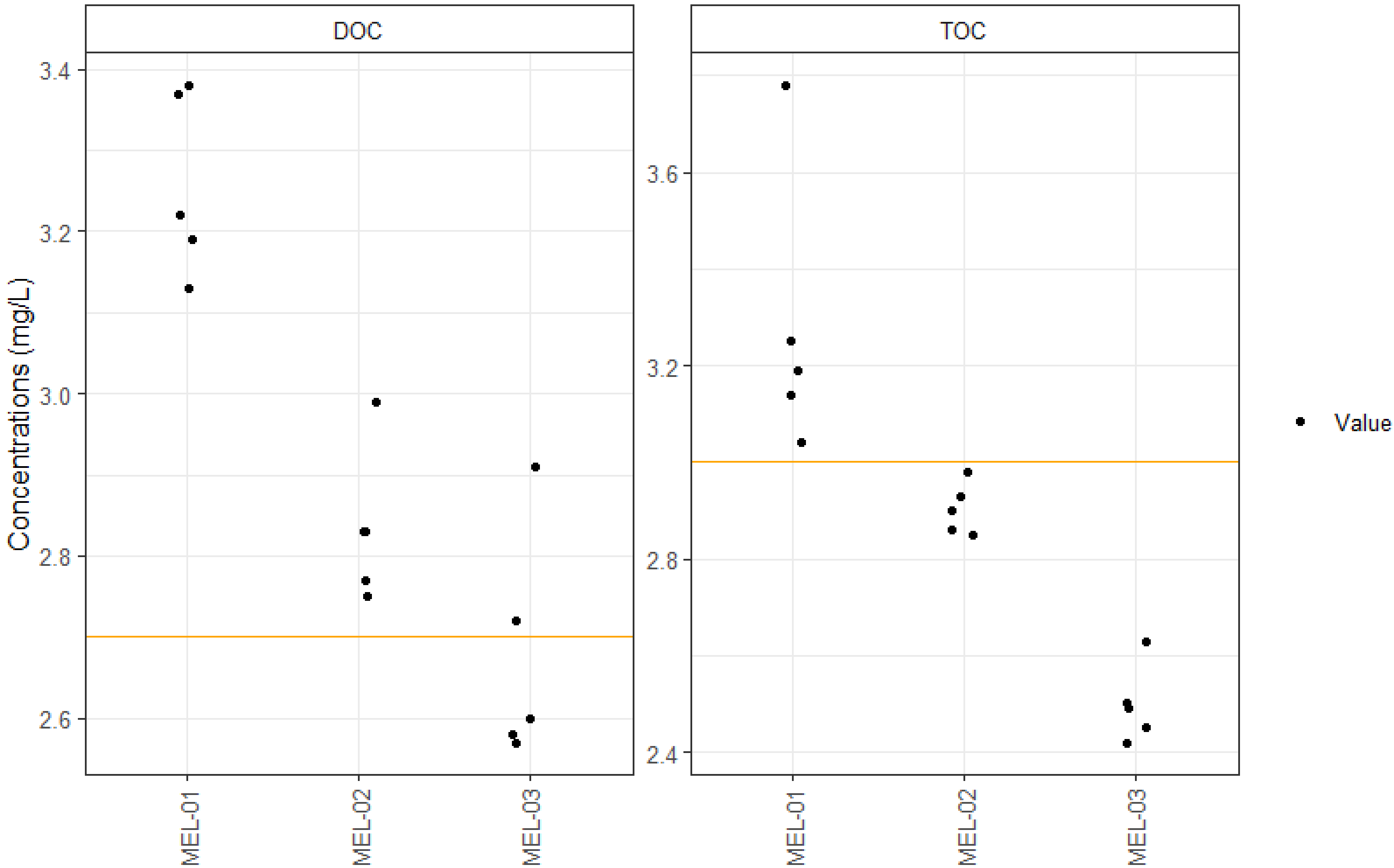



*Figure 6: Sampling event results for other parameters in Meliadine Lake with at least one sample above the upper limit of the normal range. The red line indicates the relevant threshold (if applicable) while the orange line indicates the upper limit of the normal range (if applicable). Samples below method detection limits (MDL) are set to the detection limit and shown in blue.*

## 2.1 Result Reliability Checks

Two preliminary analyses were conducted to assess the reliability of sample results. Samples failing either one of these tests have been flagged as uncertain, and warrant further evaluation.

The first analysis compares dissolved and total concentrations for a given parameters at each location. Samples in which dissolved concentrations are greater than total with a relative percent difference (RPD) of more than 30% are considered potentially unreliable. All samples failing to meet this reliability check are summarized in Table 5.

The second analysis compares parameter concentrations within each sampling area. In most cases, samples at stations in the same sampling area are expected to have similar concentrations, and outlying data points may be anomalous. Sampling areas where the maximum concentration was more than a factor of 5 greater than the median of all samples within the sampling area are highlighted here as potentially unreliable. All samples failing to meet this reliability check are summarized in Table 6.

*Table 5: Samples with uncertain reliability due to differences in dissolved and total parameter results.*

| Sample ID | Area ID | Parameter | Result (T) | Result (D) | MDL (T) | MDL (D) | RPD |
|---|---|---|---|---|---|---|---|
| MEL-03-01 | MEL-03 | Lead | 1e-05 | 0.000262 | MDL | - | 185.3 |
| MEL-01-07 | MEL-01 | Zinc | 5e-04 | 0.0034 | MDL | - | 148.7 |
| MEL-01-06 | MEL-01 | Zinc | 6e-04 | 0.0028 | - | - | 129.4 |
| MEL-01-09 | MEL-01 | Zinc | 0.00064 | 0.00109 | - | - | 52 |
| MEL-03-01 | MEL-03 | Zinc | 5e-04 | 0.00074 | MDL | - | 38.7 |
| MEL-01-08 | MEL-01 | Lead | 1e-05 | 1.4e-05 | MDL | - | 33.3 |
| MEL-01-09 | MEL-01 | Lead | 1e-05 | 1.4e-05 | MDL | - | 33.3 |
| MEL-01-01 | MEL-01 | Zinc | 0.00112 | 0.00153 | - | - | 30.9 |

*Table 6: Samples with uncertain reliability due to differences between results from the same sampling area.*

| Area ID | Parameter | DL | Median | Max | Difference | Station_with_Max |
|---|---|---|---|---|---|---|
| MEL-03 | Lead (D) | 1e-05 | 1e-05 | 0.000262 | 26.2 | MEL-03-01 |

# 3 LABORATORY & FIELD QUALITY CONTROL RESULTS

ALS' laboratory QC samples for water are:

- *Laboratory duplicates* (LD) - these samples provide insights into the precision of laboratory analyses. Duplicate aliquots are taken from the samples and run through part (aliquots taken post digestion) or all (aliquots taken from the sample bottle) the laboratory analytical process.
- *Laboratory control samples* (LCS) - these samples provide insights into whether the laboratory systems are working as intended. They are comprised of a mixture of analyte-free water to which known amounts of the method analytes are added. They are essentially an internal version of a certified reference material.
- *Matrix spikes* (MS) - these samples involve the analysis of actual samples, to which a known amount of method analytes are added in amounts high enough that the spikes are clearly discernable relative to existing concentrations. These samples provide insights into the degree that the sample matrix could interfere with analyses.
- *Matrix blanks* (MB) - these samples are analyzed to assess background interference or contamination that exists in the analytical system that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free water.

The following field QC samples were collected and submitted blind to ALS:

- *Field duplicates* (FD) - these samples provide insights into (a) variability in field conditions and (b) the precision of laboratory analyses. Duplicate samples are collected from the same location and treated independently through the sampling and analysis process.
- *Deionized blanks* (DB) - these samples are analyzed to verify the "analyte-free" status of the deionized water to help interpret the equipment blank results. These samples are comprised of deionized water poured directly into the sampling containers.
- *Equipment blanks* (EB) - these samples are analyzed to assess cross contamination in the sampling equipment that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free deionized water passed through the sampling equipment.
- *Travel blanks* (TB) - these samples are analyzed to assess cross contamination occurring during the transport of samples. These samples comprise analyte-free deionized water prepared in the lab by ALS, and travel to the site and back to the lab without being opened.

## 3.1 Overall QC Results

Overall laboratory and field QC results are summarized in Table 7.

*Table 7: Summary of laboratory and field QC results by sample type.*

| | QC_Element | Pass | Fail | ND |
|---|---|---|---|---|
| Laboratory | Lab Duplicate | 307 | 0 | 0 |
| | Lab Control Sample | 293 | 0 | 0 |
| | Matrix Spike | 165 | 0 | 9 |
| | Matrix Blank | 290 | 0 | 0 |
| Field | Field Duplicate | 248 | 0 | 0 |
| | Deionized Water Blank | 94 | 28 | 0 |
| | Equipment Blank | 99 | 23 | 0 |
| | Travel Blank | 69 | 3 | 0 |

## 3.2 Laboratory Duplicates

All laboratory duplicate results met laboratory QC objectives.

## 3.3 Laboratory Control Samples

All laboratory control sample results met laboratory QC objectives.

## 3.4 Matrix Spike

All matrix spike results met laboratory QC objectives.

In addition, some parameters had spike levels too low to confidently quantify them relative to existing concentrations in the sample. Consequently, QC results for these results could not be calculated (see Table 8).

*Table 8: Analytes not determined for matrix spikes.*

| QC_Lot | Analyte | ALS_QC_ID[1] |
|---|---|---|
| 1374502 | Silica, Reactive (as SiO2) | DUP-MEL-SEP-03 |
| 1377938 | Calcium (Ca)-Total | DUP-MEL-SEP-03 |
| 1377938 | Magnesium (Mg)-Total | DUP-MEL-SEP-03 |
| 1377938 | Sodium (Na)-Total | DUP-MEL-SEP-03 |
| 1377938 | Strontium (Sr)-Total | DUP-MEL-SEP-03 |
| 1381730 | Calcium (Ca)-Dissolved | DUP-MEL-SEP-01 |
| 1381730 | Magnesium (Mg)-Dissolved | DUP-MEL-SEP-01 |
| 1381730 | Sodium (Na)-Dissolved | DUP-MEL-SEP-01 |
| 1381730 | Strontium (Sr)-Dissolved | DUP-MEL-SEP-01 |

[1]ALS_QC_ID listing of 'Anonymous' indicates QC sample from another client used.

## 3.5 Matrix Blank

All matrix blank results met laboratory QC objectives.

## 3.6 Field Duplicates

All field duplicate sample results met laboratory QC objectives.

## 3.7 DI Blank

In this sampling event, 28 deionized water blank samples failed to meet the QC objectives. Deionized water blank results not meeting QC objectives are summarized in Table 10.

*Table 10: Details for deionized water blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1375124 | DI | Conductivity | 1.50e+00 | 1.0e+00 | Fail |
| 1378243 | DI | Ammonia, Total (as N) | 2.43e-02 | 5.0e-03 | Fail |
| 1374502 | DI | Silica, Reactive (as SiO2) | 3.90e-02 | 1.0e-02 | Fail |
| 1381732 | DI | Aluminum (Al)-Total | 1.90e-03 | 1.0e-03 | Fail |
| 1381732 | DI | Arsenic (As)-Total | 4.90e-05 | 2.0e-05 | Fail |
| 1381732 | DI | Barium (Ba)-Total | 3.60e-05 | 2.0e-05 | Fail |
| 1381732 | DI | Calcium (Ca)-Total | 3.00e-02 | 1.0e-02 | Fail |
| 1381732 | DI | Iron (Fe)-Total | 3.30e-03 | 1.0e-03 | Fail |
| 1381732 | DI | Lead (Pb)-Total | 1.30e-05 | 1.0e-05 | Fail |
| 1381732 | DI | Manganese (Mn)-Total | 1.04e-04 | 5.0e-05 | Fail |
| 1381732 | DI | Potassium (K)-Total | 4.80e-02 | 2.0e-02 | Fail |
| 1381732 | DI | Rubidium (Rb)-Total | 8.60e-06 | 5.0e-06 | Fail |
| 1381732 | DI | Sodium (Na)-Total | 4.40e-02 | 2.0e-02 | Fail |
| 1381732 | DI | Strontium (Sr)-Total | 7.50e-05 | 2.0e-05 | Fail |
| 1381732 | DI | Titanium (Ti)-Total | 8.30e-05 | 5.0e-05 | Fail |
| 1381732 | DI | Zinc (Zn)-Total | 7.80e-04 | 5.0e-04 | Fail |
| 1381730 | DI | Arsenic (As)-Dissolved | 3.20e-05 | 2.0e-05 | Fail |
| 1381730 | DI | Barium (Ba)-Dissolved | 3.80e-05 | 2.0e-05 | Fail |
| 1381730 | DI | Calcium (Ca)-Dissolved | 3.90e-02 | 1.0e-02 | Fail |
| 1381730 | DI | Iron (Fe)-Dissolved | 1.20e-03 | 1.0e-03 | Fail |
| 1381730 | DI | Lead (Pb)-Dissolved | 1.40e-05 | 1.0e-05 | Fail |
| 1381730 | DI | Manganese (Mn)-Dissolved | 9.10e-05 | 5.0e-05 | Fail |
| 1381730 | DI | Rubidium (Rb)-Dissolved | 7.50e-06 | 5.0e-06 | Fail |
| 1381730 | DI | Sodium (Na)-Dissolved | 4.10e-02 | 2.0e-02 | Fail |
| 1381730 | DI | Strontium (Sr)-Dissolved | 9.60e-05 | 2.0e-05 | Fail |
| 1381730 | DI | Tin (Sn)-Dissolved | 2.28e-04 | 2.0e-05 | Fail |
| 1381730 | DI | Zinc (Zn)-Dissolved | 1.77e-03 | 5.0e-04 | Fail |
|  | DI | Ra-226 | 1.10e-02 | 7.9e-03 | Fail |

## 3.8 Equipment Blank

In this sampling event, 23 equipment blank samples failed to meet the QC objectives. Equipment blank results not meeting QC objectives are summarized in Table 9.

*Table 9: Details for equipment blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1373525 | EB | Turbidity | 1.10e-01 | 1e-01 | Fail |
| 1378243 | EB | Ammonia, Total (as N) | 4.45e-02 | 5e-03 | Fail |
| 1381732 | EB | Aluminum (Al)-Total | 2.40e-03 | 1e-03 | Fail |
| 1381732 | EB | Arsenic (As)-Total | 4.30e-05 | 2e-05 | Fail |
| 1381732 | EB | Barium (Ba)-Total | 8.30e-05 | 2e-05 | Fail |
| 1381732 | EB | Calcium (Ca)-Total | 4.80e-02 | 1e-02 | Fail |
| 1381732 | EB | Copper (Cu)-Total | 5.60e-05 | 5e-05 | Fail |
| 1381732 | EB | Iron (Fe)-Total | 3.50e-03 | 1e-03 | Fail |
| 1381732 | EB | Lead (Pb)-Total | 1.20e-05 | 1e-05 | Fail |
| 1381732 | EB | Magnesium (Mg)-Total | 7.50e-03 | 4e-03 | Fail |
| 1381732 | EB | Manganese (Mn)-Total | 4.03e-04 | 5e-05 | Fail |
| 1381732 | EB | Nickel (Ni)-Total | 9.70e-05 | 5e-05 | Fail |
| 1381732 | EB | Rubidium (Rb)-Total | 9.90e-06 | 5e-06 | Fail |
| 1381732 | EB | Sodium (Na)-Total | 7.50e-02 | 2e-02 | Fail |
| 1381732 | EB | Strontium (Sr)-Total | 1.98e-04 | 2e-05 | Fail |
| 1381732 | EB | Titanium (Ti)-Total | 9.40e-05 | 5e-05 | Fail |
| 1381732 | EB | Zinc (Zn)-Total | 8.40e-04 | 5e-04 | Fail |
| 1381730 | EB | Barium (Ba)-Dissolved | 3.20e-05 | 2e-05 | Fail |
| 1381730 | EB | Calcium (Ca)-Dissolved | 2.70e-02 | 1e-02 | Fail |
| 1381730 | EB | Manganese (Mn)-Dissolved | 1.94e-04 | 5e-05 | Fail |
| 1381730 | EB | Rubidium (Rb)-Dissolved | 8.30e-06 | 5e-06 | Fail |
| 1381730 | EB | Strontium (Sr)-Dissolved | 1.24e-04 | 2e-05 | Fail |
| 1381730 | EB | Zinc (Zn)-Dissolved | 8.60e-04 | 5e-04 | Fail |

## 3.9 Travel Blank

In this sampling event, 3 travel blank samples failed to meet the QC objectives. Travel blank results not meeting QC objectives are summarized in Table 11.

*Table 11: Details for travel blank results not meeting QC objectives.*

| QC_Lot | ID | Analyte | Results | DL | FB.QC |
|---|---|---|---|---|---|
| 1373525 | TB | Turbidity | 0.14000 | 1e-01 | Fail |
| 1378243 | TB | Ammonia, Total (as N) | 0.01260 | 5e-03 | Fail |
| 1383175 | TB | Zinc (Zn)-Total | 0.00112 | 5e-04 | Fail |

## 3.10 Holding Time Exceedances

In addition to those ALS laboratory QC samples described above, during QC screening samples were also assessed agianst recommended hold times. Parameters and associated sample numbers exceeding recommended hold times in this sampling event are shown in Table 12. Note that pH is included in the suite of field measurements and has a very short recommended hold time, so exceeding the hold time for laboratory analysis is expected and of little importance.

*Table 12: Analytes and associated number of samples exceeding holding times.*

| Analyte | n |
|---|---|
| Phosphate Ortho Dissolved in Water | 42 |
| pH | 21 |
| Nitrate in Water by IC (Low Level) | 20 |
| Nitrite in Water by IC (Low Level) | 20 |
| Turbidity | 20 |
| Total Dissolved Solids (TDS) | 6 |

# APPENDIX B
# EFFLUENT CHARACTERIZATION, 2020

# Appendix B1
# MEL-14 Effluent Chemistry, 2020

Table B1-1. MEL-14 laboratory chemistry data, Meliadine Lake AEMP 2020.

| | | Maximum Grab Conc. | | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Jan | Jun | Jun | Jun | Jun | Jun | Jun | Jul | Jul | Jul | Jul | Jul |
| Parameter | Units | Water Licence | MDMER | 10/01/2020 | 05/06/2020 | 07/06/2020 | 14/06/2020 | 15/06/2020 | 21/06/2020 | 28/06/2020 | 01/07/2020 | 05/07/2020 | 12/07/2020 | 19/07/2020 | 21/07/2020 |
| **Field Measurements** | | | | | | | | | | | | | | | |
| pH (field) | pH units | 6 \| 9.5 | 6 \| 9.5 | 6.9 | 7.1 | 7.3 | 7.1 | 6.9 | 7.0 | 6.9 | 7.0 | | 7.8 | 6.6 | |
| DO (%) | % | | | 96 | 98 | 96 | 94 | 100 | 100 | 98 | 83 | | | | |
| DO (mg/L) | mg/L | | | | 12 | 12 | 12 | | | 12 | 9.1 | | 15 | 18 | |
| Sp. Conductivity (field) | uS/cm | | | 4,591 | 4,825 | 4,718 | 5,176 | 4,919 | 5,005 | 4,960 | 2,303 | | 2,015 | 2,233 | |
| Temperature | C | | | 7.5 | 5.6 | 6.5 | 4.7 | 5.7 | 8.7 | 7.4 | 11 | | 17 | 16 | |
| **Conventional Parameters** | | | | | | | | | | | | | | | |
| Total Dissolved Solids | mg/L | 1,400 \| 3,500 | | | 2,570 | 2,600 | 3,090 | 3,100 | 2,790 | 2,910 | | 1,510 | 1,370 | 1,430 | 1,700 |
| Total Suspended Solids | mg/L | 30 | 30 | | 5.0 | 6.0 | 8.0 | 6.0 | 6.0 | 7.0 | | 5.0 | 5.0 | 5.0 | 5.0 |
| Conductivity (lab) | uS/cm | | | | 4,700 | 4,600 | 5,100 | 4,900 | 4,800 | 4,700 | | 2,300 | 2,000 | 2,300 | 2,400 |
| Hardness (D) | mg/L | | | | 1,040 | 1,020 | 1,140 | 1,050 | 1,070 | 1,120 | | 488 | 426 | 500 | 488 |
| Hardness (T) | mg/L | | | | 1,050,000 | 1,050,000 | 1,040,000 | 1,020,000 | 1,080,000 | 1,090,000 | | 530,000 | 426,000 | 517,000 | |
| pH (lab) | pH units | | | | 7.5 | 7.6 | 7.7 | 7.7 | 7.4 | 7.4 | | 7.3 | 7.3 | 7.0 | 7.2 |
| Total Dissolved Solids (Calculated | mg/L | | | | 2,600 | 2,600 | | | | | | | 1,000 | 1,100 | 1,200 |
| Turbidity (lab) | NTU | | | | 1.6 | 1.7 | 1.7 | 1.6 | 1.2 | 1.7 | | 0.90 | 0.90 | 1.0 | 0.80 |
| **Major Ions** | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | | | | 110 | 110 | 120 | 110 | 110 | 96 | | 36 | 26 | 23 | 29 |
| Alkalinity, Carbonate | mg/L | | | | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | | < 1 | < 1 | < 1 | < 1 |
| Alkalinity, Total | mg/L | | | | 110 | 110 | 120 | 110 | 110 | 97 | | 37 | 26 | 23 | 29 |
| Calcium (D) | mg/L | | | | 297 | 293 | 327 | 302 | 303 | 321 | | 138 | 121 | 141 | 140 |
| Calcium (T) | mg/L | | | | 299 | 299 | 300 | 295 | 303 | 311 | | 151 | 120 | 148 | |
| Chloride | mg/L | | | | 1,300 | 1,300 | 1,300 | 1,300 | 1,300 | 1,200 | | 570 | 500 | 530 | 630 |
| Fluoride | mg/L | | | | < 0.1 | < 0.1 | | | | | | | < 0.1 | < 0.1 | < 0.1 |
| Magnesium (D) | mg/L | | | | 72 | 71 | 79 | 73 | 77 | 78 | | 35 | 30 | 36 | 34 |
| Magnesium (T) | mg/L | | | | 72 | 74 | 71 | 70 | 79 | 76 | | 37 | 31 | 36 | |
| Potassium (D) | mg/L | | | | 34 | 34 | 37 | 34 | 35 | 35 | | 15 | 13 | 16 | 16 |
| Potassium (T) | mg/L | | | | 35 | 34 | 34 | 34 | 36 | 34 | | 16 | 13 | 16 | |
| Reactive Silica (SiO2) | mg/L | | | | 5.3 | 8.3 | 6.1 | 6.8 | 4.8 | 3.8 | | 1.5 | 1.1 | 1.3 | 1.1 |
| Sodium (D) | mg/L | | | | 480 | 474 | 510 | 470 | 509 | 506 | | 209 | 194 | 235 | 218 |
| Sodium (T) | mg/L | | | | 479 | 462 | 474 | 470 | 512 | 492 | | 226 | 197 | 235 | |
| Sulphate | mg/L | | | | 240 | 230 | 230 | 220 | 250 | 230 | | 110 | 110 | 120 | 120 |
| **Nutrients** | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 18 | | | 11 | 10 | 11 | 10 | 12 | 9.4 | | 3.4 | 1.7 | 0.76 | 0.69 |
| Total Phosphorus | mg/L | 4 | | | 0.072 | 0.035 | 0.020 | 0.062 | 0.057 | 0.039 | | 0.057 | 0.025 | 0.032 | |
| Nitrate (as N) | mg/L | | | | 27 | 27 | 28 | 28 | 29 | 26 | | 13 | 10 | 12 | 12 |
| Nitrate + Nitrite (as N) | mg/L | | | | 27 | 27 | 28 | 28 | 29 | 26 | | 13 | 11 | 12 | 13 |
| Nitrite (as N) | mg/L | | | | 0.083 | 0.084 | 0.091 | 0.083 | 0.11 | 0.088 | | 0.11 | 0.25 | 0.39 | 0.40 |
| Orthophosphate (PO4-P) | mg/L | | | | < 0.01 | < 0.01 | 0.016 | 0.023 | 0.012 | < 0.01 | | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Total Kjeldahl Nitrogen | mg/L | | | | 11 | 9.4 | 14 | 11 | 13 | 12 | | 4.2 | 2.2 | 1.9 | |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | | | | 13 | 12 | 13 | 13 | 12 | 11 | | 5.1 | 4.7 | 5.2 | |
| Total Organic Carbon | mg/L | | | | 14 | 14 | 14 | 14 | 13 | 12 | | 5.8 | 5.2 | 5.4 | |
| **Total Metals** | | | | | | | | | | | | | | | |
| Aluminum (T) | mg/L | 3 | | | 0.45 | 0.63 | 0.64 | 0.56 | 0.66 | 0.79 | | 0.65 | 0.56 | 0.44 | |
| Arsenic (T) | mg/L | 0.6 | 1 | | 0.063 | 0.072 | 0.070 | 0.058 | 0.016 | 0.0047 | | 0.0054 | 0.0046 | 0.0036 | |
| Copper (T) | mg/L | 0.4 | 0.6 | | 0.0031 | 0.0031 | 0.0032 | 0.0031 | 0.0028 | < 0.005 | | 0.0013 | 0.0013 | 0.0010 | |
| Lead (T) | mg/L | 0.4 | 0.4 | | < 0.001 | < 0.001 | 0.00070 | 0.00061 | < 0.001 | < 0.002 | | 0.00041 | <0.0002 | <0.0002 | |
| Nickel (T) | mg/L | 1 | 1 | | 0.0088 | 0.0087 | 0.0096 | 0.0094 | 0.010 | < 0.01 | | 0.0043 | 0.0032 | 0.0031 | |
| Zinc (T) | mg/L | 0.8 | 1 | | < 0.025 | < 0.025 | 0.021 | 0.023 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Antimony (T) | mg/L | | | | < 0.0025 | < 0.0025 | < 0.001 | < 0.001 | < 0.0025 | < 0.005 | | <0.0005 | <0.0005 | 0.00051 | |
| Barium (T) | mg/L | | | | 0.15 | 0.16 | 0.15 | 0.15 | 0.16 | 0.15 | | 0.071 | 0.061 | 0.074 | |
| Beryllium (T) | mg/L | | | | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0005 | < 0.001 | | <0.0001 | <0.0001 | <0.0001 | |
| Bismuth (T) | mg/L | | | | < 0.005 | < 0.005 | < 0.002 | < 0.002 | < 0.005 | < 0.01 | | < 0.001 | < 0.001 | < 0.001 | |
| Boron (T) | mg/L | | | | 0.46 | 0.50 | 0.47 | 0.45 | 0.52 | < 0.5 | | 0.25 | 0.22 | 0.25 | |
| Cadmium (T) | mg/L | | | | 0.00008 | 0.00010 | 0.00008 | 0.00009 | 0.00010 | <0.0001 | | 0.00003 | 0.00002 | 0.00002 | |
| Chromium (T) | mg/L | | | | < 0.005 | < 0.005 | < 0.002 | < 0.002 | < 0.005 | < 0.01 | | < 0.001 | < 0.001 | < 0.001 | |
| Cobalt (T) | mg/L | | | | 0.0030 | 0.0031 | 0.0033 | 0.0031 | 0.0033 | 0.0029 | | 0.0013 | 0.00097 | 0.0011 | |
| Iron (T) | mg/L | | | | 0.25 | 0.21 | 0.15 | 0.16 | 0.11 | < 0.1 | | 0.097 | 0.063 | 0.054 | |
| Lithium (T) | mg/L | | | | 0.14 | 0.14 | 0.16 | 0.15 | 0.15 | 0.14 | | 0.070 | 0.058 | 0.066 | |
| Manganese (T) | mg/L | | | | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.3 | | 0.46 | 0.068 | 0.076 | |
| Mercury (T) | mg/L | | | | <0.0001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.0001 | | <0.0001 | <0.0001 | <0.0001 | |
| Molybdenum (T) | mg/L | | | | < 0.005 | < 0.005 | 0.0045 | 0.0043 | < 0.005 | < 0.01 | | 0.0022 | 0.0025 | 0.0026 | |
| Selenium (T) | mg/L | | | | 0.00063 | 0.00074 | 0.00066 | 0.00060 | 0.00069 | < 0.001 | | 0.00023 | 0.00021 | 0.00024 | |
| Silicon (T) | mg/L | | | | 1.7 | 1.9 | 1.8 | 1.8 | 1.7 | 1.5 | | 0.75 | 0.49 | 0.56 | |
| Silver (T) | mg/L | | | | <0.0001 | <0.0001 | < 4e-05 | < 4e-05 | <0.0001 | <0.0002 | | <0.00002 | <0.00002 | <0.00002 | |
| Strontium (T) | mg/L | | | | 5.2 | 5.6 | 5.8 | 5.7 | 5.5 | 5.4 | | 2.7 | 2.2 | 2.6 | |
| Sulfur (T) | mg/L | | | | 83 | 84 | 84 | 83 | 97 | 77 | | 42 | 36 | 40 | |
| Thallium (T) | mg/L | | | | < 5e-05 | 0.00005 | 0.00005 | 0.00005 | 0.00006 | <0.0001 | | 0.00003 | 0.00003 | 0.00003 | |
| Tin (T) | mg/L | | | | < 0.025 | < 0.025 | < 0.01 | < 0.01 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Titanium (T) | mg/L | | | | < 0.025 | < 0.025 | < 0.01 | < 0.01 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Uranium (T) | mg/L | | | | 0.0019 | 0.0019 | 0.0021 | 0.0021 | 0.0019 | 0.0014 | | 0.00019 | 0.00017 | <0.0001 | |
| Vanadium (T) | mg/L | | | | < 0.025 | < 0.025 | < 0.01 | < 0.01 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Zirconium (T) | mg/L | | | | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0005 | < 0.001 | | <0.0001 | <0.0001 | <0.0001 | |
| **Dissolved Metals** | | | | | | | | | | | | | | | |
| Aluminum (D) | mg/L | | | | 0.13 | 0.21 | 0.17 | 0.14 | 0.11 | 0.12 | | 0.078 | 0.21 | 0.063 | |
| Antimony (D) | mg/L | | | | < 0.001 | < 0.001 | < 0.0025 | < 0.0025 | < 0.0025 | < 0.005 | | <0.0005 | <0.0005 | 0.00050 | |
| Arsenic (D) | mg/L | | | | 0.054 | 0.063 | 0.061 | 0.048 | 0.0080 | 0.0026 | | 0.0036 | 0.0034 | 0.0031 | |
| Barium (D) | mg/L | | | | 0.15 | 0.15 | 0.16 | 0.15 | 0.15 | 0.16 | | 0.069 | 0.059 | 0.073 | |
| Beryllium (D) | mg/L | | | | <0.0002 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | < 0.001 | | <0.0001 | <0.0001 | <0.0001 | |
| Bismuth (D) | mg/L | | | | < 0.002 | < 0.002 | < 0.005 | < 0.005 | < 0.005 | < 0.01 | | < 0.001 | < 0.001 | < 0.001 | |
| Boron (D) | mg/L | | | | 0.47 | 0.46 | 0.55 | 0.50 | 0.53 | < 0.5 | | 0.24 | 0.21 | 0.25 | |
| Cadmium (D) | mg/L | | | | 0.00008 | 0.00008 | 0.00010 | 0.00009 | 0.00008 | <0.0001 | | 0.00003 | 0.00001 | 0.00002 | |
| Chromium (D) | mg/L | | | | < 0.002 | < 0.002 | < 0.005 | < 0.005 | < 0.005 | < 0.01 | | < 0.001 | < 0.001 | < 0.001 | |
| Cobalt (D) | mg/L | | | | 0.0031 | 0.0030 | 0.0035 | 0.0031 | 0.0033 | 0.0028 | | 0.0013 | 0.00095 | 0.0010 | |
| Copper (D) | mg/L | | | | 0.0029 | 0.0028 | 0.0031 | 0.0029 | 0.0026 | < 0.002 | | 0.0011 | 0.0012 | 0.00098 | |
| Iron (D) | mg/L | | | | 0.16 | 0.14 | 0.097 | 0.12 | 0.076 | 0.057 | | 0.044 | 0.029 | 0.034 | 0.042 |
| Lead (D) | mg/L | | | | <0.0004 | <0.0004 | < 0.001 | < 0.001 | < 0.001 | < 0.002 | | <0.0002 | <0.0002 | <0.0002 | |
| Lithium (D) | mg/L | | | | 0.14 | 0.13 | 0.18 | 0.16 | 0.15 | 0.15 | | 0.070 | 0.060 | 0.065 | |
| Manganese (D) | mg/L | | | | 1.4 | 1.3 | 1.5 | 1.4 | 1.4 | 1.4 | | 0.44 | 0.057 | 0.071 | 0.062 |
| Mercury (D) | mg/L | | | | <0.0001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.0001 | | <0.0001 | <0.0001 | <0.0001 | |
| Molybdenum (D) | mg/L | | | | 0.0046 | 0.0044 | < 0.005 | < 0.005 | < 0.005 | < 0.01 | | 0.0020 | 0.0025 | 0.0026 | |
| Nickel (D) | mg/L | | | | 0.0088 | 0.0084 | 0.011 | 0.0096 | 0.010 | < 0.01 | | 0.0039 | 0.0029 | 0.0031 | |
| Selenium (D) | mg/L | | | | 0.00058 | 0.00065 | 0.00071 | 0.00052 | 0.00057 | < 0.001 | | 0.00019 | 0.00020 | 0.00022 | |
| Silicon (D) | mg/L | | | | 1.7 | 1.7 | 1.9 | 1.8 | 1.7 | 1.6 | | 0.67 | 0.49 | 0.52 | |
| Silver (D) | mg/L | | | | < 4e-05 | < 4e-05 | <0.0001 | <0.0001 | <0.0001 | <0.0002 | | <0.00002 | <0.00002 | <0.00002 | |
| Strontium (D) | mg/L | | | | 5.3 | 5.4 | 6.1 | 5.6 | 5.5 | 5.5 | | 2.6 | 2.3 | 2.6 | |
| Sulfur (D) | mg/L | | | | 80 | 82 | 88 | 84 | 89 | 84 | | 40 | 34 | 40 | |
| Thallium (D) | mg/L | | | | 0.00004 | 0.00005 | 0.00006 | < 5e-05 | 0.00006 | <0.0001 | | 0.00003 | 0.00003 | 0.00003 | |
| Tin (D) | mg/L | | | | < 0.01 | < 0.01 | < 0.025 | < 0.025 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Titanium (D) | mg/L | | | | < 0.01 | < 0.01 | < 0.025 | < 0.025 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Uranium (D) | mg/L | | | | 0.0020 | 0.0018 | 0.0021 | 0.0020 | 0.0018 | 0.0013 | | <0.0001 | 0.00012 | <0.0001 | |
| Vanadium (D) | mg/L | | | | < 0.01 | < 0.01 | < 0.025 | < 0.025 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Zinc (D) | mg/L | | | | 0.019 | 0.019 | < 0.025 | < 0.025 | < 0.025 | < 0.05 | | < 0.005 | < 0.005 | < 0.005 | |
| Zirconium (D) | mg/L | | | | <0.0002 | <0.0002 | <0.0005 | <0.0005 | <0.0005 | < 0.001 | | <0.0001 | <0.0001 | <0.0001 | |
| **Other** | | | | | | | | | | | | | | | |
| Cyanide (Total) | mg/L | 1 | 2 | | 0.0068 | 0.0070 | 0.011 | 0.0095 | 0.012 | 0.0055 | | < 0.005 | < 0.005 | 0.011 | |
| Radium-226 | Bq/l | | 1.11 | | 0.014 | 0.016 | 0.013 | | 0.019 | 1.1 | | < 0.005 | < 0.005 | 0.010 | |
| Anion Sum | meq/L | | | | | 45 | | | | | | | | | |
| Biological Oxygen Demand | mg/L | | | | 2.0 | 3.0 | 2.0 | 2.0 | < 2 | < 2 | | < 2 | < 2 | < 2 | |
| Cation Sum | meq/L | | | | | 43 | | | | | | | | | |
| Cyanide (free) | mg/L | | | | 0.033 | 0.045 | 0.032 | 0.029 | 0.017 | 0.0033 | | 0.0035 | 0.0012 | 0.0021 | |
| Cyanide (WAD) | mg/L | | | | 0.0051 | 0.0053 | 0.0046 | 0.0060 | 0.0049 | 0.0026 | | 0.0014 | 0.0010 | 0.0033 | |
| Ion Balance | % | | | | | 2.5 | | | | | | | | | |
| **Hydrocarbons** | | | | | | | | | | | | | | | |
| F1 (C6-C10) | mg/L | | | | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | | < 0.025 | < 0.025 | < 0.025 | |
| F1 (C6-C10)-BTEX | mg/L | | | | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | | < 0.025 | < 0.025 | < 0.025 | |
| F2 (C10-C16) | mg/L | | | | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | | < 0.1 | < 0.1 | < 0.1 | |
| F3 (C16-C34) | mg/L | | | | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | | < 0.2 | < 0.2 | < 0.2 | |
| F4 (C34-C50) | mg/L | | | | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | | < 0.2 | < 0.2 | < 0.2 | |
| Total Oil and Grease | mg/L | | | | | | | | | | | | | | |
| **Volatile Organics** | | | | | | | | | | | | | | | |
| Benzene | mg/L | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | |
| Ethylbenzene | mg/L | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | |
| m,p-Xylenes | mg/L | | | | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | | <0.0004 | <0.0004 | <0.0004 | |
| o-Xylene | mg/L | | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | |
| Toluene | mg/L | | | | 0.00023 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | |
| Xylenes | mg/L | | | | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | | <0.0004 | <0.0004 | <0.0004 | |

Table B1-1. MEL-14 laboratory chemistry data, Meliadine Lake AEMP 2020.

| | | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jul | Aug | Aug | Aug | Aug | Aug | Aug | Aug | Aug | Sep | Sep | Sep | Sep | Sep | Oct |
| Parameter | Units | 26/07/2020 | 02/08/2020 | 09/08/2020 | 13/08/2020 | 16/08/2020 | 23/08/2020 | 28/08/2020 | 29/08/2020 | 30/08/2020 | 05/09/2020 | 06/09/2020 | 13/09/2020 | 20/09/2020 | 27/09/2020 | 02/10/2020 |
| **Field Measurements** | | | | | | | | | | | | | | | | |
| pH (field) | pH units | 7.0 | 7.4 | 7.2 | | | 7.3 | 7.1 | | 6.9 | 7.1 | 7.2 | 6.6 | | 7.0 | 7.6 |
| DO (%) | % | 75 | 66 | 98 | | | 85 | 103 | | 98 | 98 | 96 | 97 | | 89 | 105 |
| DO (mg/L) | mg/L | 21 | 6.3 | | | | 8.5 | 11 | | 11 | 11 | 11 | | | 10 | 14 |
| Sp. Conductivity (field) | uS/cm | 2,286 | 2,679 | 2,724 | | | 2,930 | 2,999 | | 3,012 | 3,261 | 3,265 | 3,550 | | 3,778 | 4,181 |
| Temperature | C | 17 | 16 | 17 | | | 15 | 13 | | 11 | 11 | 9.8 | 7.5 | | 8.7 | 2.7 |
| **Conventional Parameters** | | | | | | | | | | | | | | | | |
| Total Dissolved Solids | mg/L | 1,340 | 1,550 | 1,660 | 1,670 | 1,650 | 1,850 | | 1,770 | 1,620 | 1,940 | 1,910 | 1,780 | 2,410 | 2,300 | 2,630 |
| Total Suspended Solids | mg/L | 4.0 | 4.0 | 3.0 | 3.0 | 5.0 | 5.0 | | 4.0 | 3.0 | 5.0 | 6.0 | 6.0 | 5.0 | 5.0 | 5.0 |
| Conductivity (lab) | uS/cm | 2,500 | 2,500 | 2,700 | 2,800 | 2,800 | 2,900 | | 3,000 | 3,000 | 3,100 | 3,200 | 3,500 | 3,500 | 3,900 | 4,000 |
| Hardness (D) | mg/L | 531 | 561 | 583 | 605 | 600 | 599 | | 659 | 670 | 685 | 704 | 777 | 810 | 871 | 1,010 |
| Hardness (T) | mg/L | 561,000 | 562,000 | 614,000 | | 612,000 | 632,000 | | 616,000 | 633,000 | 683,000 | 708,000 | 756,000 | 781,000 | 948,000 | 971,000 |
| pH (lab) | pH units | 7.5 | 7.5 | 7.5 | 7.7 | 7.4 | 7.6 | | 7.4 | 7.4 | 7.5 | 7.6 | 7.4 | 7.5 | 7.5 | 7.6 |
| Total Dissolved Solids (Calculated) | mg/L | 1,300 | 1,300 | 1,400 | 1,400 | 1,400 | 1,400 | | 1,600 | 1,600 | 1,700 | 1,700 | 1,900 | 1,900 | 2,100 | 2,300 |
| Turbidity (lab) | NTU | 0.70 | 0.70 | 0.60 | 0.50 | 0.70 | 0.50 | | 0.60 | 0.60 | 0.60 | 0.60 | 0.70 | 0.70 | 0.60 | 0.60 |
| **Major Ions** | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 46 | 46 | 53 | 60 | 61 | 62 | | 67 | 60 | 71 | 74 | 65 | 76 | 69 | 75 |
| Alkalinity, Carbonate | mg/L | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 |
| Alkalinity, Total | mg/L | 46 | 46 | 53 | 61 | 61 | 63 | | 67 | 60 | 71 | 75 | 66 | 76 | 69 | 75 |
| Calcium (D) | mg/L | 151 | 157 | 165 | 172 | 173 | 173 | | 187 | 191 | 197 | 203 | 224 | 233 | 247 | 293 |
| Calcium (T) | mg/L | 160 | 161 | 174 | | 174 | 181 | | 172 | 178 | 197 | 203 | 217 | 221 | 278 | 273 |
| Chloride | mg/L | 600 | 630 | 680 | 700 | 710 | 700 | | 790 | 780 | 800 | 780 | 900 | 920 | 950 | 1,100 |
| Fluoride | mg/L | < 0.1 | < 0.1 | 0.11 | < 0.1 | < 0.1 | < 0.1 | | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Magnesium (D) | mg/L | 38 | 41 | 42 | 42 | 41 | 40 | | 47 | 47 | 47 | 48 | 53 | 55 | 61 | 68 |
| Magnesium (T) | mg/L | 39 | 39 | 44 | | 43 | 44 | | 45 | 46 | 47 | 49 | 52 | 56 | 62 | 70 |
| Potassium (D) | mg/L | 17 | 18 | 19 | 19 | 19 | 19 | | 21 | 21 | 22 | 22 | 24 | 25 | 26 | 29 |
| Potassium (T) | mg/L | 17 | 18 | 20 | | 20 | 21 | | 20 | 21 | 22 | 23 | 24 | 24 | 26 | 29 |
| Reactive Silica (SiO2) | mg/L | 0.90 | 0.80 | 0.78 | | 1.2 | 1.2 | | 1.1 | 1.2 | 1.8 | 2.0 | 2.0 | 1.9 | 1.5 | 1.8 |
| Sodium (D) | mg/L | 243 | 255 | 273 | 270 | 278 | 268 | | 299 | 300 | 292 | 296 | 343 | 341 | 382 | 395 |
| Sodium (T) | mg/L | 250 | 246 | 289 | | 272 | 284 | | 290 | 295 | 303 | 327 | 335 | 352 | 377 | 406 |
| Sulphate | mg/L | 130 | 140 | 150 | 140 | 140 | 150 | | 170 | 160 | 200 | 210 | 230 | 230 | 260 | 310 |
| **Nutrients** | | | | | | | | | | | | | | | | |
| Ammonia (as N) | mg/L | 0.79 | 0.60 | 0.45 | | 0.24 | 0.16 | | 0.39 | 0.47 | 0.92 | 0.98 | 1.8 | 1.3 | 1.7 | 2.3 |
| Total Phosphorus | mg/L | 0.022 | 0.022 | < 0.02 | | < 0.02 | 0.023 | | 0.026 | < 0.02 | < 0.02 | 0.022 | 0.022 | < 0.02 | < 0.02 | 0.029 |
| Nitrate (as N) | mg/L | 12 | 12 | 12 | 11 | 11 | 11 | | 11 | 11 | 11 | 12 | 14 | 15 | 17 | 16 |
| Nitrate + Nitrite (as N) | mg/L | 13 | 12 | 12 | 11 | 11 | 11 | | 11 | 11 | 12 | 12 | 15 | 15 | 18 | 16 |
| Nitrite (as N) | mg/L | 0.46 | 0.36 | 0.34 | 0.29 | 0.29 | 0.24 | | 0.28 | 0.28 | 0.35 | 0.41 | 0.45 | 0.37 | 0.38 | 0.35 |
| Orthophosphate (PO4-P) | mg/L | < 0.01 | < 0.01 | < 0.01 | | < 0.01 | < 0.01 | | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Total Kjeldahl Nitrogen | mg/L | 1.6 | 1.3 | < 0.5 | | 0.84 | 1.1 | | 1.3 | 0.68 | 1.0 | 1.7 | 3.1 | 1.2 | 2.5 | 3.4 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 7.6 | 7.6 | 8.5 | | 8.2 | 8.7 | | 8.9 | 7.9 | 9.1 | 9.6 | 7.8 | 9.2 | 8.7 | 12 |
| Total Organic Carbon | mg/L | 8.4 | 8.0 | 8.3 | | 9.0 | 9.0 | | 9.6 | 8.5 | 9.1 | 9.8 | 8.9 | 10 | 9.3 | 12 |
| **Total Metals** | | | | | | | | | | | | | | | | |
| Aluminum (T) | mg/L | 0.73 | 0.41 | 0.46 | | 0.47 | 0.53 | | 0.49 | 0.50 | 0.44 | 0.50 | 1.00 | 0.62 | 0.67 | 0.59 |
| Arsenic (T) | mg/L | 0.0042 | 0.0033 | 0.0053 | | 0.0030 | 0.0036 | | 0.0059 | 0.0055 | 0.0036 | 0.0044 | 0.0039 | 0.0034 | 0.0023 | 0.0024 |
| Copper (T) | mg/L | 0.0015 | 0.0015 | 0.0012 | | 0.0015 | 0.0017 | | 0.0018 | 0.0017 | 0.0015 | 0.0014 | 0.0015 | 0.0018 | 0.0015 | 0.0019 |
| Lead (T) | mg/L | <0.0004 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | | <0.0004 | <0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0004 |
| Nickel (T) | mg/L | 0.0045 | 0.0039 | 0.0044 | | 0.0043 | 0.0044 | | 0.0049 | 0.0049 | 0.0050 | 0.0057 | 0.0063 | 0.0066 | 0.0069 | 0.010 |
| Zinc (T) | mg/L | < 0.01 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.01 | < 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 |
| Antimony (T) | mg/L | 0.0040 | 0.00067 | 0.00070 | | 0.00063 | 0.00065 | | < 0.001 | < 0.001 | 0.00069 | 0.00074 | 0.00071 | 0.00069 | 0.00064 | < 0.001 |
| Barium (T) | mg/L | 0.083 | 0.082 | 0.100 | | 0.10 | 0.10 | | 0.11 | 0.11 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| Beryllium (T) | mg/L | <0.0002 | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | <0.0002 | <0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0002 |
| Bismuth (T) | mg/L | < 0.002 | < 0.001 | < 0.001 | | < 0.001 | < 0.001 | | < 0.002 | < 0.002 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.002 |
| Boron (T) | mg/L | 0.32 | 0.27 | 0.32 | | 0.31 | 0.35 | | 0.37 | 0.37 | 0.34 | 0.38 | 0.42 | 0.39 | 0.40 | 0.46 |
| Cadmium (T) | mg/L | 0.00002 | 0.00002 | <0.00001 | | 0.00001 | <0.00001 | | <0.00002 | <0.00002 | <0.00001 | 0.00001 | 0.00002 | 0.00003 | 0.00002 | 0.00003 |
| Chromium (T) | mg/L | < 0.002 | < 0.001 | < 0.001 | | < 0.001 | < 0.001 | | < 0.002 | < 0.002 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.002 |
| Cobalt (T) | mg/L | 0.0011 | 0.00092 | 0.0011 | | 0.00098 | 0.00097 | | 0.0011 | 0.0011 | 0.0012 | 0.0012 | 0.0015 | 0.0016 | 0.0016 | 0.0021 |
| Iron (T) | mg/L | 0.063 | 0.045 | 0.062 | | 0.037 | 0.033 | | 0.031 | 0.031 | 0.027 | 0.043 | 0.026 | 0.034 | 0.052 | 0.028 |
| Lithium (T) | mg/L | 0.076 | 0.063 | 0.070 | | 0.077 | 0.077 | | 0.082 | 0.083 | 0.066 | 0.058 | 0.074 | 0.070 | 0.080 | 0.084 |
| Manganese (T) | mg/L | 0.13 | 0.10 | 0.27 | | 0.22 | 0.18 | | 0.15 | 0.16 | 0.21 | 0.26 | 0.26 | 0.26 | 0.30 | 0.33 |
| Mercury (T) | mg/L | <0.00001 | <0.00001 | <0.00001 | | <0.00001 | <0.00001 | | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Molybdenum (T) | mg/L | 0.0030 | 0.0031 | 0.0039 | | 0.0036 | 0.0036 | | 0.0038 | 0.0038 | 0.0041 | 0.0047 | 0.0042 | 0.0041 | 0.0040 | 0.0045 |
| Selenium (T) | mg/L | 0.00030 | 0.00024 | 0.00027 | | 0.00024 | 0.00023 | | 0.00029 | 0.00031 | 0.00032 | 0.00038 | 0.00045 | 0.00048 | 0.00049 | 0.00060 |
| Silicon (T) | mg/L | 0.49 | 0.35 | 0.38 | | 0.52 | 0.55 | | 0.65 | 0.67 | 0.74 | 0.74 | 0.88 | 0.79 | 0.84 | 0.85 |
| Silver (T) | mg/L | < 4e-05 | <0.00002 | <0.00002 | | <0.00002 | <0.00002 | | < 4e-05 | < 4e-05 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | < 4e-05 |
| Strontium (T) | mg/L | 2.8 | 2.9 | 3.1 | | 3.2 | 3.3 | | 3.3 | 3.3 | 3.2 | 3.5 | 3.5 | 3.6 | 4.0 | 4.1 |
| Sulfur (T) | mg/L | 45 | 44 | 50 | | 49 | 51 | | 57 | 58 | 61 | 72 | 77 | 79 | 88 | 101 |
| Thallium (T) | mg/L | 0.00003 | 0.00003 | <0.00001 | | 0.00003 | 0.00003 | | 0.00003 | 0.00003 | 0.00003 | 0.00003 | 0.00004 | 0.00004 | 0.00003 | 0.00004 |
| Tin (T) | mg/L | < 0.01 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.01 | < 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 |
| Titanium (T) | mg/L | < 0.01 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.01 | < 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 |
| Uranium (T) | mg/L | 0.00054 | 0.00042 | 0.00032 | | 0.00037 | 0.00054 | | 0.00072 | 0.00031 | 0.00079 | 0.0011 | 0.00072 | 0.0018 | 0.0012 | 0.0027 |
| Vanadium (T) | mg/L | < 0.01 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.01 | < 0.01 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 |
| Zirconium (T) | mg/L | <0.0002 | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | <0.0002 | <0.0002 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0002 |
| **Dissolved Metals** | | | | | | | | | | | | | | | | |
| Aluminum (D) | mg/L | 0.15 | 0.14 | 0.13 | | 0.11 | 0.12 | | 0.15 | 0.099 | 0.15 | 0.16 | 0.064 | 0.14 | 0.10 | 0.12 |
| Antimony (D) | mg/L | 0.00063 | 0.00069 | 0.00067 | | 0.00066 | 0.00063 | | 0.00068 | 0.00063 | 0.00067 | 0.00068 | 0.00071 | < 0.001 | 0.00069 | 0.00079 |
| Arsenic (D) | mg/L | 0.0035 | 0.0027 | 0.0043 | | 0.0030 | 0.0032 | | 0.0059 | 0.0054 | 0.0035 | 0.0037 | 0.0035 | 0.0026 | 0.0020 | 0.0020 |
| Barium (D) | mg/L | 0.079 | 0.084 | 0.097 | | 0.10 | 0.10 | | 0.10 | 0.10 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| Beryllium (D) | mg/L | <0.0001 | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0002 | <0.0001 | <0.0001 |
| Bismuth (D) | mg/L | < 0.001 | < 0.001 | < 0.001 | | < 0.001 | < 0.001 | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.002 | < 0.001 | < 0.001 |
| Boron (D) | mg/L | 0.27 | 0.32 | 0.29 | | 0.32 | 0.32 | | 0.36 | 0.35 | 0.34 | 0.36 | 0.41 | 0.40 | 0.45 | 0.45 |
| Cadmium (D) | mg/L | 0.00002 | 0.00002 | 0.00001 | | <0.00001 | <0.00001 | | 0.00001 | 0.00001 | <0.00001 | 0.00001 | 0.00001 | 0.00002 | <0.00001 | 0.00003 |
| Chromium (D) | mg/L | < 0.001 | < 0.001 | < 0.001 | | < 0.001 | < 0.001 | | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.002 | < 0.001 | < 0.001 |
| Cobalt (D) | mg/L | 0.0010 | 0.00089 | 0.0010 | | 0.00096 | 0.0010 | | 0.0011 | 0.0011 | 0.0012 | 0.0012 | 0.0015 | 0.0015 | 0.0017 | 0.0019 |
| Copper (D) | mg/L | 0.0013 | 0.0015 | 0.0011 | | 0.0013 | 0.0015 | | 0.0015 | 0.0014 | 0.0013 | 0.0013 | 0.0014 | 0.0015 | 0.0014 | 0.0017 |
| Iron (D) | mg/L | 0.028 | 0.026 | 0.030 | | 0.022 | 0.017 | | 0.020 | 0.021 | 0.025 | 0.020 | 0.0093 | 0.013 | 0.014 | 0.014 |
| Lead (D) | mg/L | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0004 | <0.0002 | <0.0002 |
| Lithium (D) | mg/L | 0.068 | 0.075 | 0.069 | | 0.068 | 0.070 | | 0.080 | 0.076 | 0.076 | 0.079 | 0.074 | 0.076 | 0.086 | 0.088 |
| Manganese (D) | mg/L | 0.12 | 0.11 | 0.27 | | 0.21 | 0.19 | | 0.15 | 0.15 | 0.20 | 0.21 | 0.27 | 0.26 | 0.32 | 0.34 |
| Mercury (D) | mg/L | <0.00001 | <0.00001 | <0.00001 | | <0.00001 | <0.00001 | | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Molybdenum (D) | mg/L | 0.0031 | 0.0033 | 0.0037 | | 0.0039 | 0.0036 | | 0.0039 | 0.0038 | 0.0042 | 0.0044 | 0.0043 | 0.0041 | 0.0042 | 0.0046 |
| Nickel (D) | mg/L | 0.0040 | 0.0039 | 0.0042 | | 0.0040 | 0.0044 | | 0.0045 | 0.0046 | 0.0048 | 0.0051 | 0.0061 | 0.0060 | 0.0075 | 0.0091 |
| Selenium (D) | mg/L | 0.00024 | 0.00024 | 0.00027 | | 0.00026 | 0.00023 | | 0.00031 | 0.00032 | 0.00032 | 0.00034 | 0.00044 | 0.00046 | 0.00057 | 0.00059 |
| Silicon (D) | mg/L | 0.41 | 0.33 | 0.33 | | 0.42 | 0.47 | | 0.67 | 0.66 | 0.82 | 0.86 | 0.86 | 0.87 | 0.70 | 0.92 |
| Silver (D) | mg/L | <0.00002 | <0.00002 | <0.00002 | | <0.00002 | <0.00002 | | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | < 4e-05 | <0.00002 | <0.00002 |
| Strontium (D) | mg/L | 2.7 | 2.9 | 3.0 | | 3.5 | 3.3 | | 3.5 | 3.5 | 3.6 | 3.7 | 3.5 | 3.9 | 4.0 | 4.4 |
| Sulfur (D) | mg/L | 43 | 46 | 47 | | 48 | 47 | | 59 | 59 | 61 | 65 | 78 | 82 | 91 | 104 |
| Thallium (D) | mg/L | 0.00002 | 0.00003 | <0.00001 | | 0.00002 | 0.00003 | | 0.00003 | 0.00003 | 0.00003 | 0.00003 | 0.00004 | 0.00004 | 0.00003 | 0.00004 |
| Tin (D) | mg/L | < 0.005 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 | < 0.005 | < 0.005 |
| Titanium (D) | mg/L | < 0.005 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 | < 0.005 | < 0.005 |
| Uranium (D) | mg/L | 0.00045 | 0.00034 | 0.00026 | | 0.00029 | 0.00046 | | 0.00064 | 0.00023 | 0.00076 | 0.0011 | 0.00047 | 0.0017 | 0.0010 | 0.0025 |
| Vanadium (D) | mg/L | < 0.005 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 | < 0.005 | < 0.005 |
| Zinc (D) | mg/L | < 0.005 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.01 | < 0.005 | < 0.005 |
| Zirconium (D) | mg/L | <0.0001 | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0002 | <0.0001 | <0.0001 |
| **Other** | | | | | | | | | | | | | | | | |
| Cyanide (Total) | mg/L | < 0.005 | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 | < 0.005 |
| Radium-226 | Bq/l | 0.0060 | 0.014 | 0.023 | | < 0.005 | 0.019 | | 0.016 | 0.014 | 0.018 | 0.018 | 0.010 | < 0.005 | 0.015 | 0.023 |
| Anion Sum | meq/L | | | | | | | | | | | | | | | |
| Biological Oxygen Demand | mg/L | < 2 | 2.0 | < 2 | | 3.0 | 2.0 | | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 | < 2 |
| Cation Sum | meq/L | | | | | | | | | | | | | | | |
| Cyanide (free) | mg/L | 0.0012 | 0.0017 | 0.0017 | | 0.0017 | 0.0012 | | 0.0016 | 0.0016 | 0.0021 | 0.0026 | 0.0033 | 0.0019 | 0.0028 | 0.0023 |
| Cyanide (WAD) | mg/L | 0.0020 | 0.0019 | 0.0010 | | 0.0011 | < 0.001 | | 0.0011 | < 0.001 | 0.0019 | 0.0013 | 0.0013 | 0.0011 | 0.0012 | 0.0015 |
| Ion Balance | % | | | | | | | | | | | | | | | |
| **Hydrocarbons** | | | | | | | | | | | | | | | | |
| F1 (C6-C10) | mg/L | < 0.025 | < 0.025 | < 0.025 | | < 0.025 | < 0.025 | | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 |
| F1 (C6-C10)-BTEX | mg/L | < 0.025 | < 0.025 | < 0.025 | | < 0.025 | < 0.025 | | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.025 |
| F2 (C10-C16) | mg/L | < 0.1 | < 0.1 | < 0.1 | | < 0.1 | < 0.1 | | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| F3 (C16-C34) | mg/L | < 0.2 | < 0.2 | < 0.2 | | < 0.2 | < 0.2 | | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| F4 (C34-C50) | mg/L | < 0.2 | < 0.2 | < 0.2 | | < 0.2 | < 0.2 | | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Total Oil and Grease | mg/L | | | | | | | | | | | | | | | |
| **Volatile Organics** | | | | | | | | | | | | | | | | |
| Benzene | mg/L | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Ethylbenzene | mg/L | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| m,p-Xylenes | mg/L | <0.0004 | <0.0004 | <0.0004 | | <0.0004 | <0.0004 | | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 |
| o-Xylene | mg/L | <0.0002 | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Toluene | mg/L | <0.0002 | <0.0002 | 0.00026 | | <0.0002 | <0.0002 | | <0.0002 | <0.0002 | 0.00040 | <0.0004 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Xylenes | mg/L | <0.0004 | <0.0004 | <0.0004 | | <0.0004 | <0.0004 | | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 | <0.0004 |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2018 | June | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 1,500 | - | 1,500 | 1,500 | 1,500 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Hardness (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 1.0 | 0 | 0 | 7.6 | - | 7.6 | 7.6 | 7.6 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 1.0 | 0 | 0 | 1,200 | - | 1,200 | 1,200 | 1,200 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 1.0 | 0 | 0 | 5.0 | - | 5.0 | 5.0 | 5.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 1.0 | 0 | 0 | 2.5 | - | 2.5 | 2.5 | 2.5 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 51 | - | 51 | 51 | 51 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 51 | - | 51 | 51 | 51 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 300 | - | 300 | 300 | 300 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 38 | - | 38 | 38 | 38 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 1.0 | 0 | 0 | 3.1 | - | 3.1 | 3.1 | 3.1 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 5.3 | - | 5.3 | 5.3 | 5.3 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 5.4 | - | 5.4 | 5.4 | 5.4 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.12 | - | 0.12 | 0.12 | 0.12 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.068 | - | 0.068 | 0.068 | 0.068 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 3.4 | - | 3.4 | 3.4 | 3.4 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 1.0 | 0 | 0 | 0.091 | - | 0.091 | 0.091 | 0.091 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 7.5 | - | 7.5 | 7.5 | 7.5 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 8.1 | - | 8.1 | 8.1 | 8.1 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Mercury (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00001 | - | 0.00001 | 0.00001 | 0.00001 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | 0 | 0 | 0 |
| | July | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 5.0 | 0 | 0 | 1,740 | 114 | 1,700 | 1,600 | 1,900 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Hardness (D) | mg/L | - | - | - | - | - | 5.0 | 2.0 | 40 | 257 | 236 | 398 | 0 | 470 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 409 | 49 | 407 | 344 | 482 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 4.0 | 0 | 0 | 7.2 | 0.23 | 7.2 | 7.0 | 7.5 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 5.0 | 0 | 0 | 1,050 | 91 | 1,030 | 930 | 1,180 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 5.0 | 0 | 0 | 11 | 6.1 | 9.0 | 5.0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 5.0 | 0 | 0 | 0.84 | 0.48 | 0.70 | 0.30 | 1.6 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 38 | 7.6 | 38 | 27 | 47 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 38 | 7.7 | 39 | 27 | 47 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 135 | 9.2 | 130 | 125 | 145 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 129 | 15 | 128 | 109 | 152 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 432 | 42 | 420 | 400 | 500 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 24 | 2.2 | 23 | 21 | 27 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 21 | 2.5 | 21 | 18 | 25 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 12 | 1.3 | 12 | 11 | 14 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 11 | 1.4 | 12 | 9.6 | 14 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.24 | 0.14 | 0.21 | 0.071 | 0.45 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 118 | 13 | 117 | 101 | 136 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 105 | 13 | 107 | 85 | 120 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 48 | 3.3 | 49 | 43 | 51 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 5.0 | 0 | 0 | 1.4 | 1.1 | 1.8 | 0.095 | 2.6 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 4.8 | 0.75 | 5.0 | 3.7 | 5.5 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 5.0 | 0.69 | 5.2 | 3.9 | 5.6 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.18 | 0.083 | 0.18 | 0.092 | 0.30 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 2.1 | 0.91 | 2.1 | 1.2 | 3.2 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 5.0 | 0 | 0 | 0.045 | 0.031 | 0.034 | 0.022 | 0.099 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 6.2 | 1.1 | 5.7 | 4.8 | 7.4 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 8.2 | 2.9 | 6.7 | 5.9 | 13 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 5.0 | 0 | 0 | 1.6 | 1.6 | 1.2 | 0.52 | 4.4 | 0 | 20 | 1.0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 5.0 | 0 | 0 | 0.0014 | 0.00035 | 0.0013 | 0.0011 | 0.0019 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.10 | 0.014 | 0.099 | 0.083 | 0.12 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.12 | 0.026 | 0.12 | 0.094 | 0.16 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 5.0 | 1.0 | 20 | 0.00002 | 0.00001 | 0.00002 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 5.0 | 0 | 0 | 0.0014 | 0.00039 | 0.0013 | 0.0010 | 0.0021 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.14 | 0.089 | 0.098 | 0.083 | 0.29 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 5.0 | 4.0 | 80 | - | - | 0.00020 | 0.00020 | 0.00033 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.11 | 0.011 | 0.12 | 0.092 | 0.12 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.14 | 0.11 | 0.14 | 0.023 | 0.31 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 5.0 | 4.0 | 80 | - | - | 0.0010 | 0.0010 | 0.0014 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 5.0 | 0 | 0 | 0.0024 | 0.00014 | 0.0025 | 0.0022 | 0.0025 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 2.4 | 0.15 | 2.4 | 2.2 | 2.6 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00003 | 0.00001 | 0.00003 | 0.00002 | 0.00004 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00025 | 0.00022 | 0.00018 | 0.00011 | 0.00064 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 5.0 | 2.0 | 40 | 0.0049 | 0.0025 | 0.0054 | 0.0050 | 0.0086 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.068 | 0.034 | 0.084 | 0.017 | 0.099 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0013 | 0.00036 | 0.0012 | 0.00088 | 0.0018 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.10 | 0.013 | 0.098 | 0.093 | 0.12 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.13 | 0.018 | 0.14 | 0.10 | 0.15 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 5.0 | 1.0 | 20 | 0.00001 | 0.00001 | 0.00002 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0010 | 0.00013 | 0.0011 | 0.00085 | 0.0012 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 5.0 | 1.0 | 20 | 0.025 | 0.017 | 0.026 | 0.0050 | 0.048 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.13 | 0.012 | 0.13 | 0.11 | 0.14 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.10 | 0.12 | 0.061 | 0.0089 | 0.30 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 5.0 | 3.0 | 60 | - | - | 0.0010 | 0.0010 | 0.0014 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0022 | 0.00004 | 0.0022 | 0.0022 | 0.0023 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 2.6 | 0.14 | 2.6 | 2.4 | 2.7 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00003 | 0.00000 | 0.00003 | 0.00003 | 0.00003 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 5.0 | 4.0 | 80 | - | - | 0.00010 | 0.00010 | 0.00012 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 5.0 | 3.0 | 60 | - | - | 0.0050 | 0.0050 | 0.0068 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | Total Oil and Grease | mg/L | - | - | - | - | - | 5.0 | 2.0 | 40 | 0.92 | 0.68 | 1.0 | 0.50 | 1.8 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 5.0 | 4.0 | 80 | - | - | 0.00020 | 0.00020 | 0.00032 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 5.0 | 3.0 | 60 | - | - | 0.0010 | 0.0010 | 0.0027 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 5.0 | 4.0 | 80 | - | - | 0.0050 | 0.0050 | 0.0070 | - | - | - | 0 | 0 | 0 |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| | | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 4.0 | 0 | 0 | 1,950 | 342 | 2,000 | 1,500 | 2,300 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Hardness (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 387 | 260 | 491 | 0 | 565 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 406 | 234 | 505 | 57 | 557 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 4.0 | 0 | 0 | 7.2 | 0.25 | 7.2 | 6.8 | 7.4 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 4.0 | 0 | 0 | 1,160 | 215 | 1,200 | 870 | 1,370 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 4.0 | 1.0 | 25 | 7.4 | 4.8 | 9.0 | 1.0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.46 | 0.40 | 0.40 | 0.10 | 1.0 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 27 | 14 | 33 | 6.2 | 37 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 27 | 14 | 33 | 6.3 | 37 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 123 | 72 | 152 | 17 | 173 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 124 | 72 | 154 | 17 | 171 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 545 | 110 | 560 | 400 | 660 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 23 | 13 | 27 | 4.0 | 32 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 24 | 13 | 30 | 3.9 | 32 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 15 | 1.2 | 14 | 14 | 17 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 15 | 1.5 | 15 | 13 | 17 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.73 | 0.53 | 0.77 | 0.078 | 1.3 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 172 | 44 | 154 | 144 | 236 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 172 | 38 | 158 | 145 | 229 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 44 | 24 | 54 | 7.2 | 60 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 4.0 | 0 | 0 | 1.5 | 1.7 | 0.84 | 0.30 | 4.1 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 6.3 | 6.0 | 3.4 | 3.0 | 15 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 6.5 | 6.0 | 3.7 | 3.1 | 16 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.23 | 0.099 | 0.22 | 0.13 | 0.36 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 1.8 | 1.2 | 1.4 | 0.88 | 3.6 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.021 | 0.020 | 0.037 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 6.9 | 4.7 | 8.1 | 0.50 | 11 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 7.4 | 5.0 | 8.8 | 0.50 | 12 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 4.0 | 0 | 0 | 0.63 | 0.44 | 0.74 | 0.0050 | 1.0 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0019 | 0.0011 | 0.0022 | 0.00028 | 0.0030 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.11 | 0.069 | 0.13 | 0.0043 | 0.16 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.33 | 0.30 | 0.19 | 0.15 | 0.77 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 4.0 | 1.0 | 25 | 0.00080 | 0.00038 | 0.00092 | 0.00050 | 0.0011 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.12 | 0.11 | 0.11 | 0.010 | 0.26 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 4.0 | 3.0 | 75 | - | - | 0.00020 | 0.00020 | 0.00022 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.14 | 0.011 | 0.14 | 0.13 | 0.16 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.26 | 0.19 | 0.31 | 0.0024 | 0.41 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0016 | 0.00074 | 0.0018 | 0.0010 | 0.0022 | - | - | - | - | - | - |
| 2018 | August | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 4.0 | 1.0 | 25 | 0.0024 | 0.0013 | 0.0029 | 0.0010 | 0.0034 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 2.8 | 1.6 | 3.3 | 0.40 | 4.0 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.00001 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00013 | 0.00003 | 0.00013 | 0.00010 | 0.00018 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 4.0 | 2.0 | 50 | - | - | 0.0059 | 0.0050 | 0.0085 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.084 | 0.094 | 0.056 | 0.0043 | 0.22 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0019 | 0.0011 | 0.0024 | 0.00029 | 0.0050 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.10 | 0.066 | 0.13 | 0.0044 | 0.15 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.59 | 0.50 | 0.46 | 0.20 | 2.5 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.050 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0016 | 0.0023 | 0.00065 | 0.00022 | 0.010 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.038 | 0.0050 | 0.25 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.15 | 0.013 | 0.14 | 0.13 | 0.16 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.24 | 0.17 | 0.28 | 0.0025 | 0.38 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.0020 | 0.0010 | 0.050 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.0030 | 0.0010 | 0.050 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 2.6 | 1.6 | 3.0 | 0.42 | 4.1 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.00002 | 0.00001 | 0.00050 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.25 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.25 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.00011 | 0.00010 | 0.0050 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.25 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.0061 | 0.0050 | 0.25 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | Total Oil and Grease | mg/L | - | - | - | - | - | 3.0 | 2.0 | 67 | - | - | 0.50 | 0.50 | 1.2 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.0010 | 0.0010 | 0.0015 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 4.0 | 3.0 | 75 | - | - | 0.0050 | 0.0050 | 0.0080 | - | - | - | 0 | 0 | 0 |
| | | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 1.0 | 0 | 0 | 110 | - | 110 | 110 | 110 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 1.0 | 0 | 0 | 7.3 | - | 7.3 | 7.3 | 7.3 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 1,700 | - | 1,700 | 1,700 | 1,700 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 1.0 | 0 | 0 | 13 | - | 13 | 13 | 13 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 1,780 | - | 1,780 | 1,780 | 1,780 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 326 | - | 326 | 326 | 326 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 342 | - | 342 | 342 | 342 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 1.0 | 0 | 0 | 7.2 | - | 7.2 | 7.2 | 7.2 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 1.0 | 0 | 0 | 915 | - | 915 | 915 | 915 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 1.0 | 0 | 0 | 3.0 | - | 3.0 | 3.0 | 3.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 1.0 | 0 | 0 | 0.60 | - | 0.60 | 0.60 | 0.60 | - | - | - | - | - | - |
| 2019 | June | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 93 | - | 93 | 93 | 93 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 97 | - | 97 | 97 | 97 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 450 | - | 450 | 450 | 450 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 23 | - | 23 | 23 | 23 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 25 | - | 25 | 25 | 25 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 13 | - | 13 | 13 | 13 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.86 | - | 0.86 | 0.86 | 0.86 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 169 | - | 169 | 169 | 169 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 177 | - | 177 | 177 | 177 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 52 | - | 52 | 52 | 52 | - | - | - | - | - | - |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | Water Licence Limits | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | MEL-14 Summary Statistics | MEL-14 Summary Statistics | MEL-14 Summary Statistics | MEL-14 Summary Statistics | MEL-14 Summary Statistics | MEL-14 Summary Statistics | MEL-14 Summary Statistics | MEL-14 Summary Statistics | Water Licence Limits | Water Licence Limits | Water Licence Limits | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | MDMER Authorized Limits of Deleterious Substances (Schedule 4) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2019 | June | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 1.0 | 0 | 0 | 4.2 | - | 4.2 | 4.2 | 4.2 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.21 | - | 0.21 | 0.21 | 0.21 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 4.2 | - | 4.2 | 4.2 | 4.2 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 1.0 | 0 | 0 | 0.021 | - | 0.021 | 0.021 | 0.021 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 4.4 | - | 4.4 | 4.4 | 4.4 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 4.8 | - | 4.8 | 4.8 | 4.8 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 1.0 | 0 | 0 | 0.17 | - | 0.17 | 0.17 | 0.17 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 1.0 | 0 | 0 | 0.0025 | - | 0.0025 | 0.0025 | 0.0025 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.052 | - | 0.052 | 0.052 | 0.052 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.23 | - | 0.23 | 0.23 | 0.23 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00002 | - | 0.00002 | 0.00002 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00075 | - | 0.00075 | 0.00075 | 0.00075 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 1.0 | 0 | 0 | 0.0013 | - | 0.0013 | 0.0013 | 0.0013 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.12 | - | 0.12 | 0.12 | 0.12 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 1.0 | 0 | 0 | 0.00026 | - | 0.00026 | 0.00026 | 0.00026 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.068 | - | 0.068 | 0.068 | 0.068 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.033 | - | 0.033 | 0.033 | 0.033 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0015 | - | 0.0015 | 0.0015 | 0.0015 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 1.0 | 0 | 0 | 0.0034 | - | 0.0034 | 0.0034 | 0.0034 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.48 | - | 0.48 | 0.48 | 0.48 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 2.0 | - | 2.0 | 2.0 | 2.0 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 22 | - | 22 | 22 | 22 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00002 | - | 0.00002 | 0.00002 | 0.00002 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.034 | - | 0.034 | 0.034 | 0.034 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0023 | - | 0.0023 | 0.0023 | 0.0023 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.052 | - | 0.052 | 0.052 | 0.052 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.23 | - | 0.23 | 0.23 | 0.23 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00001 | - | 0.00001 | 0.00001 | 0.00001 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00069 | - | 0.00069 | 0.00069 | 0.00069 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0012 | - | 0.0012 | 0.0012 | 0.0012 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.090 | - | 0.090 | 0.090 | 0.090 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.067 | - | 0.067 | 0.067 | 0.067 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.027 | - | 0.027 | 0.027 | 0.027 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0015 | - | 0.0015 | 0.0015 | 0.0015 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0033 | - | 0.0033 | 0.0033 | 0.0033 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00010 | - | 0.00010 | 0.00010 | 0.00010 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.44 | - | 0.44 | 0.44 | 0.44 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 1.9 | - | 1.9 | 1.9 | 1.9 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 20 | - | 20 | 20 | 20 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00003 | - | 0.00003 | 0.00003 | 0.00003 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0014 | - | 0.0014 | 0.0014 | 0.0014 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 1.0 | 0 | 0 | 0.013 | - | 0.013 | 0.013 | 0.013 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 1.0 | 0 | 0 | 0.30 | - | 0.30 | 0.30 | 0.30 | - | - | - | 0 | 0 | 0 |
| | July | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 1.0 | 0 | 0 | 37 | - | 37 | 37 | 37 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 9.6 | - | 9.6 | 9.6 | 9.6 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 2.0 | 0 | 0 | 7.0 | 0.078 | 7.0 | 6.9 | 7.0 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 4.0 | 0 | 0 | 1,750 | 129 | 1,750 | 1,600 | 1,900 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 2.0 | 0 | 0 | 18 | 5.8 | 18 | 14 | 22 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 2.0 | 0 | 0 | 1,710 | 82 | 1,710 | 1,650 | 1,770 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 310 | 49 | 296 | 266 | 380 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 302 | 43 | 293 | 260 | 361 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 4.0 | 0 | 0 | 7.4 | 0.10 | 7.4 | 7.2 | 7.5 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 4.0 | 0 | 0 | 1,100 | 120 | 1,140 | 935 | 1,190 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 4.0 | 1.0 | 25 | 3.6 | 3.3 | 3.0 | 1.0 | 8.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 4.0 | 0 | 0 | 5.0 | 8.0 | 1.4 | 0.40 | 17 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 19 | 5.5 | 19 | 13 | 25 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 19 | 5.5 | 19 | 13 | 25 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 87 | 15 | 83 | 73 | 109 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 85 | 14 | 82 | 72 | 105 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 455 | 39 | 455 | 410 | 500 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 23 | 2.8 | 22 | 20 | 26 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 22 | 1.9 | 21 | 20 | 24 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 13 | 0.87 | 13 | 13 | 14 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 13 | 1.2 | 12 | 12 | 14 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.79 | 0.26 | 0.87 | 0.42 | 0.99 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 185 | 5.4 | 184 | 179 | 192 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 182 | 7.8 | 182 | 174 | 192 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 52 | 5.5 | 54 | 44 | 56 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 4.0 | 0 | 0 | 4.7 | 0.79 | 4.7 | 3.7 | 5.6 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 13 | 1.3 | 13 | 11 | 14 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 13 | 1.3 | 14 | 11 | 14 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.37 | 0.023 | 0.37 | 0.35 | 0.40 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 5.0 | 0.51 | 5.2 | 4.3 | 5.5 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.023 | 0.020 | 0.027 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 4.0 | 0.83 | 4.2 | 2.8 | 4.7 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 4.5 | 0.97 | 4.8 | 3.1 | 5.2 | - | - | - | - | - | - |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2019 | July | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 4.0 | 0 | 0 | 0.20 | 0.18 | 0.14 | 0.073 | 0.45 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0017 | 0.00055 | 0.0016 | 0.0011 | 0.0024 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.045 | 0.0058 | 0.045 | 0.038 | 0.052 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.33 | 0.035 | 0.34 | 0.28 | 0.36 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00001 | 0.00001 | 0.00002 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00059 | 0.00025 | 0.00064 | 0.00024 | 0.00083 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 4.0 | 1.0 | 25 | 0.00090 | 0.00048 | 0.00099 | 0.00050 | 0.0014 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.70 | 1.1 | 0.18 | 0.091 | 2.4 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.071 | 0.0069 | 0.071 | 0.062 | 0.077 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.045 | 0.032 | 0.045 | 0.012 | 0.080 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0012 | 0.00047 | 0.0013 | 0.0010 | 0.0016 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0027 | 0.00066 | 0.0028 | 0.0018 | 0.0034 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.42 | 0.15 | 0.44 | 0.21 | 0.58 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 1.9 | 0.21 | 1.9 | 1.6 | 2.2 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 19 | 3.5 | 18 | 17 | 24 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00002 | 0.00001 | 0.00003 | 0.00001 | 0.00003 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00020 | 0.00005 | 0.00022 | 0.00013 | 0.00024 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 4.0 | 2.0 | 50 | - | - | 0.0058 | 0.0050 | 0.0067 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.037 | 0.012 | 0.035 | 0.024 | 0.053 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0016 | 0.00049 | 0.0016 | 0.00096 | 0.0022 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.046 | 0.0081 | 0.045 | 0.037 | 0.056 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.33 | 0.039 | 0.34 | 0.27 | 0.36 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00055 | 0.00032 | 0.00063 | 0.00020 | 0.00085 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00081 | 0.00050 | 0.00092 | 0.00020 | 0.0013 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.078 | 0.069 | 0.065 | 0.0098 | 0.17 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.072 | 0.0072 | 0.070 | 0.067 | 0.082 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.038 | 0.028 | 0.036 | 0.011 | 0.070 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0011 | 0.00044 | 0.0013 | 0.0010 | 0.0015 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0026 | 0.00084 | 0.0027 | 0.0014 | 0.0034 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.41 | 0.15 | 0.43 | 0.21 | 0.56 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 1.9 | 0.32 | 1.9 | 1.5 | 2.3 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 20 | 2.5 | 19 | 18 | 24 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00003 | 0.00001 | 0.00003 | 0.00001 | 0.00003 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00014 | 0.00008 | 0.00015 | 0.00010 | 0.00022 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.0050 | 0.0050 | 0.0071 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.00010 | 0.00010 | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.0010 | 0.0010 | 0.0014 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | 0 | 0 | 0 |
| | August | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 2.0 | 0 | 0 | 90 | 7.1 | 90 | 85 | 95 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 7.0 | 0.71 | 7.2 | 5.9 | 7.5 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 6.0 | 0 | 0 | 7.4 | 0.23 | 7.4 | 7.1 | 7.7 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 6.0 | 0 | 0 | 1,750 | 152 | 1,750 | 1,500 | 1,900 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 6.0 | 0 | 0 | 15 | 3.0 | 15 | 10 | 19 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 6.0 | 0 | 0 | 1,840 | 229 | 1,800 | 1,530 | 2,170 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 321 | 81 | 330 | 234 | 391 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 338 | 94 | 340 | 232 | 441 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 4.0 | 0 | 0 | 7.5 | 0.26 | 7.5 | 7.3 | 7.8 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 6.0 | 0 | 0 | 1,130 | 115 | 1,140 | 965 | 1,310 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 4.0 | 0 | 0 | 3.8 | 2.4 | 3.0 | 2.0 | 7.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 4.0 | 0 | 0 | 0.85 | 0.70 | 0.85 | 0.20 | 1.5 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 34 | 16 | 34 | 18 | 50 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 34 | 17 | 34 | 18 | 51 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 90 | 22 | 92 | 66 | 109 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 93 | 24 | 95 | 65 | 118 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 428 | 47 | 435 | 370 | 470 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 24 | 6.2 | 24 | 17 | 29 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 26 | 8.3 | 25 | 17 | 36 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 12 | 0.94 | 12 | 11 | 13 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 12 | 1.3 | 12 | 11 | 14 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.60 | 0.15 | 0.62 | 0.43 | 0.75 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 170 | 10.0 | 170 | 162 | 181 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 178 | 15 | 178 | 161 | 193 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 55 | 13 | 57 | 39 | 69 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 4.0 | 0 | 0 | 3.1 | 0.53 | 3.0 | 2.6 | 3.8 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 12 | 1.2 | 12 | 11 | 14 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 13 | 1.1 | 13 | 12 | 14 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.70 | 0.084 | 0.73 | 0.57 | 0.75 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 3.5 | 0.51 | 3.5 | 2.9 | 4.1 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.022 | 0.020 | 0.025 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 6.9 | 4.2 | 6.9 | 2.8 | 11 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 8.0 | 5.2 | 7.9 | 3.3 | 13 | - | - | - | - | - | - |

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2019 | August | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 4.0 | 0 | 0 | 0.30 | 0.25 | 0.31 | 0.067 | 0.53 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0015 | 0.00059 | 0.0016 | 0.00090 | 0.0021 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.058 | 0.016 | 0.060 | 0.038 | 0.072 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.27 | 0.11 | 0.25 | 0.18 | 0.39 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00001 | 0.00000 | 0.00001 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00041 | 0.00007 | 0.00040 | 0.00034 | 0.00050 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 4.0 | 0 | 0 | 0.00098 | 0.00042 | 0.00091 | 0.00062 | 0.0015 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.091 | 0.035 | 0.090 | 0.049 | 0.13 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 4.0 | 3.0 | 75 | - | - | 0.00020 | 0.00020 | 0.00022 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.053 | 0.0026 | 0.054 | 0.050 | 0.056 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.014 | 0.0077 | 0.013 | 0.0056 | 0.023 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0011 | 0.00048 | 0.0013 | 0.0010 | 0.0015 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0030 | 0.00073 | 0.0029 | 0.0022 | 0.0038 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.00011 | 0.00010 | 0.00013 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.35 | 0.12 | 0.34 | 0.24 | 0.48 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 1.9 | 0.38 | 2.0 | 1.4 | 2.3 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 21 | 5.4 | 22 | 14 | 26 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00003 | 0.00001 | 0.00003 | 0.00002 | 0.00004 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00029 | 0.00014 | 0.00027 | 0.00017 | 0.00046 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 4.0 | 3.0 | 75 | - | - | 0.0050 | 0.0050 | 0.0055 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.059 | 0.039 | 0.048 | 0.027 | 0.11 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0014 | 0.00049 | 0.0014 | 0.00087 | 0.0019 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.055 | 0.015 | 0.057 | 0.039 | 0.069 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.28 | 0.11 | 0.26 | 0.18 | 0.41 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00040 | 0.00005 | 0.00039 | 0.00035 | 0.00047 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00091 | 0.00033 | 0.00087 | 0.00060 | 0.0013 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.069 | 0.056 | 0.045 | 0.035 | 0.15 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.056 | 0.0021 | 0.056 | 0.054 | 0.058 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0083 | 0.0026 | 0.0087 | 0.0053 | 0.011 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0045 | 0.0043 | 0.0038 | 0.0010 | 0.0098 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0029 | 0.00063 | 0.0028 | 0.0023 | 0.0036 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.00011 | 0.00010 | 0.00012 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.33 | 0.096 | 0.34 | 0.25 | 0.42 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 1.8 | 0.40 | 1.8 | 1.3 | 2.2 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 21 | 4.8 | 21 | 16 | 25 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00003 | 0.00000 | 0.00003 | 0.00002 | 0.00003 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00025 | 0.00014 | 0.00022 | 0.00013 | 0.00044 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.0050 | 0.0050 | 0.0075 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 2.0 | 2.0 | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | 0 | 0 | 0 |
| | September | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 2.0 | 0 | 0 | 102 | 0.57 | 102 | 101 | 102 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 3.0 | 0 | 0 | 8.7 | 1.3 | 8.1 | 7.7 | 10 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 5.0 | 0 | 0 | 7.1 | 0.12 | 7.1 | 7.0 | 7.3 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 5.0 | 0 | 0 | 2,140 | 55 | 2,100 | 2,100 | 2,200 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 5.0 | 0 | 0 | 13 | 3.2 | 12 | 10 | 18 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 5.0 | 0 | 0 | 2,170 | 106 | 2,220 | 1,990 | 2,240 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 434 | 28 | 445 | 392 | 453 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 436 | 31 | 441 | 399 | 462 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 4.0 | 0 | 0 | 7.6 | 0.075 | 7.6 | 7.5 | 7.7 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 5.0 | 0 | 0 | 1,340 | 57 | 1,320 | 1,290 | 1,430 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 4.0 | 0 | 0 | 3.3 | 1.3 | 3.0 | 2.0 | 5.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 4.0 | 0 | 0 | 0.70 | 0.29 | 0.70 | 0.40 | 1.0 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 42 | 12 | 47 | 25 | 51 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 42 | 12 | 47 | 25 | 51 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 122 | 9.1 | 125 | 108 | 128 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 123 | 8.5 | 124 | 112 | 131 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 530 | 16 | 530 | 510 | 550 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 32 | 1.7 | 32 | 30 | 34 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 31 | 2.4 | 31 | 29 | 34 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 14 | 0.34 | 15 | 14 | 15 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 14 | 0.50 | 14 | 14 | 15 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 1.3 | 0.45 | 1.2 | 0.81 | 1.9 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 211 | 17 | 203 | 201 | 236 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 210 | 18 | 212 | 190 | 227 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 83 | 6.2 | 83 | 75 | 90 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 4.0 | 0 | 0 | 3.6 | 0.22 | 3.6 | 3.4 | 3.9 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 13 | 1.00 | 13 | 12 | 14 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 13 | 1.0 | 14 | 12 | 14 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.52 | 0.082 | 0.52 | 0.43 | 0.60 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.010 | 0.010 | 0.019 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 3.8 | 0.45 | 3.9 | 3.3 | 4.2 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.020 | 0.020 | 0.024 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 9.0 | 3.4 | 11 | 4.0 | 11 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 9.8 | 3.7 | 12 | 4.3 | 12 | - | - | - | - | - | - |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2019 | September | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 4.0 | 0 | 0 | 0.26 | 0.20 | 0.21 | 0.077 | 0.54 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0025 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0018 | 0.00041 | 0.0020 | 0.0012 | 0.0021 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.068 | 0.0098 | 0.073 | 0.053 | 0.073 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.24 | 0.099 | 0.28 | 0.18 | 0.33 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00002 | 0.00000 | 0.00002 | 0.00002 | 0.00005 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00049 | 0.00004 | 0.00052 | 0.00043 | 0.0010 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 4.0 | 1.0 | 25 | 0.00091 | 0.00025 | 0.00086 | 0.00065 | 0.0025 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.14 | 0.096 | 0.11 | 0.052 | 0.28 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.062 | 0.0069 | 0.063 | 0.054 | 0.068 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.040 | 0.0094 | 0.037 | 0.034 | 0.054 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.0018 | 0.00057 | 0.0019 | 0.0011 | 0.0050 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 4.0 | 1.0 | 25 | 0.0034 | 0.00070 | 0.0039 | 0.0034 | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00015 | 0.00007 | 0.00013 | 0.00011 | 0.00050 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.70 | 0.28 | 0.64 | 0.42 | 1.1 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 2.1 | 0.13 | 2.1 | 2.0 | 2.3 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 30 | 2.7 | 30 | 26 | 32 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.00002 | 0.00001 | 0.00005 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00030 | 0.00005 | 0.00035 | 0.00026 | 0.00050 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 4.0 | 3.0 | 75 | - | - | 0.0055 | 0.0050 | 0.025 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.041 | 0.013 | 0.039 | 0.028 | 0.058 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0017 | 0.00044 | 0.0018 | 0.0011 | 0.0022 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.068 | 0.012 | 0.071 | 0.051 | 0.078 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.26 | 0.080 | 0.25 | 0.19 | 0.35 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00002 | 0.00000 | 0.00002 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00050 | 0.00010 | 0.00053 | 0.00037 | 0.00059 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00079 | 0.00019 | 0.00078 | 0.00059 | 0.0010 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.062 | 0.030 | 0.057 | 0.034 | 0.10 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.00020 | 0.00020 | 0.00036 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.059 | 0.0052 | 0.059 | 0.054 | 0.066 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.030 | 0.013 | 0.033 | 0.013 | 0.043 | - | - | - | - | - | - |
| | | Mercury (D) | mg/L | - | - | - | - | - | 3.0 | 3.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0026 | 0.0019 | 0.0020 | 0.0011 | 0.0054 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0037 | 0.00035 | 0.0039 | 0.0032 | 0.0039 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00013 | 0.00002 | 0.00013 | 0.00010 | 0.00015 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.68 | 0.23 | 0.61 | 0.48 | 1.0 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 2.3 | 0.11 | 2.3 | 2.2 | 2.4 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 31 | 0.80 | 31 | 30 | 32 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00002 | 0.00001 | 0.00002 | 0.00001 | 0.00003 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00032 | 0.00003 | 0.00031 | 0.00029 | 0.00035 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 4.0 | 3.0 | 75 | - | - | 0.0050 | 0.0050 | 0.011 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.0010 | 0.0010 | 0.0010 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | 0 | 0 | 0 |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2019 | October | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 1.0 | 0 | 0 | 7.3 | - | 7.3 | 7.3 | 7.3 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 2,100 | - | 2,100 | 2,100 | 2,100 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 1.0 | 0 | 0 | 3.5 | - | 3.5 | 3.5 | 3.5 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 2,170 | - | 2,170 | 2,170 | 2,170 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 385 | - | 385 | 385 | 385 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 422 | - | 422 | 422 | 422 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 1.0 | 0 | 0 | 7.4 | - | 7.4 | 7.4 | 7.4 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 1,400 | - | - | - | - | 1.0 | 0 | 0 | 860 | - | 860 | 860 | 860 | 0 | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 1.0 | 0 | 0 | 2.0 | - | 2.0 | 2.0 | 2.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 1.0 | 0 | 0 | 0.20 | - | 0.20 | 0.20 | 0.20 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 24 | - | 24 | 24 | 24 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 24 | - | 24 | 24 | 24 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 108 | - | 108 | 108 | 108 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 124 | - | 124 | 124 | 124 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 530 | - | 530 | 530 | 530 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 28 | - | 28 | 28 | 28 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 28 | - | 28 | 28 | 28 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 14 | - | 14 | 14 | 14 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 15 | - | 15 | 15 | 15 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.68 | - | 0.68 | 0.68 | 0.68 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 214 | - | 214 | 214 | 214 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 215 | - | 215 | 215 | 215 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 74 | - | 74 | 74 | 74 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 1.0 | 0 | 0 | 4.0 | - | 4.0 | 4.0 | 4.0 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 14 | - | 14 | 14 | 14 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 14 | - | 14 | 14 | 14 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.37 | - | 0.37 | 0.37 | 0.37 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 4.3 | - | 4.3 | 4.3 | 4.3 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.020 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 3.6 | - | 3.6 | 3.6 | 3.6 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 3.6 | - | 3.6 | 3.6 | 3.6 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 1.0 | 0 | 0 | 0.12 | - | 0.12 | 0.12 | 0.12 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 1.0 | 0 | 0 | 0.0010 | - | 0.0010 | 0.0010 | 0.0010 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.055 | - | 0.055 | 0.055 | 0.055 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.35 | - | 0.35 | 0.35 | 0.35 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00003 | - | 0.00003 | 0.00003 | 0.00003 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00052 | - | 0.00052 | 0.00052 | 0.00052 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 1.0 | 0 | 0 | 0.00072 | - | 0.00072 | 0.00072 | 0.00072 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.080 | - | 0.080 | 0.080 | 0.080 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.082 | - | 0.082 | 0.082 | 0.082 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.038 | - | 0.038 | 0.038 | 0.038 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0014 | - | 0.0014 | 0.0014 | 0.0014 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 1.0 | 0 | 0 | 0.0034 | - | 0.0034 | 0.0034 | 0.0034 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00014 | - | 0.00014 | 0.00014 | 0.00014 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.66 | - | 0.66 | 0.66 | 0.66 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 2.2 | - | 2.2 | 2.2 | 2.2 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 33 | - | 33 | 33 | 33 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00002 | - | 0.00002 | 0.00002 | 0.00002 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00028 | - | 0.00028 | 0.00028 | 0.00028 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 1.0 | 0 | 0 | 0.015 | - | 0.015 | 0.015 | 0.015 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.019 | - | 0.019 | 0.019 | 0.019 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00050 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00084 | - | 0.00084 | 0.00084 | 0.00084 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.050 | - | 0.050 | 0.050 | 0.050 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.34 | - | 0.34 | 0.34 | 0.34 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00002 | - | 0.00002 | 0.00002 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00048 | - | 0.00048 | 0.00048 | 0.00048 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00068 | - | 0.00068 | 0.00068 | 0.00068 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.044 | - | 0.044 | 0.044 | 0.044 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.070 | - | 0.070 | 0.070 | 0.070 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.031 | - | 0.031 | 0.031 | 0.031 | - | - | - | - | - | - |
| | | Mercury (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0012 | - | 0.0012 | 0.0012 | 0.0012 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0034 | - | 0.0034 | 0.0034 | 0.0034 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00012 | - | 0.00012 | 0.00012 | 0.00012 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.53 | - | 0.53 | 0.53 | 0.53 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 2.1 | - | 2.1 | 2.1 | 2.1 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 28 | - | 28 | 28 | 28 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00002 | - | 0.00002 | 0.00002 | 0.00002 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00025 | - | 0.00025 | 0.00025 | 0.00025 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.013 | - | 0.013 | 0.013 | 0.013 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 1.0 | 0 | 0 | 0.0054 | - | 0.0054 | 0.0054 | 0.0054 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | 0 | 0 | 0 |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| | | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| 2020 | January | DO (%) | % | - | - | - | - | - | 1.0 | 0 | 0 | 96 | - | 96 | 96 | 96 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 1.0 | 0 | 0 | 6.9 | - | 6.9 | 6.9 | 6.9 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 4,590 | - | 4,590 | 4,590 | 4,590 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 1.0 | 0 | 0 | 7.5 | - | 7.5 | 7.5 | 7.5 | - | - | - | - | - | - |
| | June | DO (%) | % | - | - | - | - | - | 6.0 | 0 | 0 | 98 | 2.3 | 98 | 94 | 100 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 12 | 0.22 | 12 | 12 | 12 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 6.0 | 0 | 0 | 7.0 | 0.15 | 7.0 | 6.9 | 7.3 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 6.0 | 0 | 0 | 4,930 | 157 | 4,940 | 4,720 | 5,180 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 6.0 | 0 | 0 | 6.4 | 1.4 | 6.1 | 4.7 | 8.7 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 6.0 | 0 | 0 | 4,800 | 179 | 4,750 | 4,600 | 5,100 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1,070 | 47 | 1,060 | 1,020 | 1,140 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1,060 | 26 | 1,050 | 1,020 | 1,090 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 6.0 | 0 | 0 | 7.5 | 0.11 | 7.6 | 7.4 | 7.7 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 3,500 | - | - | - | - | 6.0 | 0 | 0 | 2,840 | 231 | 2,850 | 2,570 | 3,100 | 0 | - | - | - | - | - |
| | | Total Dissolved Solids (Calcul | mg/L | - | - | - | - | - | 2.0 | 0 | 0 | 2,600 | 0 | 2,600 | 2,600 | 2,600 | - | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 6.0 | 0 | 0 | 6.3 | 1.0 | 6.0 | 5.0 | 8.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 6.0 | 0 | 0 | 1.6 | 0.19 | 1.7 | 1.2 | 1.7 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 109 | 7.7 | 110 | 96 | 120 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 110 | 7.3 | 110 | 97 | 120 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 307 | 14 | 302 | 293 | 327 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 301 | 5.5 | 300 | 295 | 311 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1,280 | 41 | 1,300 | 1,200 | 1,300 | - | - | - | - | - | - |
| | | Fluoride | mg/L | - | - | - | - | - | 2.0 | 2.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 75 | 3.5 | 75 | 71 | 79 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 74 | 3.1 | 73 | 70 | 79 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 35 | 1.1 | 34 | 34 | 37 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 34 | 0.85 | 34 | 34 | 36 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 5.9 | 1.6 | 5.7 | 3.8 | 8.3 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 492 | 19 | 493 | 470 | 510 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 482 | 18 | 476 | 462 | 512 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 233 | 10 | 230 | 220 | 250 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 6.0 | 0 | 0 | 11 | 0.94 | 11 | 9.4 | 12 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 28 | 1.2 | 28 | 26 | 29 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 28 | 1.2 | 28 | 26 | 29 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.090 | 0.011 | 0.086 | 0.083 | 0.11 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 6.0 | 3.0 | 50 | - | - | 0.011 | 0.010 | 0.023 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 12 | 1.6 | 12 | 9.4 | 14 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 6.0 | 0 | 0 | 0.048 | 0.019 | 0.048 | 0.020 | 0.072 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 12 | 0.82 | 13 | 11 | 13 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 14 | 0.84 | 14 | 12 | 14 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 6.0 | 0 | 0 | 0.62 | 0.11 | 0.64 | 0.45 | 0.79 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 6.0 | 0 | 0 | 0.047 | 0.029 | 0.061 | 0.0047 | 0.072 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.15 | 0.0018 | 0.15 | 0.15 | 0.16 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.44 | 0.098 | 0.48 | 0.45 | 0.52 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.00008 | 0.00002 | 0.00009 | 0.00008 | 0.00010 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0031 | 0.00016 | 0.0031 | 0.0029 | 0.0033 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 6.0 | 1.0 | 17 | 0.0030 | 0.00027 | 0.0031 | 0.0028 | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.16 | 0.071 | 0.16 | 0.10 | 0.25 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 6.0 | 4.0 | 67 | - | - | 0.0010 | 0.00061 | 0.0020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.15 | 0.0058 | 0.15 | 0.14 | 0.16 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1.3 | 0.032 | 1.3 | 1.3 | 1.4 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 6.0 | 4.0 | 67 | - | - | 0.0050 | 0.0043 | 0.010 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 6.0 | 1.0 | 17 | 0.0086 | 0.0019 | 0.0095 | 0.0087 | 0.010 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.00064 | 0.00008 | 0.00068 | 0.00060 | 0.0010 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1.8 | 0.14 | 1.8 | 1.5 | 1.9 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 5.5 | 0.22 | 5.5 | 5.2 | 5.8 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 85 | 6.7 | 83 | 77 | 97 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 6.0 | 2.0 | 33 | 0.00005 | 0.00001 | 0.00005 | 0.00005 | 0.00010 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0019 | 0.00026 | 0.0019 | 0.0014 | 0.0021 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 6.0 | 4.0 | 67 | - | - | 0.025 | 0.021 | 0.050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.15 | 0.038 | 0.13 | 0.11 | 0.21 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.039 | 0.027 | 0.051 | 0.0026 | 0.063 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.15 | 0.0056 | 0.15 | 0.15 | 0.16 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.46 | 0.11 | 0.50 | 0.46 | 0.55 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.00008 | 0.00002 | 0.00008 | 0.00008 | 0.00010 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0031 | 0.00024 | 0.0031 | 0.0028 | 0.0035 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.0025 | 0.00077 | 0.0028 | 0.0020 | 0.0031 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.11 | 0.039 | 0.11 | 0.057 | 0.16 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.15 | 0.017 | 0.15 | 0.13 | 0.18 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1.4 | 0.068 | 1.4 | 1.3 | 1.5 | - | - | - | - | - | - |
| | | Mercury (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 6.0 | 4.0 | 67 | - | - | 0.0050 | 0.0044 | 0.010 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.0088 | 0.0020 | 0.0098 | 0.0084 | 0.011 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.00059 | 0.00008 | 0.00062 | 0.00052 | 0.0010 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1.7 | 0.12 | 1.7 | 1.6 | 1.9 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 5.6 | 0.28 | 5.5 | 5.3 | 6.1 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 85 | 3.3 | 84 | 80 | 89 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 6.0 | 2.0 | 33 | 0.00005 | 0.00001 | 0.00005 | 0.00004 | 0.00010 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0018 | 0.00029 | 0.0019 | 0.0013 | 0.0021 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 6.0 | 4.0 | 67 | - | - | 0.025 | 0.019 | 0.050 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 6.0 | 5.0 | 83 | - | - | 0.00020 | 0.00020 | 0.00023 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Anion Sum | meq/L | - | - | - | - | - | 1.0 | 0 | 0 | 45 | - | 45 | 45 | 45 | - | - | - | - | - | - |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 6.0 | 2.0 | 33 | 1.8 | 0.75 | 2.0 | 2.0 | 3.0 | - | - | - | - | - | - |
| | | Cation Sum | meq/L | - | - | - | - | - | 1.0 | 0 | 0 | 43 | - | 43 | 43 | 43 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.027 | 0.015 | 0.031 | 0.0033 | 0.045 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 6.0 | 0 | 0 | 0.0086 | 0.0026 | 0.0083 | 0.0055 | 0.012 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Cyanide (WAD) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0048 | 0.0012 | 0.0050 | 0.0026 | 0.0060 | - | - | - | - | - | - |
| | | Ion Balance | % | - | - | - | - | - | 1.0 | 0 | 0 | 2.5 | - | 2.5 | 2.5 | 2.5 | - | - | - | - | - | - |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 5.0 | 0 | 0 | 0.23 | 0.49 | 0.016 | 0.013 | 1.1 | - | - | - | 0 | 0 | 0 |
| | | **Toxicity** | | | | | | | | | | | | | | | | | | | | |
| | | DM_LC50_Survival | % | - | - | - | - | - | 4.0 | 0 | 0 | 100 | 0 | 100 | 100 | 100 | - | - | - | - | - | - |
| | | LM_IC25_Biomass | % | - | - | - | - | - | 1.0 | 0 | 0 | 97 | - | 97 | 97 | 97 | - | - | - | - | - | - |
| | | LM_IC25_Frond | % | - | - | - | - | - | 1.0 | 0 | 0 | 67 | - | 67 | 67 | 67 | - | - | - | - | - | - |
| | | RBT_LC50_Survival | % | - | - | - | - | - | 4.0 | 0 | 0 | 100 | 0 | 100 | 100 | 100 | - | - | - | - | - | - |

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| | | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 2.0 | 0 | 0 | 79 | 5.9 | 79 | 75 | 83 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 16 | 5.2 | 17 | 9.1 | 21 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 4.0 | 0 | 0 | 7.1 | 0.50 | 7.0 | 6.6 | 7.8 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 4.0 | 0 | 0 | 2,210 | 133 | 2,260 | 2,020 | 2,300 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 4.0 | 0 | 0 | 15 | 2.6 | 16 | 11 | 17 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 5.0 | 0 | 0 | 2,300 | 187 | 2,300 | 2,000 | 2,500 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 487 | 38 | 488 | 426 | 531 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 508 | 58 | 524 | 426 | 561 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 5.0 | 0 | 0 | 7.3 | 0.19 | 7.3 | 7.0 | 7.5 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 3,500 | - | - | - | - | 5.0 | 0 | 0 | 1,470 | 144 | 1,430 | 1,340 | 1,700 | 0 | - | - | - | - | - |
| | | Total Dissolved Solids (Calcul | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 1,150 | 129 | 1,150 | 1,000 | 1,300 | - | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 5.0 | 0 | 0 | 4.8 | 0.45 | 5.0 | 4.0 | 5.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 5.0 | 0 | 0 | 0.86 | 0.11 | 0.90 | 0.70 | 1.0 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 32 | 9.2 | 29 | 23 | 46 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 32 | 9.3 | 29 | 23 | 46 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 138 | 11 | 140 | 121 | 151 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 145 | 17 | 150 | 120 | 160 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 566 | 52 | 570 | 500 | 630 | - | - | - | - | - | - |
| | | Fluoride | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 35 | 2.8 | 35 | 30 | 38 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 36 | 3.6 | 37 | 31 | 39 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 15 | 1.4 | 16 | 13 | 17 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 16 | 1.7 | 16 | 13 | 17 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 1.2 | 0.23 | 1.1 | 0.90 | 1.5 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 220 | 20 | 218 | 194 | 243 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 227 | 22 | 230 | 197 | 250 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 118 | 8.4 | 120 | 110 | 130 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 5.0 | 0 | 0 | 1.5 | 1.2 | 0.79 | 0.69 | 3.4 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 12 | 1.1 | 12 | 10 | 13 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 12 | 1.0 | 13 | 11 | 13 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.32 | 0.14 | 0.39 | 0.11 | 0.46 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 2.5 | 1.2 | 2.1 | 1.6 | 4.2 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 4.0 | 0 | 0 | 0.034 | 0.016 | 0.029 | 0.022 | 0.057 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 5.7 | 1.3 | 5.2 | 4.7 | 7.6 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 6.2 | 1.5 | 5.6 | 5.2 | 8.4 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 4.0 | 0 | 0 | 0.59 | 0.12 | 0.60 | 0.44 | 0.73 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.00051 | 0.00050 | 0.0040 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0044 | 0.00077 | 0.0044 | 0.0036 | 0.0054 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.072 | 0.0091 | 0.072 | 0.061 | 0.083 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.26 | 0.044 | 0.25 | 0.22 | 0.32 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00002 | 0.00000 | 0.00002 | 0.00002 | 0.00003 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0011 | 0.00015 | 0.0011 | 0.00097 | 0.0013 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 4.0 | 0 | 0 | 0.0013 | 0.00019 | 0.0013 | 0.0010 | 0.0015 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.069 | 0.019 | 0.063 | 0.054 | 0.097 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 4.0 | 3.0 | 75 | - | - | 0.00030 | 0.00020 | 0.00041 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.068 | 0.0074 | 0.068 | 0.058 | 0.076 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.18 | 0.19 | 0.10 | 0.068 | 0.46 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0026 | 0.00033 | 0.0026 | 0.0022 | 0.0030 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 4.0 | 0 | 0 | 0.0038 | 0.00073 | 0.0038 | 0.0031 | 0.0045 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00025 | 0.00004 | 0.00024 | 0.00021 | 0.00030 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.58 | 0.12 | 0.53 | 0.49 | 0.75 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00004 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 2.6 | 0.26 | 2.6 | 2.2 | 2.8 | - | - | - | - | - | - |
| 2020 | July | Sulfur (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 41 | 3.6 | 41 | 36 | 45 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00003 | 0.00000 | 0.00003 | 0.00003 | 0.00003 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 4.0 | 1.0 | 25 | 0.00024 | 0.00021 | 0.00018 | 0.00010 | 0.00054 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 4.0 | 4.0 | 100 | - | - | - | - | 0.010 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.12 | 0.066 | 0.11 | 0.063 | 0.21 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.00050 | 0.00050 | 0.00063 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0034 | 0.00022 | 0.0035 | 0.0031 | 0.0036 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.070 | 0.0082 | 0.071 | 0.059 | 0.079 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.24 | 0.024 | 0.24 | 0.21 | 0.27 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00002 | 0.00001 | 0.00002 | 0.00001 | 0.00003 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0011 | 0.00014 | 0.0010 | 0.00095 | 0.0013 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0012 | 0.00014 | 0.0011 | 0.00098 | 0.0013 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.036 | 0.0074 | 0.034 | 0.028 | 0.044 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.066 | 0.0041 | 0.067 | 0.060 | 0.070 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.15 | 0.16 | 0.071 | 0.057 | 0.44 | - | - | - | - | - | - |
| | | Mercury (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0026 | 0.00045 | 0.0026 | 0.0020 | 0.0031 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0035 | 0.00056 | 0.0035 | 0.0029 | 0.0040 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00021 | 0.00002 | 0.00021 | 0.00019 | 0.00024 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.52 | 0.11 | 0.50 | 0.41 | 0.67 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 2.6 | 0.20 | 2.6 | 2.3 | 2.7 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 39 | 3.8 | 40 | 34 | 43 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.00003 | 0.00000 | 0.00003 | 0.00002 | 0.00003 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 4.0 | 2.0 | 50 | - | - | 0.00011 | 0.00010 | 0.00045 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Volatile Suspended Solids | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 4.0 | - | 4.0 | 4.0 | 4.0 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 4.0 | 4.0 | 100 | - | - | - | - | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0020 | 0.0011 | 0.0017 | 0.0012 | 0.0035 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 4.0 | 3.0 | 75 | - | - | 0.0050 | 0.0050 | 0.011 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Cyanide (WAD) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 0.0019 | 0.0010 | 0.0017 | 0.0010 | 0.0033 | - | - | - | - | - | - |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 4.0 | 2.0 | 50 | - | - | 0.0055 | 0.0050 | 0.010 | - | - | - | 0 | 0 | 0 |
| | | **Toxicity** | | | | | | | | | | | | | | | | | | | | |
| | | DM_LC50_Survival | % | - | - | - | - | - | 5.0 | 0 | 0 | 100 | 0 | 100 | 100 | 100 | - | - | - | - | - | - |
| | | FHM_EC25_Growth | % | - | - | - | - | - | 1.0 | 0 | 0 | 100 | - | 100 | 100 | 100 | - | - | - | - | - | - |
| | | FHM_LC50_Survival | % | - | - | - | - | - | 1.0 | 0 | 0 | 100 | - | 100 | 100 | 100 | - | - | - | - | - | - |
| | | LM_IC25_Biomass | % | - | - | - | - | - | 1.0 | 0 | 0 | 97 | - | 97 | 97 | 97 | - | - | - | - | - | - |
| | | LM_IC25_Frond | % | - | - | - | - | - | 1.0 | 0 | 0 | 97 | - | 97 | 97 | 97 | - | - | - | - | - | - |
| | | RBT_LC50_Survival | % | - | - | - | - | - | 4.0 | 0 | 0 | 100 | 0 | 100 | 100 | 100 | - | - | - | - | - | - |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2020 | August | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 5.0 | 0 | 0 | 90 | 15 | 98 | 66 | 103 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 4.0 | 0 | 0 | 9.1 | 2.2 | 9.6 | 6.3 | 11 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 5.0 | 0 | 0 | 7.2 | 0.18 | 7.2 | 6.9 | 7.4 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 5.0 | 0 | 0 | 2,870 | 157 | 2,930 | 2,680 | 3,010 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 5.0 | 0 | 0 | 14 | 2.6 | 15 | 11 | 17 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 7.0 | 0 | 0 | 2,810 | 177 | 2,800 | 2,500 | 3,000 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 611 | 40 | 600 | 561 | 670 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 612 | 26 | 615 | 562 | 633 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 7.0 | 0 | 0 | 7.5 | 0.13 | 7.5 | 7.4 | 7.7 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 3,500 | - | - | - | - | 7.0 | 0 | 0 | 1,680 | 99 | 1,660 | 1,550 | 1,850 | 0 | - | - | - | - | - |
| | | Total Dissolved Solids (Calcul | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 1,440 | 113 | 1,400 | 1,300 | 1,600 | - | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 7.0 | 0 | 0 | 3.9 | 0.90 | 4.0 | 3.0 | 5.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 7.0 | 0 | 0 | 0.60 | 0.082 | 0.60 | 0.50 | 0.70 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 58 | 6.9 | 60 | 46 | 67 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 7.0 | 7.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 59 | 7.0 | 61 | 46 | 67 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 174 | 12 | 173 | 157 | 191 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 173 | 6.9 | 174 | 161 | 181 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 713 | 56 | 700 | 630 | 790 | - | - | - | - | - | - |
| | | Fluoride | mg/L | - | - | - | - | - | 7.0 | 6.0 | 86 | - | - | 0.10 | 0.10 | 0.11 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 43 | 2.6 | 42 | 40 | 47 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 43 | 2.4 | 44 | 39 | 46 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 20 | 1.2 | 19 | 18 | 21 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 20 | 1.1 | 20 | 18 | 21 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 1.1 | 0.20 | 1.2 | 0.78 | 1.2 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 278 | 17 | 273 | 255 | 300 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 279 | 18 | 286 | 246 | 295 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 150 | 12 | 150 | 140 | 170 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 6.0 | 0 | 0 | 0.39 | 0.16 | 0.42 | 0.16 | 0.60 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 11 | 0.44 | 11 | 11 | 12 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 11 | 0.44 | 11 | 11 | 12 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 7.0 | 0 | 0 | 0.30 | 0.040 | 0.29 | 0.24 | 0.36 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.91 | 0.41 | 0.97 | 0.50 | 1.3 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 6.0 | 3.0 | 50 | - | - | 0.021 | 0.020 | 0.026 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 8.3 | 0.49 | 8.4 | 7.6 | 8.9 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 8.7 | 0.58 | 8.8 | 8.0 | 9.6 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 6.0 | 0 | 0 | 0.48 | 0.040 | 0.48 | 0.41 | 0.53 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 6.0 | 2.0 | 33 | 0.00061 | 0.00009 | 0.00069 | 0.00063 | 0.0010 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 6.0 | 0 | 0 | 0.0044 | 0.0013 | 0.0044 | 0.0030 | 0.0059 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.10 | 0.0097 | 0.10 | 0.082 | 0.11 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.33 | 0.041 | 0.33 | 0.27 | 0.37 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 6.0 | 4.0 | 67 | - | - | 0.00002 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0010 | 0.00008 | 0.0010 | 0.00092 | 0.0011 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 6.0 | 0 | 0 | 0.0016 | 0.00021 | 0.0016 | 0.0012 | 0.0018 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.040 | 0.012 | 0.035 | 0.031 | 0.062 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 6.0 | 6.0 | 100 | - | - | - | - | 0.00040 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.075 | 0.0074 | 0.077 | 0.063 | 0.083 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.18 | 0.059 | 0.17 | 0.10 | 0.27 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0036 | 0.00029 | 0.0037 | 0.0031 | 0.0039 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 6.0 | 0 | 0 | 0.0045 | 0.00038 | 0.0044 | 0.0039 | 0.0049 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.00026 | 0.00003 | 0.00026 | 0.00023 | 0.00031 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.52 | 0.14 | 0.54 | 0.35 | 0.67 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00004 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 3.2 | 0.15 | 3.2 | 2.9 | 3.3 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 51 | 5.1 | 50 | 44 | 58 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.00003 | 0.00001 | 0.00003 | 0.00001 | 0.00003 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.00045 | 0.00016 | 0.00040 | 0.00031 | 0.00072 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 6.0 | 6.0 | 100 | - | - | - | - | 0.010 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.13 | 0.019 | 0.12 | 0.099 | 0.15 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.00066 | 0.00003 | 0.00067 | 0.00063 | 0.00069 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0041 | 0.0013 | 0.0037 | 0.0027 | 0.0059 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.099 | 0.0077 | 0.10 | 0.084 | 0.10 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.33 | 0.026 | 0.32 | 0.29 | 0.36 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 6.0 | 2.0 | 33 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.00099 | 0.00006 | 0.0010 | 0.00089 | 0.0011 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0014 | 0.00016 | 0.0014 | 0.0011 | 0.0015 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.022 | 0.0047 | 0.021 | 0.017 | 0.030 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.073 | 0.0047 | 0.073 | 0.068 | 0.080 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.18 | 0.056 | 0.17 | 0.11 | 0.27 | - | - | - | - | - | - |
| | | Mercury (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0037 | 0.00023 | 0.0038 | 0.0033 | 0.0039 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0043 | 0.00028 | 0.0043 | 0.0039 | 0.0046 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.00027 | 0.00004 | 0.00027 | 0.00023 | 0.00032 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.48 | 0.15 | 0.45 | 0.33 | 0.67 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 3.3 | 0.26 | 3.4 | 2.9 | 3.5 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 51 | 6.2 | 48 | 46 | 59 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 6.0 | 1.0 | 17 | 0.00003 | 0.00001 | 0.00003 | 0.00001 | 0.00003 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.00037 | 0.00016 | 0.00032 | 0.00023 | 0.00064 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 6.0 | 5.0 | 83 | - | - | 0.00020 | 0.00020 | 0.00026 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 6.0 | 6.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 6.0 | 3.0 | 50 | - | - | 2.0 | 2.0 | 3.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 6.0 | 0 | 0 | 0.0016 | 0.00019 | 0.0017 | 0.0012 | 0.0017 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 6.0 | 6.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Cyanide (WAD) | mg/L | - | - | - | - | - | 6.0 | 2.0 | 33 | 0.0010 | 0.00052 | 0.0011 | 0.0010 | 0.0019 | - | - | - | - | - | - |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 6.0 | 1.0 | 17 | 0.015 | 0.0069 | 0.015 | 0.0050 | 0.023 | - | - | - | 0 | 0 | 0 |
| | | **Toxicity** | | | | | | | | | | | | | | | | | | | | |
| | | DM_LC50_Survival | % | - | - | - | - | - | 3.0 | 0 | 0 | 100 | 0 | 100 | 100 | 100 | - | - | - | - | - | - |
| | | RBT_LC50_Survival | % | - | - | - | - | - | 3.0 | 0 | 0 | 100 | 0 | 100 | 100 | 100 | - | - | - | - | - | - |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| 2020 | September | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 4.0 | 0 | 0 | 95 | 4.0 | 96 | 89 | 98 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 3.0 | 0 | 0 | 11 | 0.32 | 11 | 10 | 11 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 4.0 | 0 | 0 | 7.0 | 0.26 | 7.1 | 6.6 | 7.2 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 4.0 | 0 | 0 | 3,460 | 250 | 3,410 | 3,260 | 3,780 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 4.0 | 0 | 0 | 9.2 | 1.4 | 9.3 | 7.5 | 11 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 5.0 | 0 | 0 | 3,440 | 313 | 3,500 | 3,100 | 3,900 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 769 | 77 | 777 | 685 | 871 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 775 | 104 | 756 | 683 | 948 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 5.0 | 0 | 0 | 7.5 | 0.070 | 7.5 | 7.4 | 7.6 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 3,500 | - | - | - | - | 5.0 | 0 | 0 | 2,070 | 272 | 1,940 | 1,780 | 2,410 | 0 | - | - | - | - | - |
| | | Total Dissolved Solids (Calcul | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 1,860 | 167 | 1,900 | 1,700 | 2,100 | - | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 5.0 | 0 | 0 | 5.4 | 0.55 | 5.0 | 5.0 | 6.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 5.0 | 0 | 0 | 0.64 | 0.055 | 0.60 | 0.60 | 0.70 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 71 | 4.3 | 71 | 65 | 76 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 71 | 4.2 | 71 | 66 | 76 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 221 | 21 | 224 | 197 | 247 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 223 | 32 | 217 | 197 | 278 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 870 | 76 | 900 | 780 | 950 | - | - | - | - | - | - |
| | | Fluoride | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 53 | 5.9 | 53 | 47 | 61 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 53 | 5.9 | 52 | 47 | 62 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 24 | 1.8 | 24 | 22 | 26 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 24 | 1.5 | 24 | 22 | 26 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 1.8 | 0.21 | 1.9 | 1.5 | 2.0 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 331 | 37 | 341 | 292 | 382 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 339 | 28 | 335 | 303 | 377 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 226 | 23 | 230 | 200 | 260 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 5.0 | 0 | 0 | 1.3 | 0.40 | 1.3 | 0.92 | 1.8 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 14 | 2.5 | 14 | 11 | 17 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 14 | 2.5 | 15 | 12 | 18 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.39 | 0.038 | 0.38 | 0.35 | 0.45 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 1.9 | 0.89 | 1.7 | 1.0 | 3.1 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 5.0 | 3.0 | 60 | - | - | 0.020 | 0.020 | 0.022 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 8.9 | 0.68 | 9.1 | 7.8 | 9.6 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 9.4 | 0.47 | 9.3 | 8.9 | 10 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 5.0 | 0 | 0 | 0.64 | 0.22 | 0.62 | 0.44 | 1.00 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00069 | 0.00004 | 0.00069 | 0.00064 | 0.00074 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 5.0 | 0 | 0 | 0.0035 | 0.00078 | 0.0036 | 0.0023 | 0.0044 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.11 | 0.0030 | 0.11 | 0.10 | 0.11 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.39 | 0.029 | 0.39 | 0.34 | 0.42 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 5.0 | 1.0 | 20 | 0.00002 | 0.00001 | 0.00002 | 0.00001 | 0.00003 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0014 | 0.00023 | 0.0015 | 0.0012 | 0.0016 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 5.0 | 0 | 0 | 0.0015 | 0.00017 | 0.0015 | 0.0014 | 0.0018 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.036 | 0.011 | 0.034 | 0.026 | 0.052 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.070 | 0.0083 | 0.070 | 0.058 | 0.080 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.26 | 0.032 | 0.26 | 0.21 | 0.30 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0042 | 0.00028 | 0.0041 | 0.0040 | 0.0047 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 5.0 | 0 | 0 | 0.0061 | 0.00076 | 0.0063 | 0.0050 | 0.0069 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00042 | 0.00007 | 0.00045 | 0.00032 | 0.00049 | - | - | - | - | - | - |
| | | Silicon (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.80 | 0.063 | 0.79 | 0.74 | 0.88 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 3.6 | 0.28 | 3.5 | 3.2 | 4.0 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 76 | 9.8 | 77 | 61 | 88 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00003 | 0.00001 | 0.00003 | 0.00003 | 0.00004 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0011 | 0.00041 | 0.0011 | 0.00072 | 0.0018 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.12 | 0.040 | 0.14 | 0.064 | 0.16 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 5.0 | 1.0 | 20 | 0.00065 | 0.00009 | 0.00069 | 0.00067 | 0.0010 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0031 | 0.00073 | 0.0035 | 0.0020 | 0.0037 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.11 | 0.0020 | 0.11 | 0.11 | 0.11 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.39 | 0.043 | 0.40 | 0.34 | 0.45 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 5.0 | 2.0 | 40 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00002 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0014 | 0.00023 | 0.0015 | 0.0012 | 0.0017 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0014 | 0.00008 | 0.0014 | 0.0013 | 0.0015 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.016 | 0.0061 | 0.014 | 0.0093 | 0.025 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.078 | 0.0049 | 0.076 | 0.074 | 0.086 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.25 | 0.046 | 0.26 | 0.20 | 0.32 | - | - | - | - | - | - |
| | | Mercury (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0042 | 0.00011 | 0.0042 | 0.0041 | 0.0044 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0059 | 0.0011 | 0.0060 | 0.0048 | 0.0075 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00043 | 0.00010 | 0.00044 | 0.00032 | 0.00057 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.82 | 0.069 | 0.86 | 0.70 | 0.87 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00004 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 3.8 | 0.18 | 3.7 | 3.5 | 4.0 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 75 | 12 | 78 | 61 | 91 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00003 | 0.00001 | 0.00003 | 0.00003 | 0.00004 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.00100 | 0.00044 | 0.0010 | 0.00047 | 0.0017 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 5.0 | 4.0 | 80 | - | - | 0.00020 | 0.00020 | 0.00040 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 5.0 | 5.0 | 100 | - | - | - | - | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0025 | 0.00056 | 0.0026 | 0.0019 | 0.0033 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 5.0 | 5.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Cyanide (WAD) | mg/L | - | - | - | - | - | 5.0 | 0 | 0 | 0.0014 | 0.00031 | 0.0013 | 0.0011 | 0.0019 | - | - | - | - | - | - |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 5.0 | 1.0 | 20 | 0.013 | 0.0066 | 0.015 | 0.0050 | 0.018 | - | - | - | 0 | 0 | 0 |
| | | **Toxicity** | | | | | | | | | | | | | | | | | | | | |
| | | DM_LC50_Survival | % | - | - | - | - | - | 4.0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |
| | | RBT_LC50_Survival | % | - | - | - | - | - | 4.0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |

B1-2. MEL-14 water chemistry summary statistics, Meliadine Lake AEMP 2018-2020.

| Year | Month | Parameter | Units | Water Licence Limits | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | | MEL-14 Summary Statistics | | | | | | | | Water Licence Limits | | | MDMER Authorized Limits of Deleterious Substances (Schedule 4) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Maximum Average Conc. | Maximum Grab Conc. | Maximum Monthly Mean Conc. | Maximum Composite Sample Conc. | Maximum Grab Sample Conc. | N | N<DL | ND.per | Mean | SD | Median | Min | Max | Monthly Mean | Maximum Grab | Maximum Grab (N) | Monthly Mean | Maximum Grab % | Maximum Grab (N) |
| | | **Field Measurements** | | | | | | | | | | | | | | | | | | | | |
| | | DO (%) | % | - | - | - | - | - | 1.0 | 0 | 0 | 105 | - | 105 | 105 | 105 | - | - | - | - | - | - |
| | | DO (mg/L) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 14 | - | 14 | 14 | 14 | - | - | - | - | - | - |
| | | pH (field) | pH units | 6 \| 9.5 | - | 6 \| 9.5 | - | - | 1.0 | 0 | 0 | 7.6 | - | 7.6 | 7.6 | 7.6 | - | 0 | 0 | - | 0 | 0 |
| | | Sp. Conductivity (field) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 4,180 | - | 4,180 | 4,180 | 4,180 | - | - | - | - | - | - |
| | | Temperature | C | - | - | - | - | - | 1.0 | 0 | 0 | 2.7 | - | 2.7 | 2.7 | 2.7 | - | - | - | - | - | - |
| | | **Conventional Parameters** | | | | | | | | | | | | | | | | | | | | |
| | | Conductivity (lab) | uS/cm | - | - | - | - | - | 1.0 | 0 | 0 | 4,000 | - | 4,000 | 4,000 | 4,000 | - | - | - | - | - | - |
| | | Hardness (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 1,010 | - | 1,010 | 1,010 | 1,010 | - | - | - | - | - | - |
| | | Hardness (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 971 | - | 971 | 971 | 971 | - | - | - | - | - | - |
| | | pH (lab) | pH units | - | - | - | - | - | 1.0 | 0 | 0 | 7.6 | - | 7.6 | 7.6 | 7.6 | - | - | - | - | - | - |
| | | Total Dissolved Solids | mg/L | 3,500 | - | - | - | - | 1.0 | 0 | 0 | 2,630 | - | 2,630 | 2,630 | 2,630 | 0 | - | - | - | - | - |
| | | Total Dissolved Solids (Calcul | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 2,300 | - | 2,300 | 2,300 | 2,300 | - | - | - | - | - | - |
| | | Total Suspended Solids | mg/L | 15 | 30 | 15 | 23 | 30 | 1.0 | 0 | 0 | 5.0 | - | 5.0 | 5.0 | 5.0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Turbidity (lab) | NTU | - | - | - | - | - | 1.0 | 0 | 0 | 0.60 | - | 0.60 | 0.60 | 0.60 | - | - | - | - | - | - |
| | | **Major Ions** | | | | | | | | | | | | | | | | | | | | |
| | | Alkalinity, Bicarbonate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 75 | - | 75 | 75 | 75 | - | - | - | - | - | - |
| | | Alkalinity, Carbonate | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 1.0 | - | - | - | - | - | - |
| | | Alkalinity, Total | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 75 | - | 75 | 75 | 75 | - | - | - | - | - | - |
| | | Calcium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 293 | - | 293 | 293 | 293 | - | - | - | - | - | - |
| | | Calcium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 273 | - | 273 | 273 | 273 | - | - | - | - | - | - |
| | | Chloride | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 1,100 | - | 1,100 | 1,100 | 1,100 | - | - | - | - | - | - |
| | | Fluoride | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | Magnesium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 68 | - | 68 | 68 | 68 | - | - | - | - | - | - |
| | | Magnesium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 70 | - | 70 | 70 | 70 | - | - | - | - | - | - |
| | | Potassium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 29 | - | 29 | 29 | 29 | - | - | - | - | - | - |
| | | Potassium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 29 | - | 29 | 29 | 29 | - | - | - | - | - | - |
| | | Reactive Silica (SiO2) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 1.8 | - | 1.8 | 1.8 | 1.8 | - | - | - | - | - | - |
| | | Sodium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 395 | - | 395 | 395 | 395 | - | - | - | - | - | - |
| | | Sodium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 406 | - | 406 | 406 | 406 | - | - | - | - | - | - |
| | | Sulphate | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 310 | - | 310 | 310 | 310 | - | - | - | - | - | - |
| | | **Nutrients** | | | | | | | | | | | | | | | | | | | | |
| | | Ammonia (as N) | mg/L | 14 | 18 | - | - | - | 1.0 | 0 | 0 | 2.3 | - | 2.3 | 2.3 | 2.3 | 0 | 0 | 0 | - | - | - |
| | | Nitrate (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 16 | - | 16 | 16 | 16 | - | - | - | - | - | - |
| | | Nitrate + Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 16 | - | 16 | 16 | 16 | - | - | - | - | - | - |
| | | Nitrite (as N) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.35 | - | 0.35 | 0.35 | 0.35 | - | - | - | - | - | - |
| | | Orthophosphate (PO4-P) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Total Kjeldahl Nitrogen | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 3.4 | - | 3.4 | 3.4 | 3.4 | - | - | - | - | - | - |
| | | Total Phosphorus | mg/L | 2.0 | 4.0 | - | - | - | 1.0 | 0 | 0 | 0.029 | - | 0.029 | 0.029 | 0.029 | 0 | 0 | 0 | - | - | - |
| | | **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | | | | |
| | | Dissolved Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | Total Organic Carbon | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 12 | - | 12 | 12 | 12 | - | - | - | - | - | - |
| | | **Total Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (T) | mg/L | 2.0 | 3.0 | - | - | - | 1.0 | 0 | 0 | 0.59 | - | 0.59 | 0.59 | 0.59 | 0 | 0 | 0 | - | - | - |
| | | Antimony (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Arsenic (T) | mg/L | 0.30 | 0.60 | 0.50 | 0.75 | 1.0 | 1.0 | 0 | 0 | 0.0024 | - | 0.0024 | 0.0024 | 0.0024 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Barium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.11 | - | 0.11 | 0.11 | 0.11 | - | - | - | - | - | - |
| | | Beryllium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Bismuth (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Boron (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.46 | - | 0.46 | 0.46 | 0.46 | - | - | - | - | - | - |
| | | Cadmium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00003 | - | 0.00003 | 0.00003 | 0.00003 | - | - | - | - | - | - |
| | | Chromium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0020 | - | - | - | - | - | - |
| | | Cobalt (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0021 | - | 0.0021 | 0.0021 | 0.0021 | - | - | - | - | - | - |
| | | Copper (T) | mg/L | 0.20 | 0.40 | 0.30 | 0.45 | 0.60 | 1.0 | 0 | 0 | 0.0019 | - | 0.0019 | 0.0019 | 0.0019 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Iron (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.028 | - | 0.028 | 0.028 | 0.028 | - | - | - | - | - | - |
| | | Lead (T) | mg/L | 0.20 | 0.40 | 0.20 | 0.30 | 0.40 | 1.0 | 1.0 | 100 | - | - | - | - | 0.00040 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lithium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.084 | - | 0.084 | 0.084 | 0.084 | - | - | - | - | - | - |
| | | Manganese (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.33 | - | 0.33 | 0.33 | 0.33 | - | - | - | - | - | - |
| | | Mercury (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0045 | - | 0.0045 | 0.0045 | 0.0045 | - | - | - | - | - | - |
| | | Nickel (T) | mg/L | 0.50 | 1.0 | 0.50 | 0.75 | 1.0 | 1.0 | 0 | 0 | 0.010 | - | 0.010 | 0.010 | 0.010 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Selenium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00060 | - | 0.00060 | 0.00060 | 0.00060 | - | - | - | - | - | - |
| 2020 | October | Silicon (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.85 | - | 0.85 | 0.85 | 0.85 | - | - | - | - | - | - |
| | | Silver (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00004 | - | - | - | - | - | - |
| | | Strontium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 4.1 | - | 4.1 | 4.1 | 4.1 | - | - | - | - | - | - |
| | | Sulfur (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 101 | - | 101 | 101 | 101 | - | - | - | - | - | - |
| | | Thallium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00004 | - | 0.00004 | 0.00004 | 0.00004 | - | - | - | - | - | - |
| | | Tin (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Titanium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Uranium (T) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0027 | - | 0.0027 | 0.0027 | 0.0027 | - | - | - | - | - | - |
| | | Vanadium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.010 | - | - | - | - | - | - |
| | | Zinc (T) | mg/L | 0.40 | 0.80 | 0.50 | 0.75 | 1.0 | 1.0 | 1.0 | 100 | - | - | - | - | 0.010 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Zirconium (T) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | **Dissolved Metals** | | | | | | | | | | | | | | | | | | | | |
| | | Aluminum (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.12 | - | 0.12 | 0.12 | 0.12 | - | - | - | - | - | - |
| | | Antimony (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00079 | - | 0.00079 | 0.00079 | 0.00079 | - | - | - | - | - | - |
| | | Arsenic (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0020 | - | 0.0020 | 0.0020 | 0.0020 | - | - | - | - | - | - |
| | | Barium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.11 | - | 0.11 | 0.11 | 0.11 | - | - | - | - | - | - |
| | | Beryllium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | Bismuth (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Boron (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.45 | - | 0.45 | 0.45 | 0.45 | - | - | - | - | - | - |
| | | Cadmium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00003 | - | 0.00003 | 0.00003 | 0.00003 | - | - | - | - | - | - |
| | | Chromium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0010 | - | - | - | - | - | - |
| | | Cobalt (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0019 | - | 0.0019 | 0.0019 | 0.0019 | - | - | - | - | - | - |
| | | Copper (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0017 | - | 0.0017 | 0.0017 | 0.0017 | - | - | - | - | - | - |
| | | Iron (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.014 | - | 0.014 | 0.014 | 0.014 | - | - | - | - | - | - |
| | | Lead (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Lithium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.088 | - | 0.088 | 0.088 | 0.088 | - | - | - | - | - | - |
| | | Manganese (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.34 | - | 0.34 | 0.34 | 0.34 | - | - | - | - | - | - |
| | | Mercury (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00001 | - | - | - | - | - | - |
| | | Molybdenum (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0046 | - | 0.0046 | 0.0046 | 0.0046 | - | - | - | - | - | - |
| | | Nickel (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0091 | - | 0.0091 | 0.0091 | 0.0091 | - | - | - | - | - | - |
| | | Selenium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00059 | - | 0.00059 | 0.00059 | 0.00059 | - | - | - | - | - | - |
| | | Silicon (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.92 | - | 0.92 | 0.92 | 0.92 | - | - | - | - | - | - |
| | | Silver (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00002 | - | - | - | - | - | - |
| | | Strontium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 4.4 | - | 4.4 | 4.4 | 4.4 | - | - | - | - | - | - |
| | | Sulfur (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 104 | - | 104 | 104 | 104 | - | - | - | - | - | - |
| | | Thallium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.00004 | - | 0.00004 | 0.00004 | 0.00004 | - | - | - | - | - | - |
| | | Tin (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Titanium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Uranium (D) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0025 | - | 0.0025 | 0.0025 | 0.0025 | - | - | - | - | - | - |
| | | Vanadium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zinc (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | - | - | - | - | - | - |
| | | Zirconium (D) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00010 | - | - | - | - | - | - |
| | | **Hydrocarbons** | | | | | | | | | | | | | | | | | | | | |
| | | F1 (C6-C10) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F1 (C6-C10)-BTEX | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.025 | - | - | - | - | - | - |
| | | F2 (C10-C16) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.10 | - | - | - | - | - | - |
| | | F3 (C16-C34) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | F4 (C34-C50) | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.20 | - | - | - | - | - | - |
| | | **Volatile Organics** | | | | | | | | | | | | | | | | | | | | |
| | | Benzene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Ethylbenzene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | m,p-Xylenes | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | o-Xylene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Toluene | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00020 | - | - | - | - | - | - |
| | | Xylenes | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 0.00040 | - | - | - | - | - | - |
| | | **Other** | | | | | | | | | | | | | | | | | | | | |
| | | Biological Oxygen Demand | mg/L | - | - | - | - | - | 1.0 | 1.0 | 100 | - | - | - | - | 2.0 | - | - | - | - | - | - |
| | | Cyanide (free) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0023 | - | 0.0023 | 0.0023 | 0.0023 | - | - | - | - | - | - |
| | | Cyanide (Total) | mg/L | 0.50 | 1.0 | 1.0 | 1.5 | 2.0 | 1.0 | 1.0 | 100 | - | - | - | - | 0.0050 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Cyanide (WAD) | mg/L | - | - | - | - | - | 1.0 | 0 | 0 | 0.0015 | - | 0.0015 | 0.0015 | 0.0015 | - | - | - | - | - | - |
| | | Radium-226 | Bq/l | - | - | 0.37 | 0.74 | 1.1 | 1.0 | 0 | 0 | 0.023 | - | 0.023 | 0.023 | 0.023 | - | - | - | 0 | 0 | 0 |
| | | **Toxicity** | | | | | | | | | | | | | | | | | | | | |
| | | DM_LC50_Survival | % | - | - | - | - | - | 1.0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |
| | | RBT_LC50_Survival | % | - | - | - | - | - | 1.0 | 0 | 0 | - | - | - | - | - | - | - | - | - | - | - |

# Appendix B2
# Daily Discharge Volumes from CP1 to Meliadine Lake in 2020

## CP1 DAILY DISCHARGE FLOW RATES TO MELIADINE LAKE - JUNE 2020

| Date | ACTUAL daily discharge to Meliadine Lake ($m^3$) | FORECASTED daily discharge to meet target cumulative monthly total to Meliadine Lake ($m^3$) | Cumulative discharge to Meliadine Lake ($m^3$) | Discharged daily average conductivity (uS/cm) | Discharged daily average TSS (mg/L) (internal lab) | Discharged daily average pH | Discharged daily average temperature ($^oC$) (in EWTP) |
|---|---|---|---|---|---|---|---|
| 05/06/2020 | 2197 | 2197 | 2197 | 4780 | 4.7 | 7.0 | (no record) |
| 06/06/2020 | 9001 | 9001 | 11198 | 4650 | 5.3 | 7.0 | (no record) |
| 07/06/2020 | 9830 | 9830 | 21028 | 4548 | 6.0 | 7.1 | (no record) |
| 08/06/2020 | 12137 | 12137 | 33165 | 4780 | 6.3 | 7.1 | (no record) |
| 09/06/2020 | 14389 | 14389 | 47554 | 4843 | 4.0 | 7.1 | (no record) |
| 10/06/2020 | 14369 | 14369 | 61924 | 4896 | 6.2 | 7.1 | (no record) |
| 11/06/2020 | 14373 | 14373 | 76297 | 4923 | 6.6 | 7.1 | (no record) |
| 12/06/2020 | 14561 | 14561 | 90858 | 4960 | 5.0 | 6.9 | (no record) |
| 13/06/2020 | 14901 | 14901 | 105759 | 5028 | 5.8 | 7.0 | (no record) |
| 14/06/2020 | 14812 | 14812 | 120571 | 5054 | 6.9 | 7.0 | (no record) |
| 15/06/2020 | 15012 | 15012 | 135582 | 4967 | 5.6 | 7.1 | (no record) |
| 16/06/2020 | 14965 | 14965 | 150547 | 4894 | 5.2 | 7.0 | (no record) |
| 17/06/2020 | 13857 | 13857 | 164404 | 4930 | 4.0 | 7.0 | (no record) |
| 18/06/2020 | 15254 | 15254 | 179658 | 4948 | 5.0 | 6.9 | (no record) |
| 19/06/2020 | 14872 | 14872 | 194530 | 4945 | 4.0 | 6.9 | (no record) |
| 20/06/2020 | 14291 | 14291 | 208821 | 4874 | 4.5 | 7.0 | 5.6 |
| 21/06/2020 | 14688 | 14688 | 223509 | 4851 | 4.8 | 7.1 | 5.3 |
| 22/06/2020 | 14843 | 14843 | 238352 | 4396 | 5.3 | 6.9 | 5.3 |
| 23/06/2020 | 15767 | 15767 | 254119 | 3906 | 4.0 | 6.9 | 5.7 |
| 24/06/2020 | 15295 | 15295 | 269414 | 4750 | 4.3 | 7.0 | 3.1 |
| 25/06/2020 | 9141 | 9141 | 278554 | 5090 | 2.10 (NTU) | 6.9 | 1.9 |
| 26/06/2020 | 6456 | 6456 | 285010 | 4589 | 4.0 | 7.1 | 5.4 |
| 27/06/2020 | 16678 | 16678 | 301689 | 4829 | 4.0 | 7.0 | 4.9 |
| 28/06/2020 | 16961 | 16961 | 318650 | 4588 | 5.0 | 7.1 | 4.6 |
| 29/06/2020 | 17518 | 17518 | 336167 | 4534 | 4.3 | 7.0 | 6.0 |
| 30/06/2020 | 16786 | 16786 | 352954 | 4989 | 4.0 | 6.9 | 4.4 |

| | | |
|---|---|---|
| ACTUAL Average Daily Discharge = | 13,575 | m3/d |
| TARGET Daily Discharge Rate = | **15,000** | m3/d |
| ACTUAL Monthly Cumulative Discharge = | 352,954 | m3/month |
| FORECASTED Monthly Cumulative Discharge = | 352,954 | m3/month |
| TARGET Monthly Cumulative Discharge = | **450,000** | m3/month |

## CP1 DAILY DISCHARGE FLOW RATES TO MELIADINE LAKE - JULY 2020

| Date | ACTUAL daily discharge to Meliadine Lake ($m^3$) | FORECASTED daily discharge to meet target cumulative monthly total to Meliadine Lake ($m^3$) | Cumulative discharge to Meliadine Lake ($m^3$) | Discharged daily average conductivity (uS/cm) | Discharged daily average TSS (mg/L) (internal lab) | Discharged daily average pH | Discharged daily average temperature (°C) (in EWTP) |
|---|---|---|---|---|---|---|---|
| 01/07/2020 | 16656 | 16656 | 16656 | 4750 | 4.0 | 7.1 | 6.4 |
| 02/07/2020 | 14670 | 14670 | 31326 | 4665 | 5.8 | 7.0 | 7.2 |
| 03/07/2020 | 12646 | 12646 | 43972 | 4223 | 4.0 | 7.0 | 8.5 |
| 04/07/2020 | 16860 | 16860 | 60832 | 3285 | 4.3 | 6.9 | 10.4 |
| 05/07/2020 | 17211 | 17211 | 78043 | 2206 | 5.0 | 7.2 | 12.8 |
| 06/07/2020 | 14792 | 14792 | 92835 | 1883 | <4.0 | 7.5 | 13.5 |
| 07/07/2020 | 16313 | 16313 | 109147 | 1905 | <4.0 | 7.5 | 13.9 |
| 08/07/2020 | 16529 | 16529 | 125676 | 1913 | <4.0 | 7.3 | 14.1 |
| 09/07/2020 | 15996 | 15996 | 141673 | 1952 | <4.0 | 7.2 | 14.5 |
| 10/07/2020 | 12299 | 12299 | 153972 | 2053 | <4.0 | 7.4 | 15 |
| 11/07/2020 | 16202 | 16202 | 170174 | 2038 | <4.0 | 7.2 | 14.6 |
| 12/07/2020 | 15992 | 15992 | 186166 | 2027 | <4.0 | 7.3 | 16.5 |
| 13/07/2020 | 16213 | 16213 | 202379 | 2075 | <4.0 | 7.6 | 15.4 |
| 14/07/2020 | 7674 | 7674 | 210053 | 2146 | <4.0 | 7.7 | 14.6 |
| 15/07/2020 | 15340 | 15340 | 225393 | 2180 | <4.0 | 7.2 | 14.2 |
| 16/07/2020 | 10904 | 10904 | 236297 | 2188 | <4.0 | 7.3 | 14.5 |
| 17/07/2020 | 15378 | 15378 | 251675 | 2191 | <4.0 | 7.3 | 14.7 |
| 18/07/2020 | 15623 | 15623 | 267298 | 2212 | <4.0 | 6.9 | 14.2 |
| 19/07/2020 | 9491 | 9491 | 276789 | 2255 | <4.0 | 6.9 | 15.0 |
| 20/07/2020 | 12456 | 12456 | 289245 | 2277 | <4.0 | 6.9 | 15.2 |
| 21/07/2020 | 12404 | 12404 | 301649 | 2326 | <4.0 | 6.4 | 17.0 |
| 22/07/2020 | 12121 | 12121 | 313770 | 2343 | <4.0 | 6.8 | 18.0 |
| 23/07/2020 | 10555 | 10555 | 324325 | 2359 | <4.0 | 7.0 | 18.5 |
| 24/07/2020 | 6368 | 6368 | 330693 | 2435 | <4.0 | 7.1 | 18.8 |
| 25/07/2020 | 5133 | 5133 | 335826 | 2429 | <4.0 | 7.2 | 16.9 |
| 26/07/2020 | 5143 | 5143 | 340969 | 2441 | <4.0 | 7.1 | 15.4 |
| 27/07/2020 | 5148 | 5148 | 346117 | 2452 | <4.0 | 7.0 | 15.8 |
| 28/07/2020 | 5149 | 5149 | 351265 | 2471 | <4.0 | 6.9 | 17.1 |
| 29/07/2020 | 5150 | 5150 | 356416 | 2514 | <4.0 | 7.1 | 16.1 |
| 30/07/2020 | 5152 | 5152 | 361568 | 2530 | <4.0 | 7.1 | 17.2 |
| 31/07/2020 | 4526 | 4526 | 366094 | 2545 | <4.0 | 6.9 | 16.2 |

| | | |
|---|---|---|
| ACTUAL Average Daily Discharge = | 11,809 | m3/d |
| TARGET Daily Discharge Rate = | **15,000** | m3/d |
| ACTUAL Monthly Cumulative Discharge = | 366,094 | m3/month |
| FORECASTED Monthly Cumulative Discharge = | 366,094 | m3/month |
| TARGET Monthly Cumulative Discharge = | **450,000** | m3/month |

## CP1 DAILY DISCHARGE FLOW RATES TO MELIADINE LAKE - AUGUST 2020

| Date | ACTUAL daily discharge to Meliadine Lake ($m^3$) | FORECASTED daily discharge to meet target cumulative monthly total to Meliadine Lake ($m^3$) | Cumulative discharge to Meliadine Lake ($m^3$) | Discharged daily average conductivity (uS/cm) | Discharged daily average TSS (mg/L) (internal lab) | Discharged daily average pH | Discharged daily average temperature ($^oC$) (in EWTP) |
|---|---|---|---|---|---|---|---|
| 01/08/2020 | 3878 | 3878 | 3878 | 2563 | <4.0 | 6.9 | 15.9 |
| 02/08/2020 | 3281 | 3281 | 7159 | 2582 | <4.0 | 7.0 | 16.7 |
| 03/08/2020 | 3274 | 3274 | 10432 | 2606 | <4.0 | 7.2 | 17.5 |
| 04/08/2020 | 3320 | 3320 | 13752 | 2621 | <4.0 | 7.2 | 18.9 |
| 05/08/2020 | 3324 | 3324 | 17076 | 2631 | <4.0 | 7.1 | 19.9 |
| 06/08/2020 | 3322 | 3322 | 20398 | 2650 | <4.0 | 7.0 | 20.1 |
| 07/08/2020 | 2873 | 2873 | 23271 | 2662 | <4.0 | 7.0 | 19.3 |
| 08/08/2020 | 3282 | 3282 | 26553 | 2669 | <4.0 | 7.0 | 17.8 |
| 09/08/2020 | 3077 | 3077 | 29630 | 2708 | <4.0 | 7.0 | 16.9 |
| 10/08/2020 | 2153 | 2153 | 31783 | 2722 | 4.0 | 7.0 | 15.8 |
| 11/08/2020 | 2454 | 2454 | 34237 | 2726 | <4.0 | 7.1 | 15.8 |
| 12/08/2020 | 2599 | 2599 | 36836 | 2724 | <4.0 | 7.2 | 15.8 |
| 13/08/2020 | 1601 | 1601 | 38437 | 2765 | <4.0 | 7.1 | 16.2 |
| 14/08/2020 | 1154 | 1154 | 39591 | 2791 | 5.7 | 7.1 | 14.3 |
| 15/08/2020 | 1163 | 1163 | 40754 | 2742 | 5.5 | 6.8 | 14.9 |
| 16/08/2020 | 1563 | 1563 | 42317 | 2757 | 4.0 | 6.9 | 15.2 |
| 17/08/2020 | 1988 | 1988 | 44305 | 2780 | <4.0 | 7.0 | 13.7 |
| 18/08/2020 | 3039 | 3039 | 47344 | 2809 | <4.0 | 6.7 | 12.5 |
| 19/08/2020 | 2913 | 2913 | 50257 | 2844 | <4.0 | 6.7 | 12.5 |
| 20/08/2020 | 2871 | 2871 | 53128 | 2854 | 4,5 | 6.7 | 11.7 |
| 21/08/2020 | 2473 | 2473 | 55601 | 2831 | <4.0 | 6.8 | 12.2 |
| 22/08/2020 | 2895 | 2895 | 58496 | 2838 | <4.0 | 7.0 | 11.7 |
| 23/08/2020 | 3310 | 3310 | 61806 | 2864 | <4.0 | 6.9 | 11.1 |
| 24/08/2020 | 2859 | 2859 | 64665 | 2885 | <4.0 | 7.0 | 12.6 |
| 25/08/2020 | 2933 | 2933 | 67597 | 2905 | <4.0 | 7.0 | 13.2 |
| 26/08/2020 | 2721 | 2721 | 70318 | 2934 | <4.0 | 7.0 | 13.5 |
| 27/08/2020 | 2596 | 2596 | 72915 | 3013 | <4.0 | 6.9 | 12.1 |
| 28/08/2020 | 2402 | 2402 | 75317 | 3008 | <4.0 | 6.9 | 12.6 |
| 29/08/2020 | 2911 | 2911 | 78228 | 3017 | <4.0 | 6.9 | 12.9 |
| 30/08/2020 | 2882 | 2882 | 81111 | 3038 | <4.0 | 6.9 | 12.5 |
| 31/08/2020 | 2344 | 2344 | 83455 | 3117 | <4.0 | 6.9 | 11.2 |

| | | |
|---|---|---|
| ACTUAL Average Daily Discharge = | 2,692 | m3/d |
| TARGET Daily Discharge Rate = | **15,000** | m3/d |
| ACTUAL Monthly Cumulative Discharge = | 83,455 | m3/month |
| FORECASTED Monthly Cumulative Discharge = | 83,455 | m3/month |
| TARGET Monthly Cumulative Discharge = | **450,000** | m3/month |

## CP1 DAILY DISCHARGE FLOW RATES TO MELIADINE LAKE - SEPTEMBER 2020

| Date | ACTUAL daily discharge to Meliadine Lake ($m^3$) | FORECASTED daily discharge to meet target cumulative monthly total to Meliadine Lake ($m^3$) | Cumulative discharge to Meliadine Lake ($m^3$) | Discharged daily average conductivity (uS/cm) | Discharged daily average TSS (mg/L) (internal lab) | Discharged daily average pH | Discharged daily average temperature (°C) (in EWTP) |
|---|---|---|---|---|---|---|---|
| 01/09/2020 | 2669 | 2669 | 2669 | 3084 | <4.0 | 6.9 | 11.2 |
| 02/09/2020 | 2398 | 2398 | 5067 | 3059 | <4.0 | 6.9 | 11.5 |
| 03/09/2020 | 2440 | 2440 | 7507 | 3051 | <4.0 | 6.9 | 12.1 |
| 04/09/2020 | 2152 | 2152 | 9659 | 3065 | <4.0 | 7.1 | 11.7 |
| 05/09/2020 | 2271 | 2271 | 11930 | 3100 | <4.0 | 7.0 | 11.4 |
| 06/09/2020 | 2604 | 2604 | 14534 | 3196 | <4.0 | 6.9 | 11 |
| 07/09/2020 | 3964 | 3964 | 18498 | 3212 | <4.0 | 6.9 | 8.8 |
| 08/09/2020 | 5336 | 5336 | 23834 | 3231 | <4.0 | 6.8 | 8 |
| 09/09/2020 | 4817 | 4817 | 28651 | 3335 | 5.5 | 7.1 | 7.2 |
| 10/09/2020 | 3814 | 3814 | 32465 | 3316 | 4.5 | 7.3 | 7.7 |
| 11/09/2020 | 4175 | 4175 | 36640 | 3339 | 5.0 | 7.2 | 8.15 |
| 12/09/2020 | 6564 | 6564 | 43203 | 3365 | <4.0 | 7.2 | 7 |
| 13/09/2020 | 8336 | 8336 | 51540 | 3387 | 6.5 | 6.9 | 7.65 |
| 14/09/2020 | 7449 | 7449 | 58989 | 3393 | 5.0 | 7.0 | 6.83 |
| 15/09/2020 | 8767 | 8767 | 67755 | 3406 | 4.0 | 7.4 | 5.5 |
| 16/09/2020 | 9685 | 9685 | 77441 | 3443 | 4.0 | 7.3 | 4.1 |
| 17/09/2020 | 11365 | 11365 | 88806 | 3487 | 8.5 | 7.0 | 4.2 |
| 18/09/2020 | 9474 | 9474 | 98280 | 3480 | 4.0 | 6.8 | 5.7 |
| 19/09/2020 | 12764 | 12764 | 111044 | 3494 | 4.0 | 7.0 | 5.0 |
| 20/09/2020 | 15071 | 15071 | 126115 | 3538 | 4.0 | 7.1 | 5.7 |
| 21/09/2020 | 14139 | 14139 | 140254 | 3640 | 4.0 | 7.2 | 5.9 |
| 22/09/2020 | 3792 | 3792 | 144045 | 3704 | 4.0 | 7.7 | 6.5 |
| 23/09/2020 | 8151 | 8151 | 152196 | 3700 | 4.0 | 7.4 | 5.4 |
| 24/09/2020 | 12734 | 12734 | 164930 | 3683 | 4.0 | 7.3 | 6.0 |
| 25/09/2020 | 8245 | 8245 | 173174 | 3779 | 4.0 | 7.3 | 7.5 |
| 26/09/2020 | 15 | 15 | 173189 | 3873 | 4.0 | 7.3 | 6.2 |
| 27/09/2020 | 6667 | 6667 | 179856 | 3833 | 4.0 | 6.9 | 6.4 |
| 28/09/2020 | 11749 | 11749 | 191605 | 3872 | 4.0 | 7.3 | 5.7 |
| 29/09/2020 | 13290 | 13290 | 204895 | 4119 | 4.0 | 7.2 | 4.0 |
| 30/09/2020 | 9950 | 9950 | 214846 | 4005 | 4.0 | 7.2 | 4.4 |

| | | |
|---|---|---|
| ACTUAL Average Daily Discharge = | 7,162 | m3/d |
| TARGET Daily Discharge Rate = | **15,000** | m3/d |
| ACTUAL Monthly Cumulative Discharge = | 214,846 | m3/month |
| FORECASTED Monthly Cumulative Discharge = | 214,846 | m3/month |
| TARGET Monthly Cumulative Discharge = | **450,000** | m3/month |

## CP1 DAILY DISCHARGE FLOW RATES TO MELIADINE LAKE - OCTOBER 2020

| Date | ACTUAL daily discharge to Meliadine Lake ($m^3$) | Cumulative discharge to Meliadine Lake ($m^3$) | Discharged daily average conductivity (uS/cm) | Discharged daily average TSS (mg/L) (internal lab) | Discharged daily average pH | Discharged daily average temperature ($^oC$) (in EWTP) |
|---|---|---|---|---|---|---|
| 01/10/2020 | 6675 | 6675 | 4078 | 4.0 | 7.4 | 3.1 |
| 02/10/2020 | 5338 | 12013 | 4092 | 4.0 | 7.4 | 3.3 |
| 03/10/2020 | 1816 | 13829 | 4113 | 4.0 | 7.4 | 3.0 |
| 04/10/2020 | | | | | | |
| 05/10/2020 | | | | | | |
| 06/10/2020 | | | | | | |
| 07/10/2020 | | | | | | |
| 08/10/2020 | | | | | | |
| 09/10/2020 | | | | | | |
| 10/10/2020 | | | | | | |
| 11/10/2020 | | | | | | |
| 12/10/2020 | | | | | | |
| 13/10/2020 | | | | | | |
| 14/10/2020 | | | | | | |
| 15/10/2020 | | | | | | |
| 16/10/2020 | | | | | | |
| 17/10/2020 | | | | | | |
| 18/10/2020 | | | | | | |
| 19/10/2020 | | | | | | |
| 20/10/2020 | | | | | | |
| 21/10/2020 | | | | | | |
| 22/10/2020 | | | | | | |
| 23/10/2020 | | | | | | |
| 24/10/2020 | | | | | | |
| 25/10/2020 | | | | | | |
| 26/10/2020 | | | | | | |
| 27/10/2020 | | | | | | |
| 28/10/2020 | | | | | | |
| 29/10/2020 | | | | | | |
| 30/10/2020 | | | | | | |
| 31/10/2020 | | | | | | |

| | | |
|---|---|---|
| ACTUAL Average Daily Discharge = | 4,610 | m3/d |
| TARGET Daily Discharge Rate = | **15,000** | m3/d |
| ACTUAL Monthly Cumulative Discharge = | - | m3/month |
| FORECASTED Monthly Cumulative Discharge = | - | m3/month |
| TARGET Monthly Cumulative Discharge = | **450,000** | m3/month |

# APPENDIX C
# MELIADINE LAKE – SUPPORTING FIGURES AND TABLES

# Appendix C1
# Meliadine Lake Water Chemistry – Boxplots

# LIST OF FIGURES – APPENDIX C1

**Figure C1-1. Field pH**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

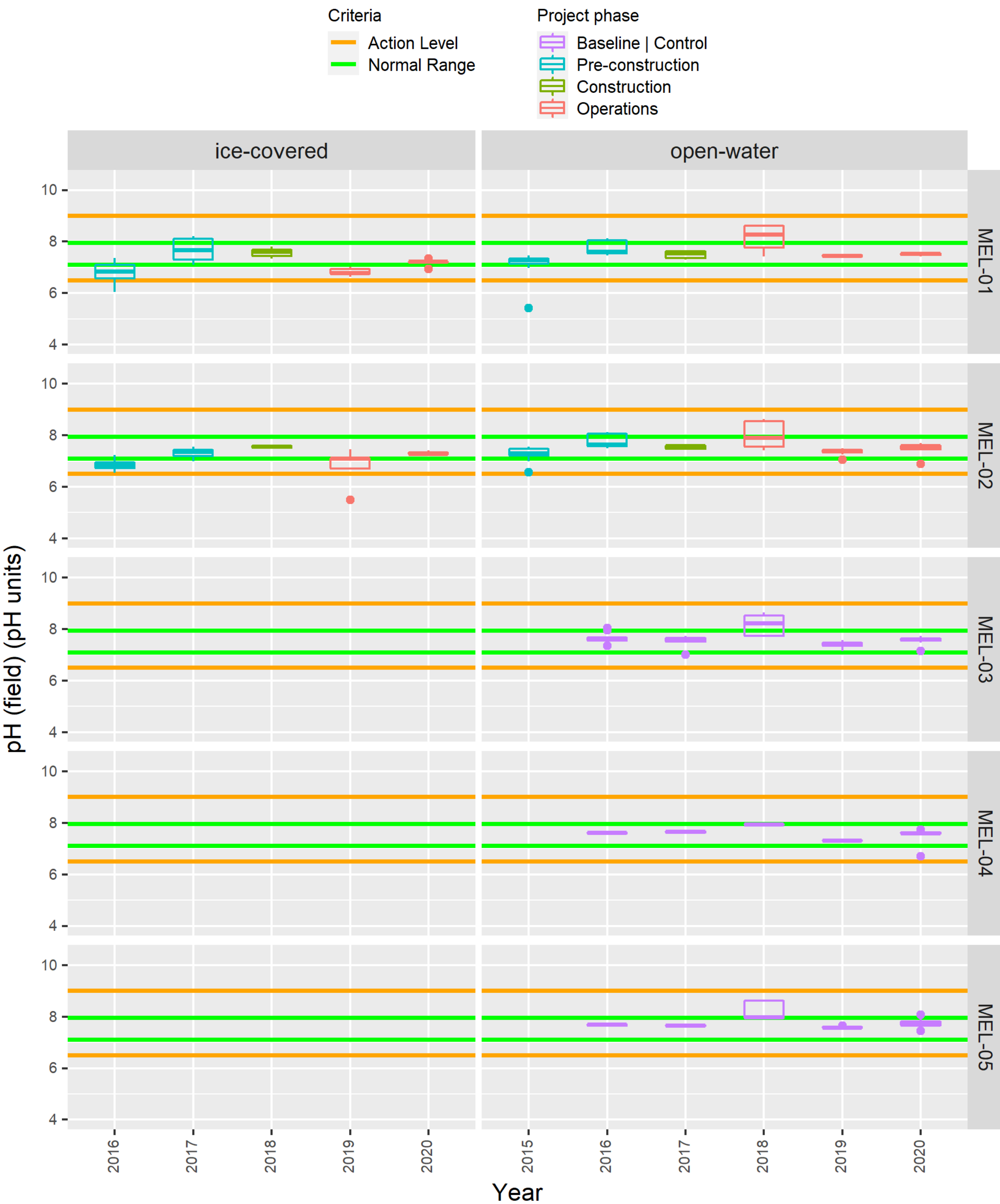


**Figure C1-2. Specific conductivity (µS/cm)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

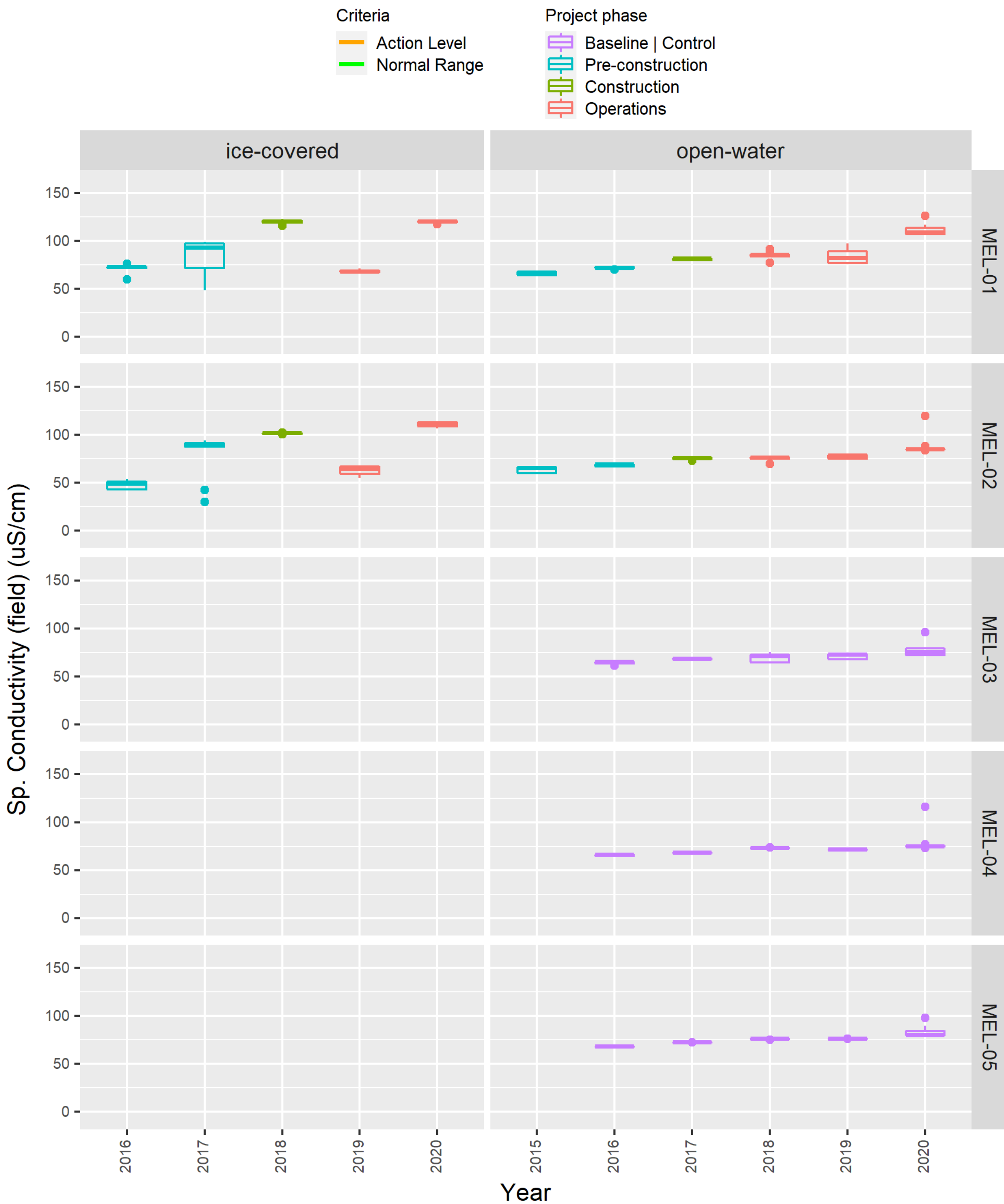
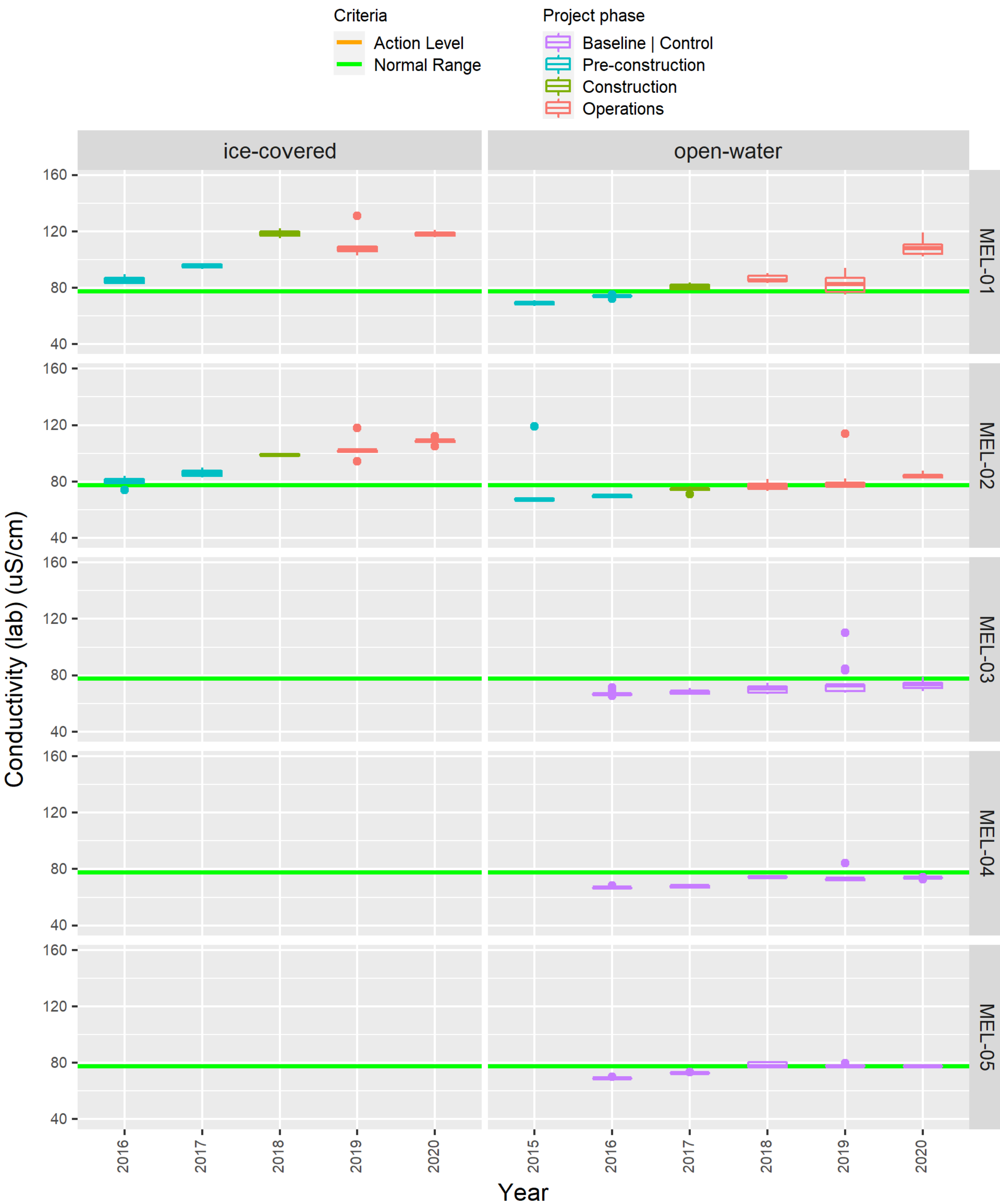


**Figure C1-3. Lab-measured conductivity (µS/cm)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-4. Hardness (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

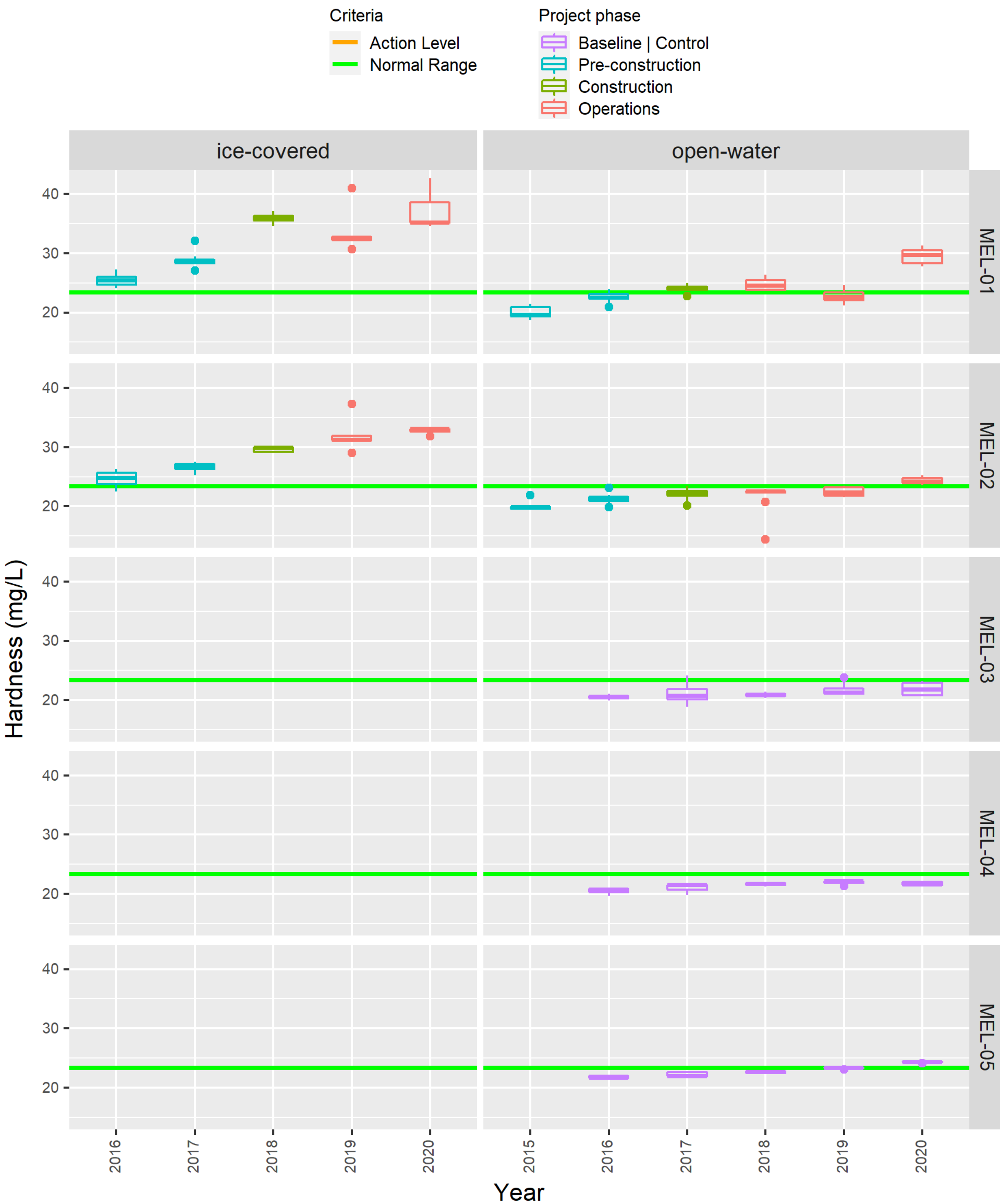


**Figure C1-5. Lab measured pH**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

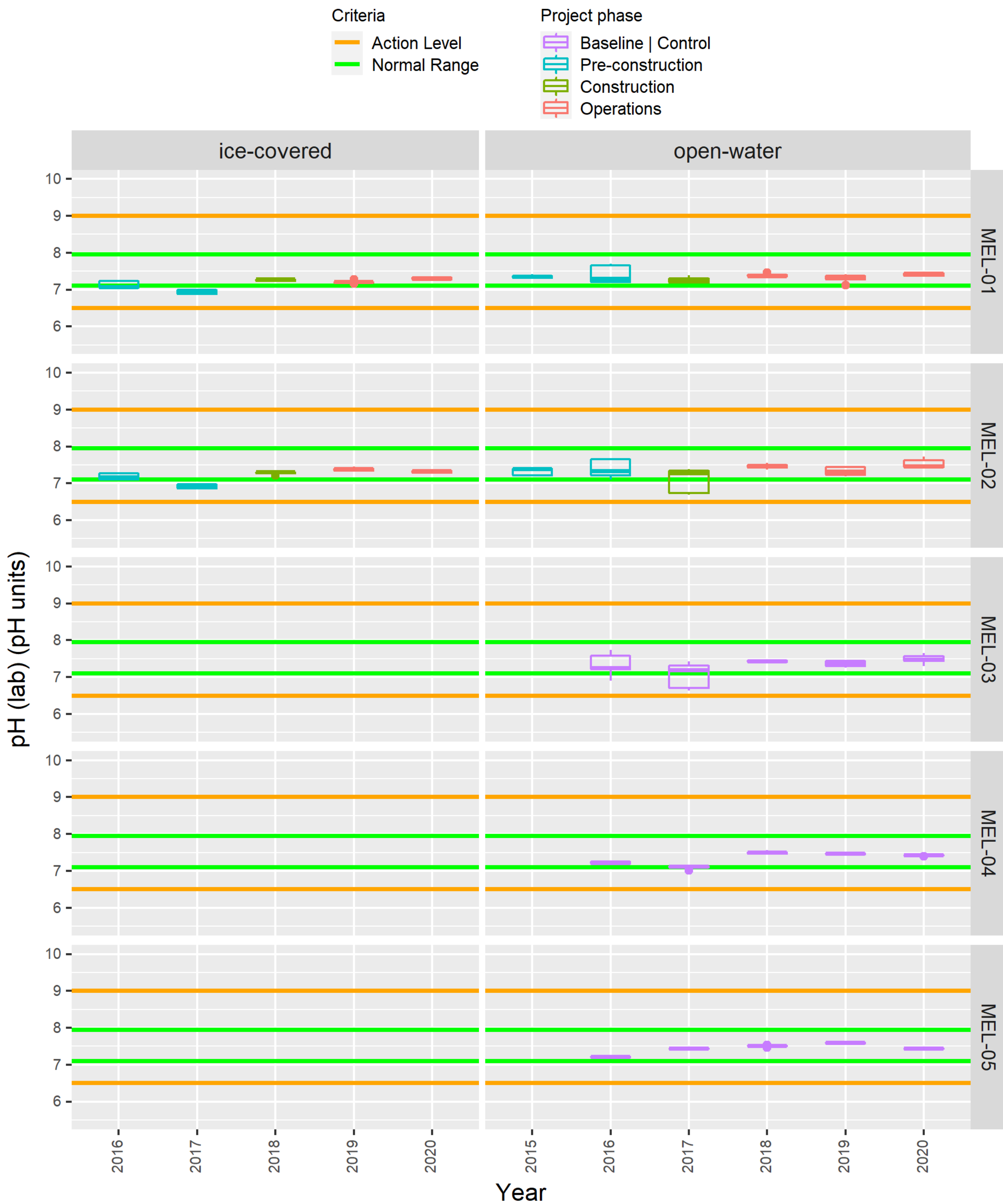


**Figure C1-6. Total dissolved solids (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

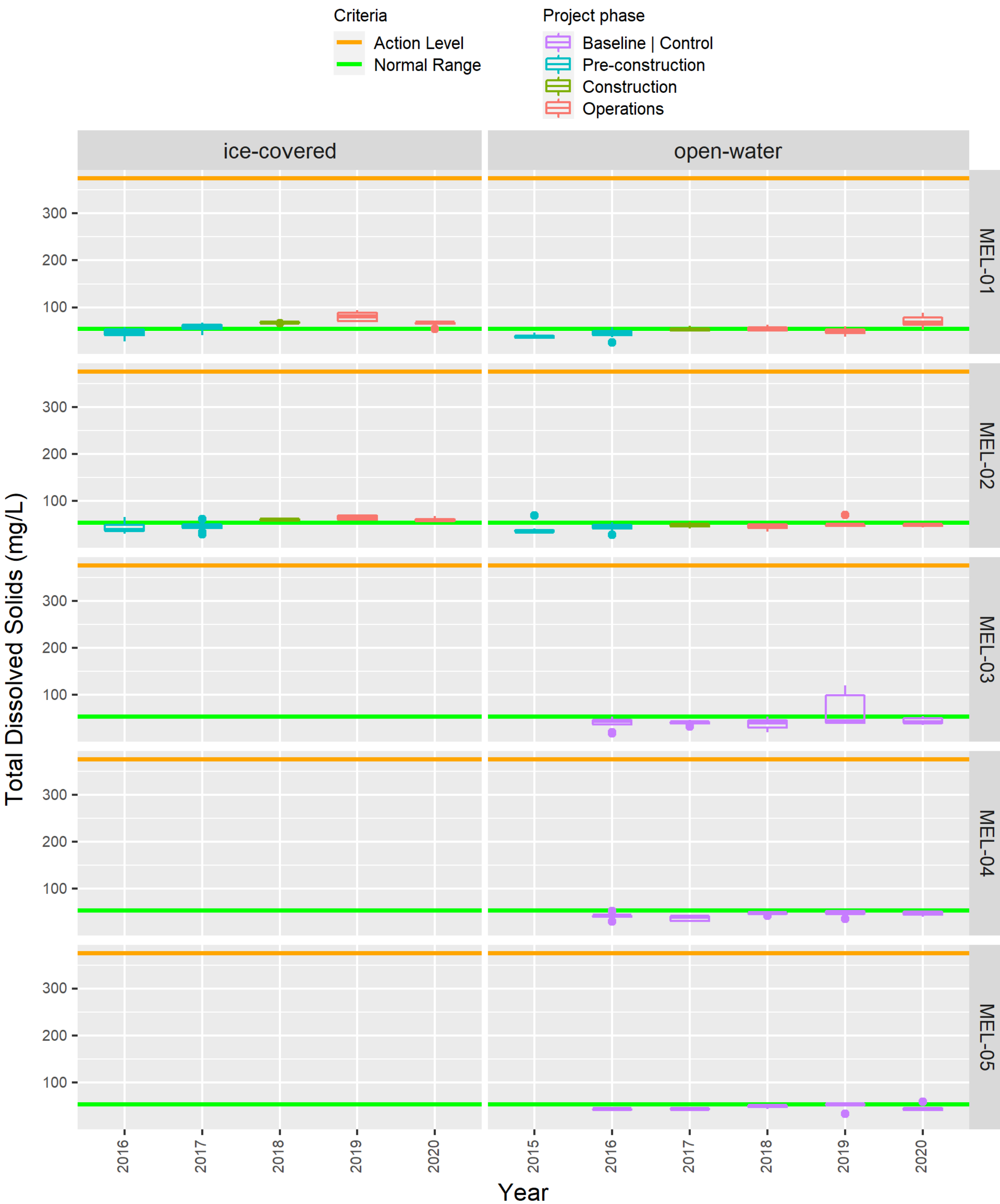
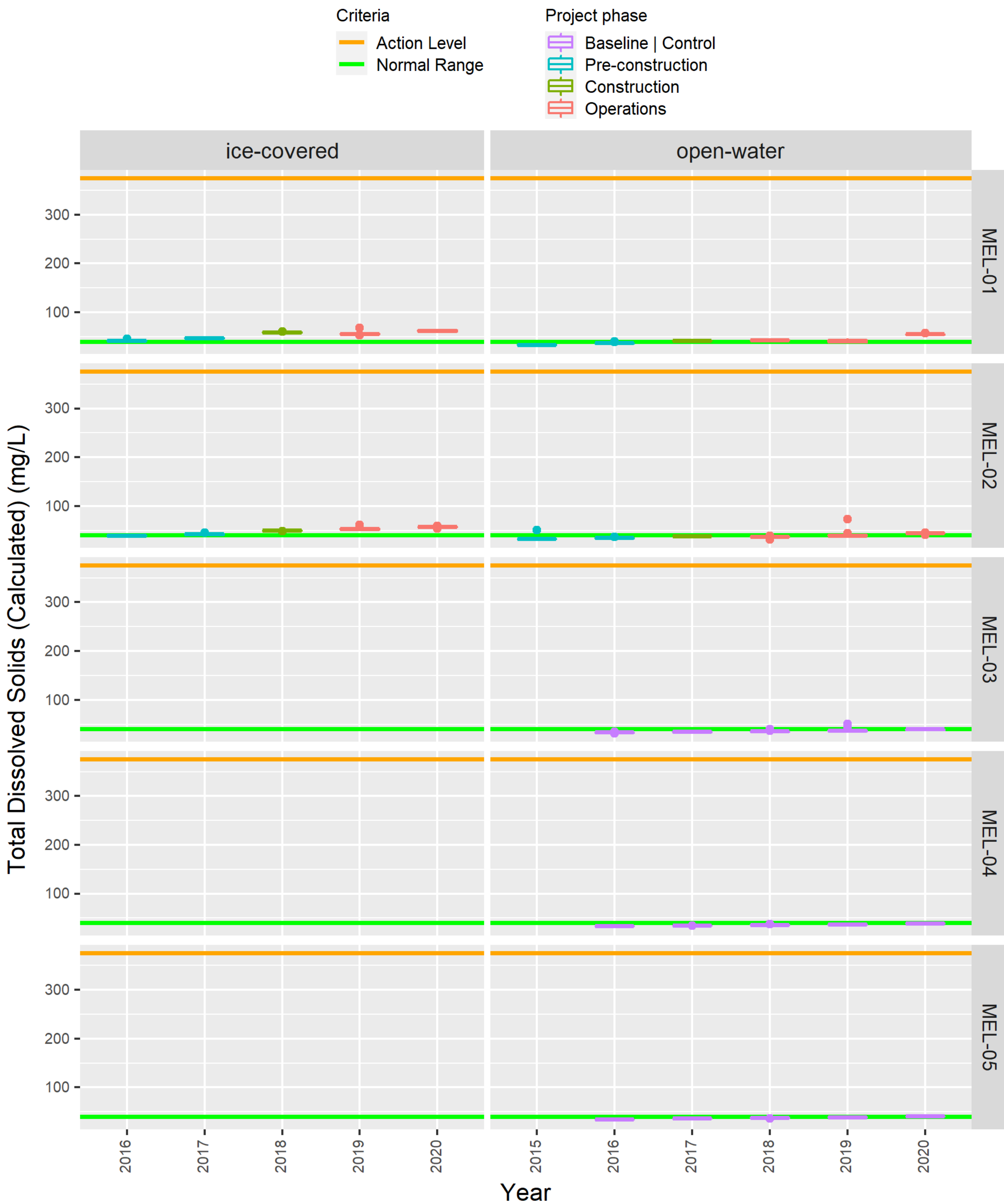


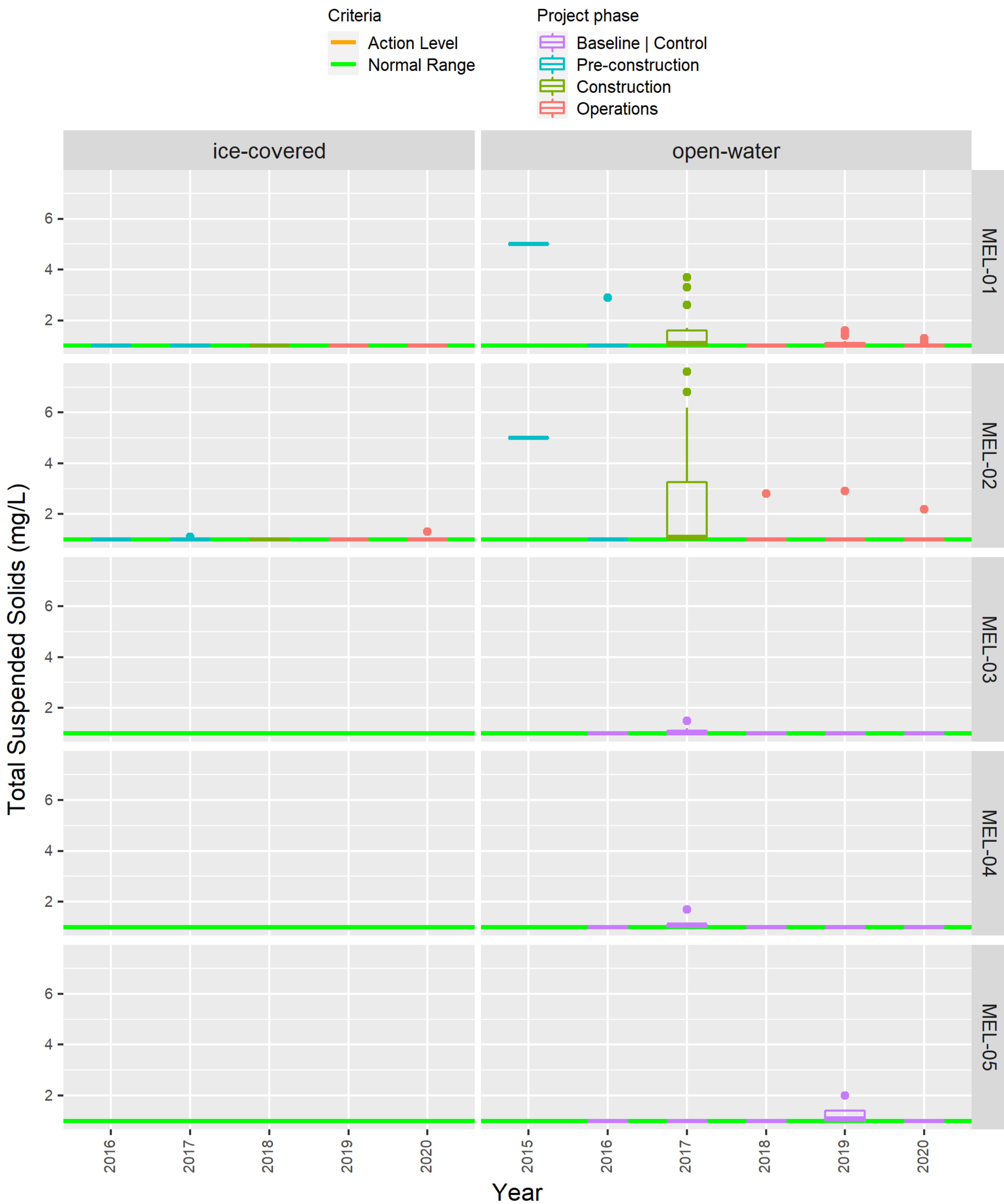
**Figure C1-7. Calculated total dissolved solids (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



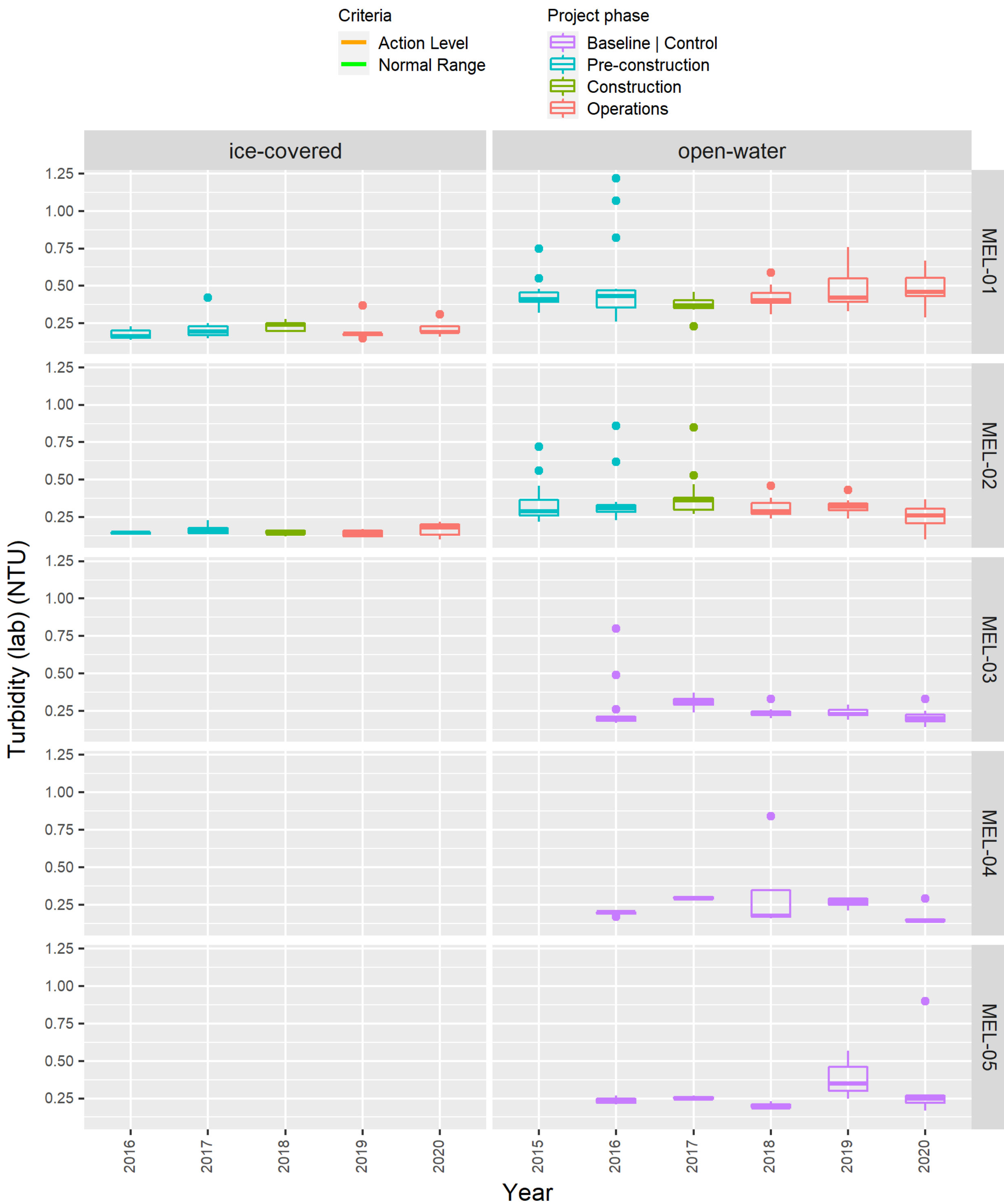
## Figure C1-8. Total suspended solids (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



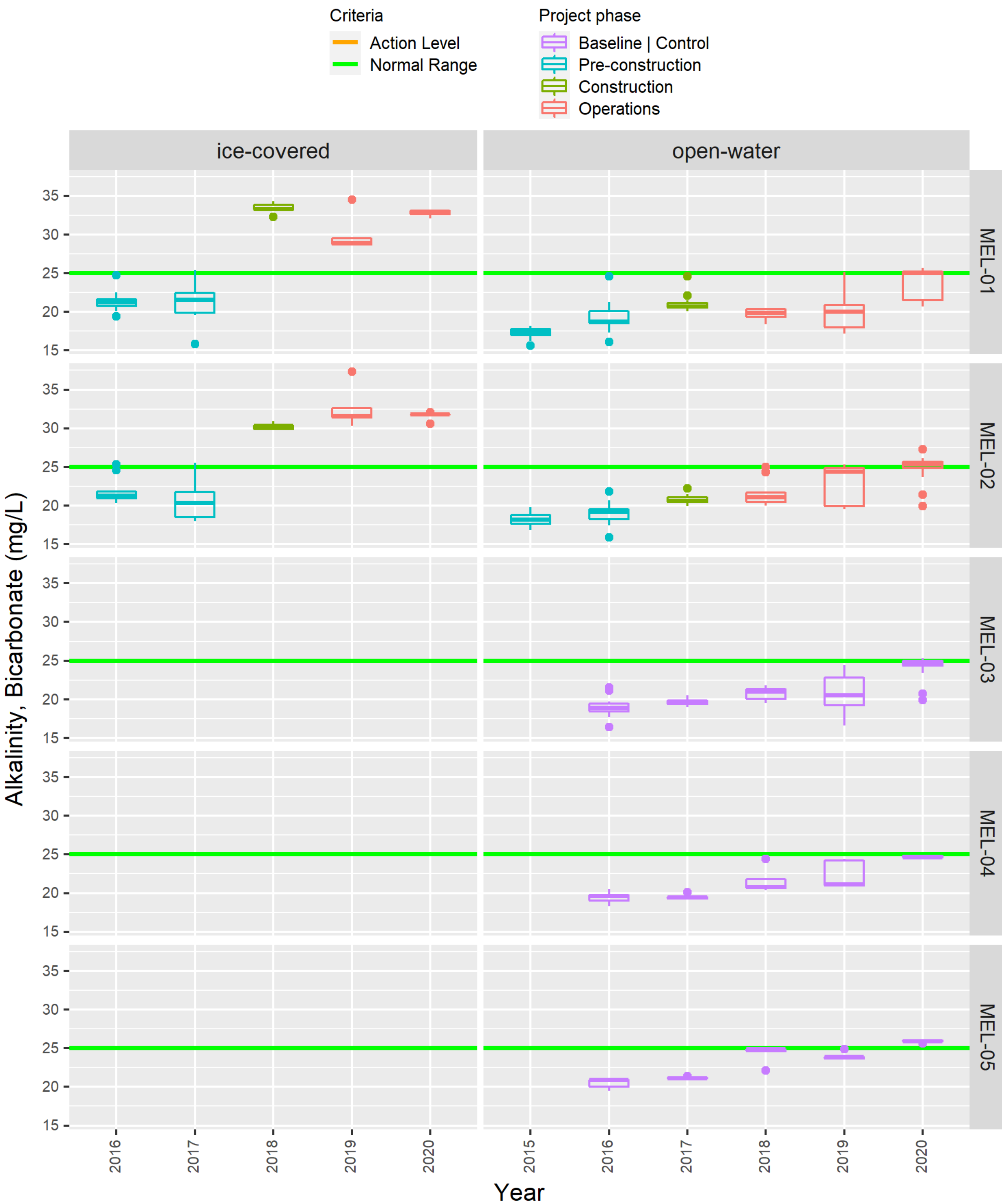
## Figure C1-9. Lab measured turbidity (NTU)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-10. Bicarbonate alkalinity (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-11. Total alkalinity (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

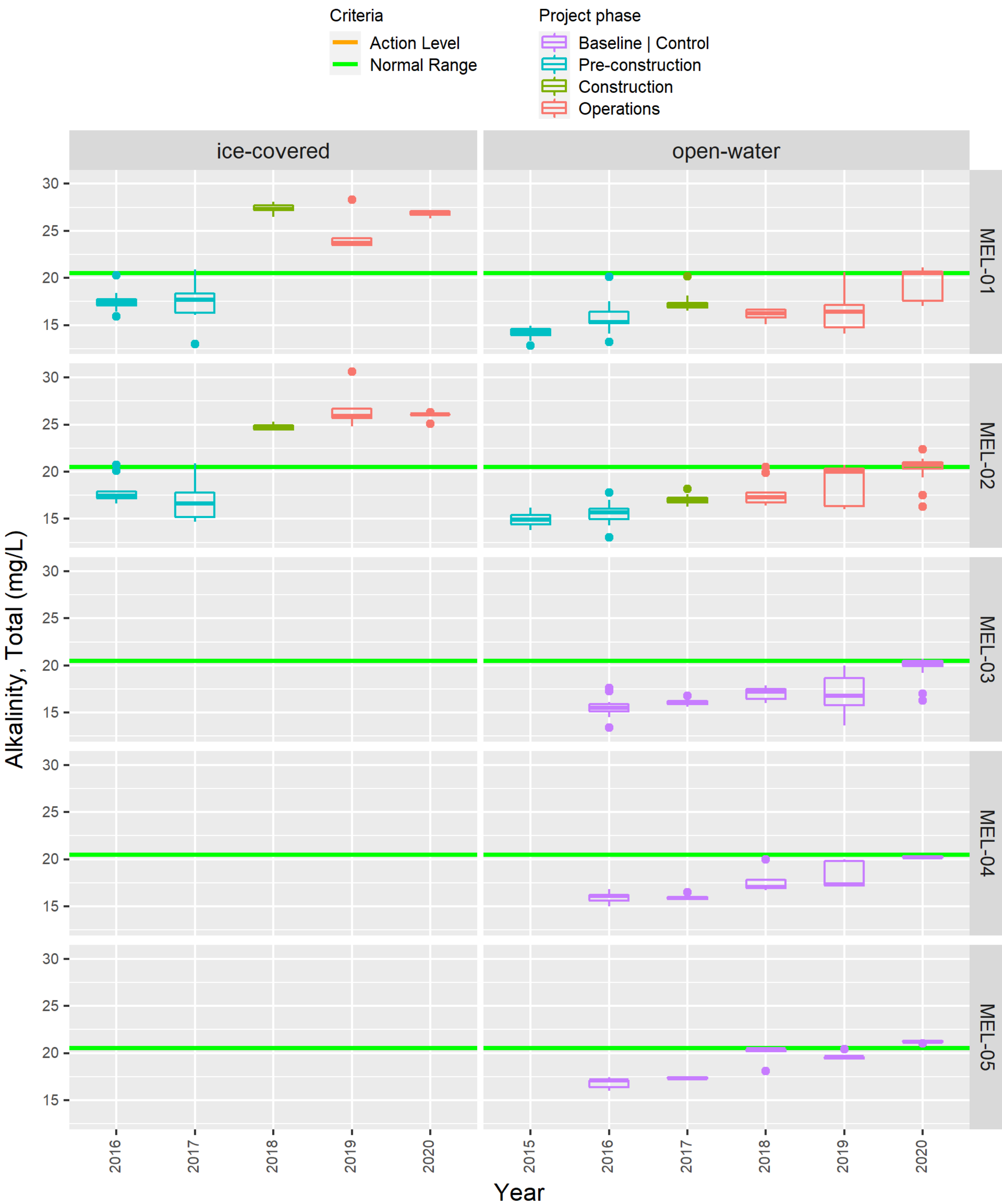
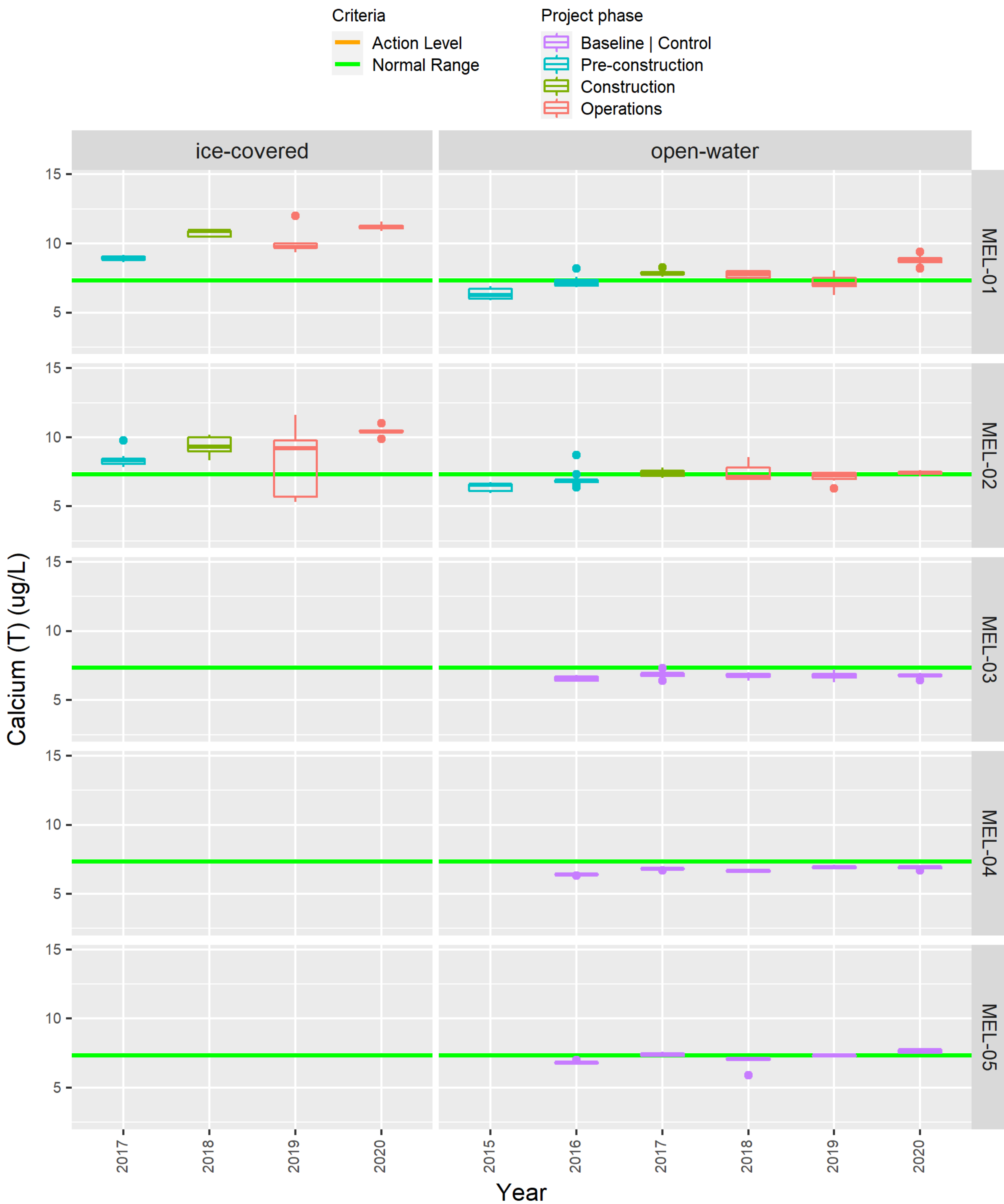


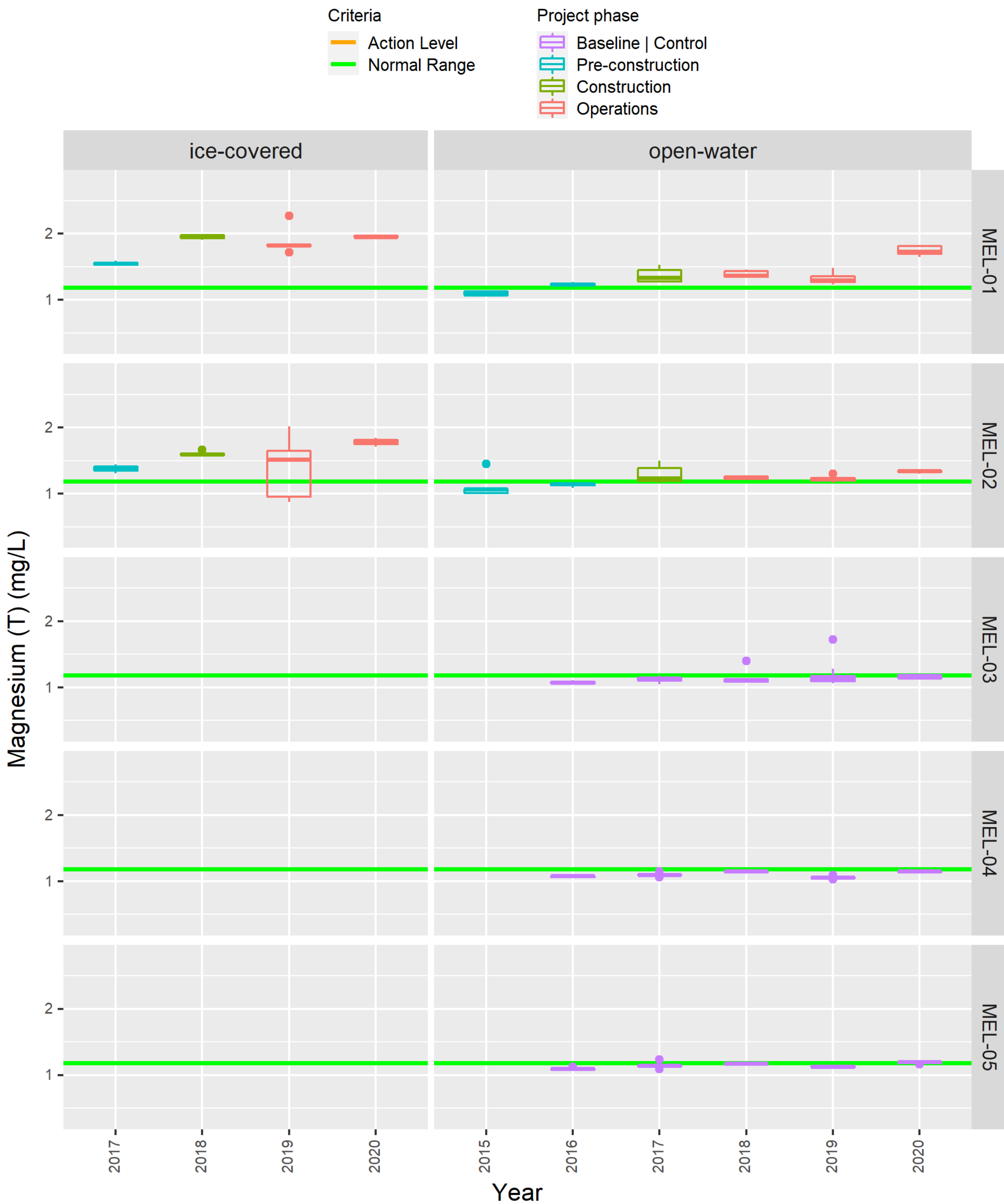
**Figure C1-12. Total calcium (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-13. Total magnesium (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-14. Total potassium (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

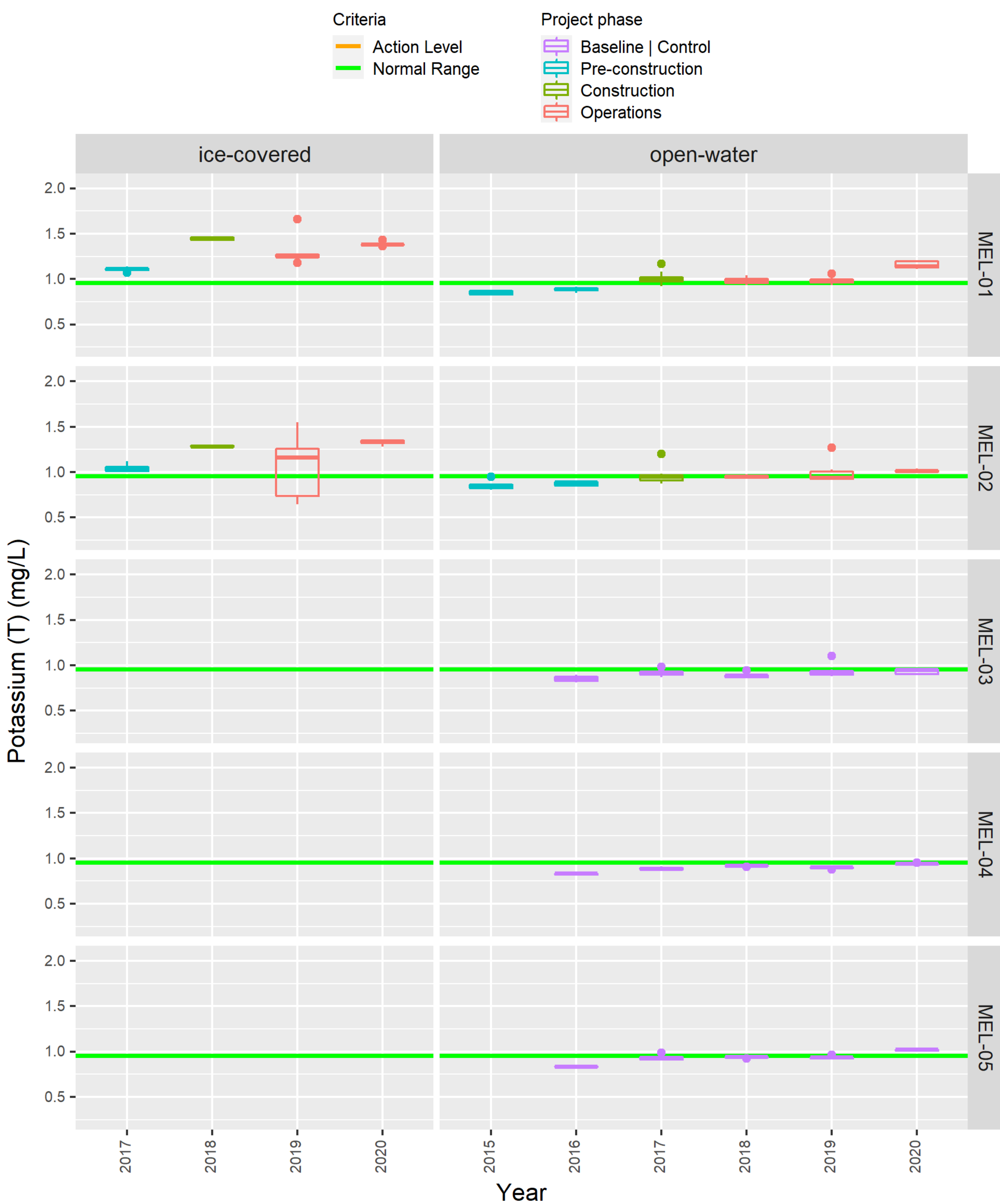


**Figure C1-15. Total sodium (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

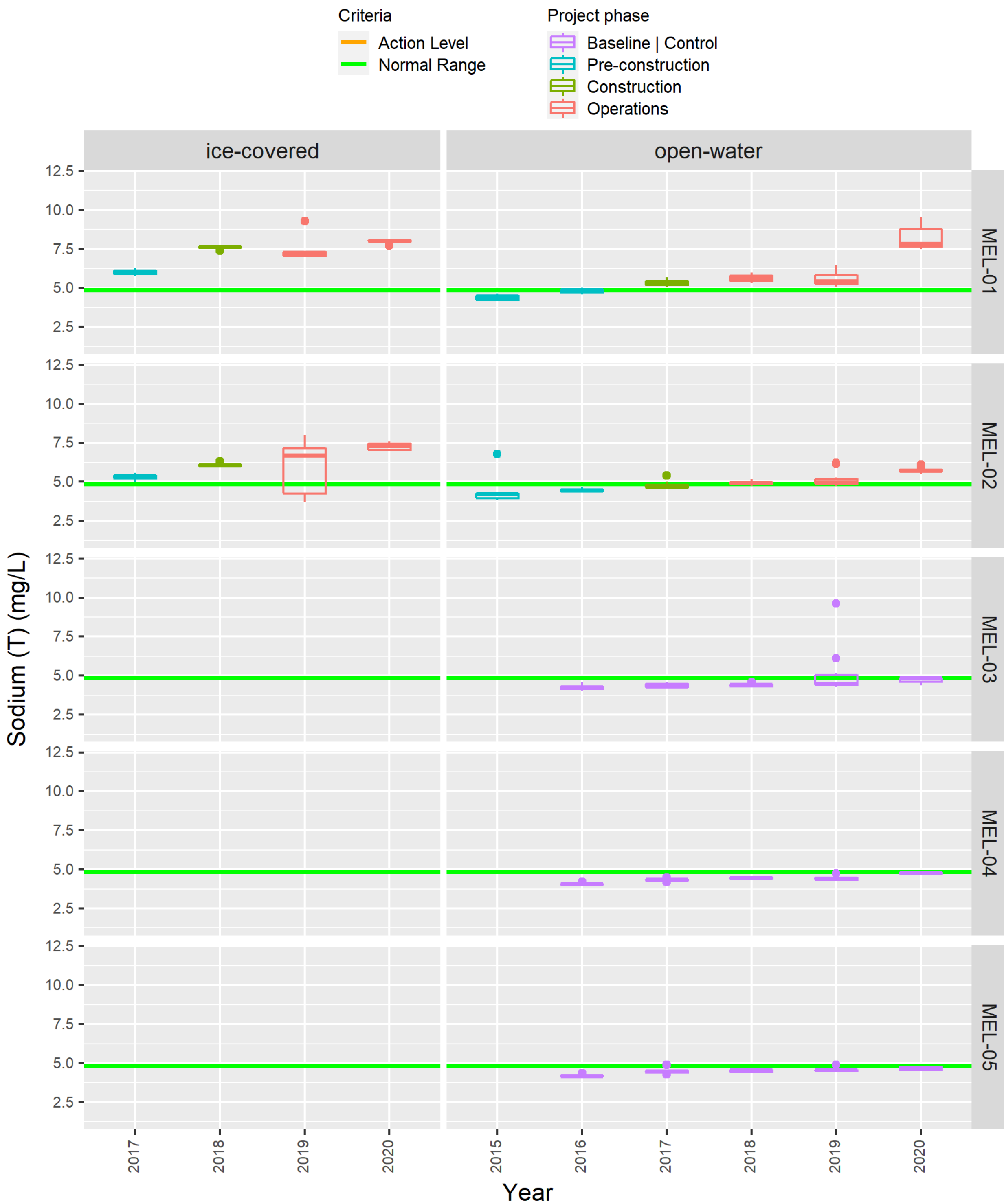
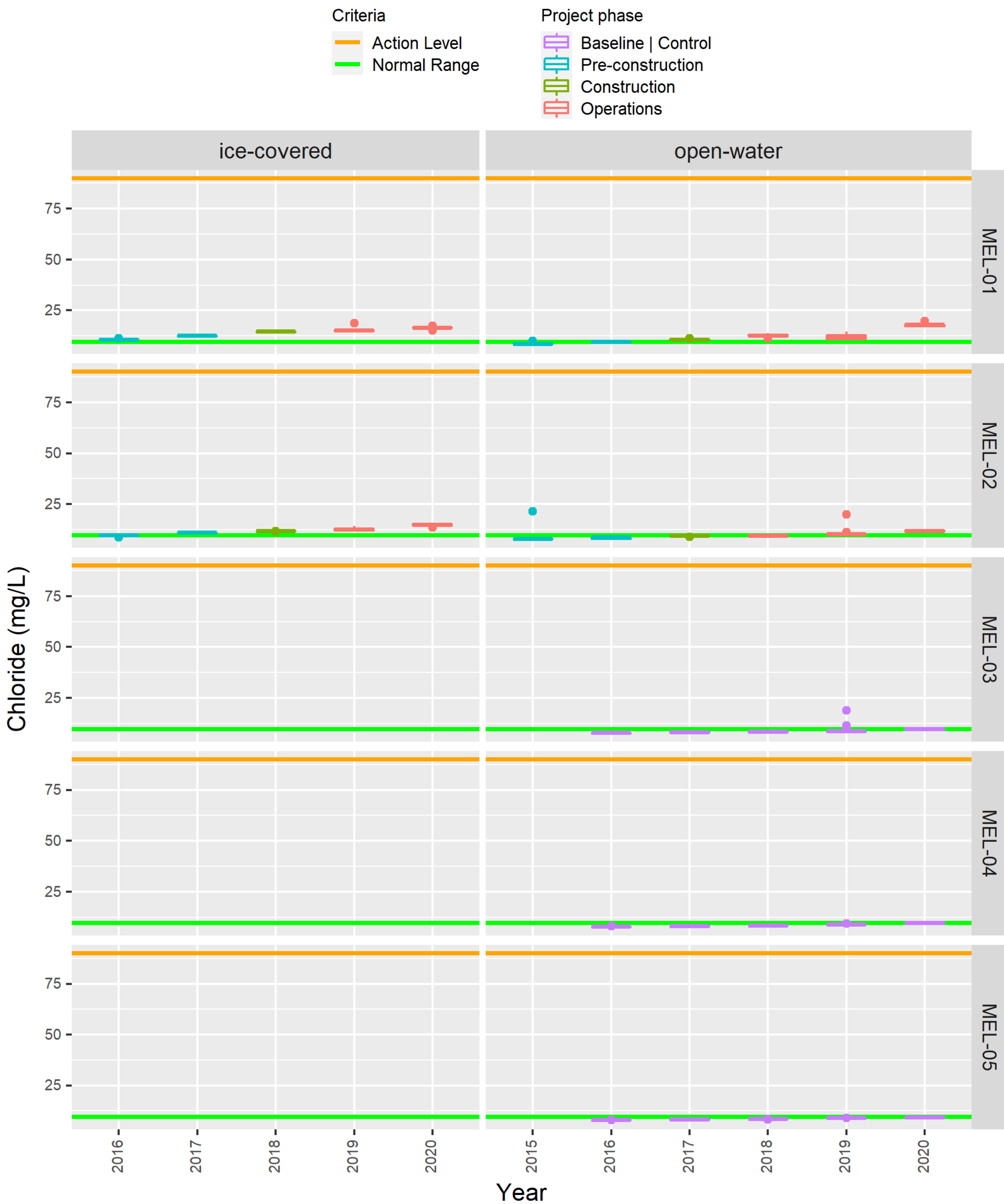


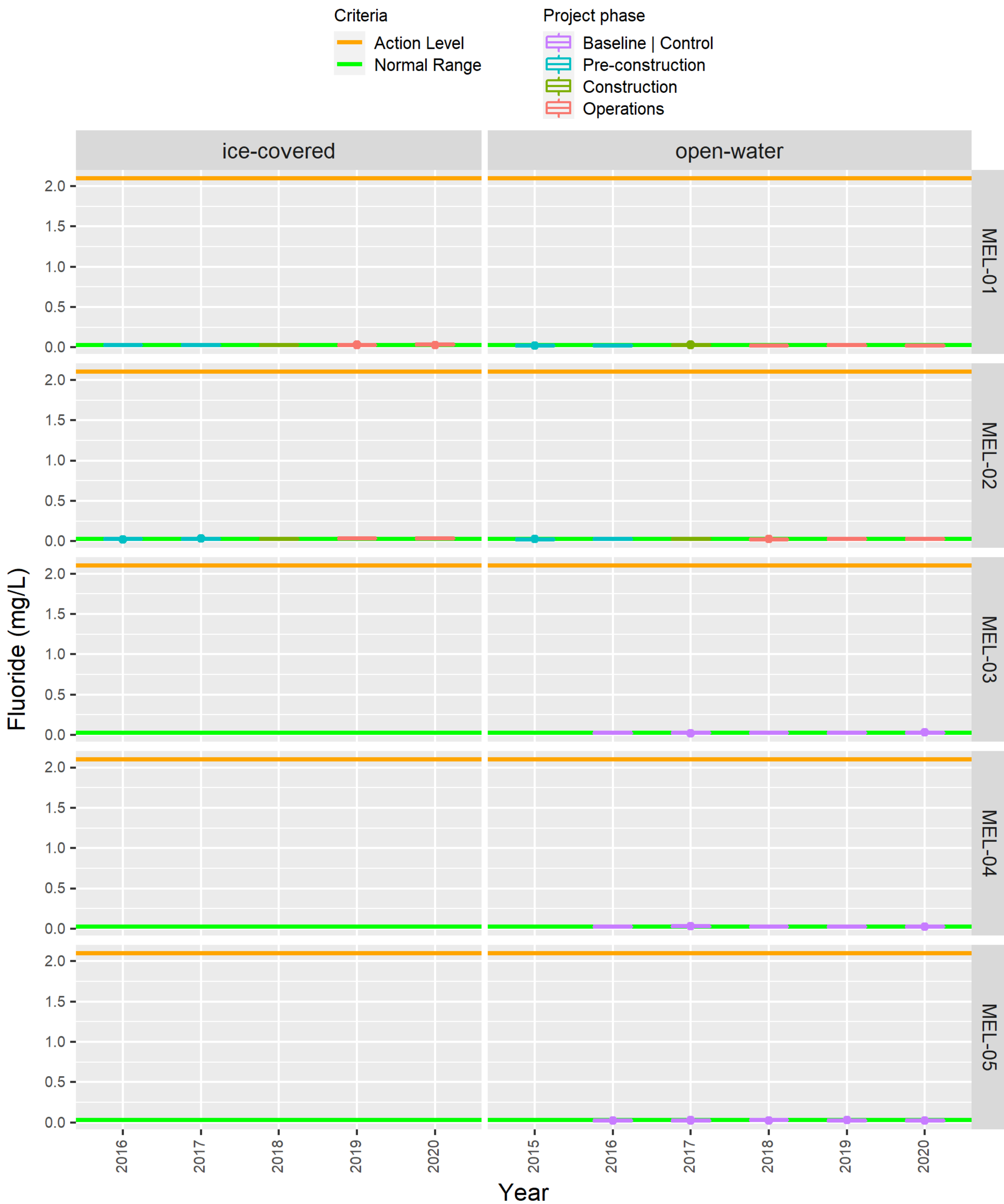
**Figure C1-16. Chloride (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



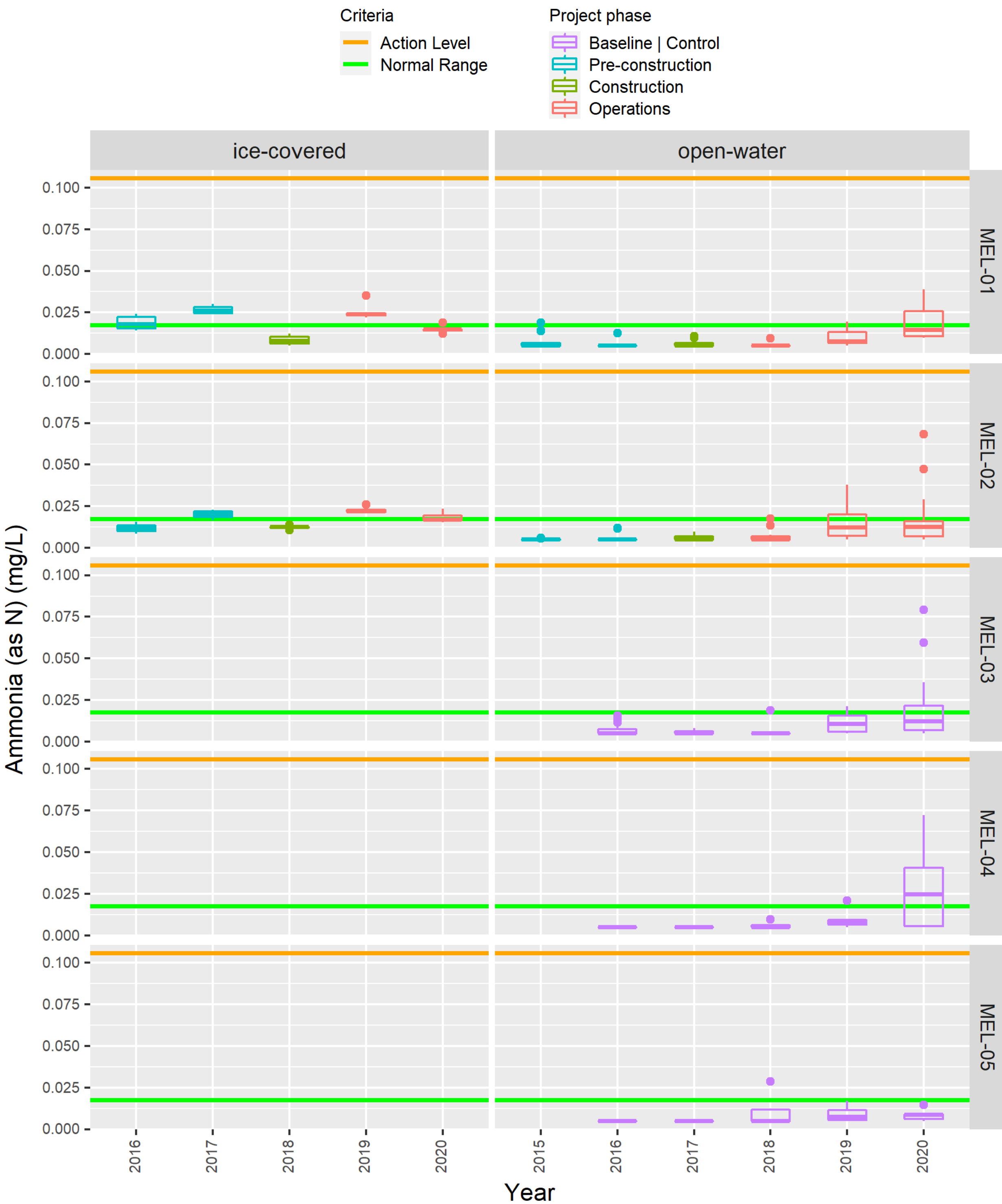
## Figure C1-17. Fluoride (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-18. Ammonia (as nitrogen) (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-19. Nitrate (as nitrogen) (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

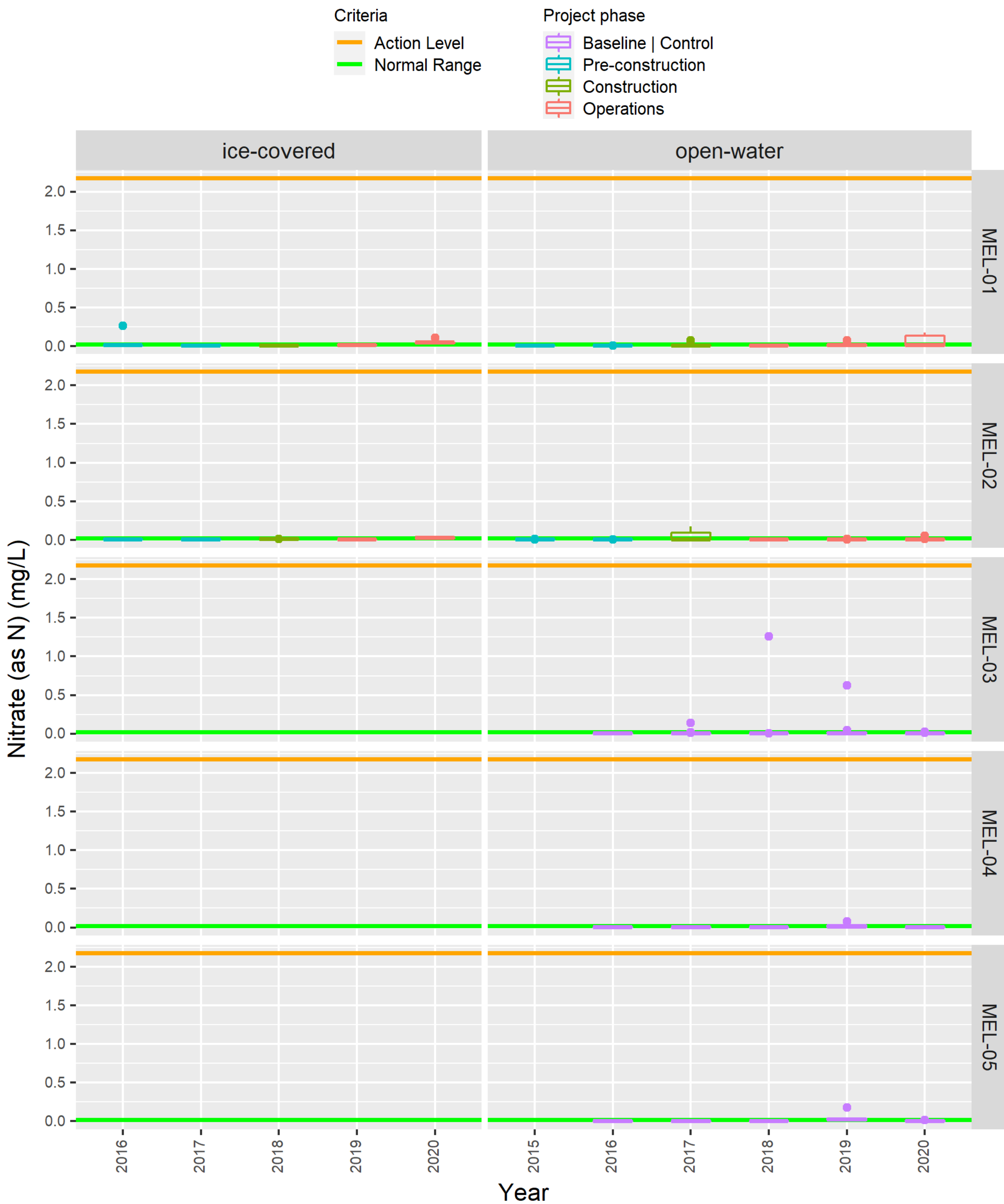
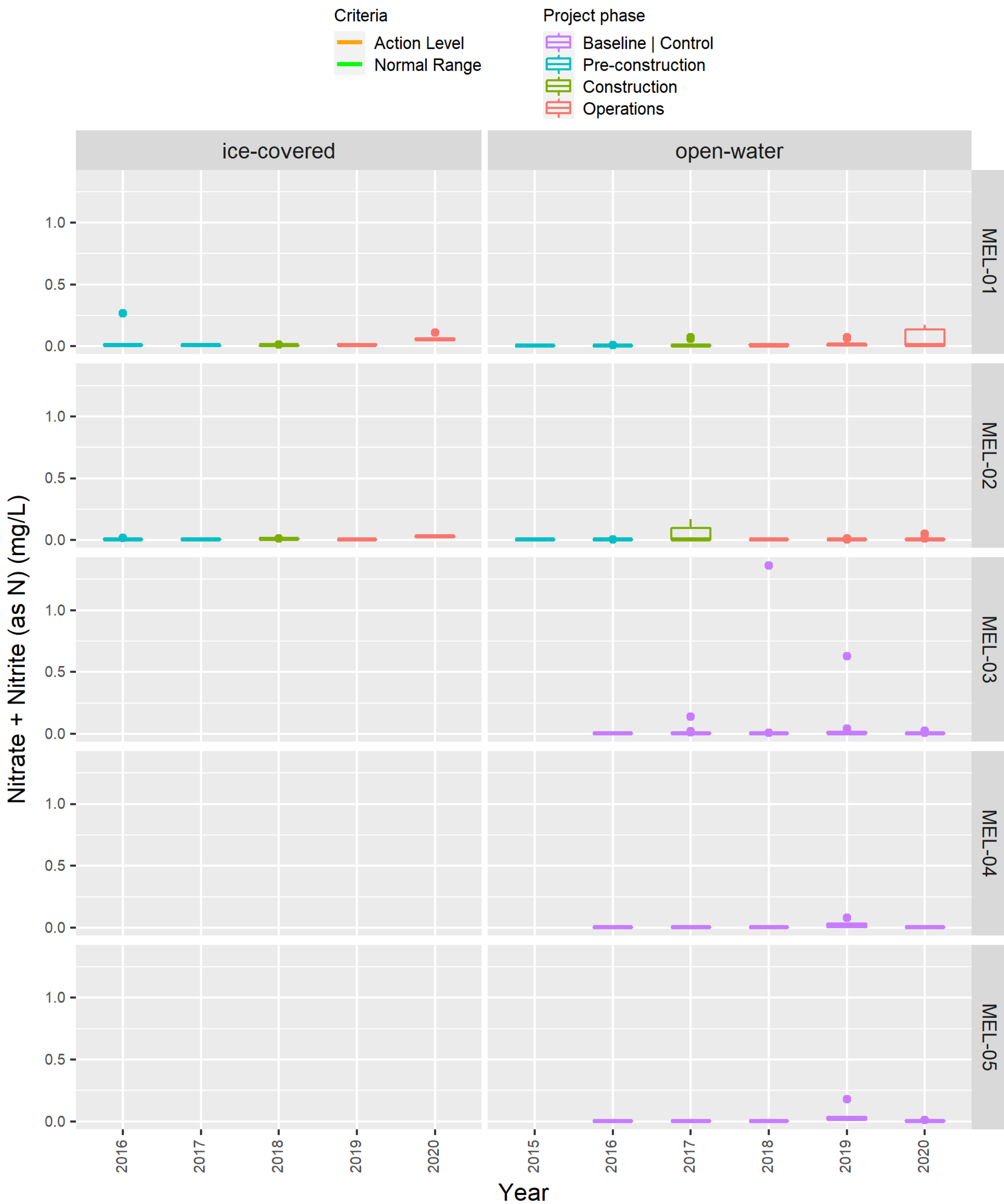


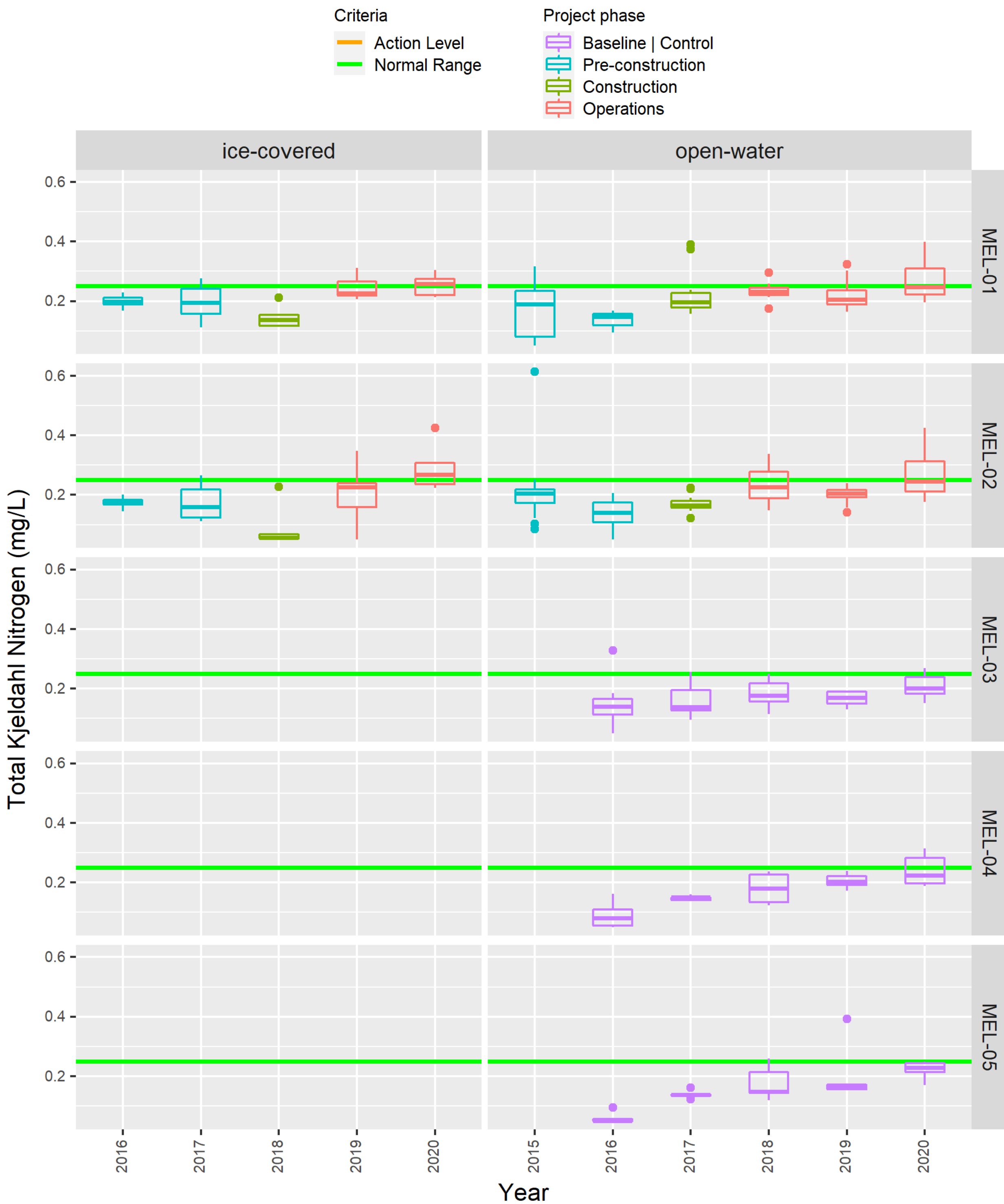
**Figure C1-20. Nitrate and nitrite (as nitrogen) (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



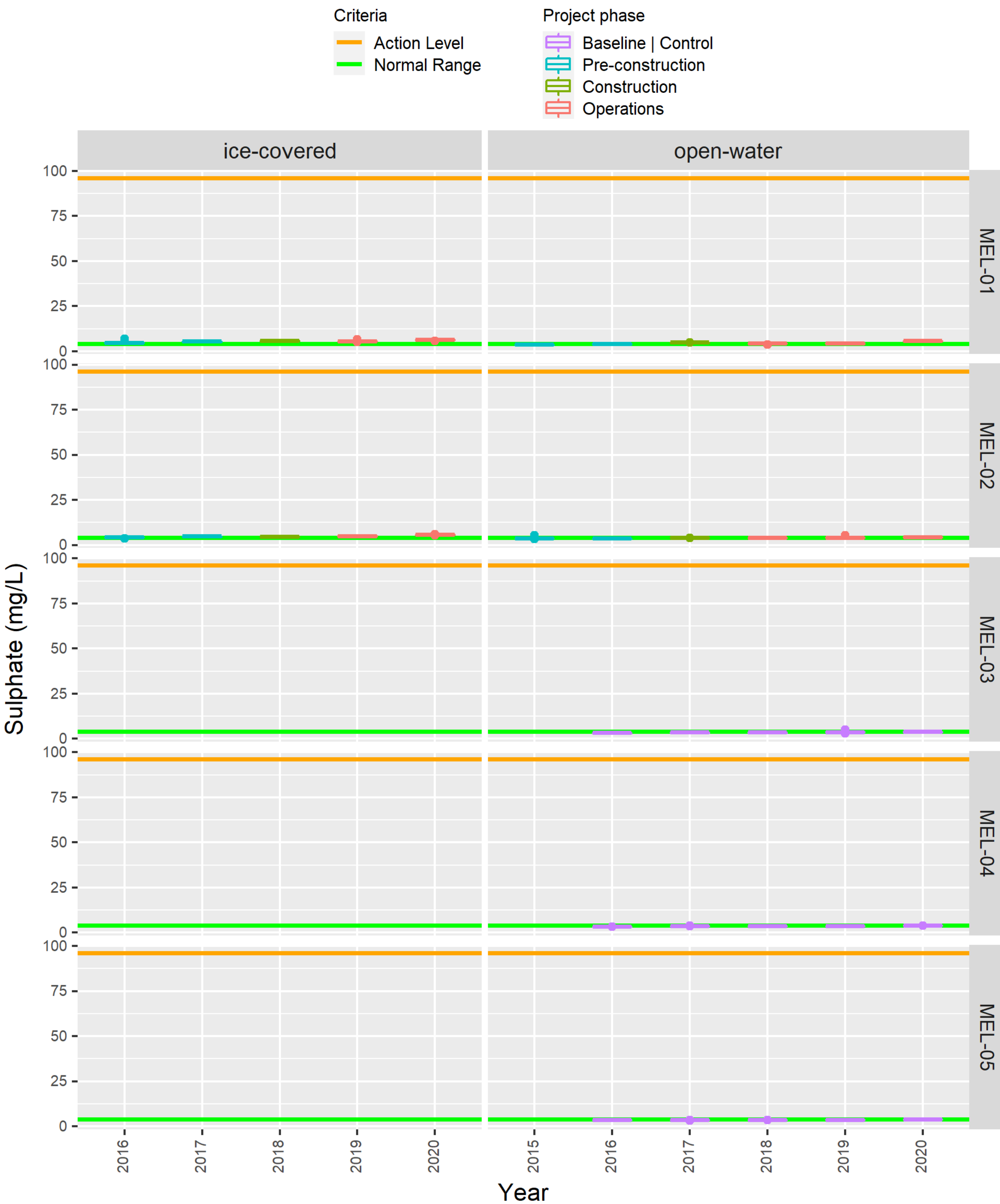
## Figure C1-21. Total Kjeldahl nitrogen (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-22. Sulphate (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-23. Total phosphorus (µg/)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

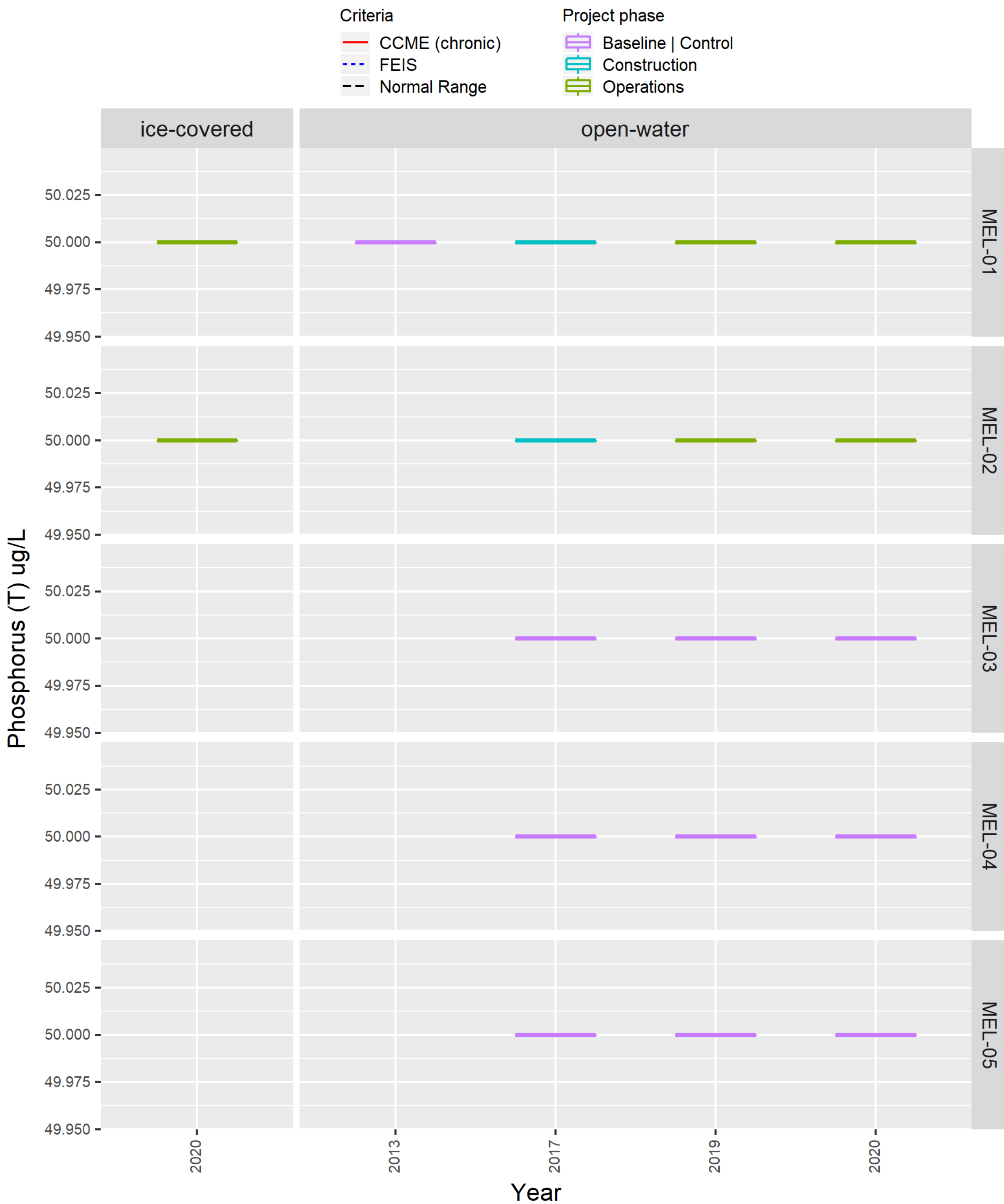


**Figure C1-24. Dissolved organic carbon (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

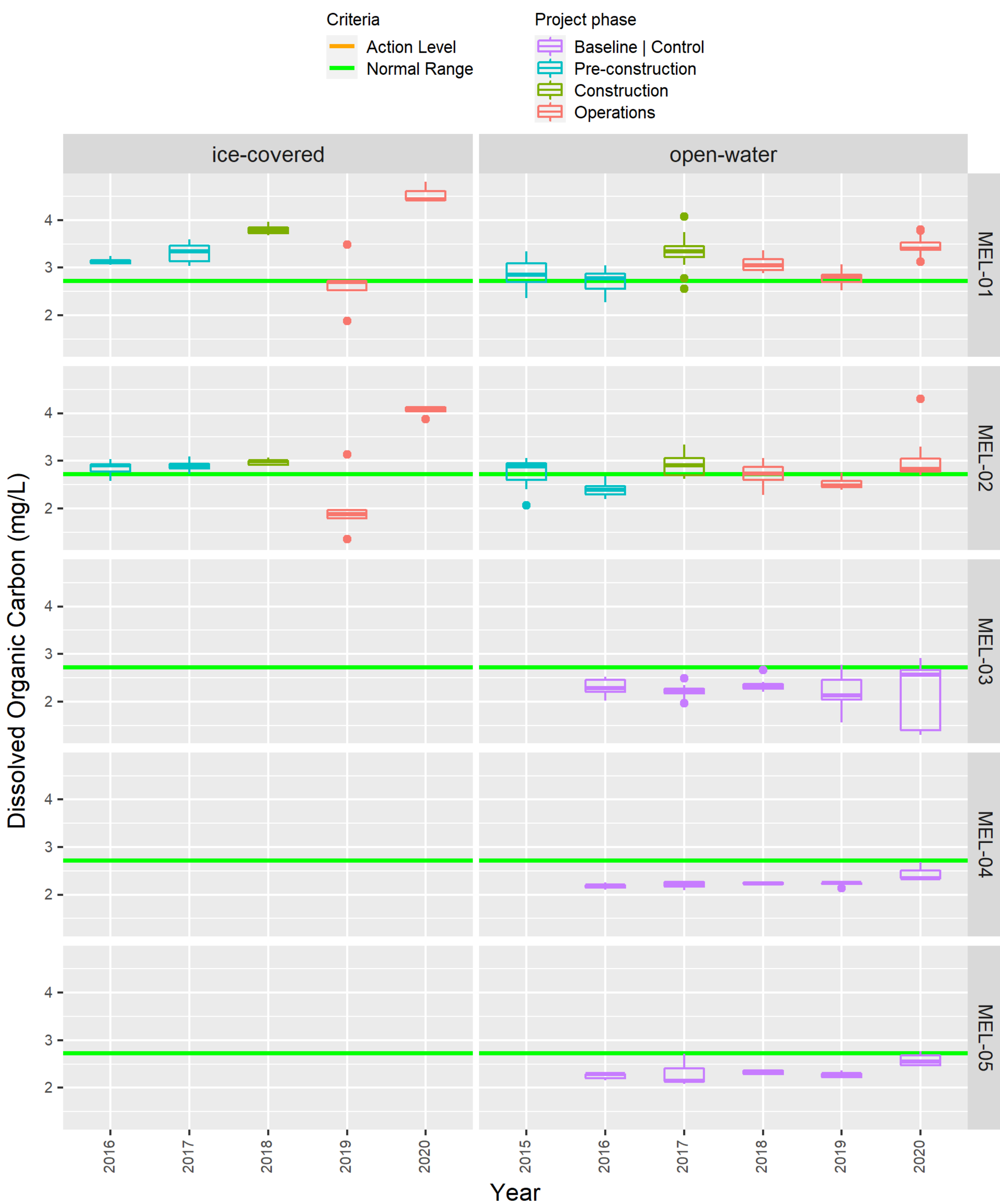


**Figure C1-25. Total organic carbon (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

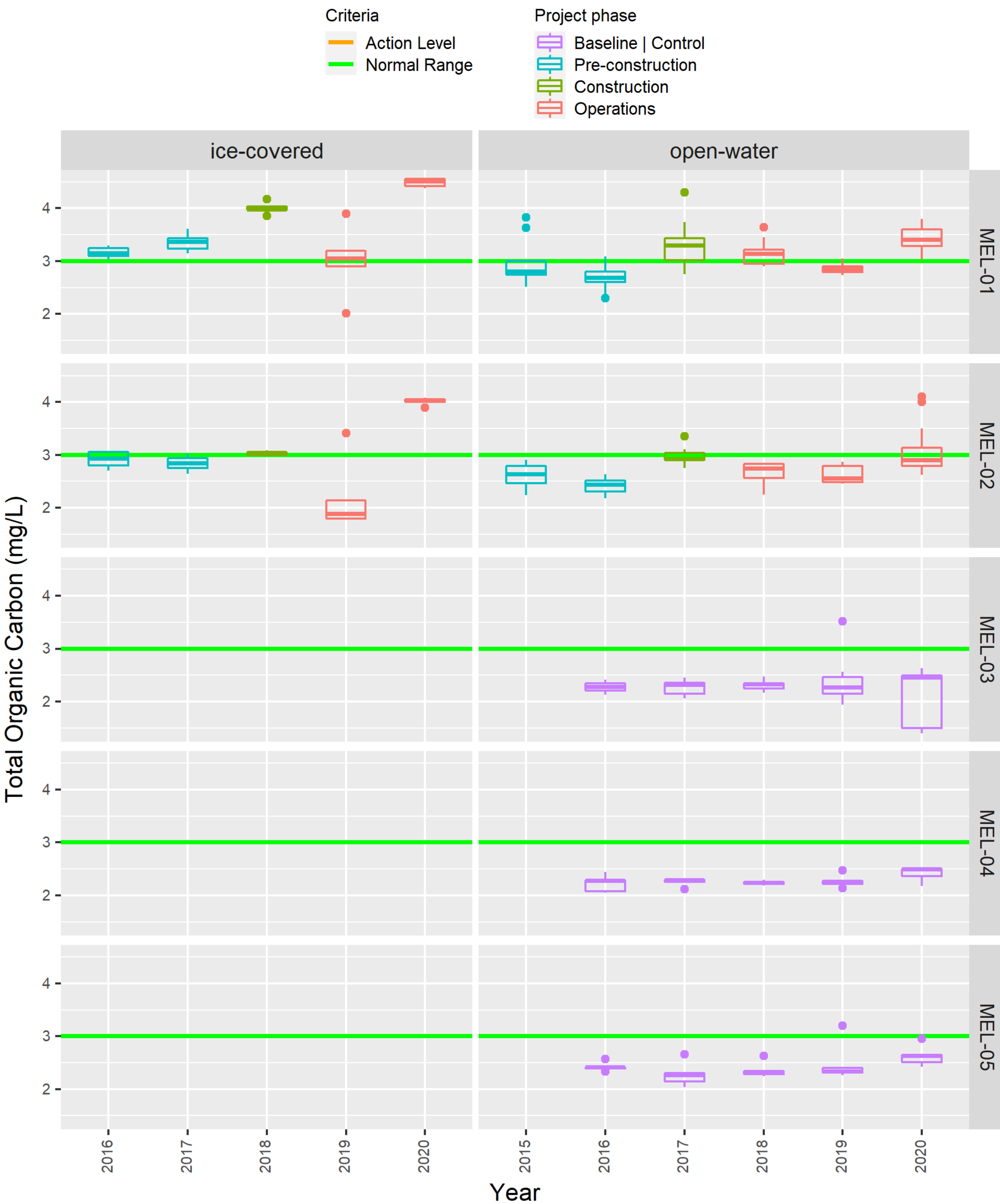
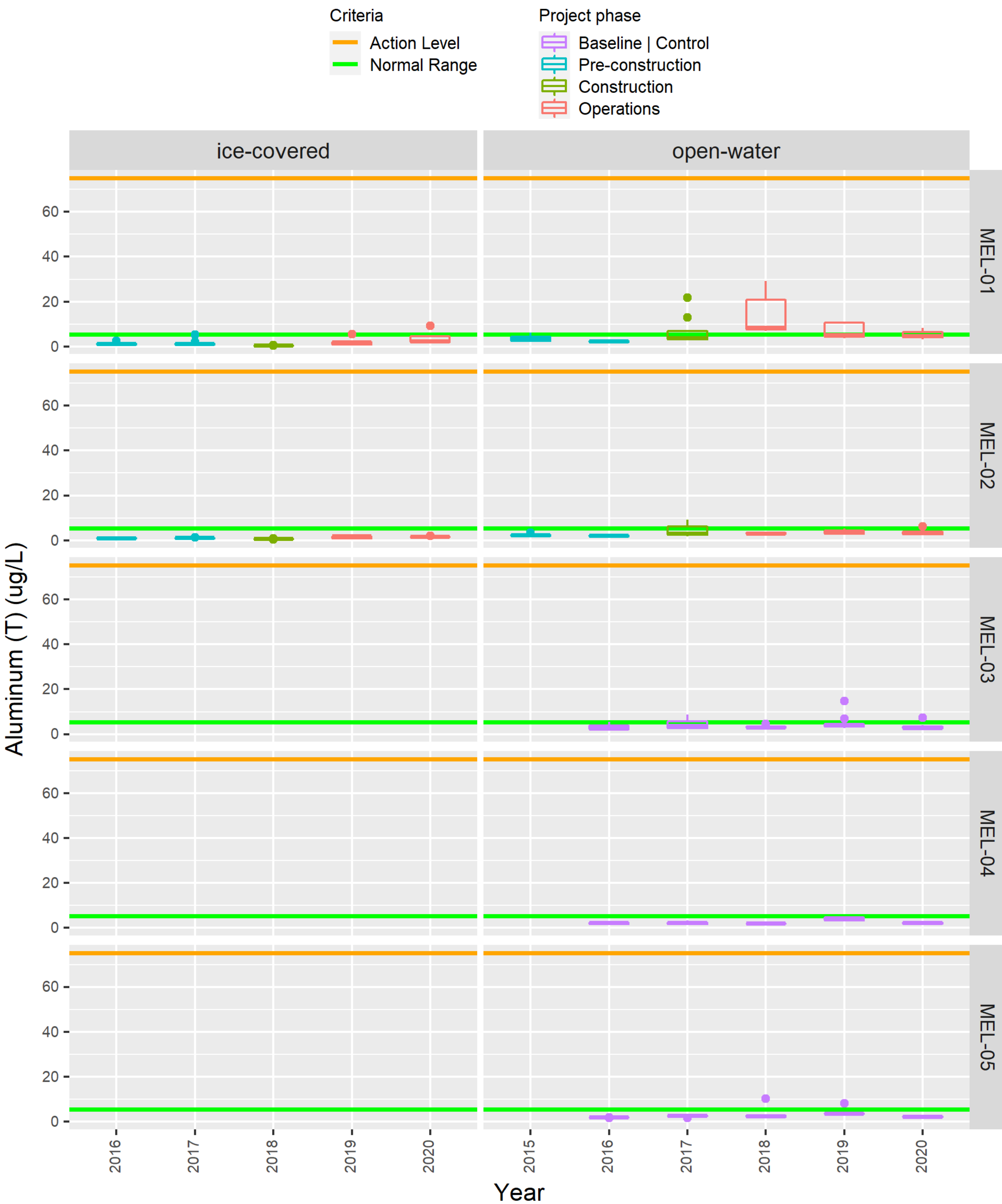


**Figure C1-26. Total aluminum (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-27. Total antimony (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

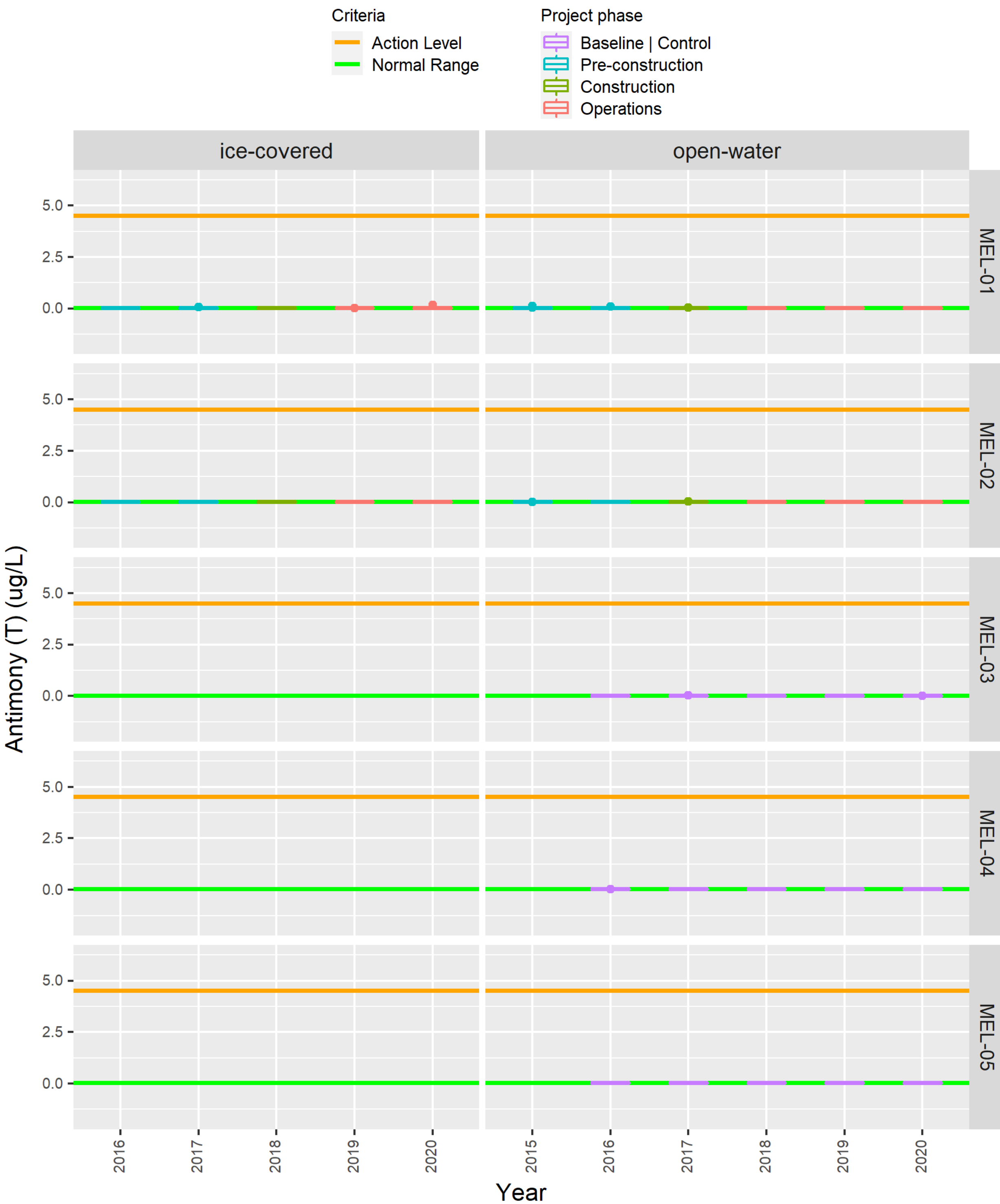
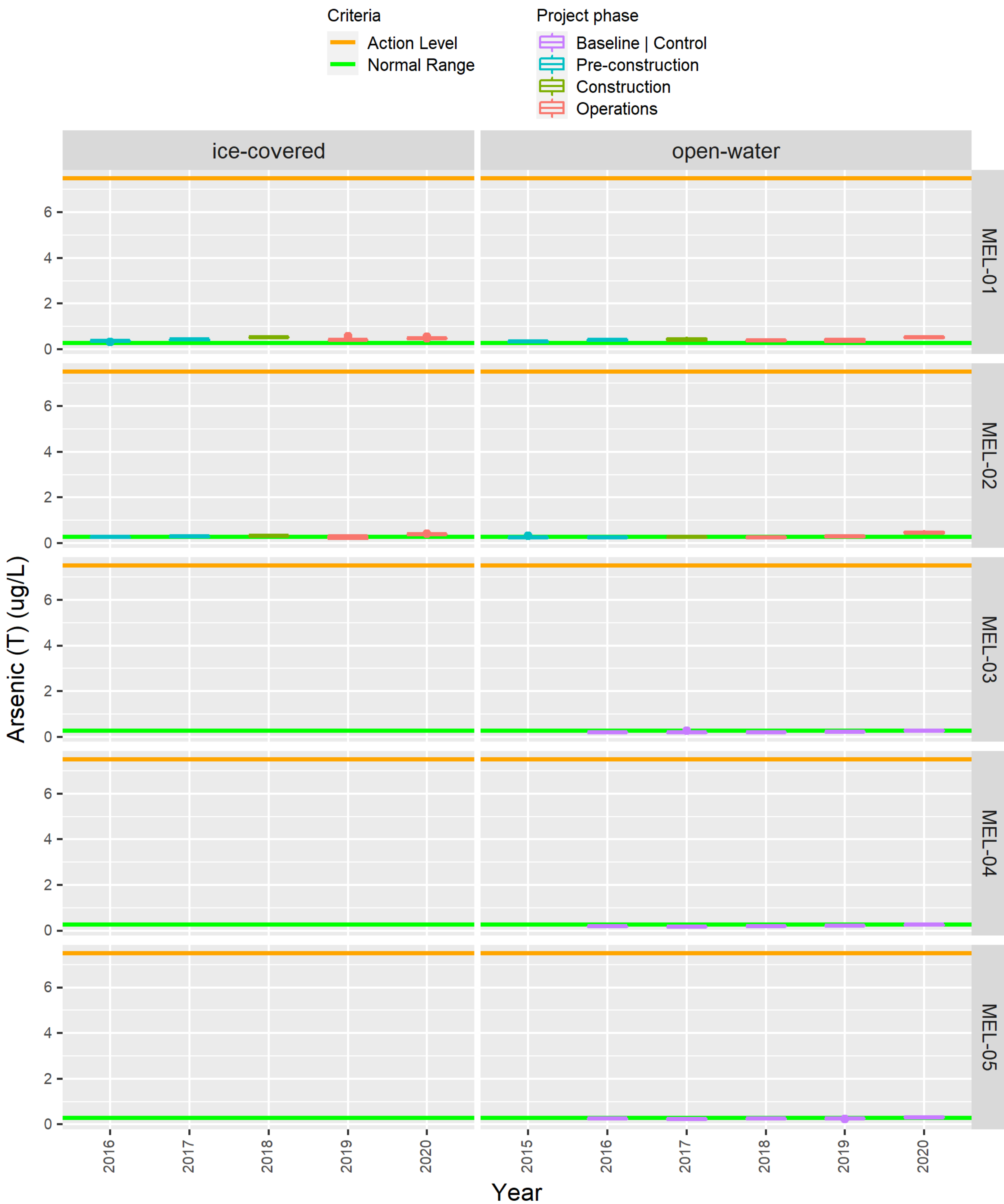


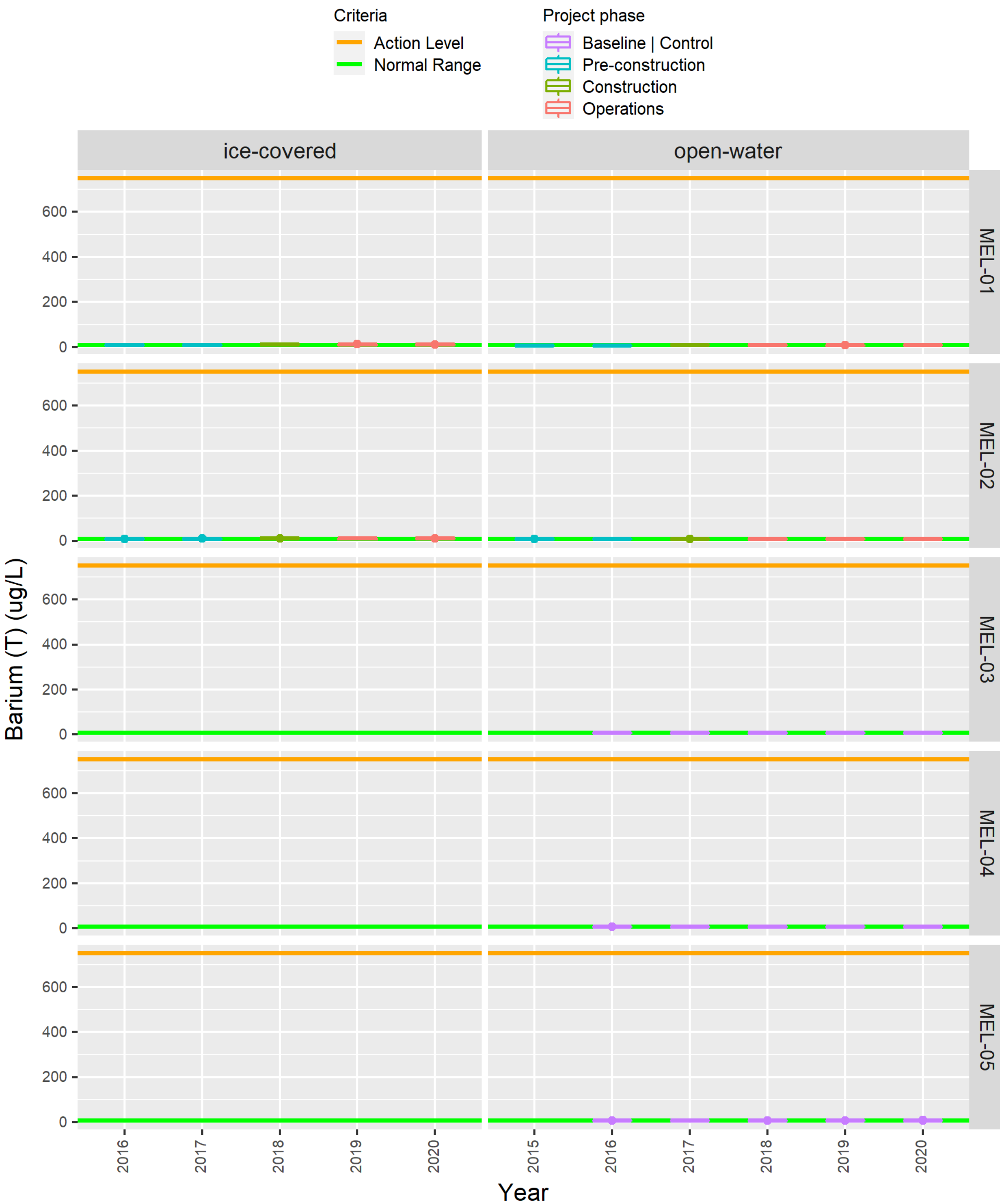
**Figure C1-28. Total arsenic (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



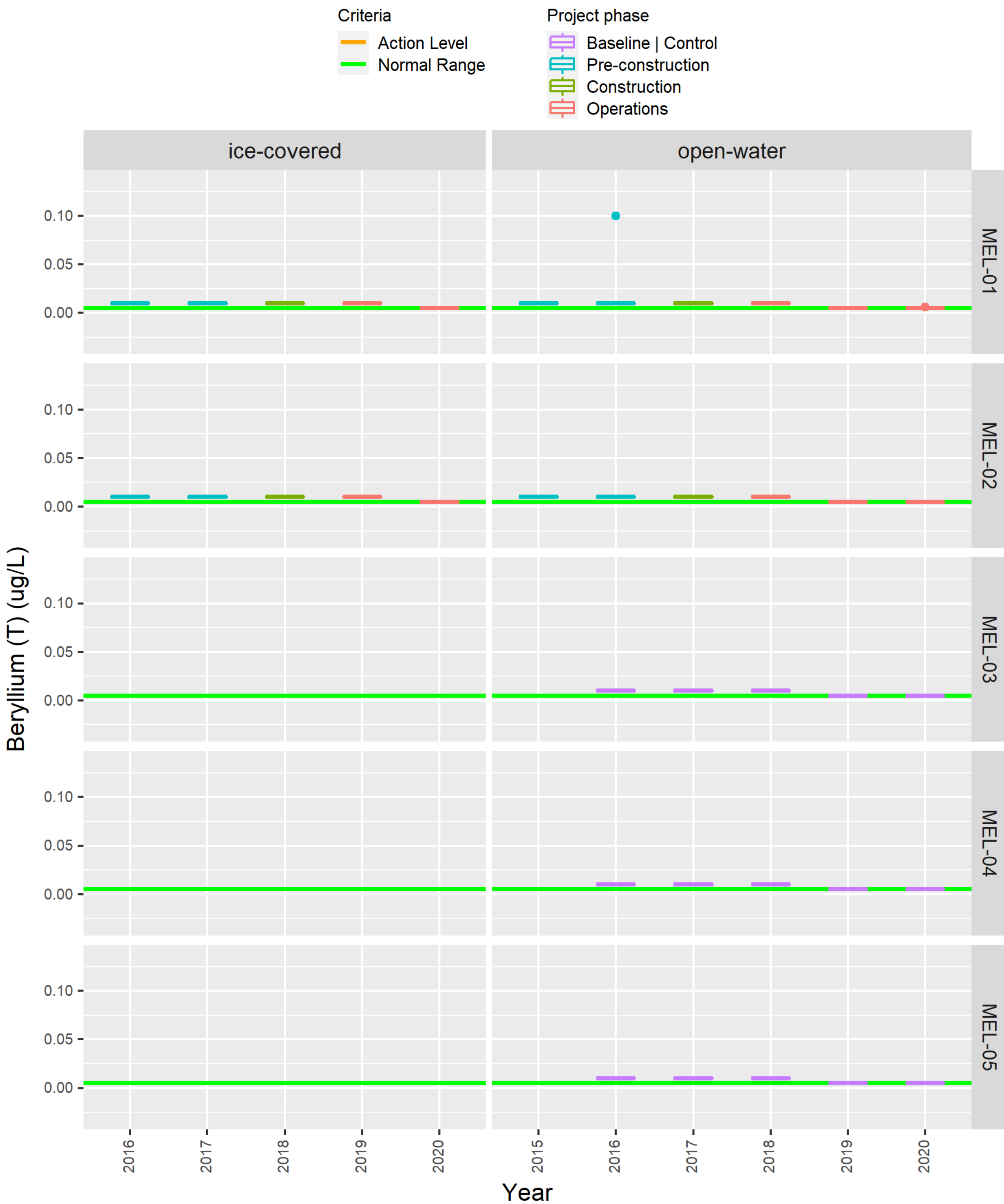
## Figure C1-29. Total barium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-30. Total beryllium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-31. Total bismuth (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

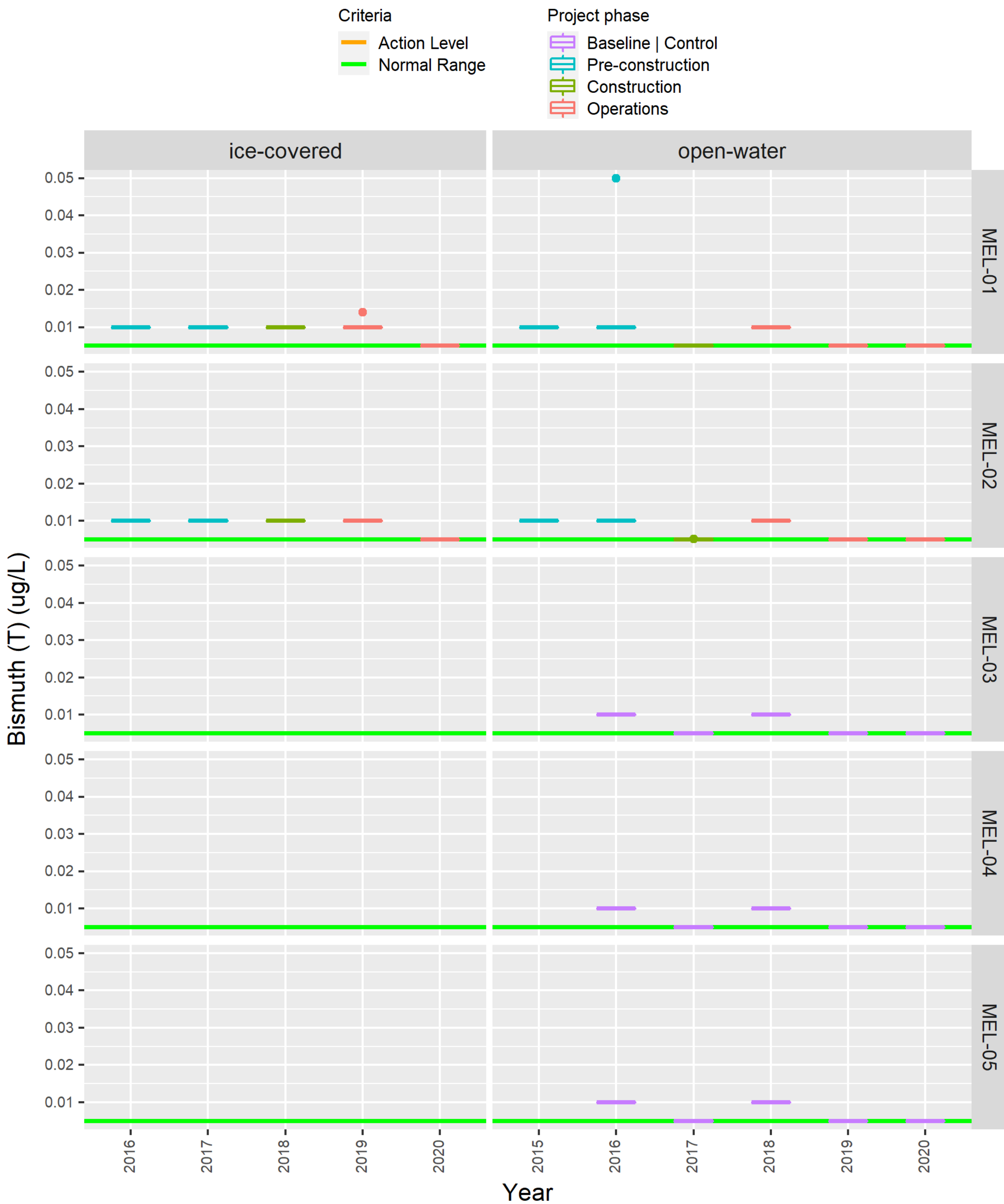
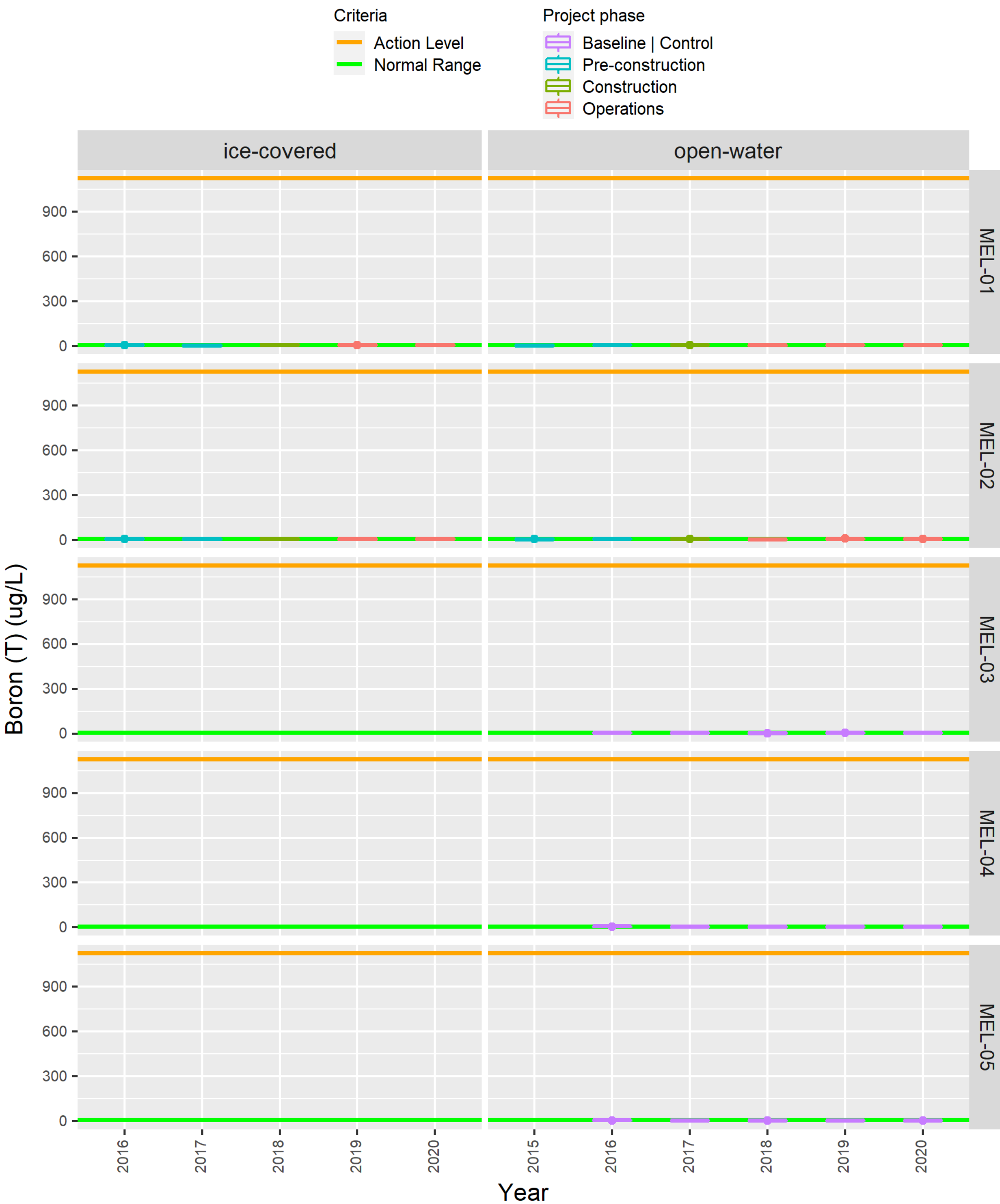


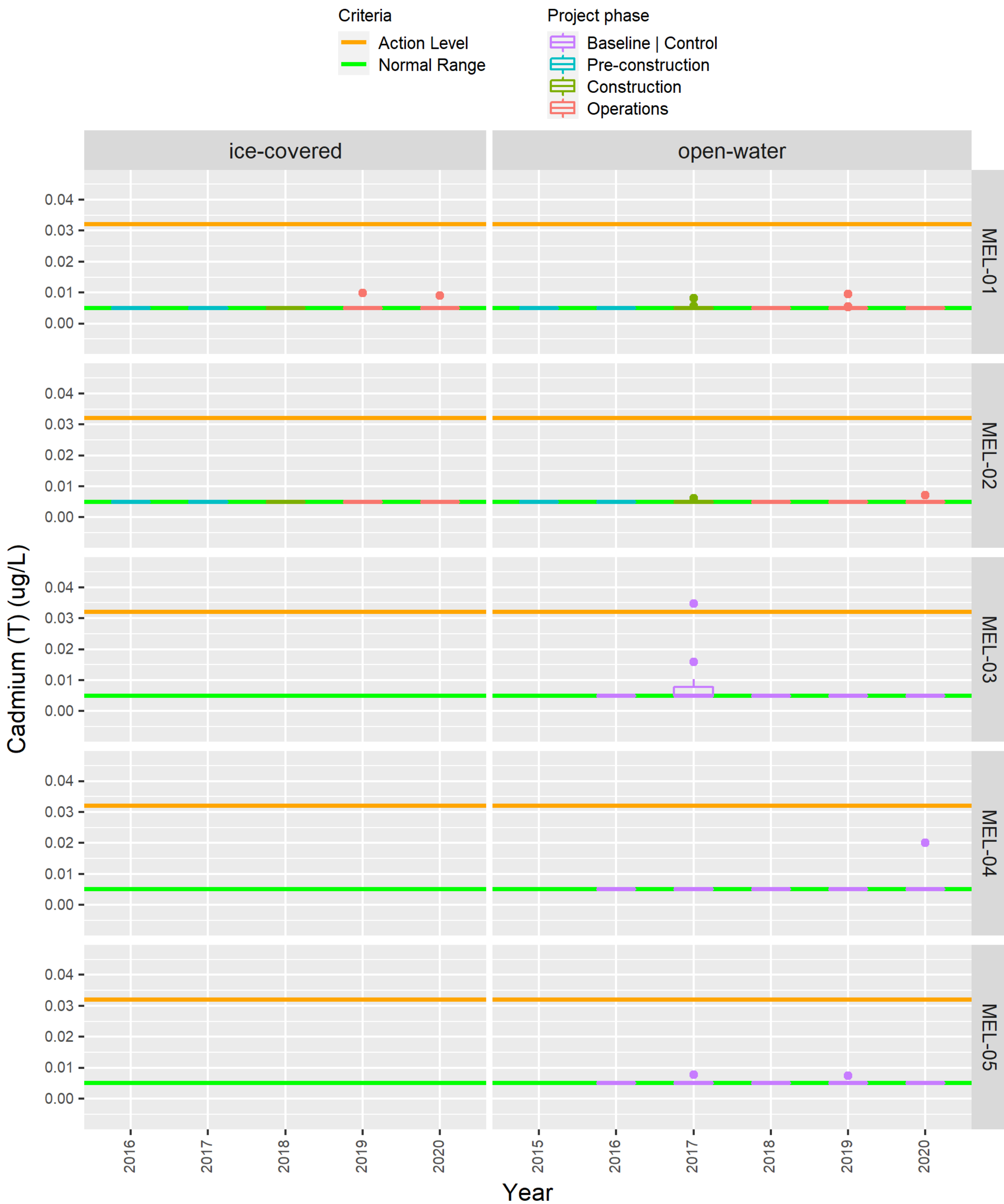
**Figure C1-32. Total boron (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



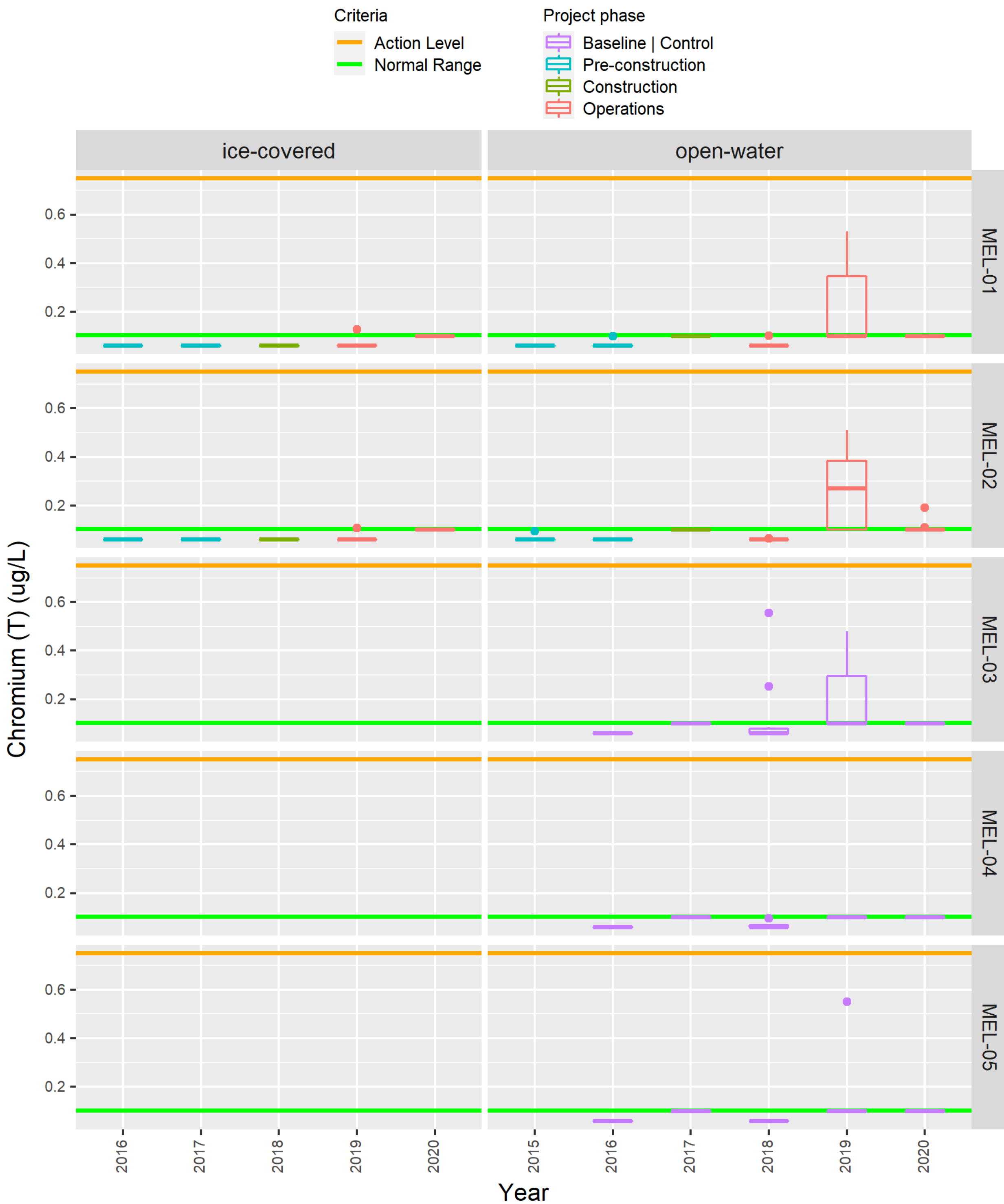
## Figure C1-33. Total cadmium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



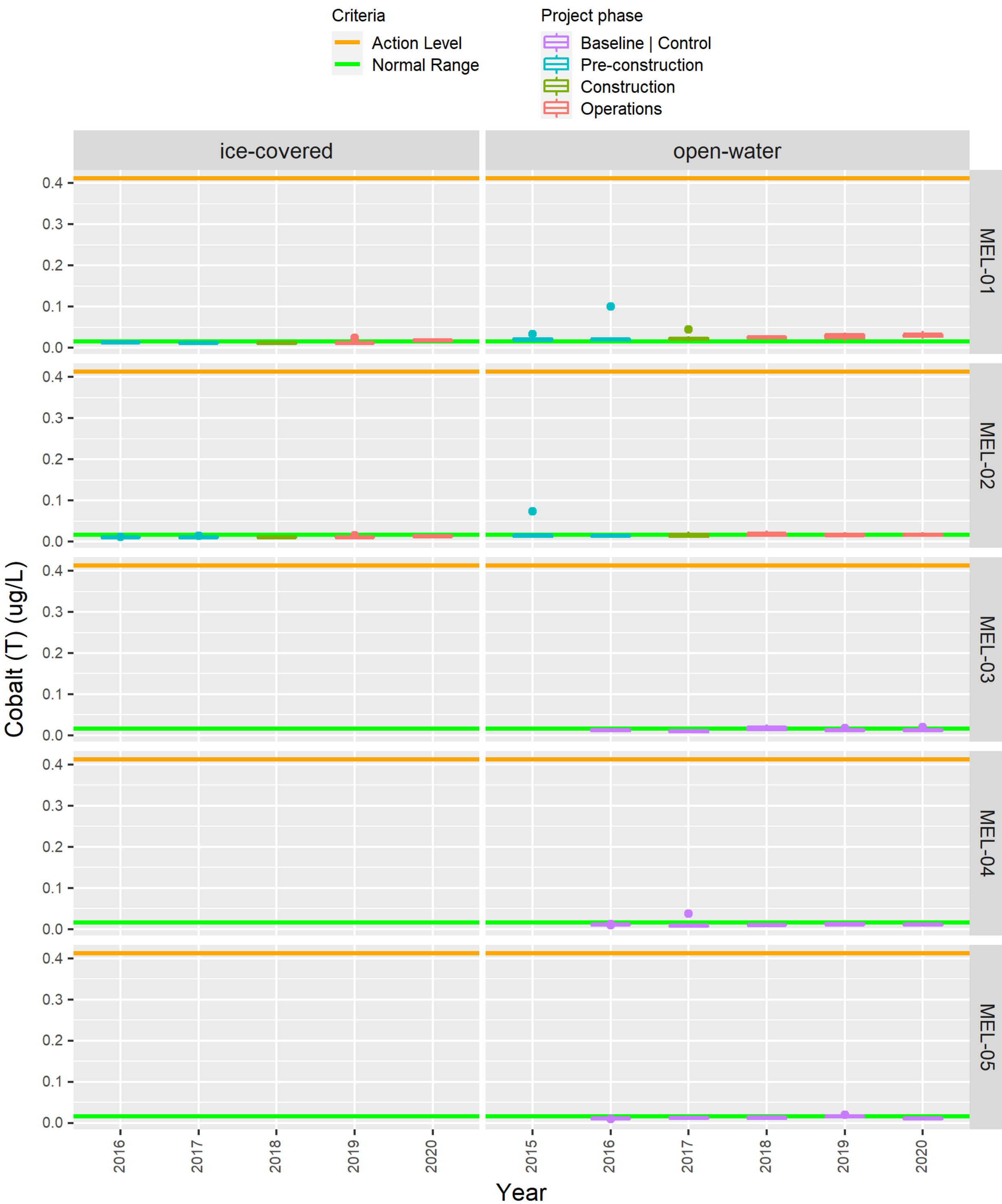
## Figure C1-34. Total chromium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



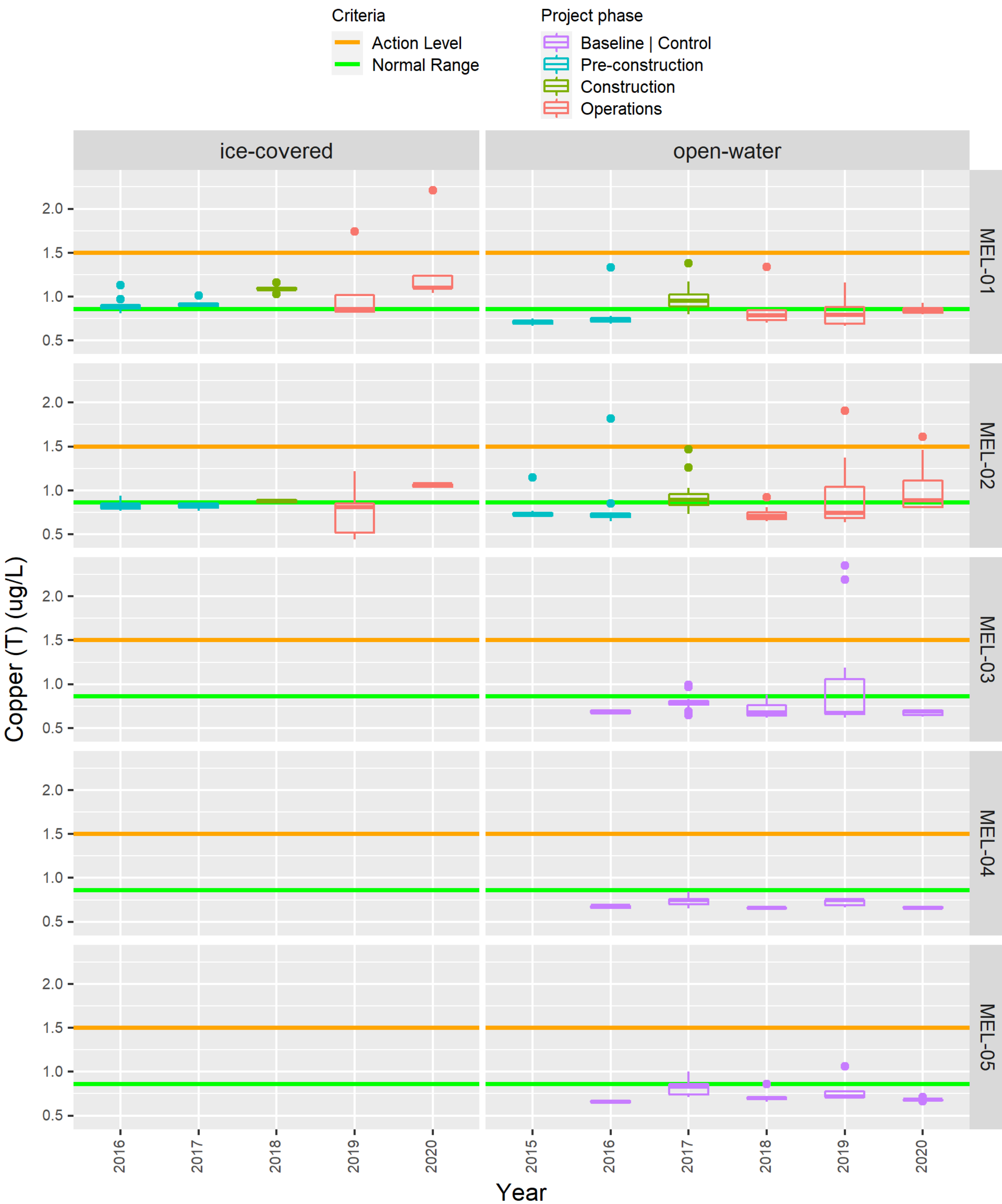
## Figure C1-35. Total cobalt (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



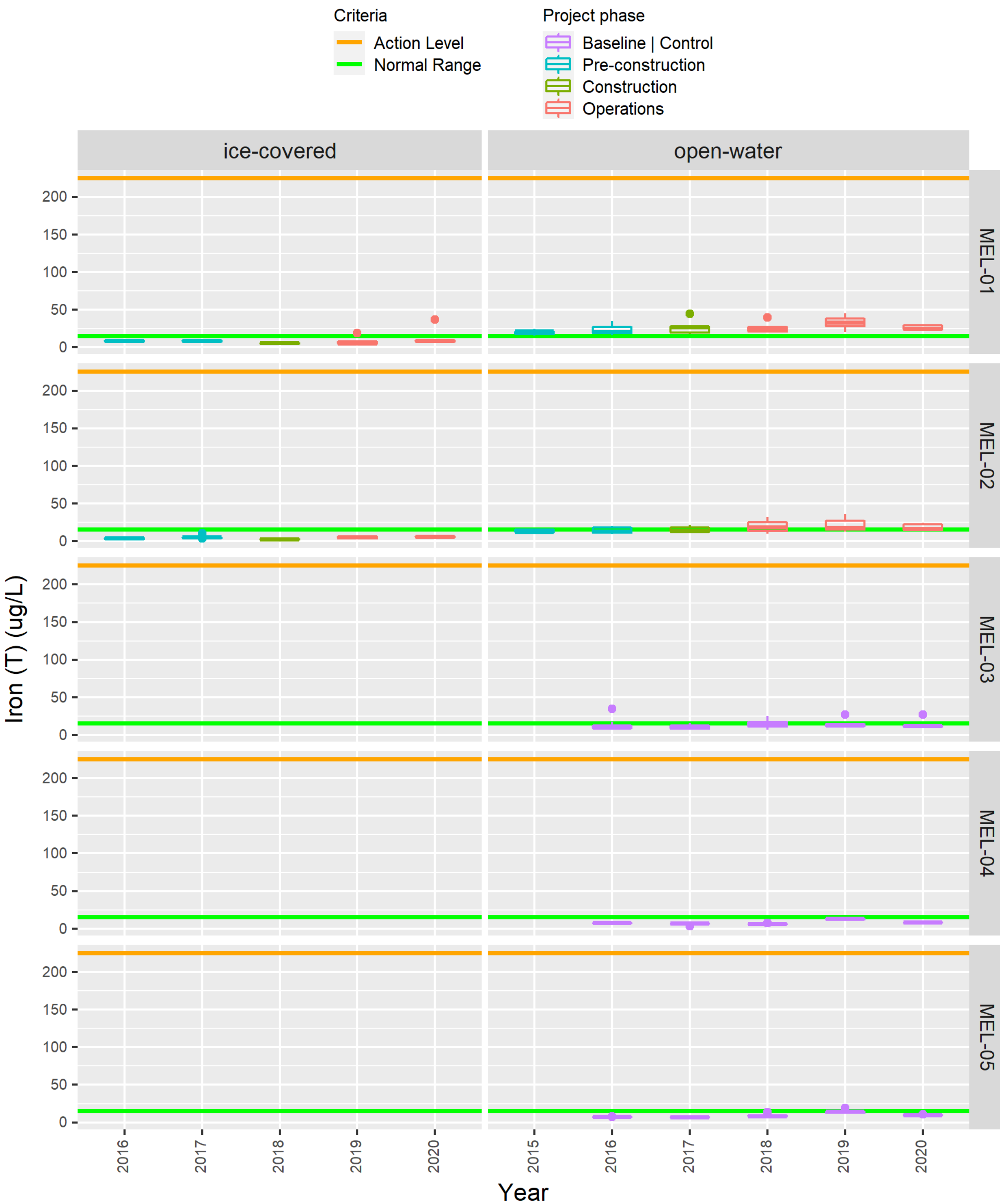
## Figure C1-36. Total copper (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



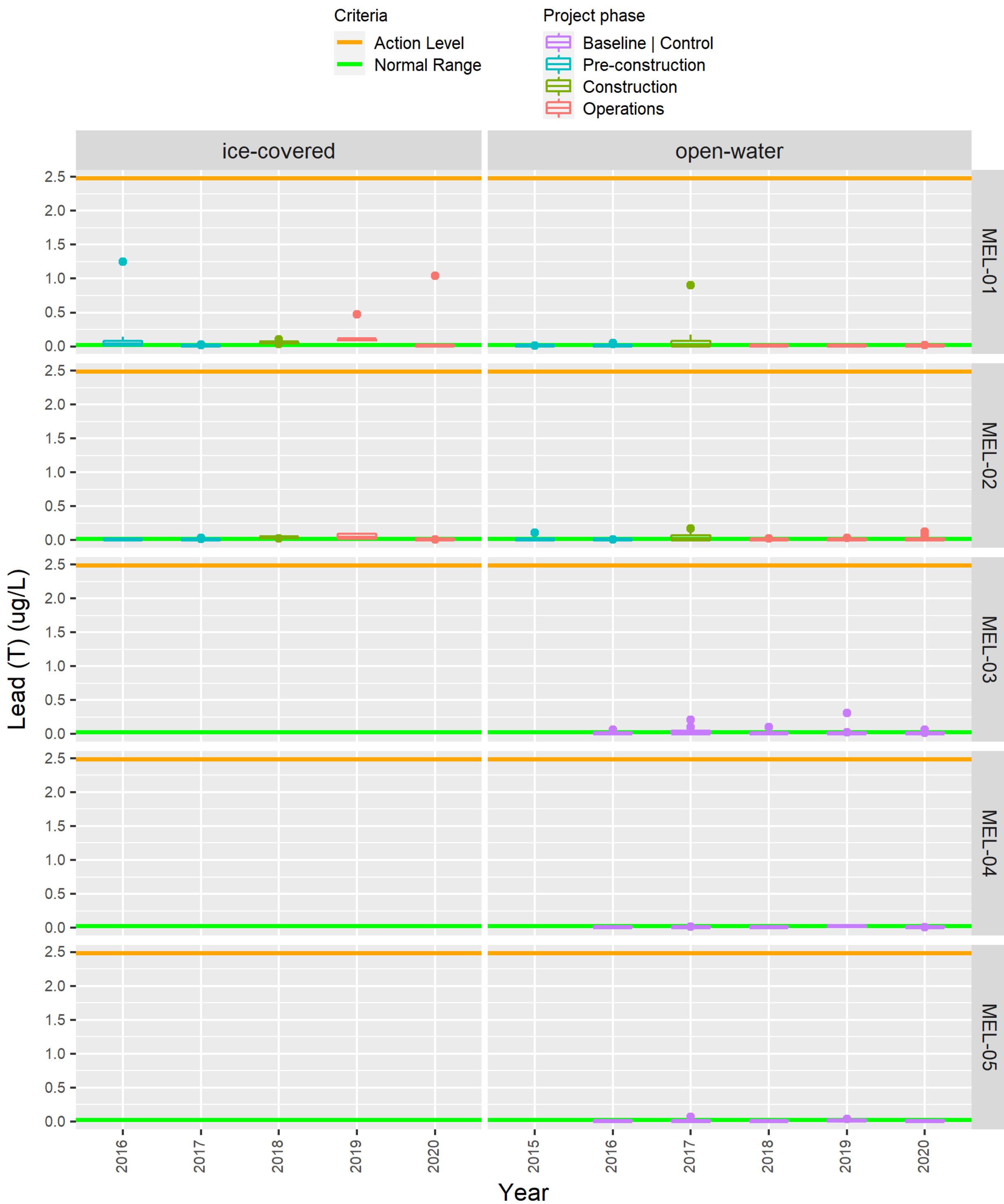
## Figure C1-37. Total iron (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-38. Total lead (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-39. Total lithium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

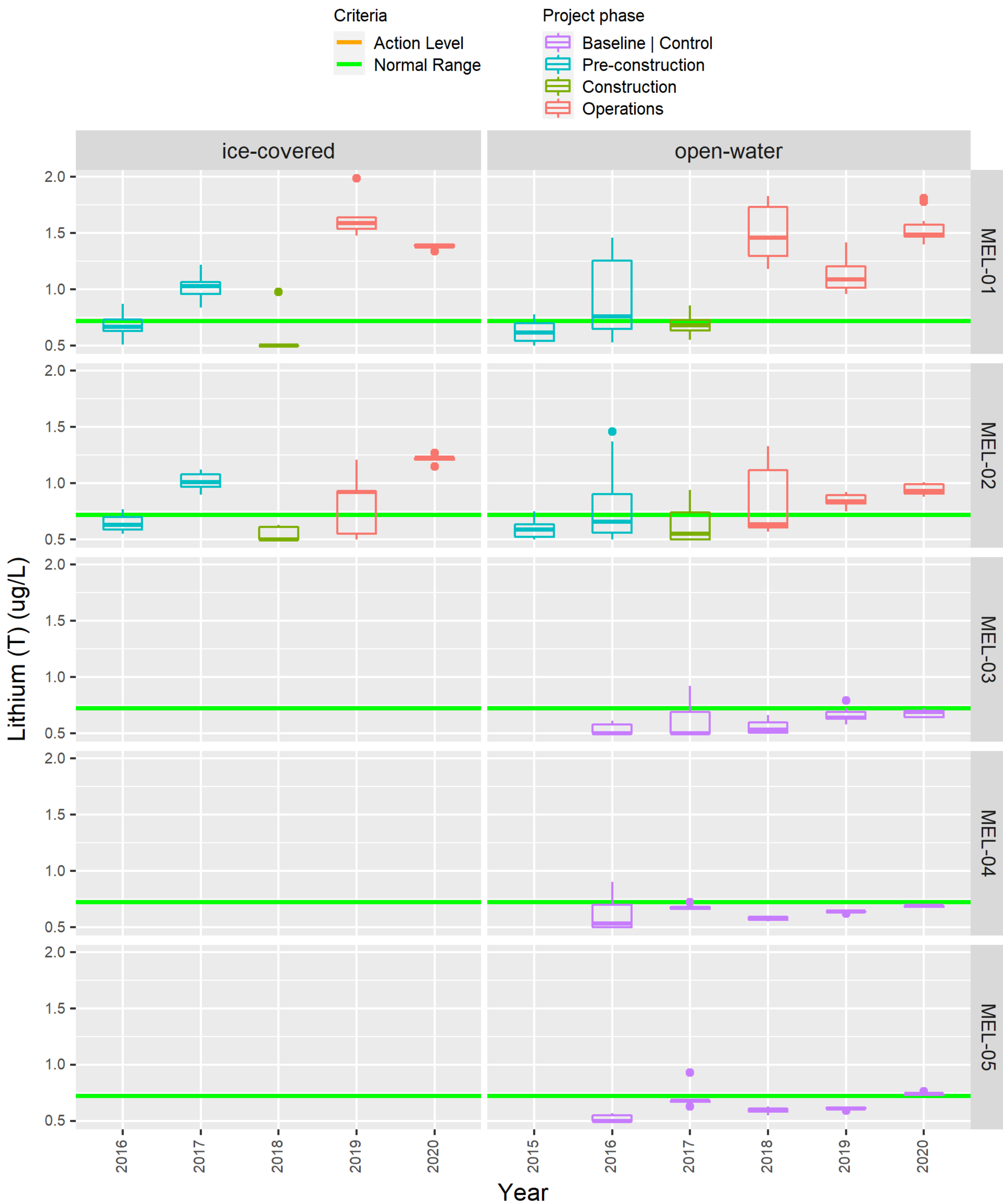
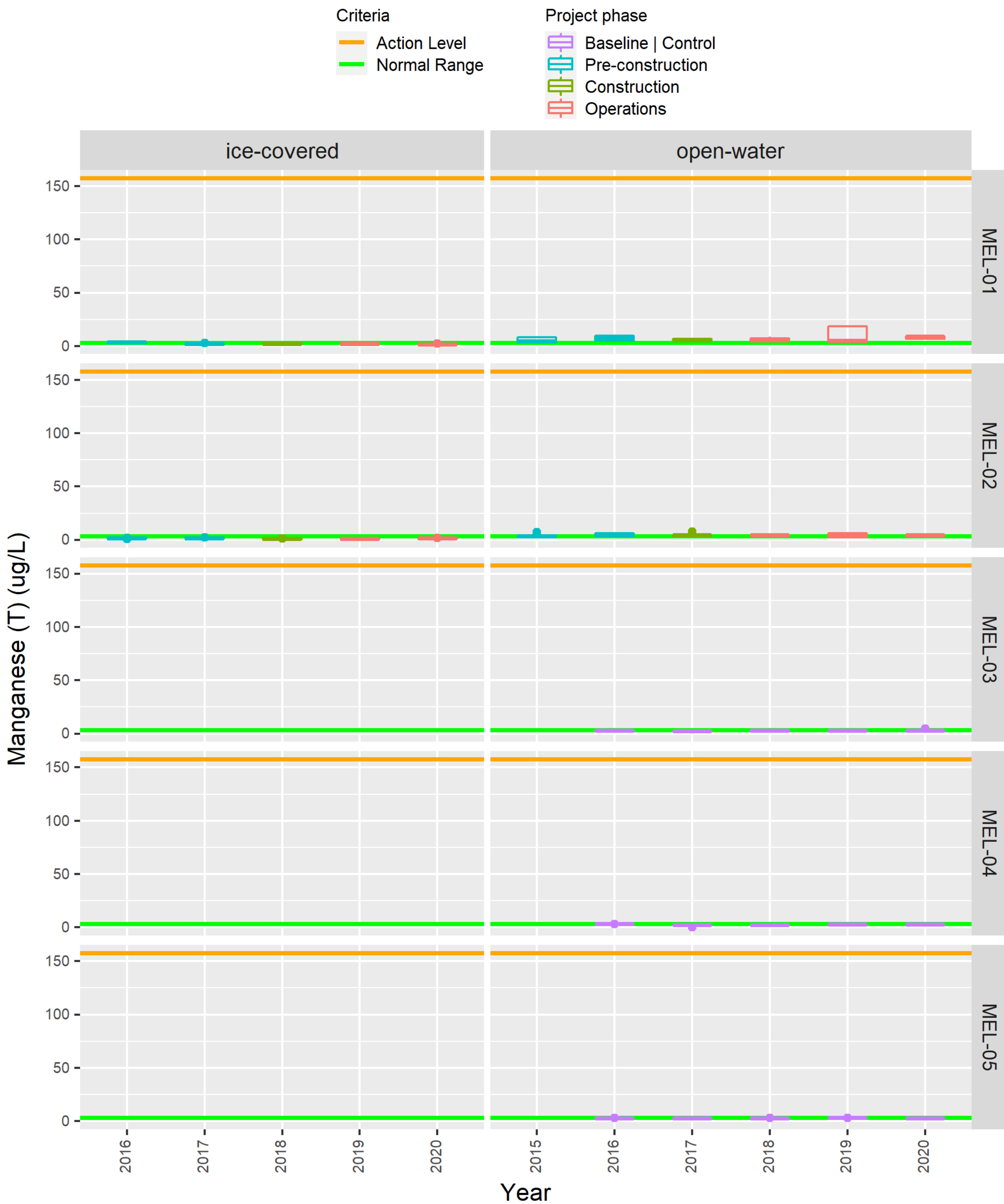


**Figure C1-40. Total manganese (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-41. Total mercury (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

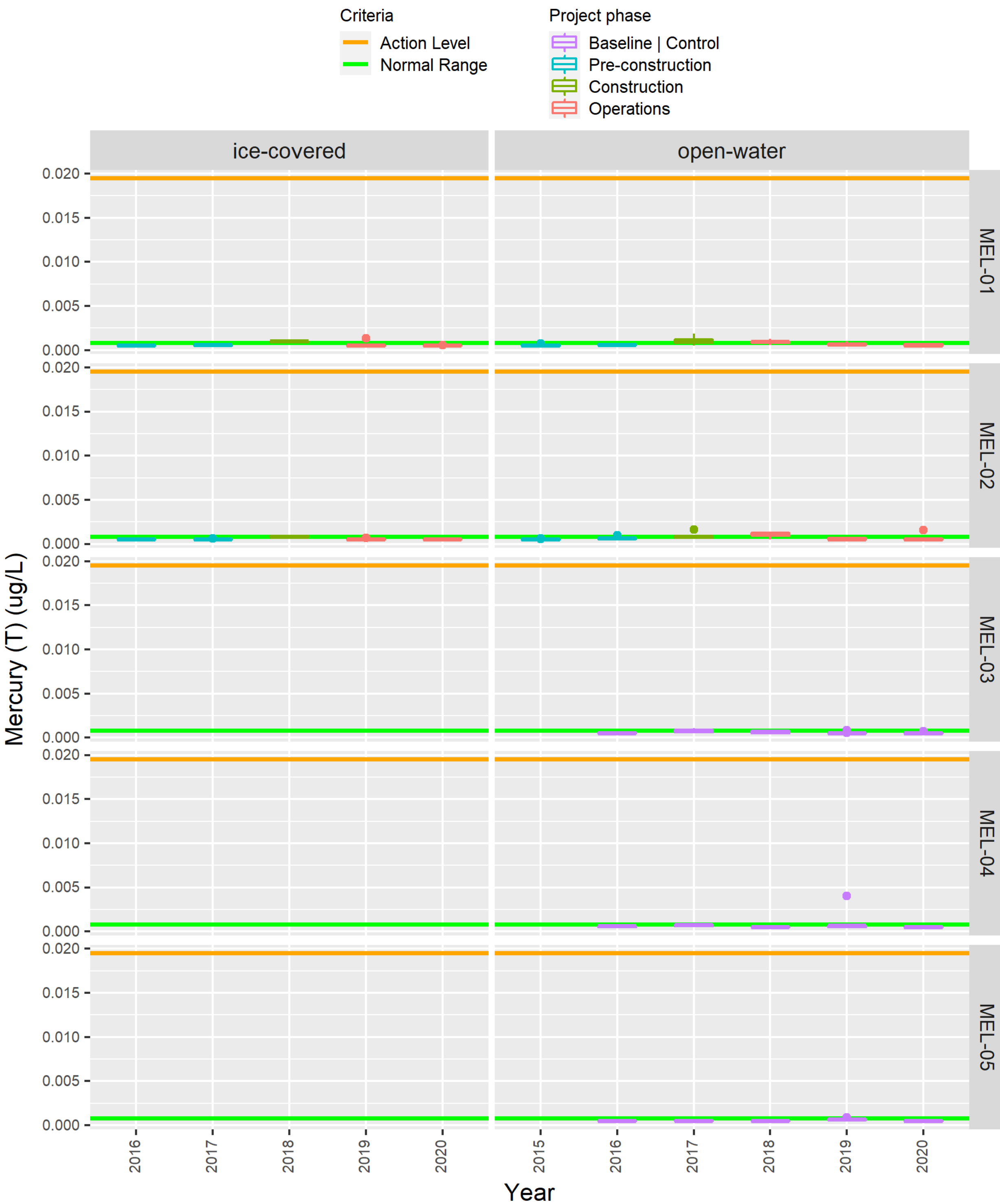
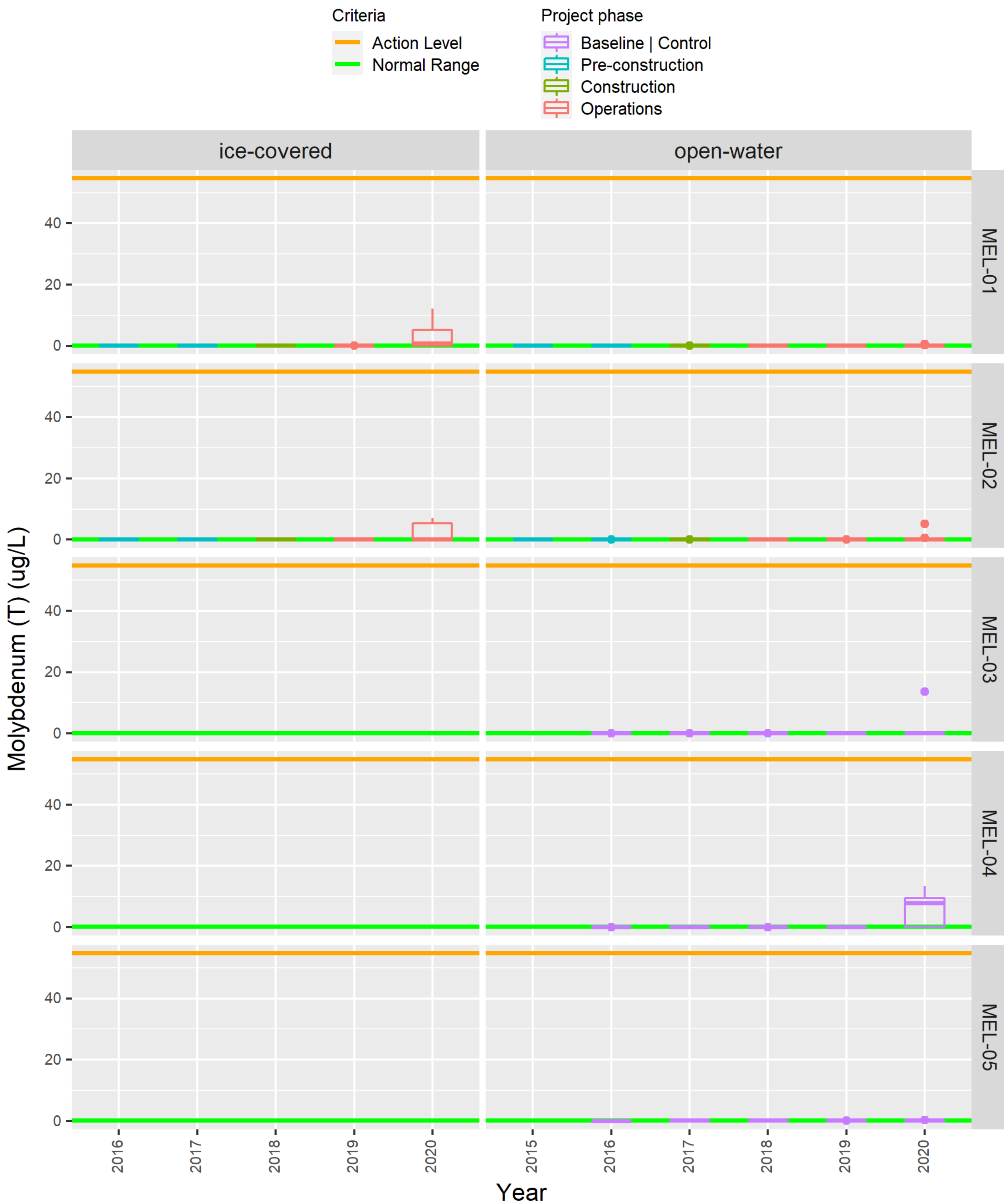


**Figure C1-42. Total molybdenum (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-43. Total nickel (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

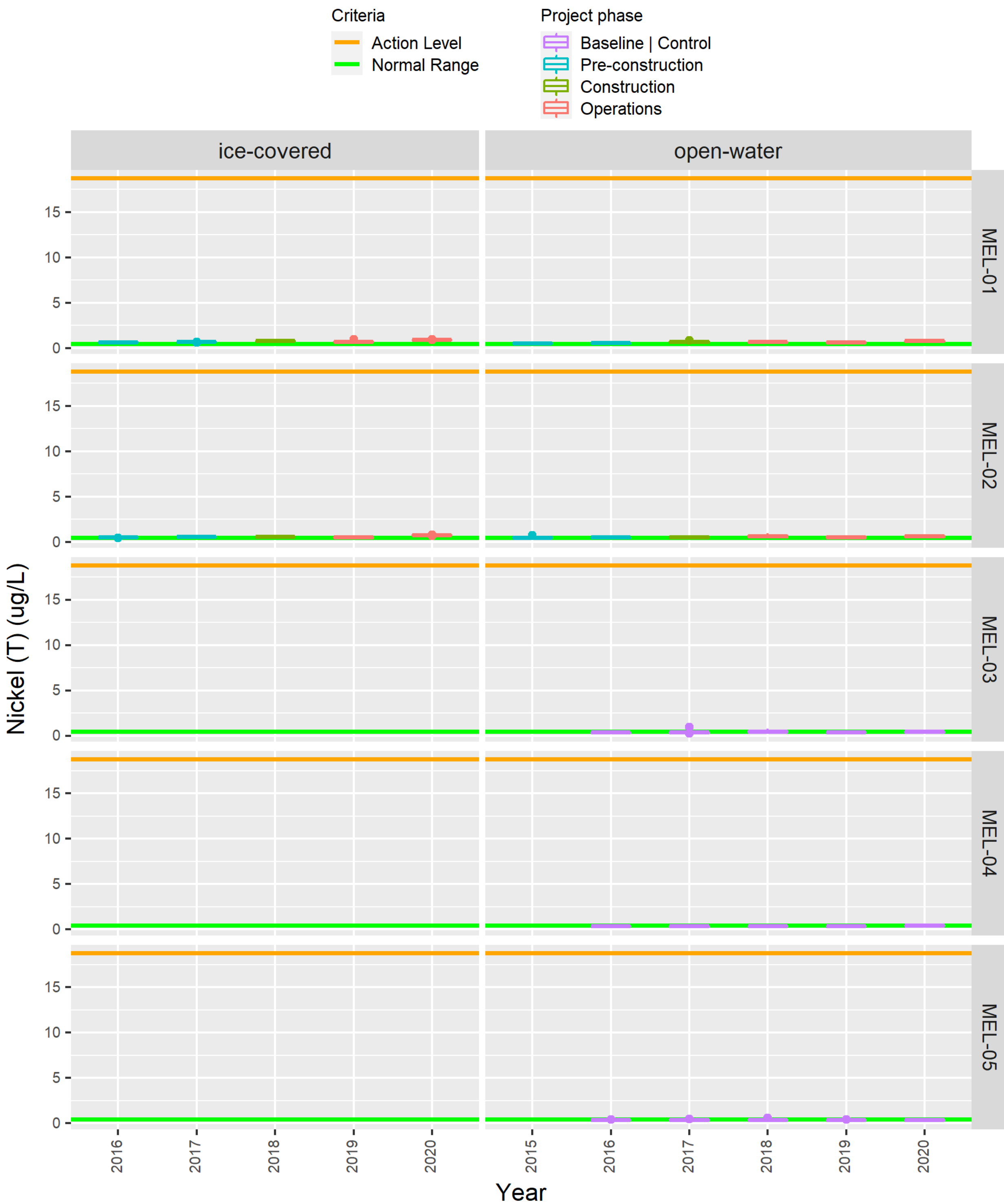
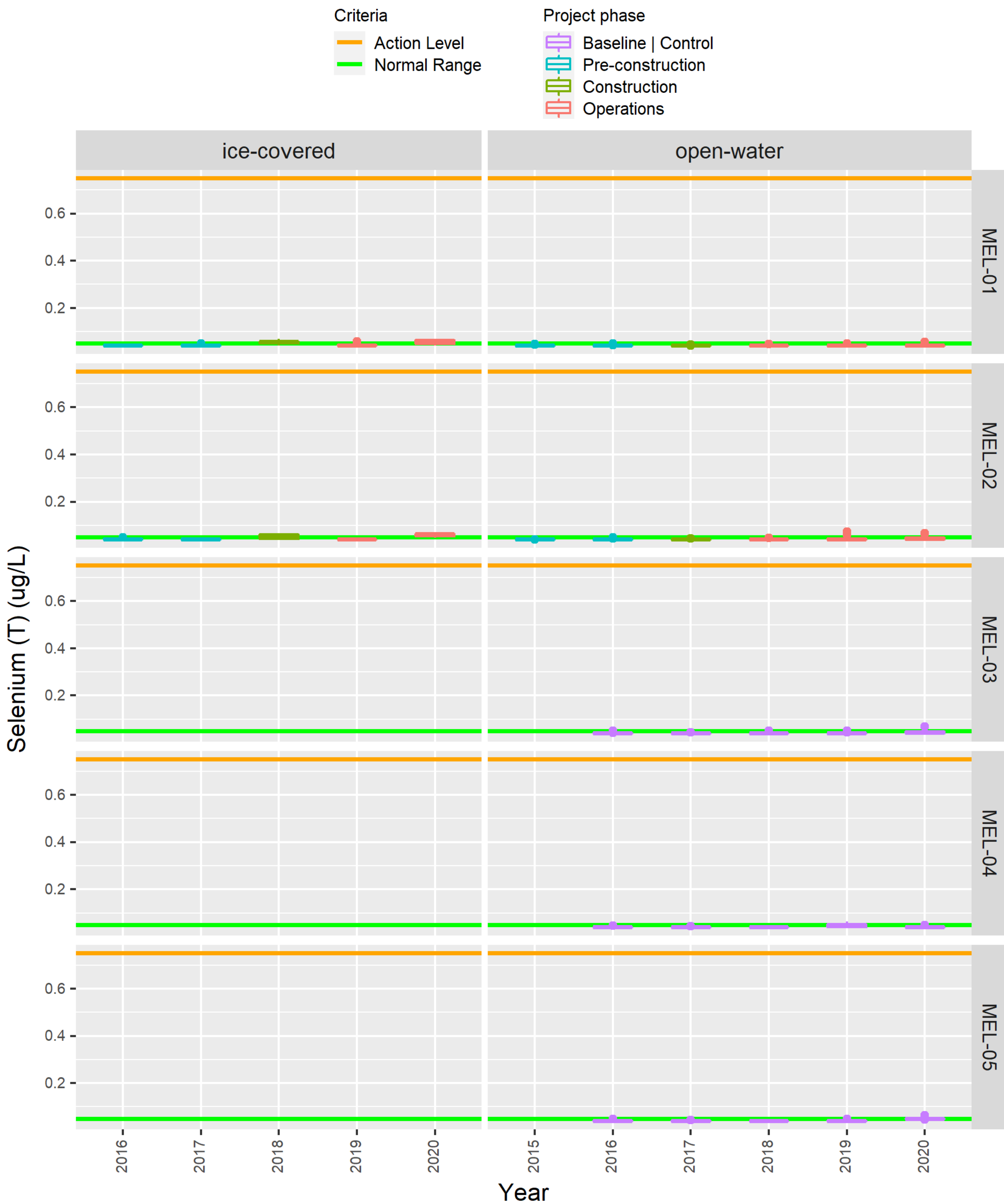


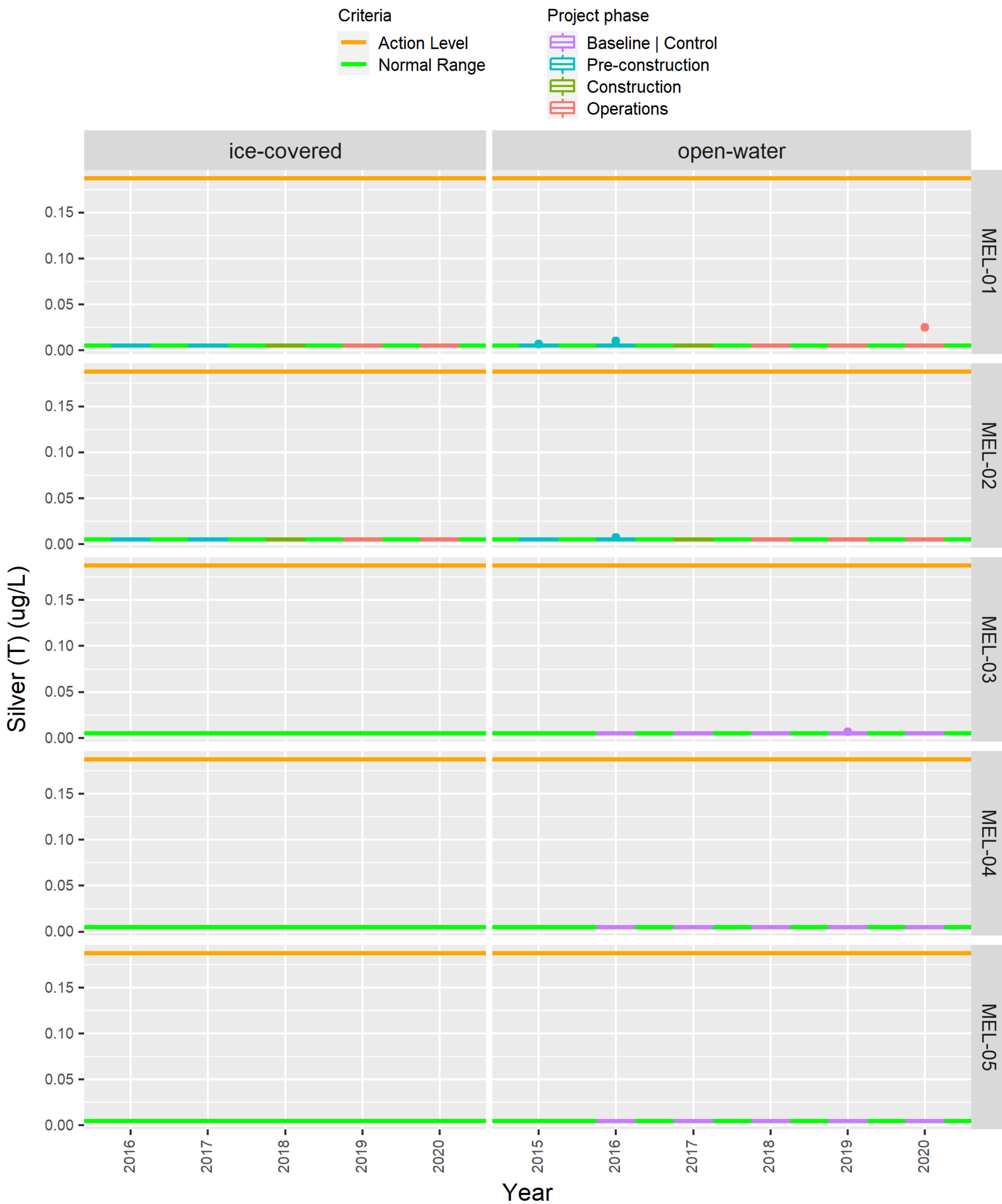
**Figure C1-44. Total selenium (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



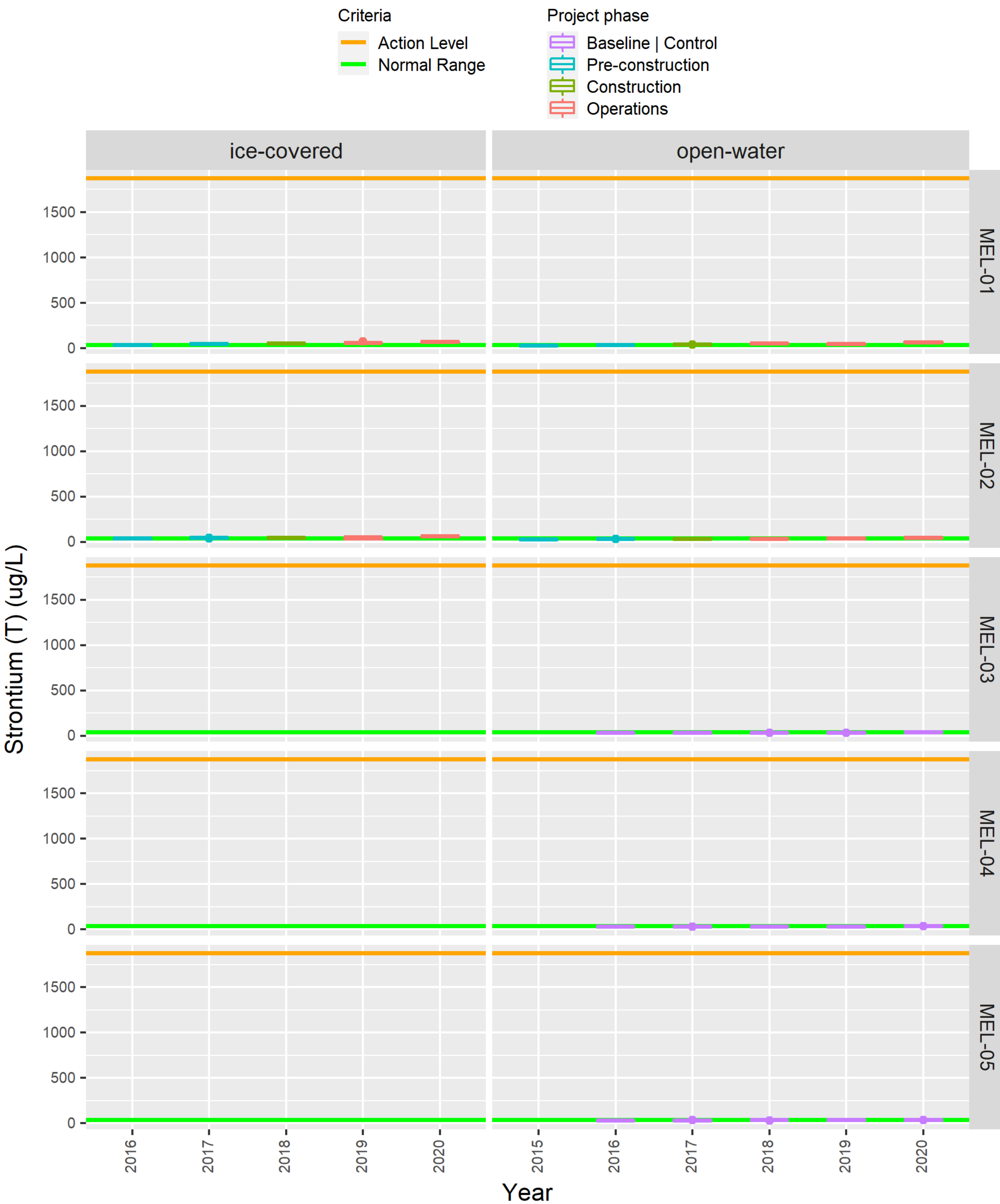
## Figure C1-45. Total silver (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-46. Total strontium (μg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-47. Total thallium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

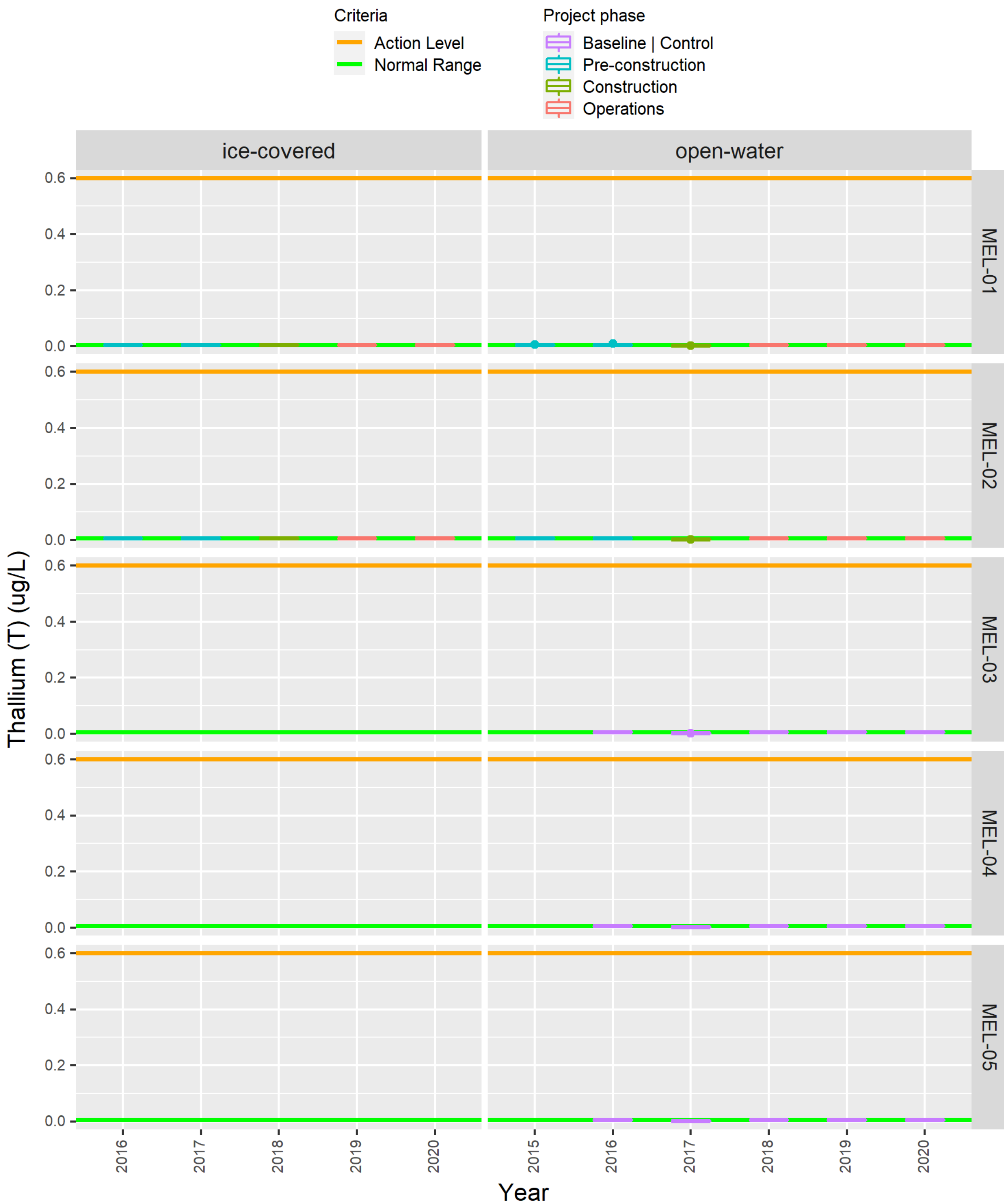


**Figure C1-48. Total tin (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

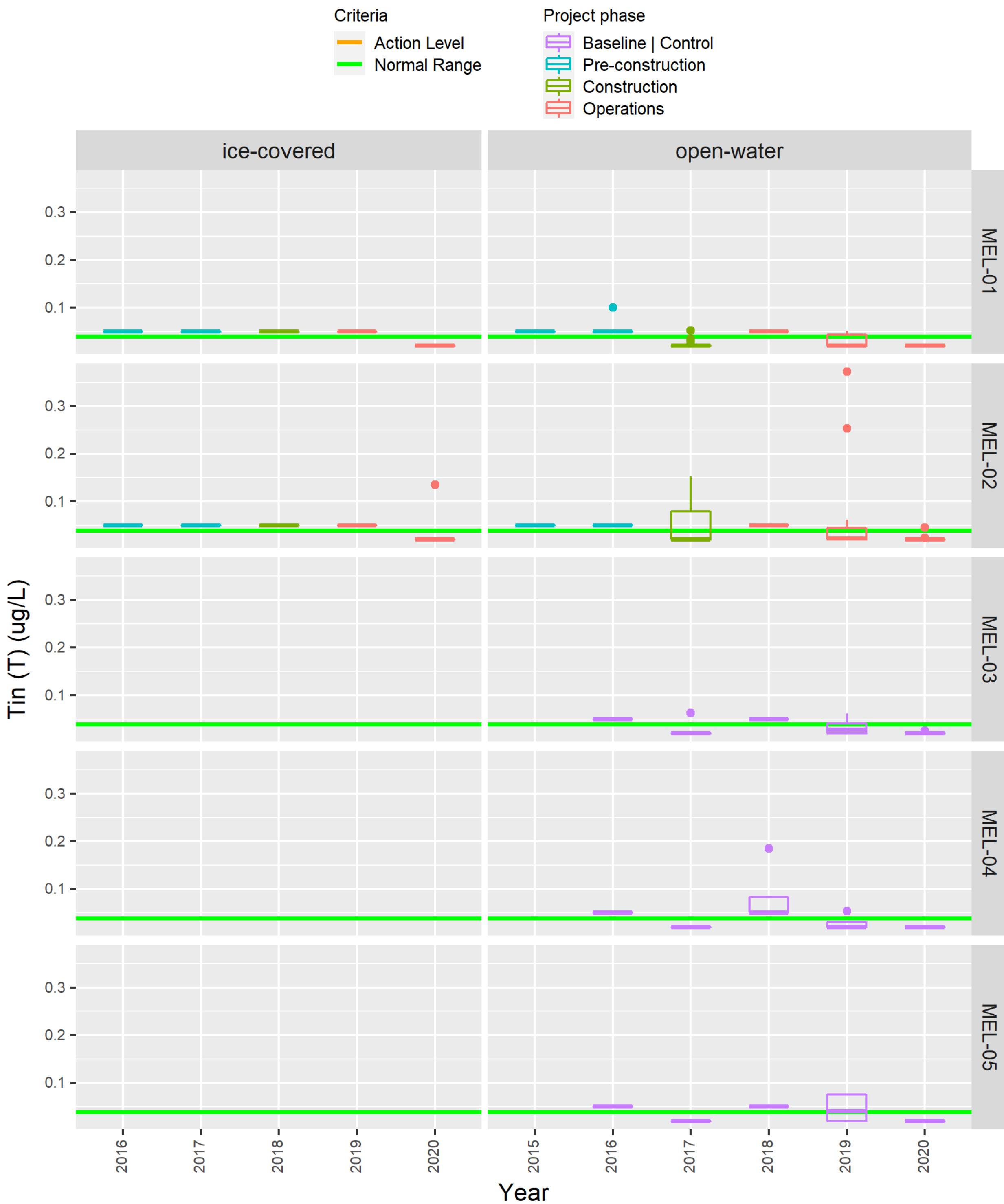


**Figure C1-49. Total titanium (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

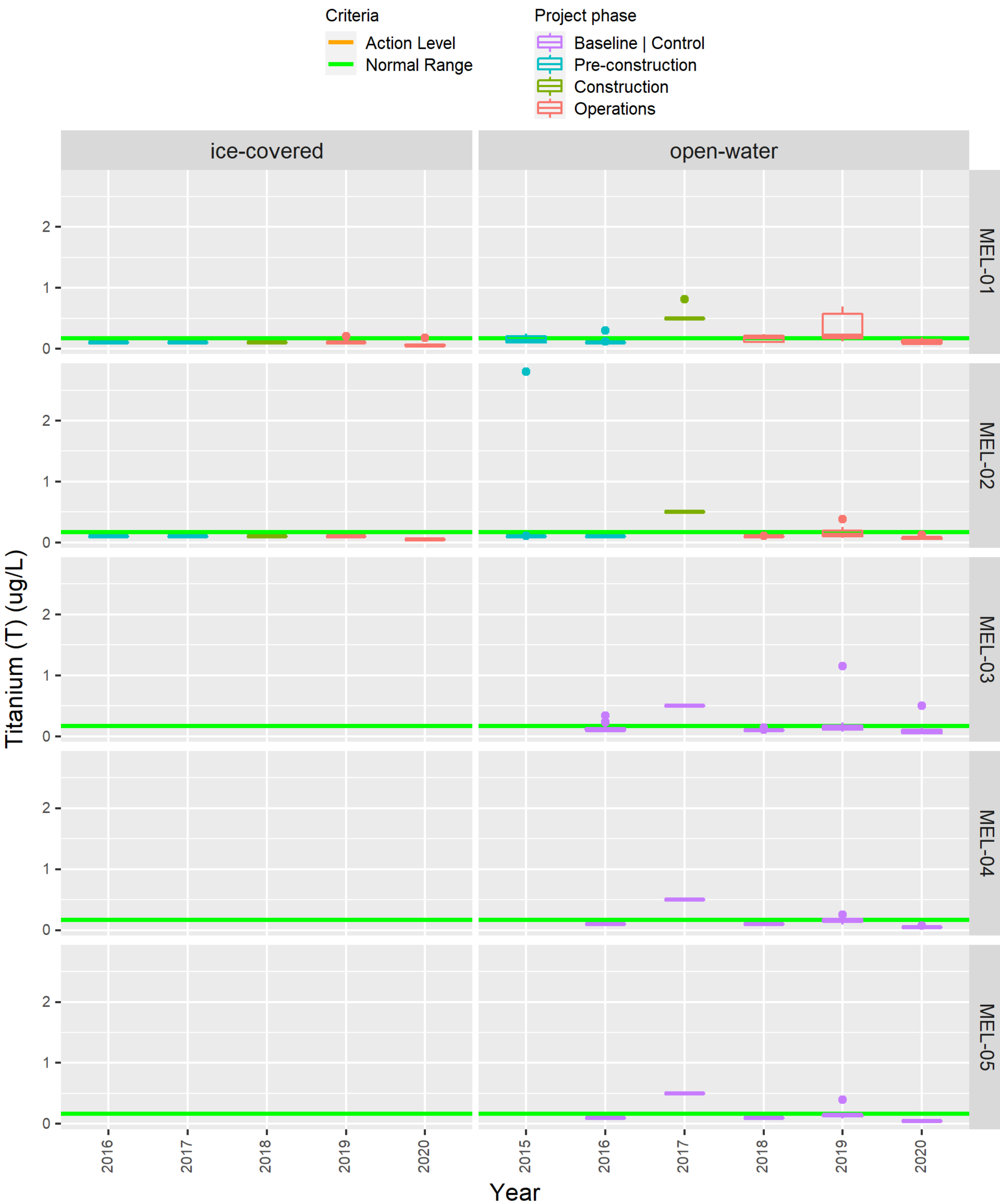


**Figure C1-50. Total uranium (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

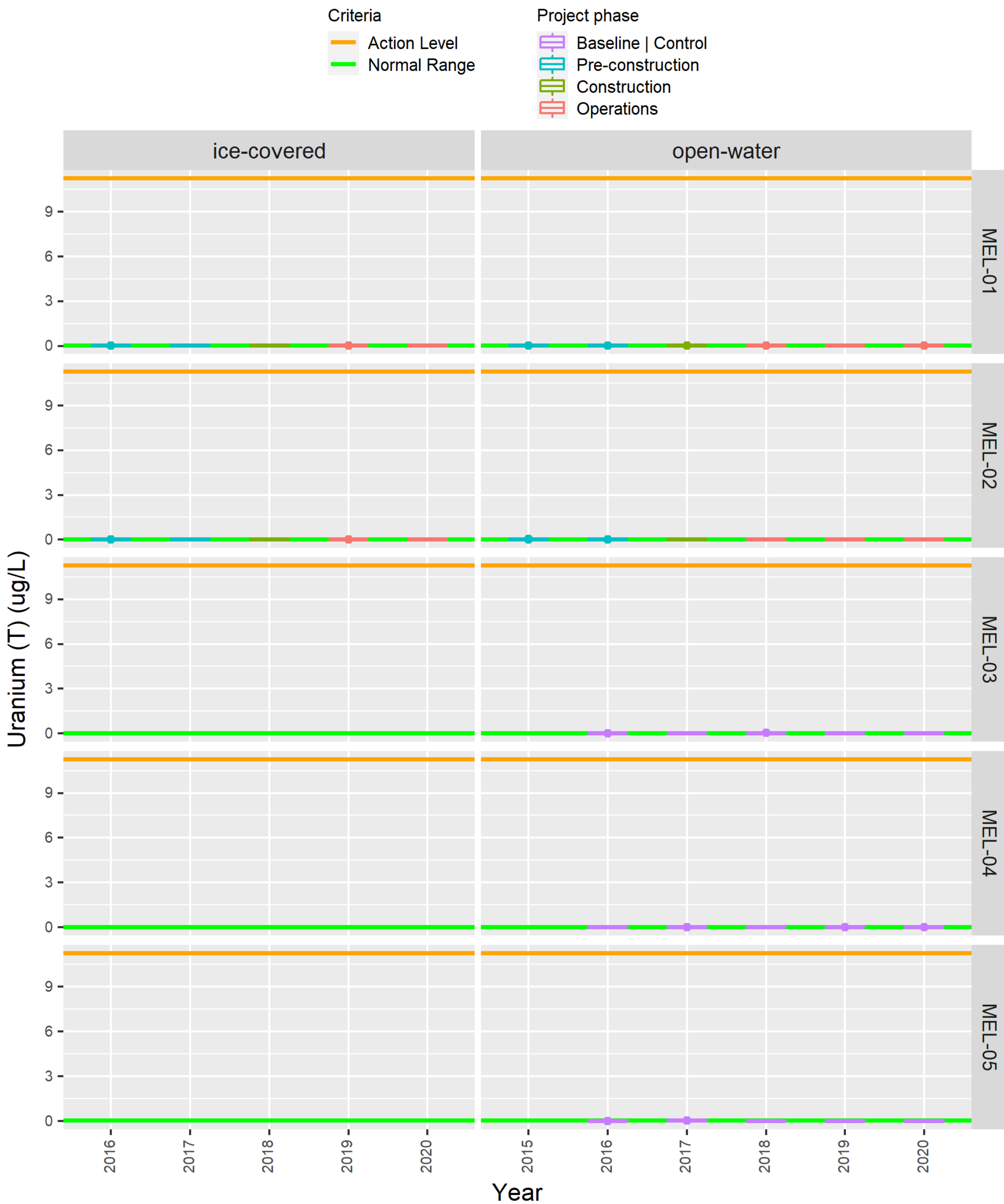


**Figure C1-51. Total vanadium (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

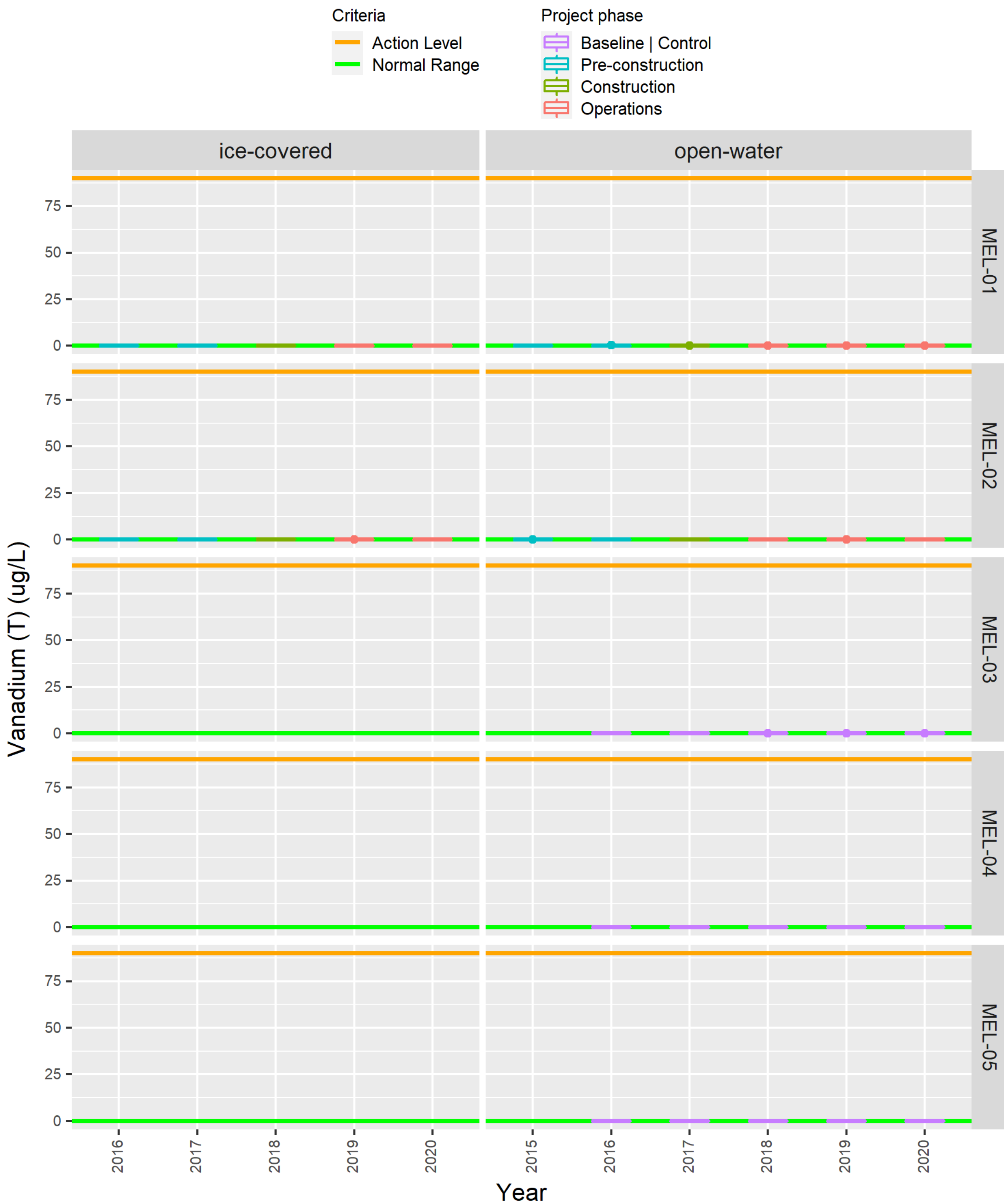
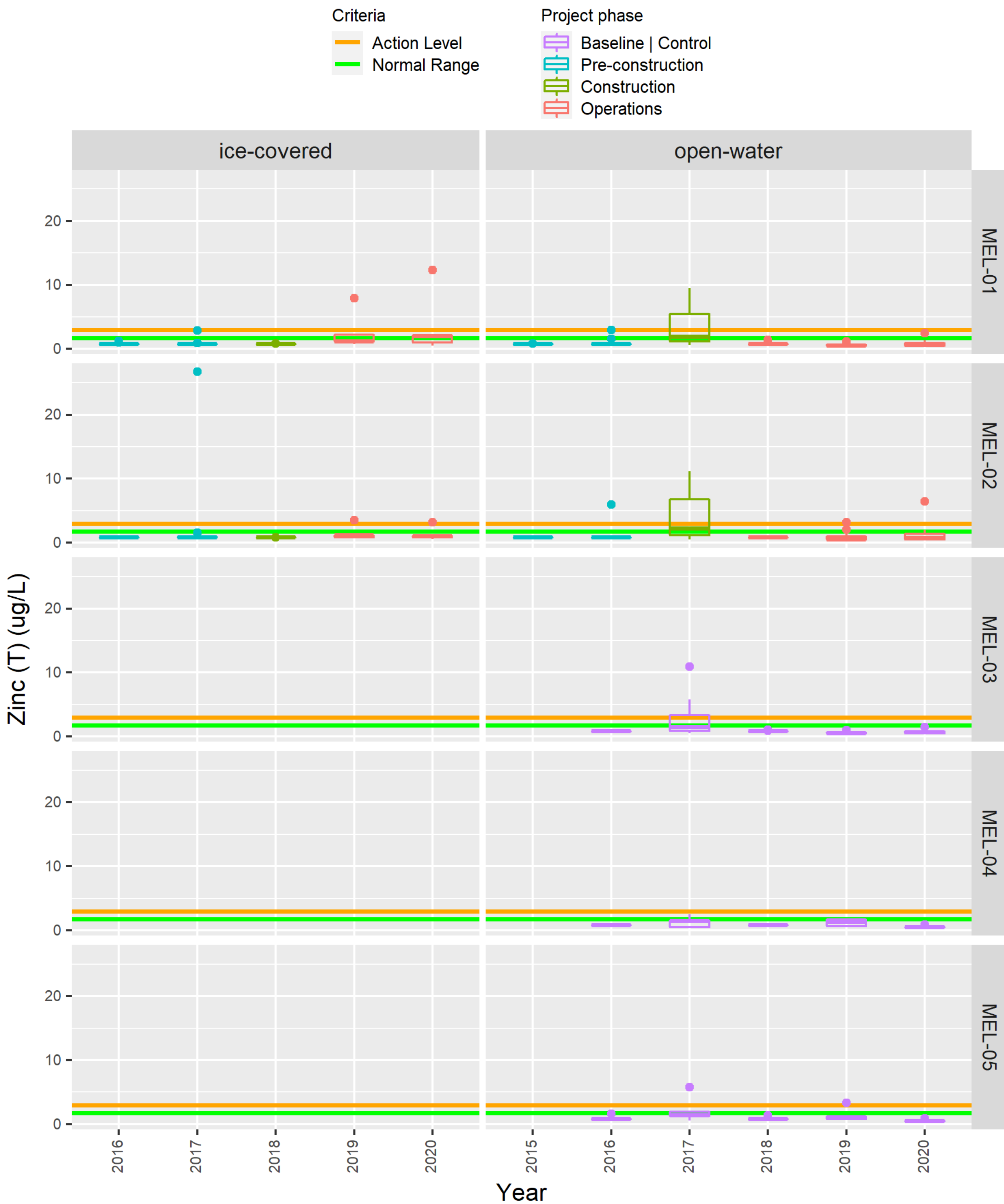


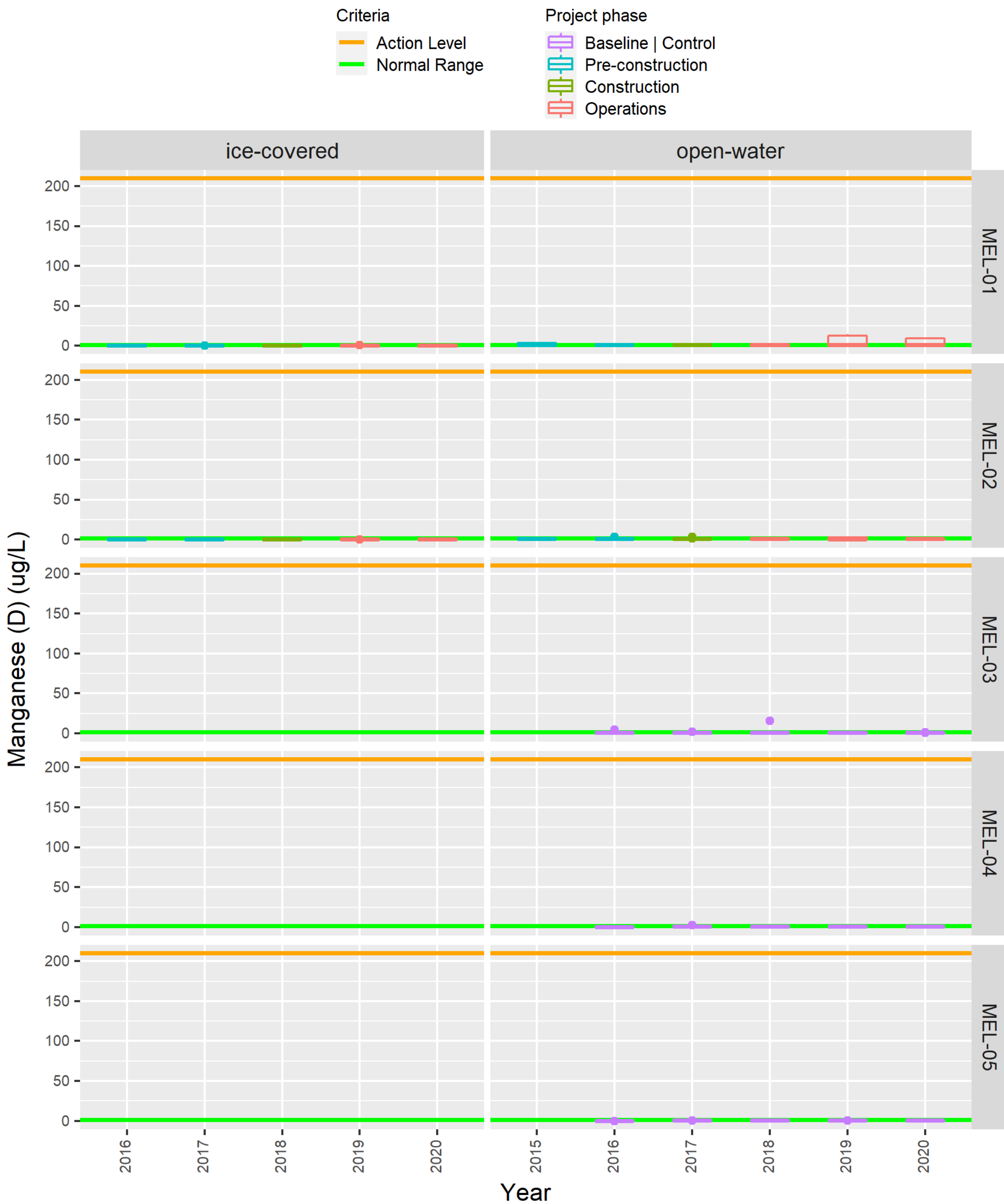
**Figure C1-52. Total zinc (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



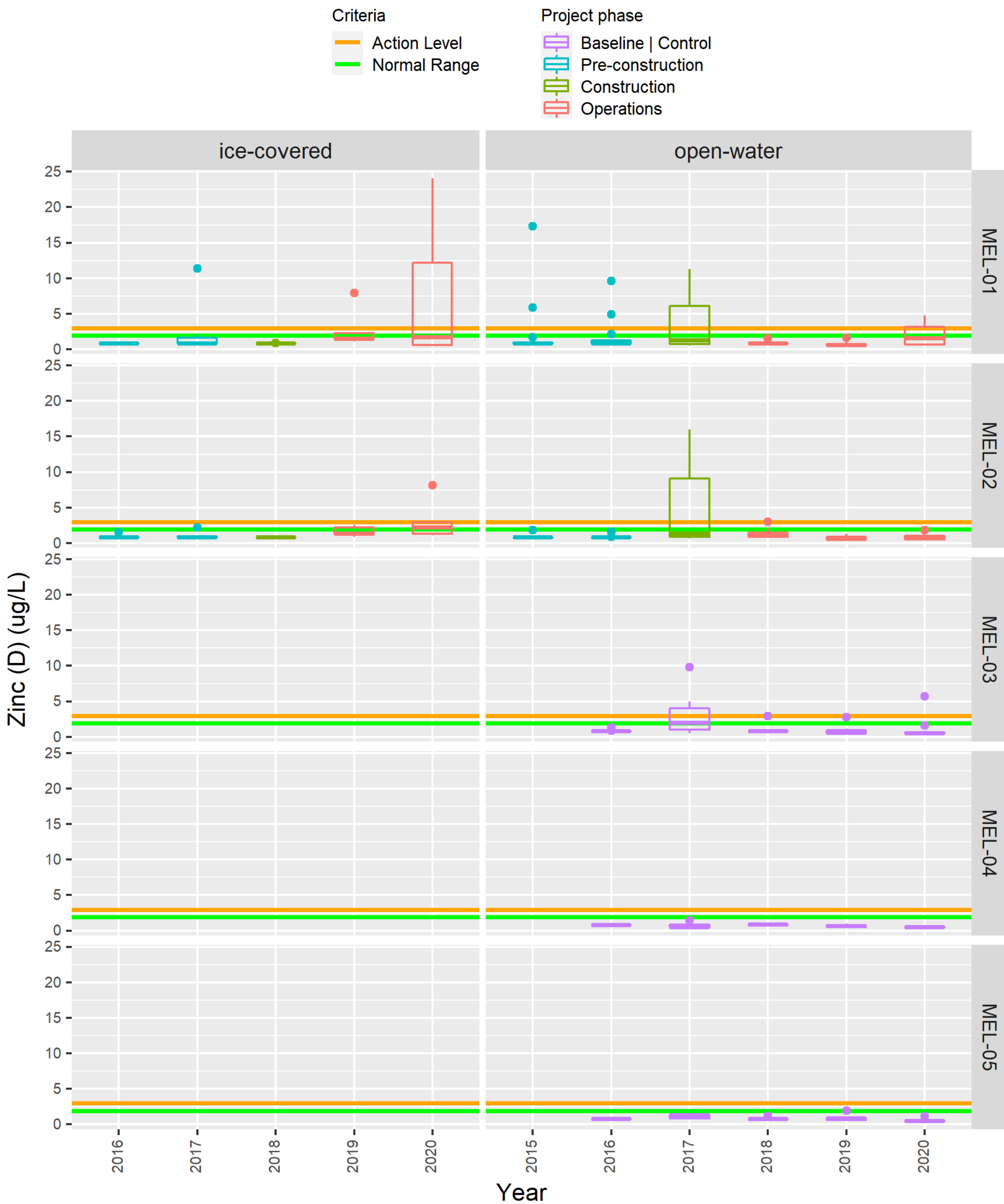
## Figure C1-53. Dissolved manganese (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C1-54. Dissolved zinc (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



# Appendix C2
# Meliadine Lake Water Chemistry – Scatter Plots

# LIST OF FIGURES – APPENDIX C2

## Figure C2-1. Specific conductivity (µS/cm)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

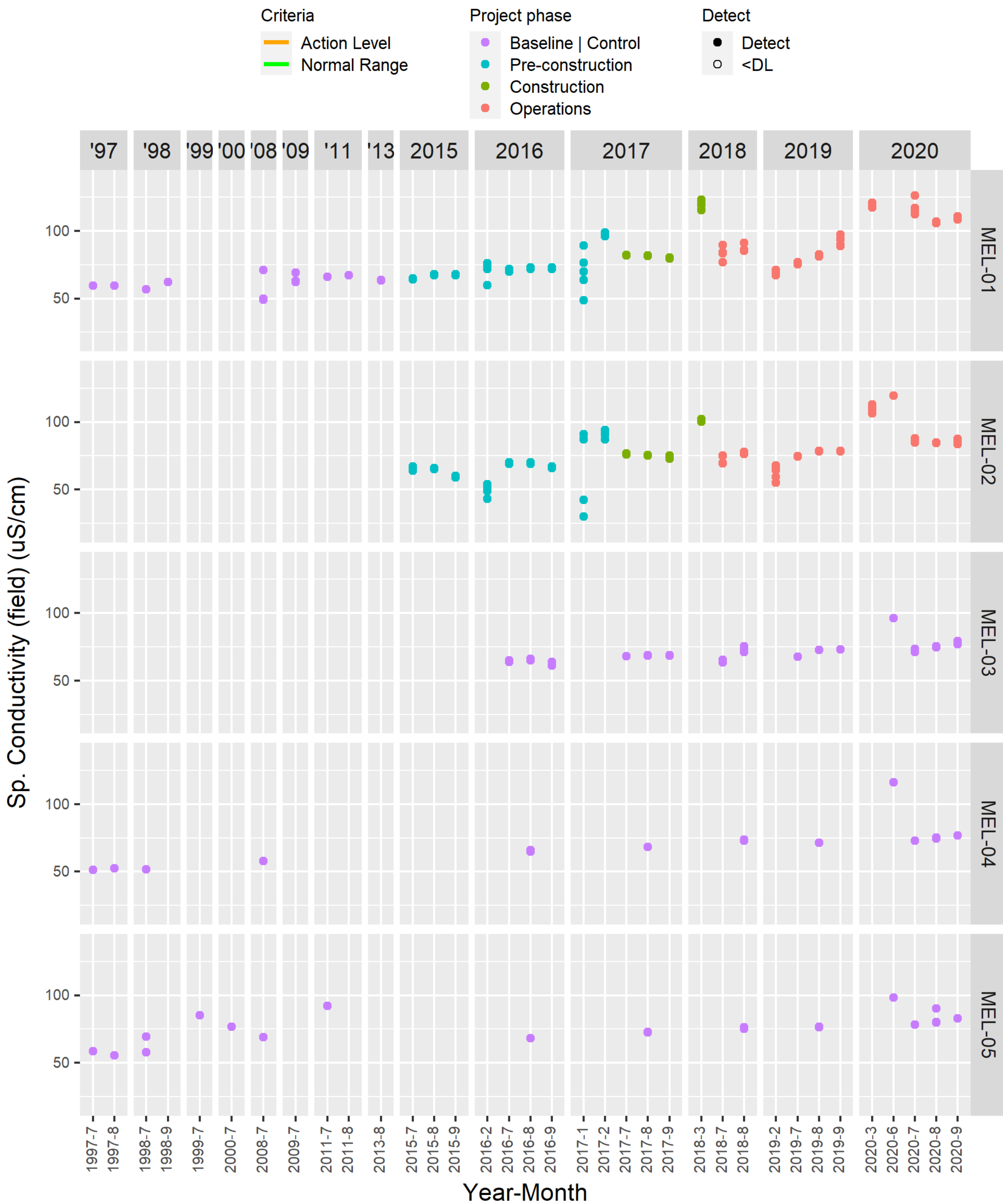


**Figure C2-2. Field pH**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

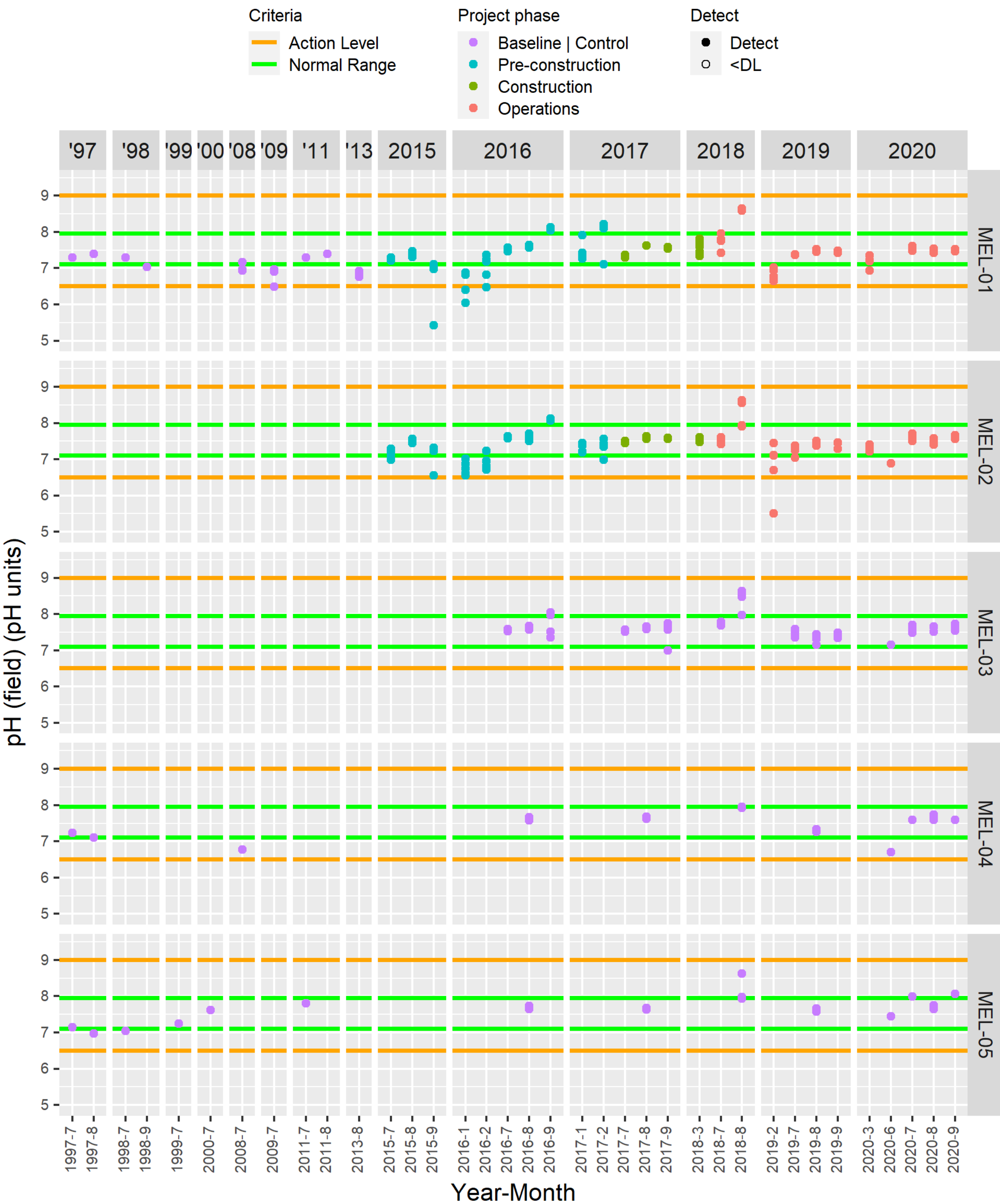


**Figure C2-3. Lab-measured conductivity (µS/cm)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

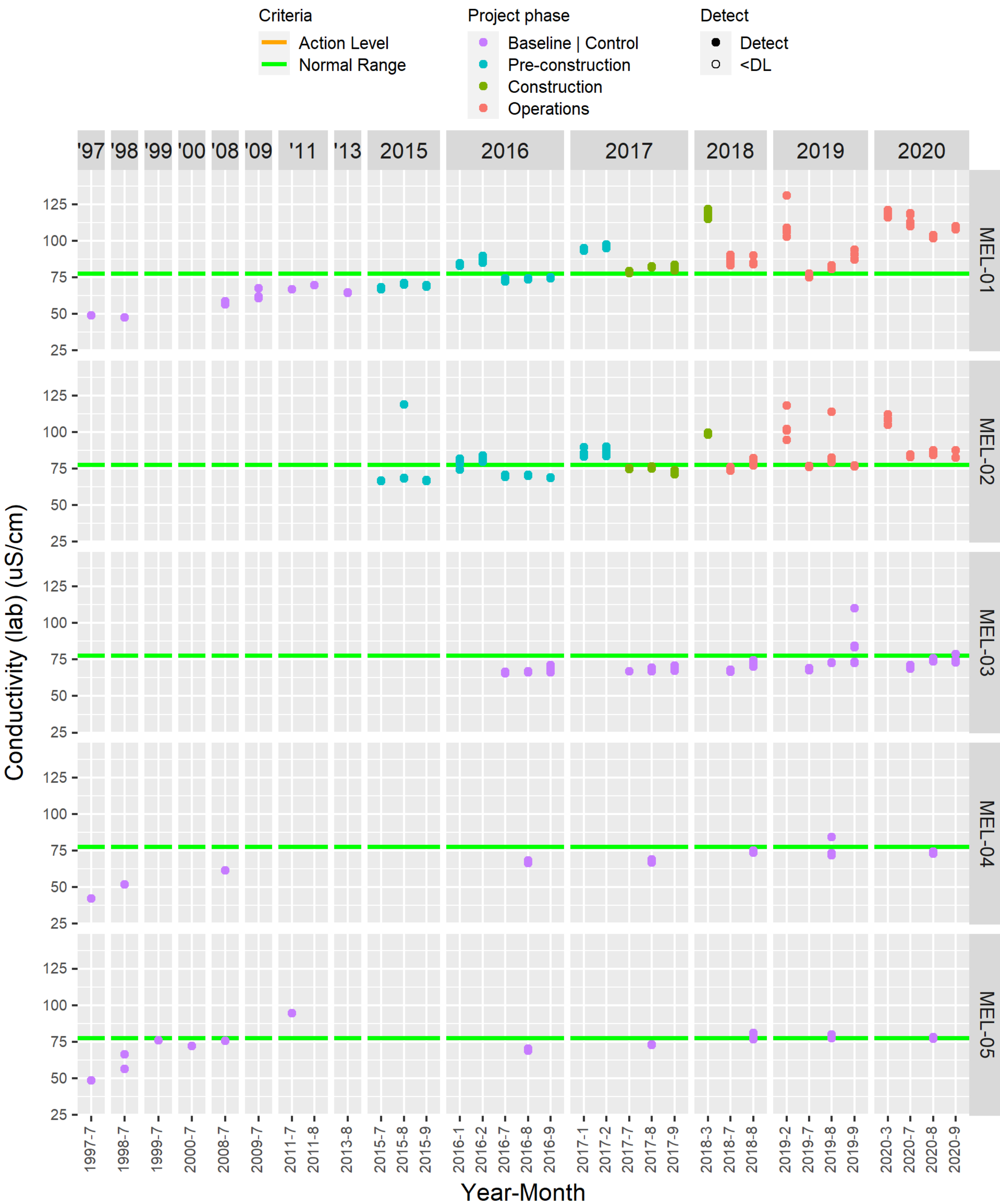


**Figure C2-4. Hardness (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

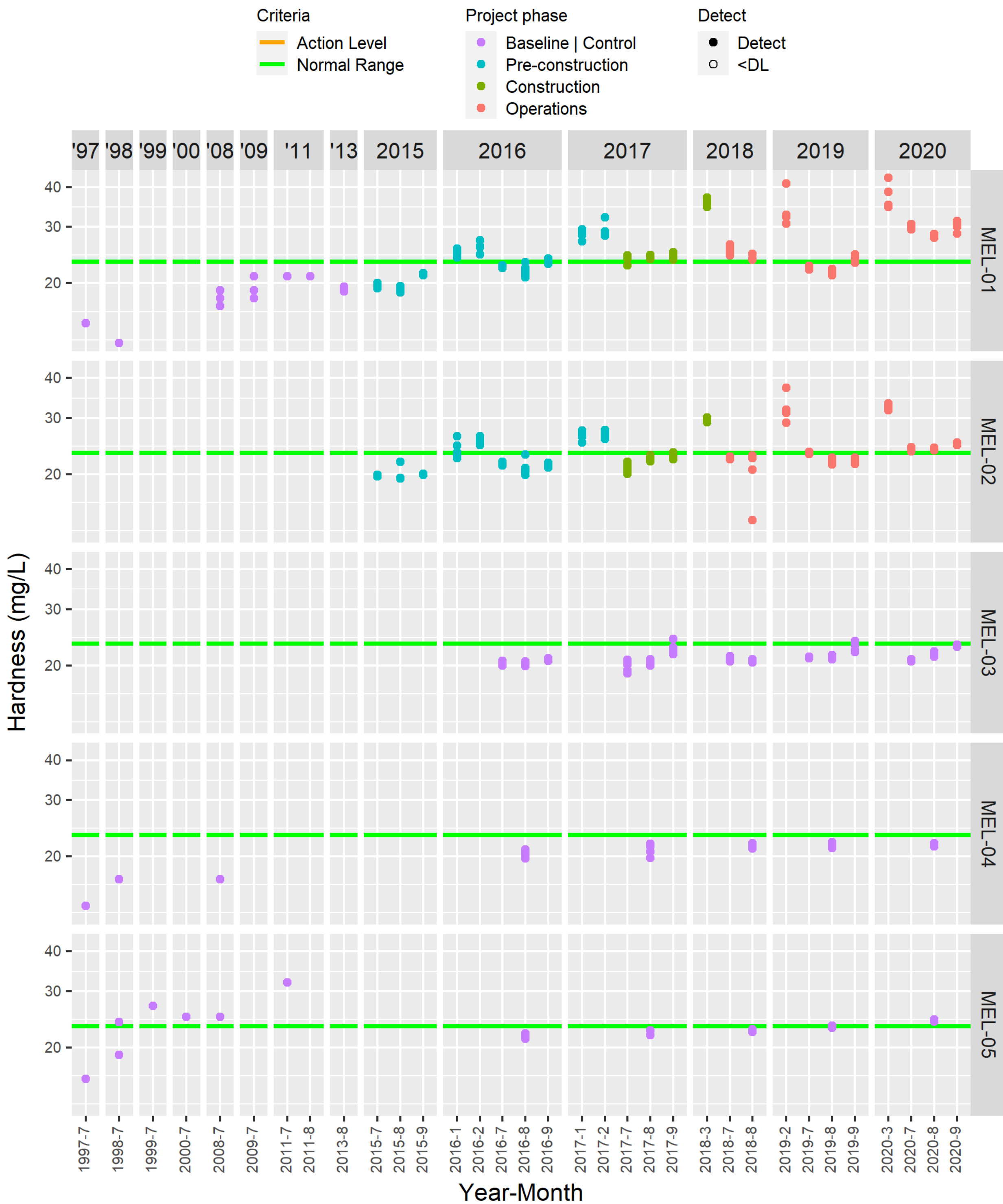


**Figure C2-5. Lab measured pH**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

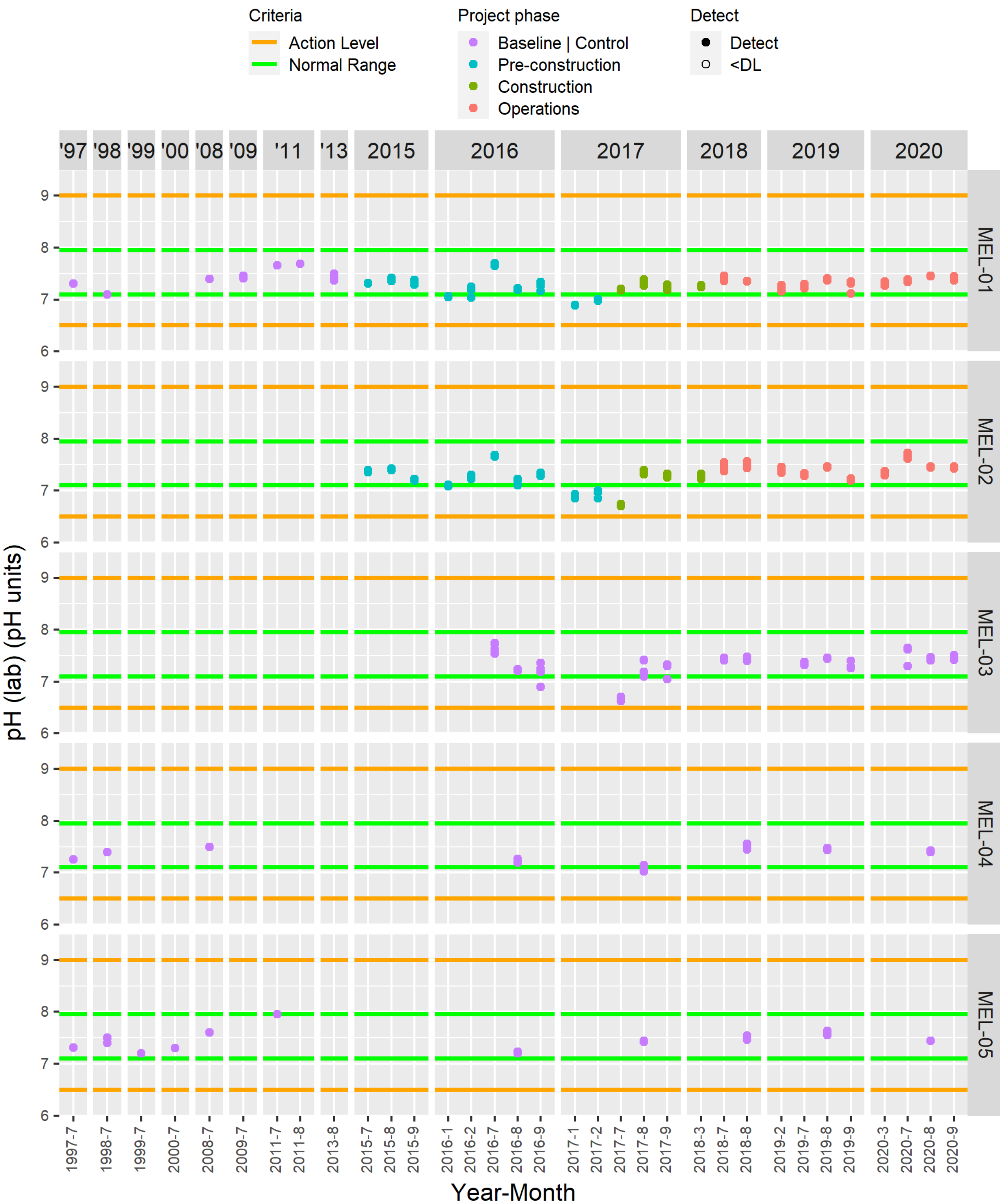


**Figure C2-6. Total dissolved solids (mg/L)**

**2013.**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

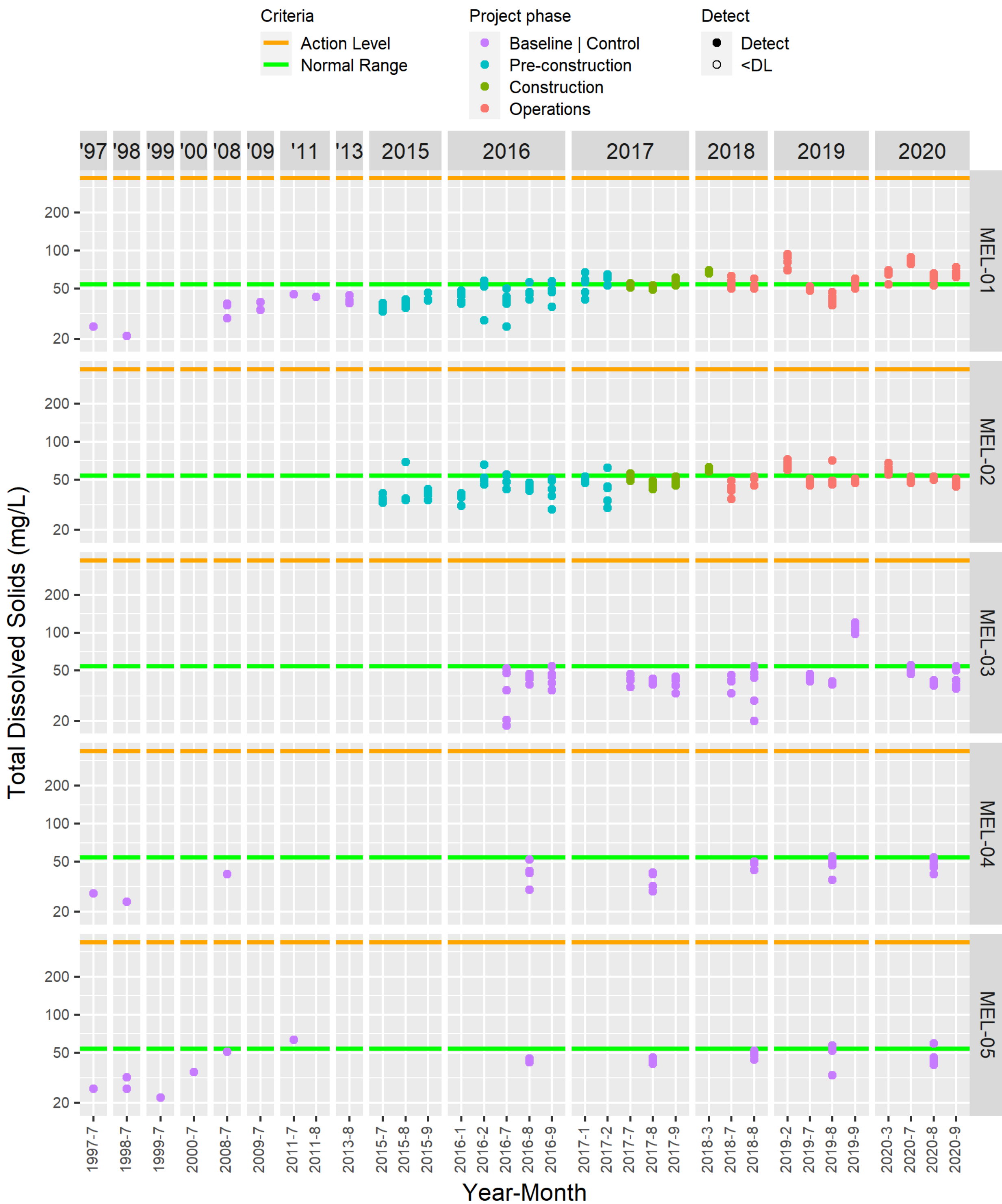


**Figure C2-7. Calculated total dissolved solids (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

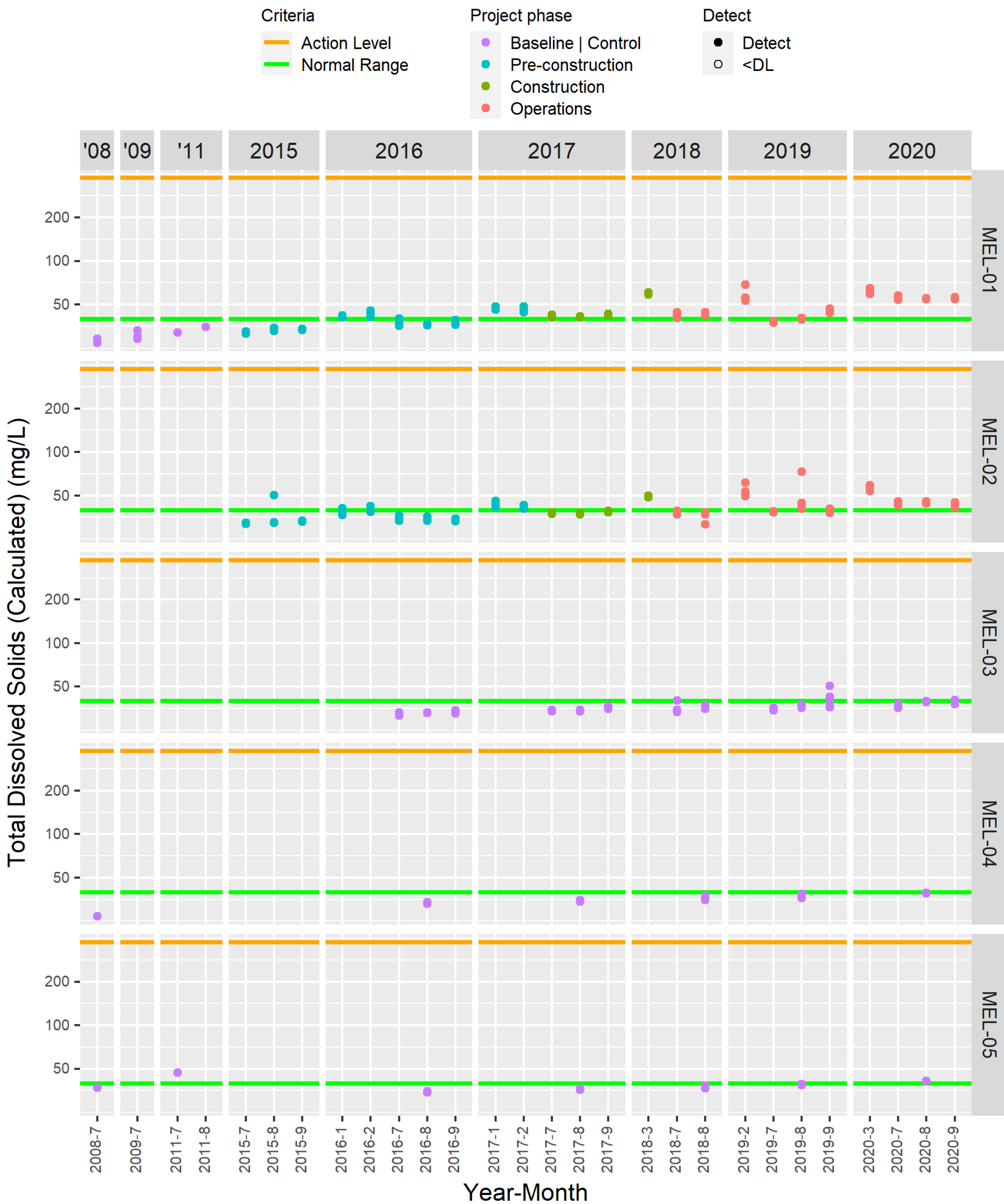


**Figure C2-8. Total suspended solids (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

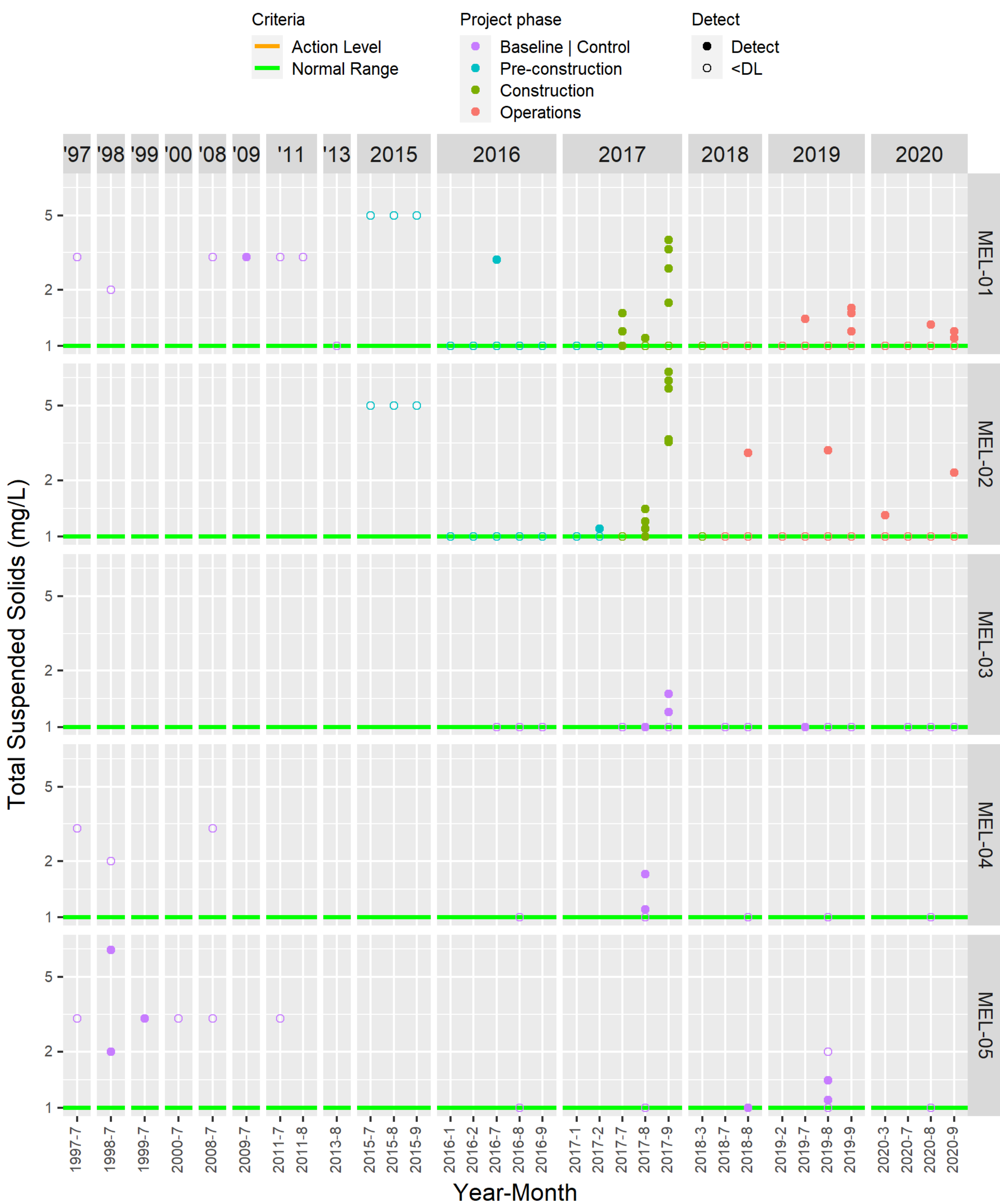
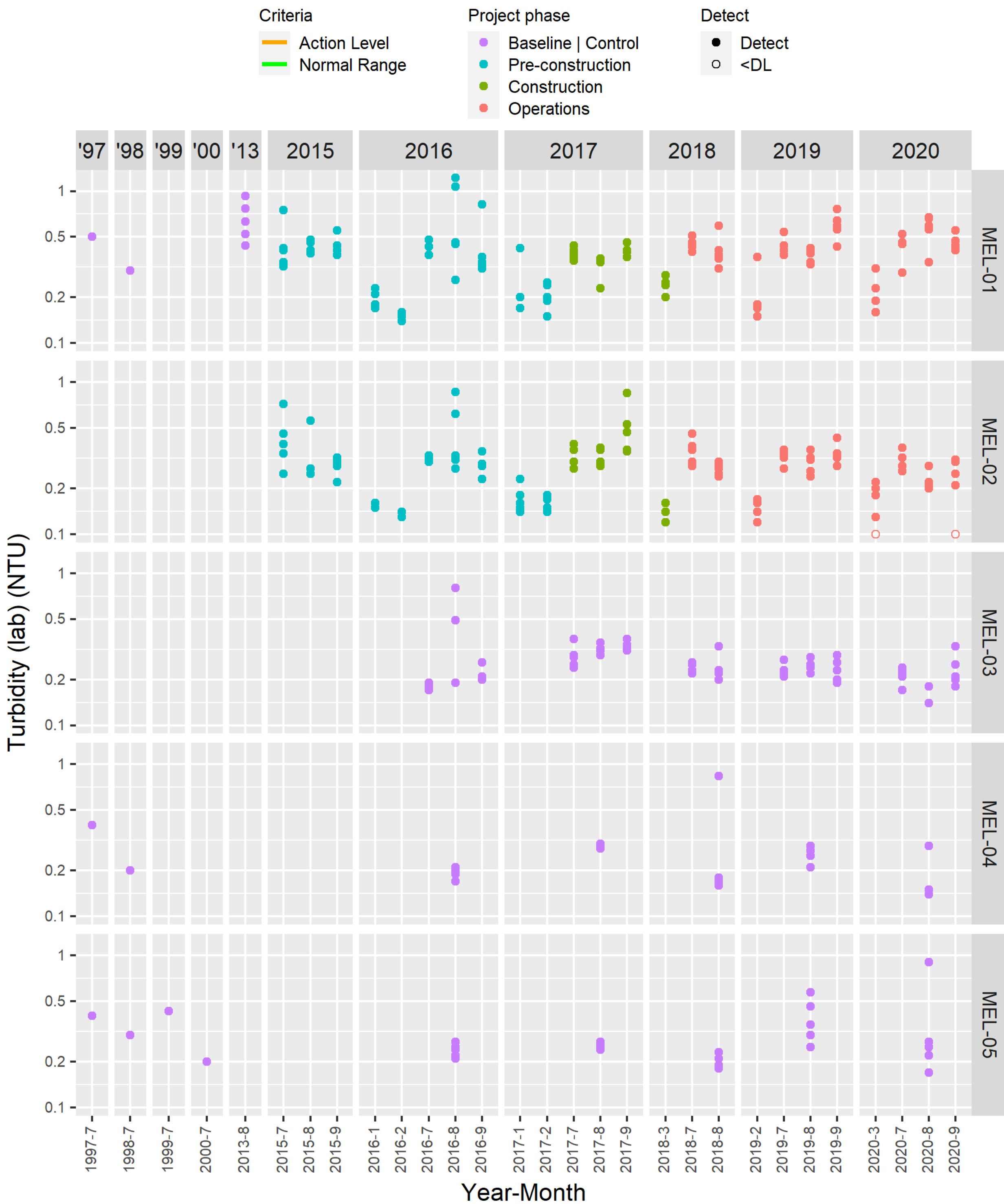


**Figure C2-9. Lab measured turbidity (NTU)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-10. Bicarbonate alkalinity (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

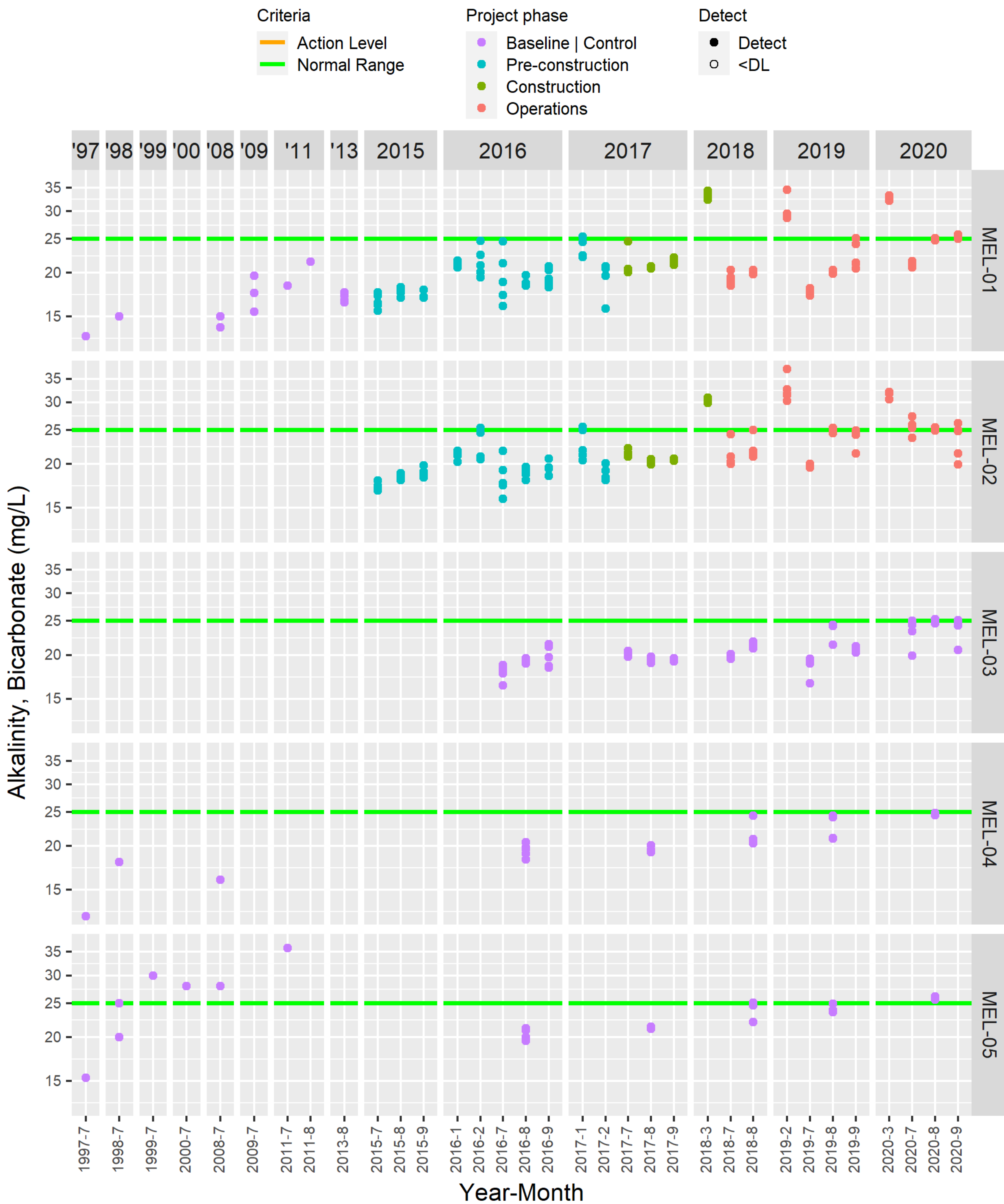
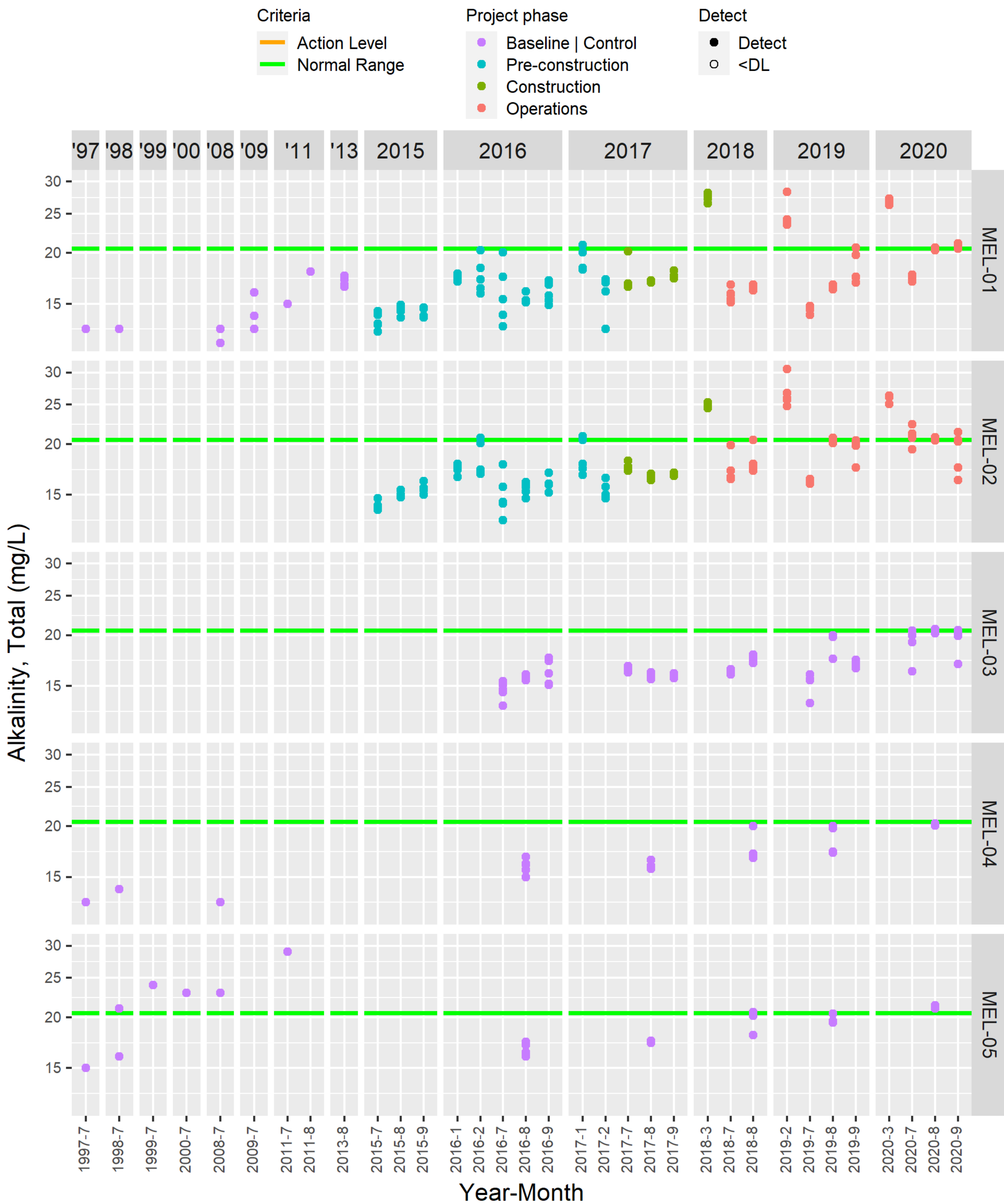


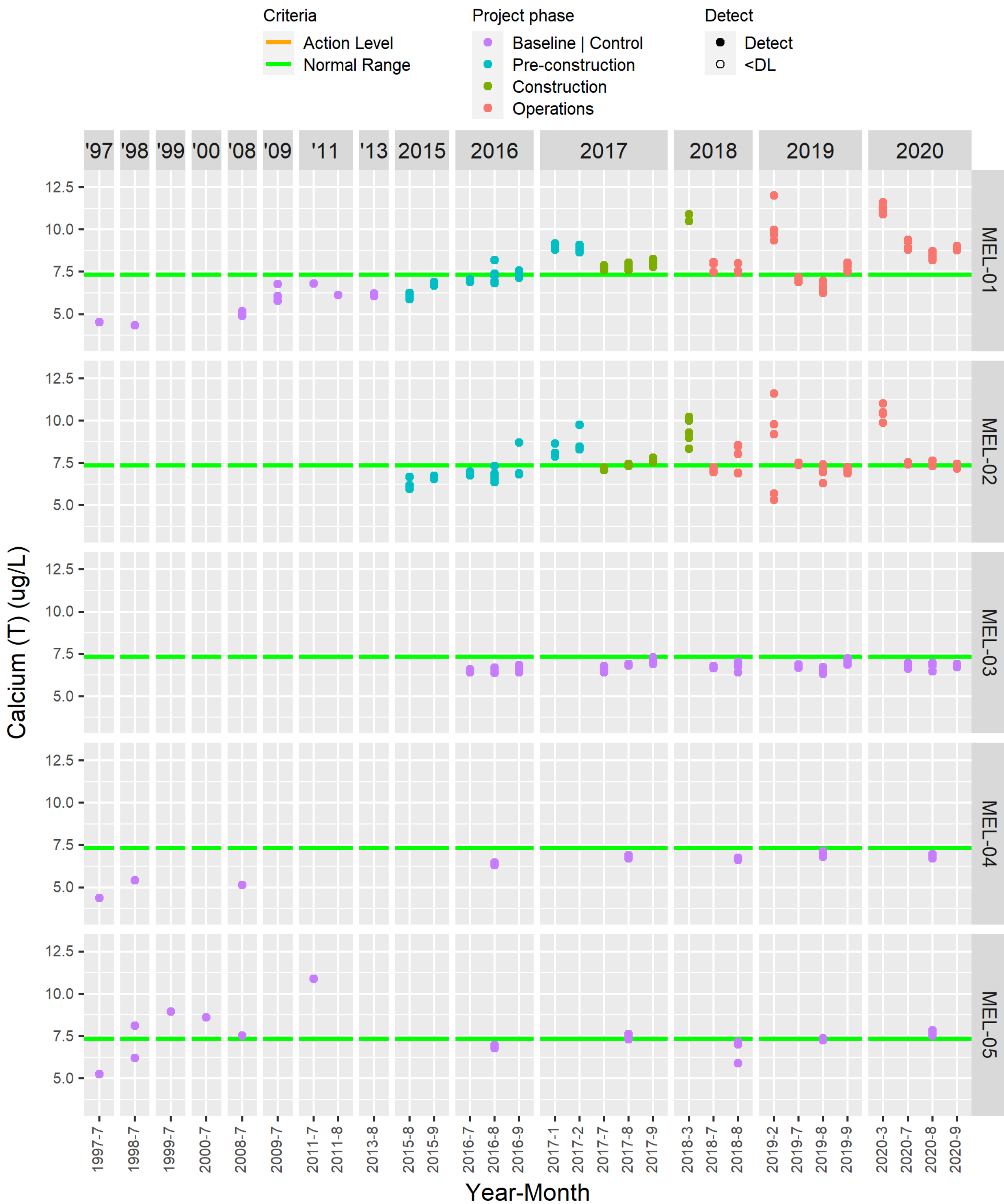
**Figure C2-11. Total alkalinity (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



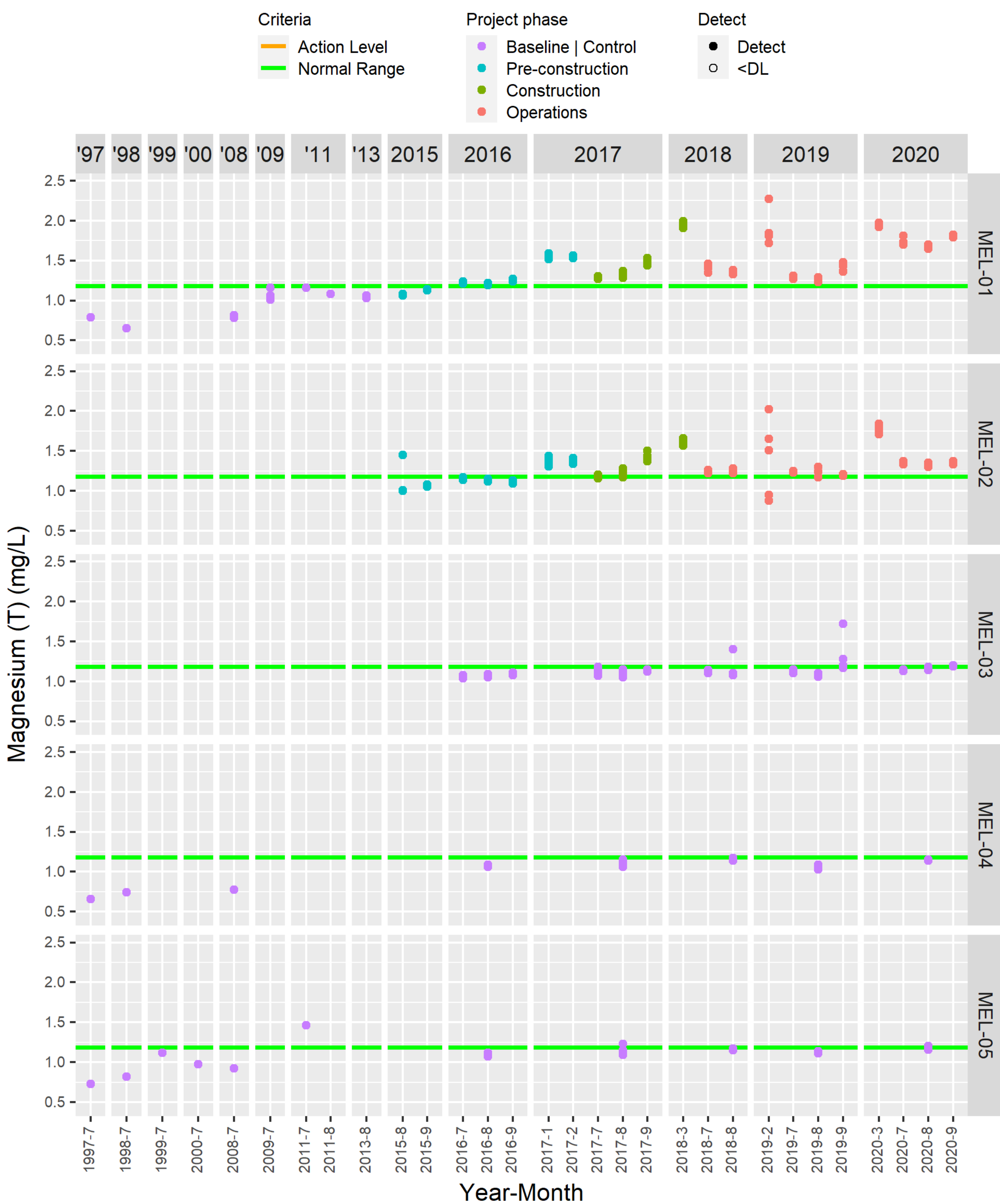
## Figure C2-12. Total calcium (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



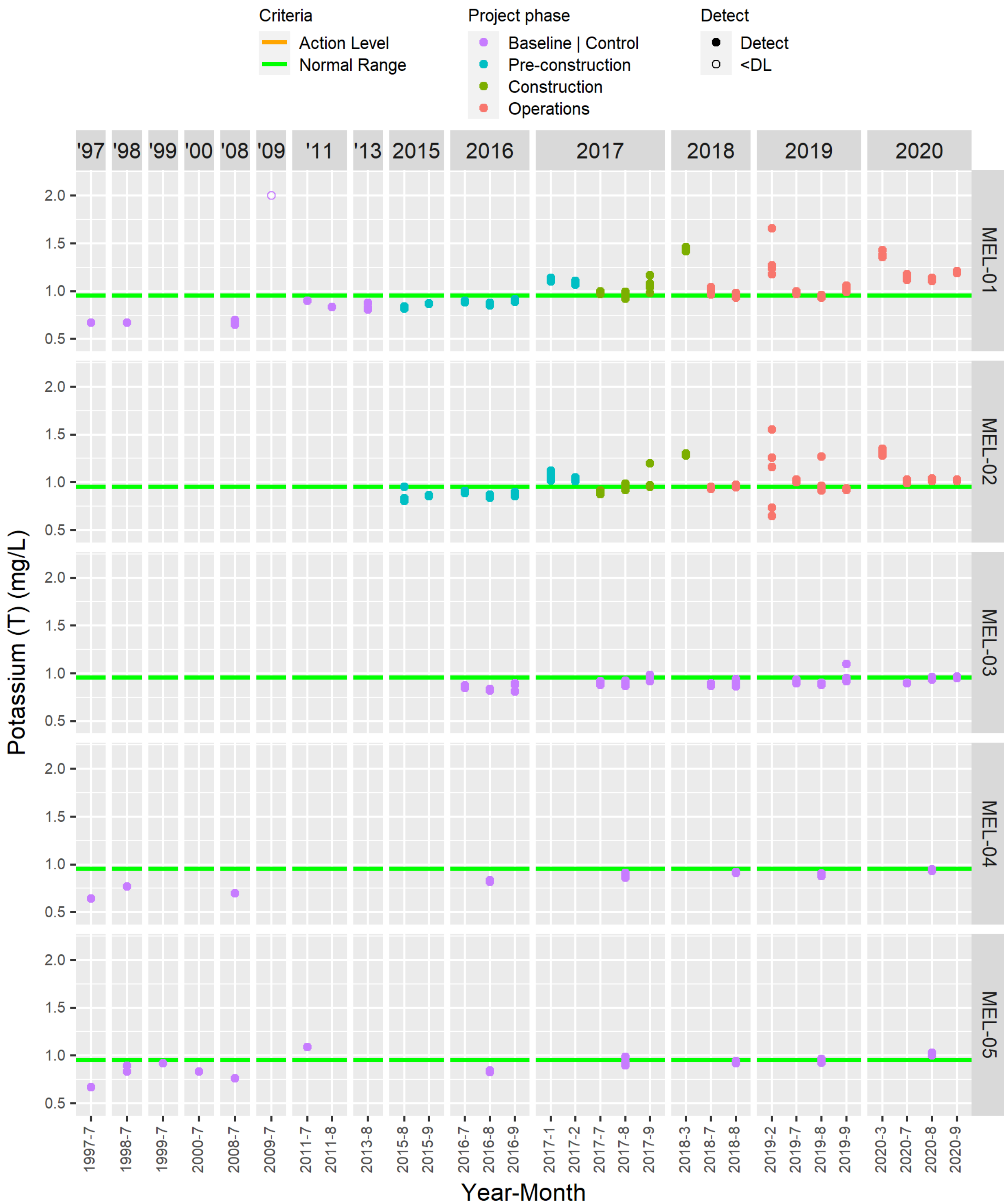
## Figure C2-13. Total magnesium (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



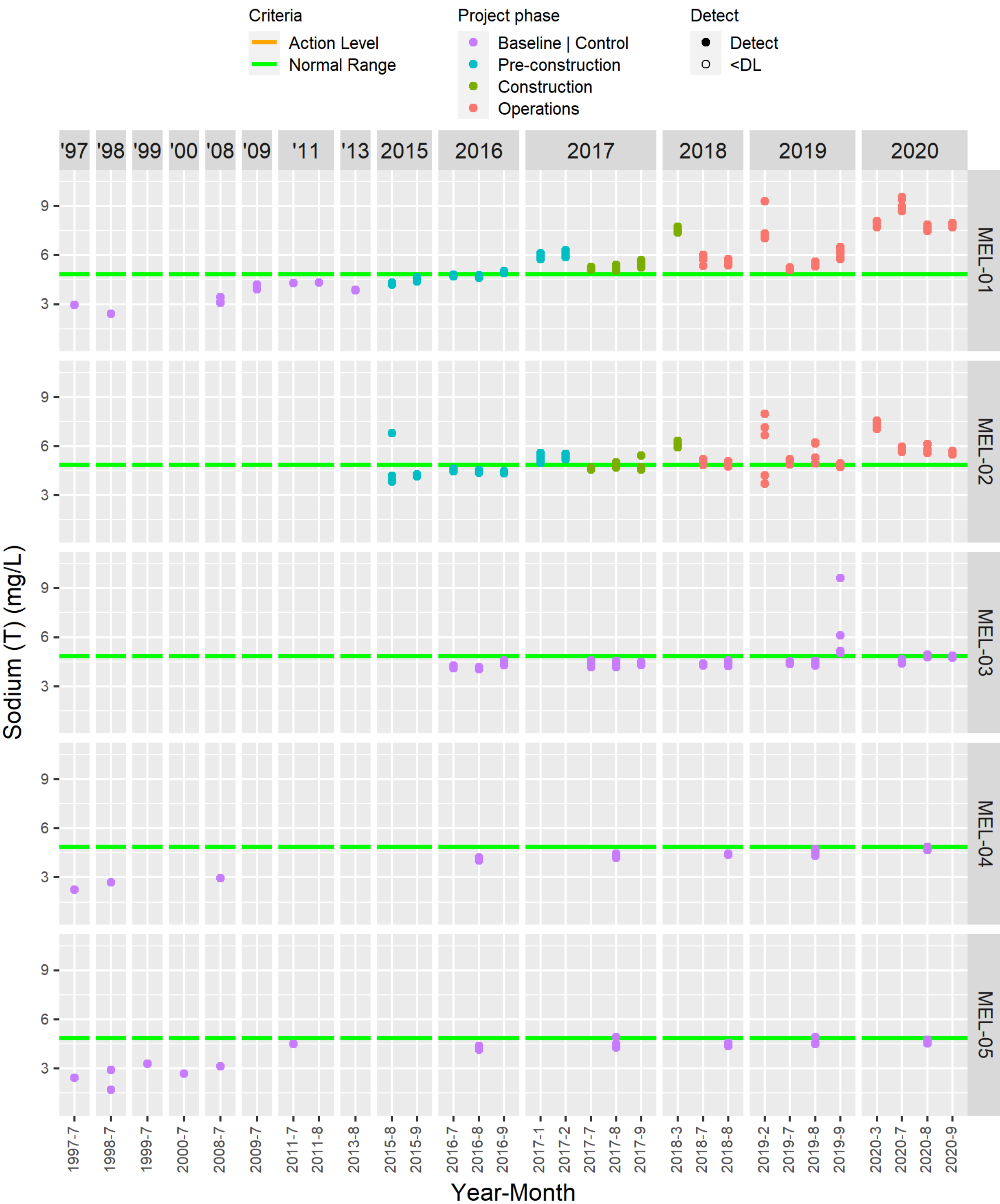
## Figure C2-14. Total potassium (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-15. Total sodium (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-16. Chloride (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

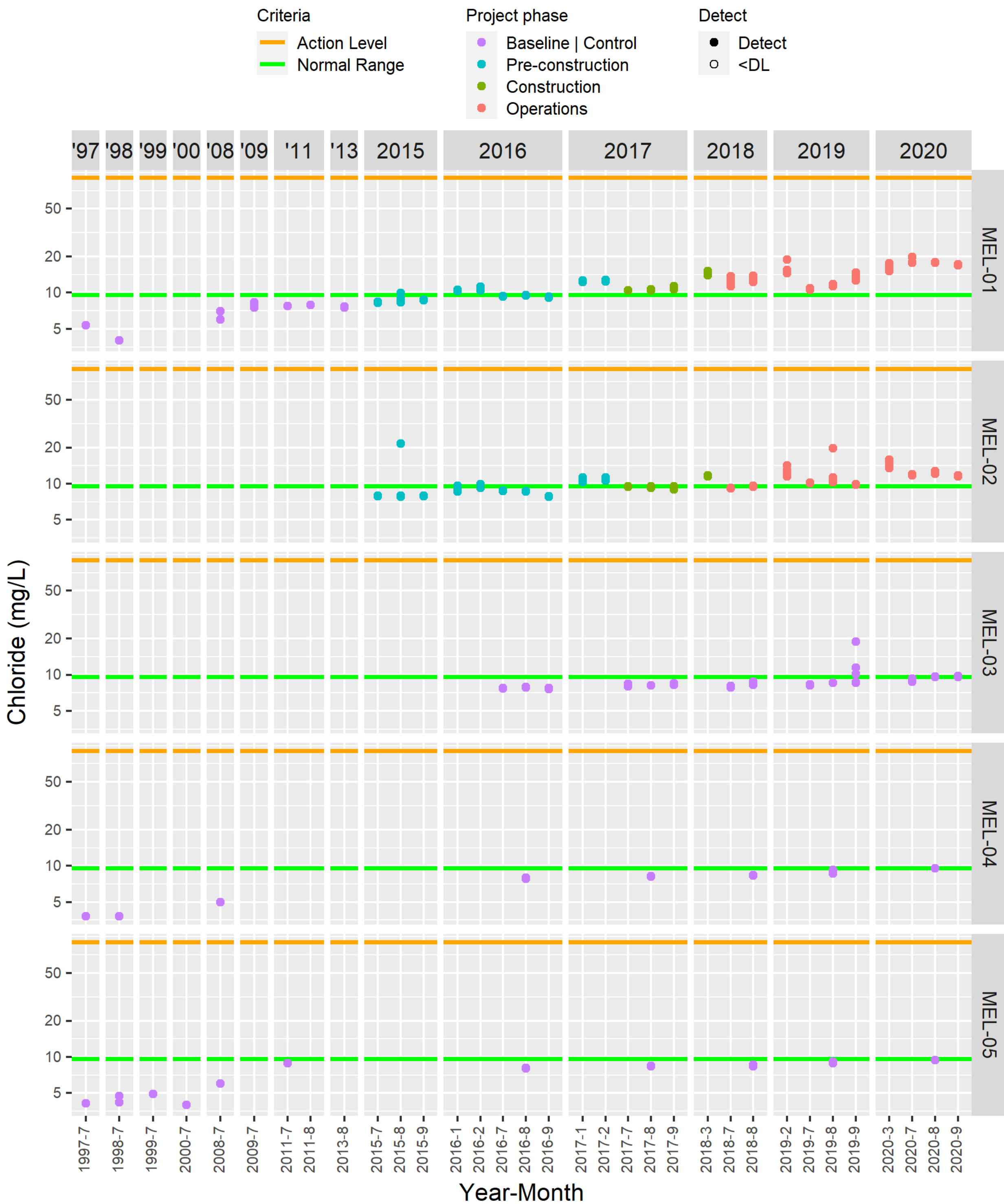
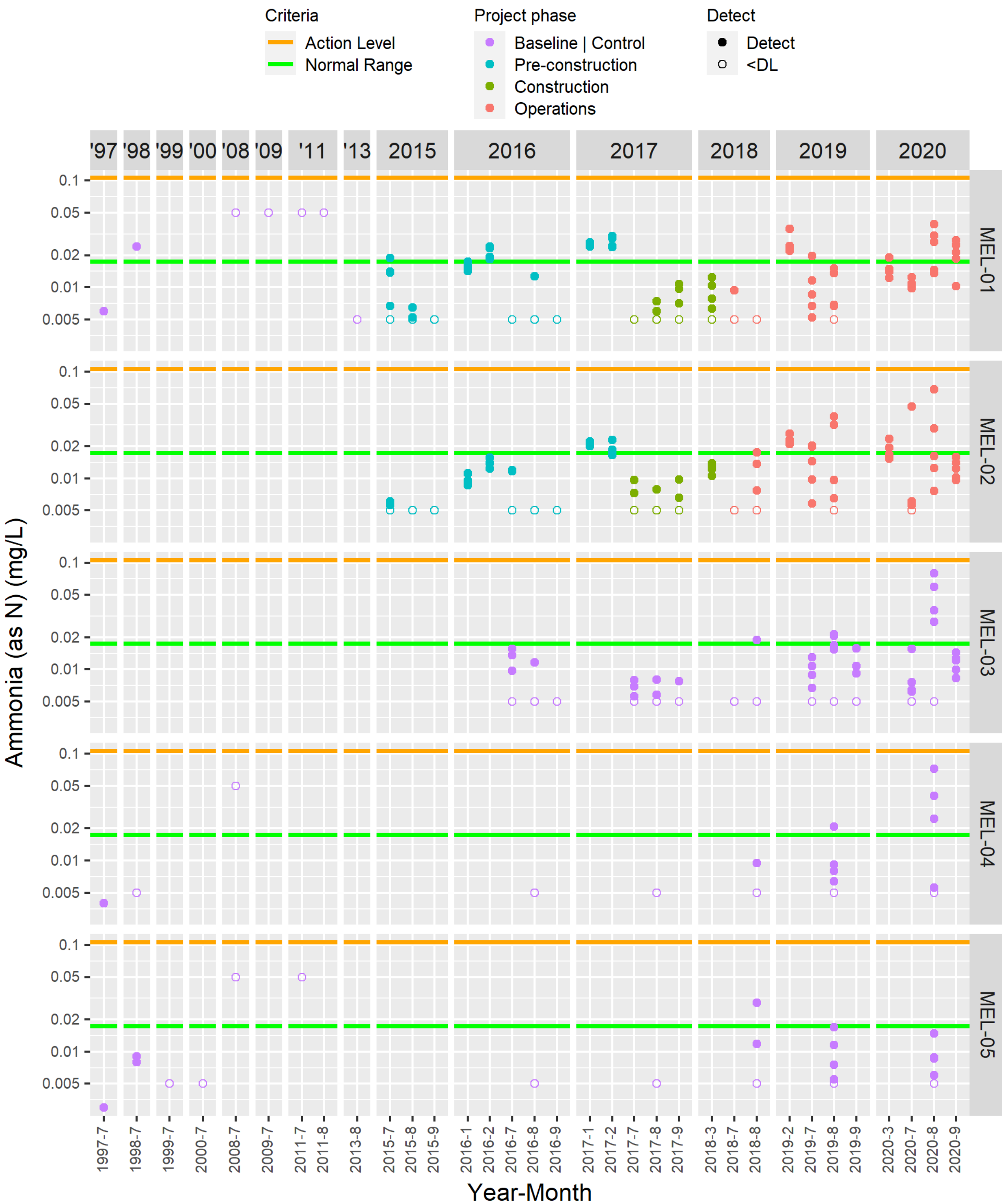


**Figure C2-17. Fluoride (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

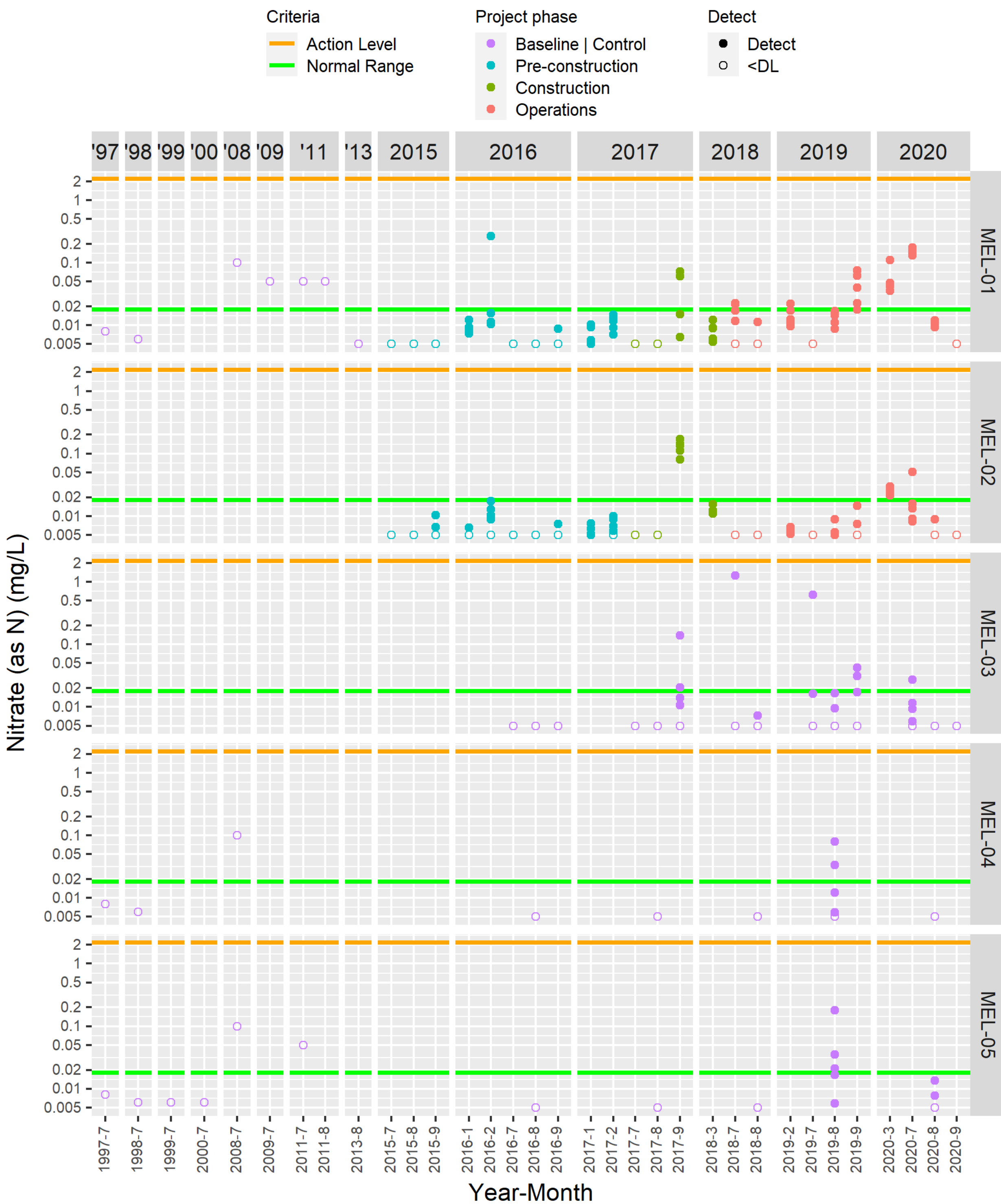
## Figure C2-18. Ammonia (as nitrogen) (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



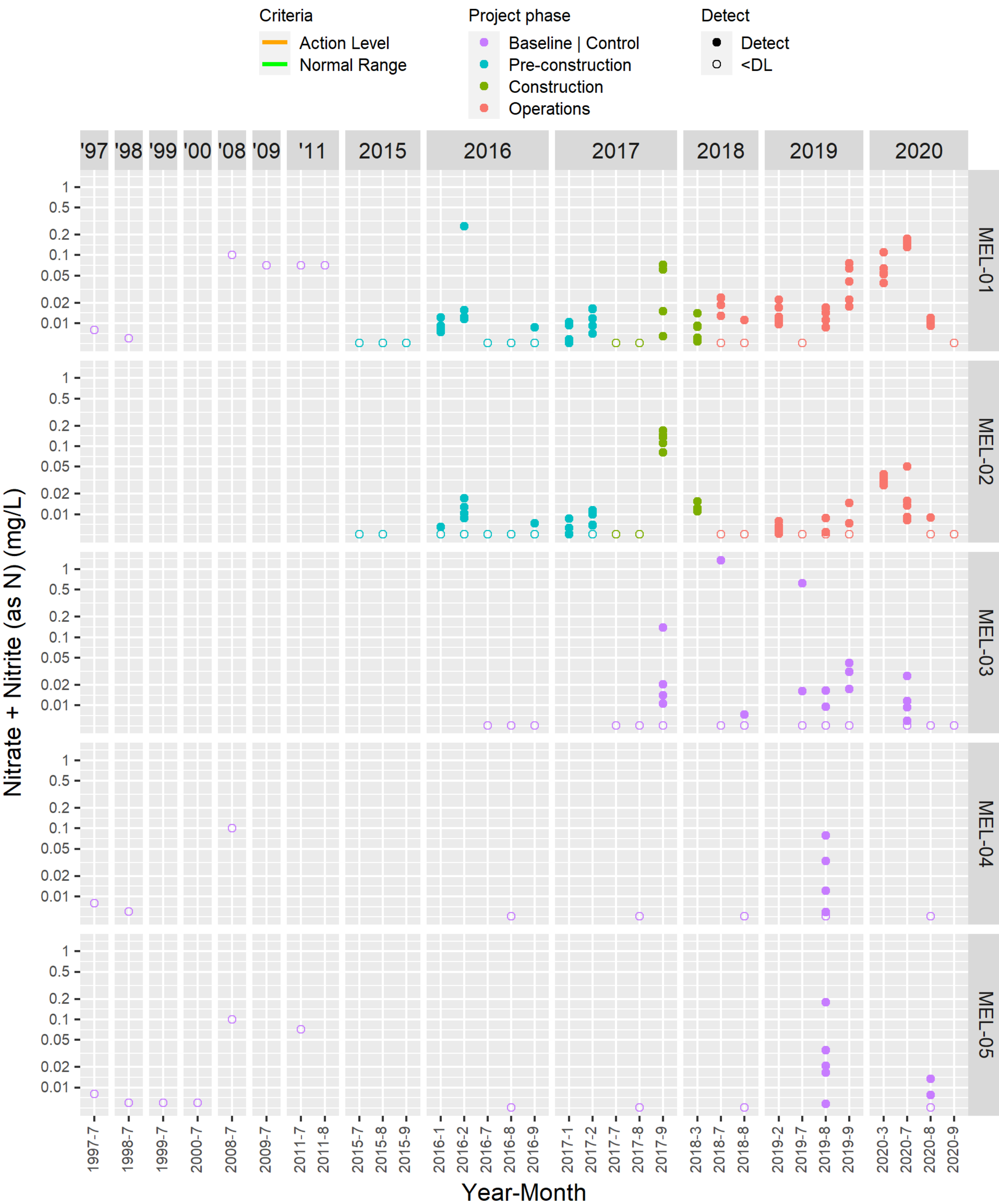
## Figure C2-19. Nitrate (as N) (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



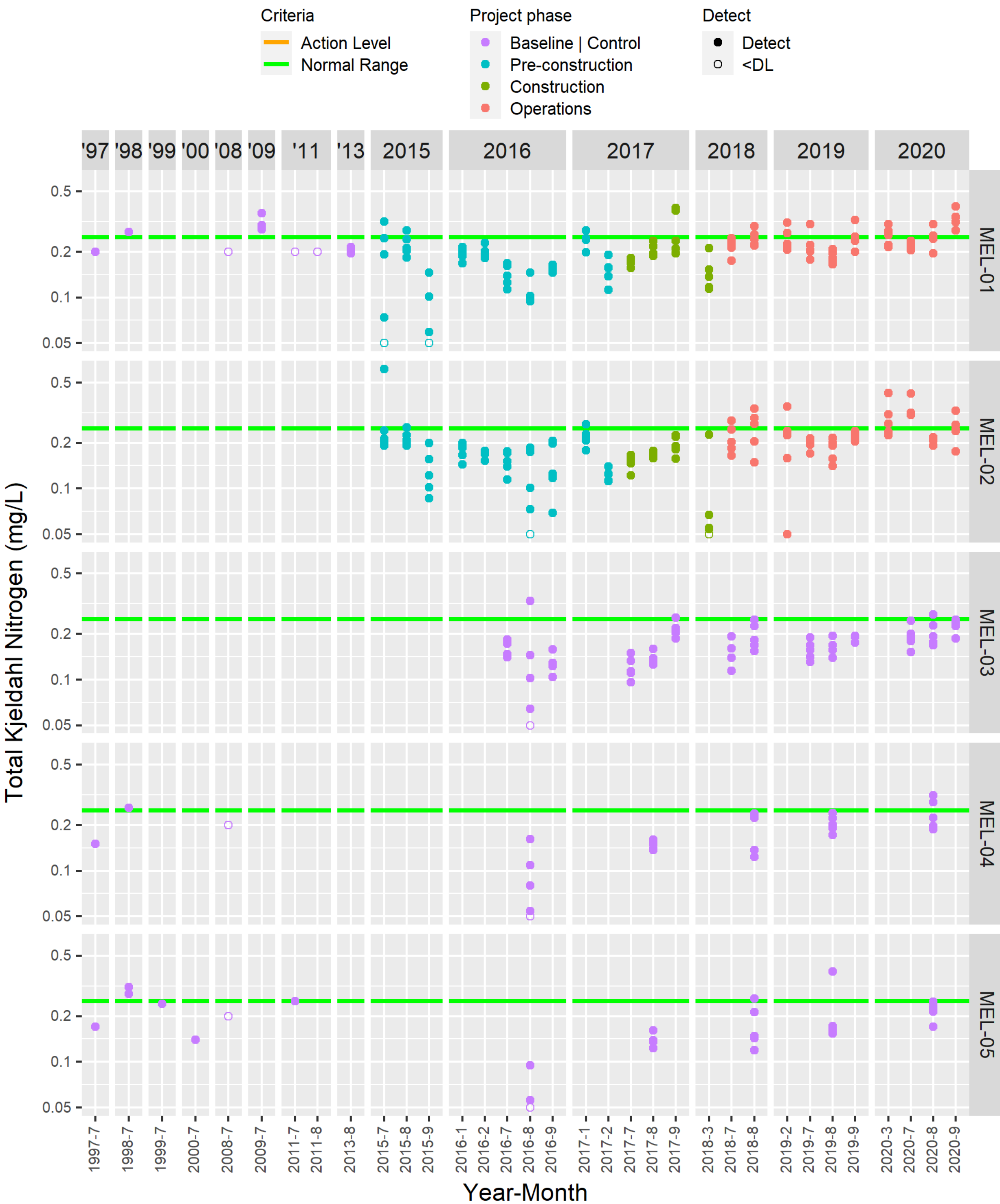
## Figure C2-20. Nitrate and nitrite (as N) (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



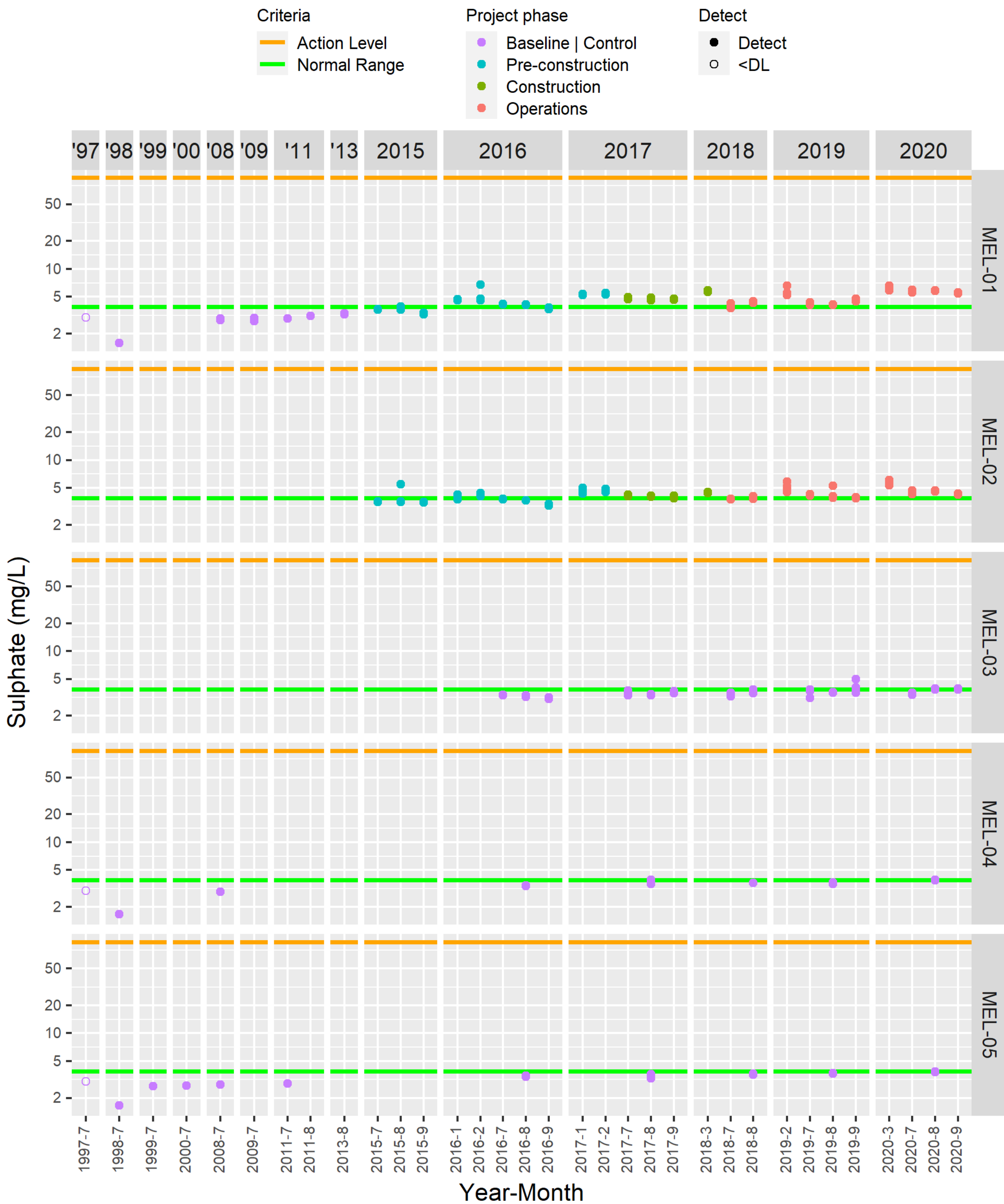
## Figure C2-21. Total Kjeldahl nitrogen (TKN; mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-22. Sulphate (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-23. Total phosphorus (mg/)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

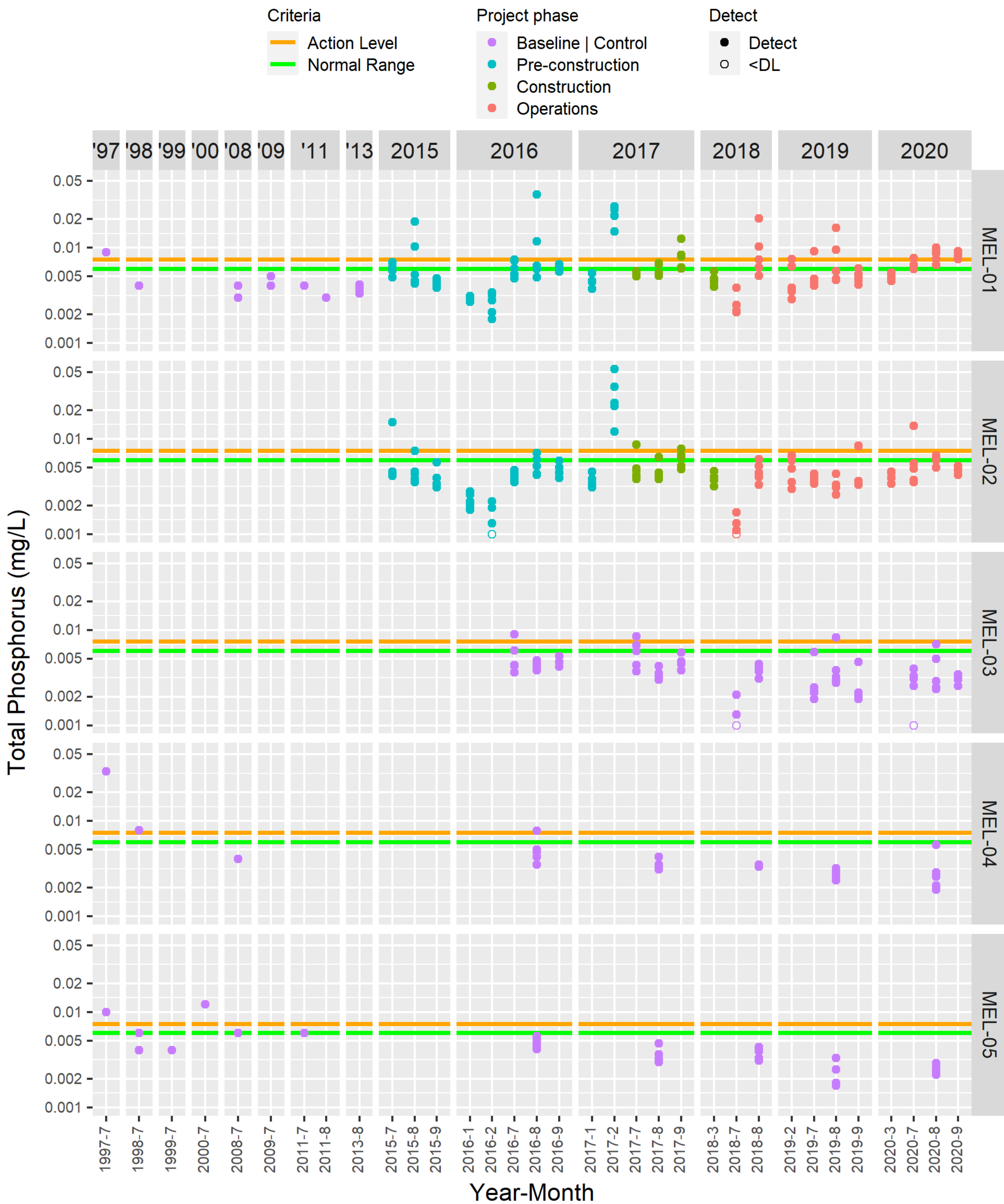
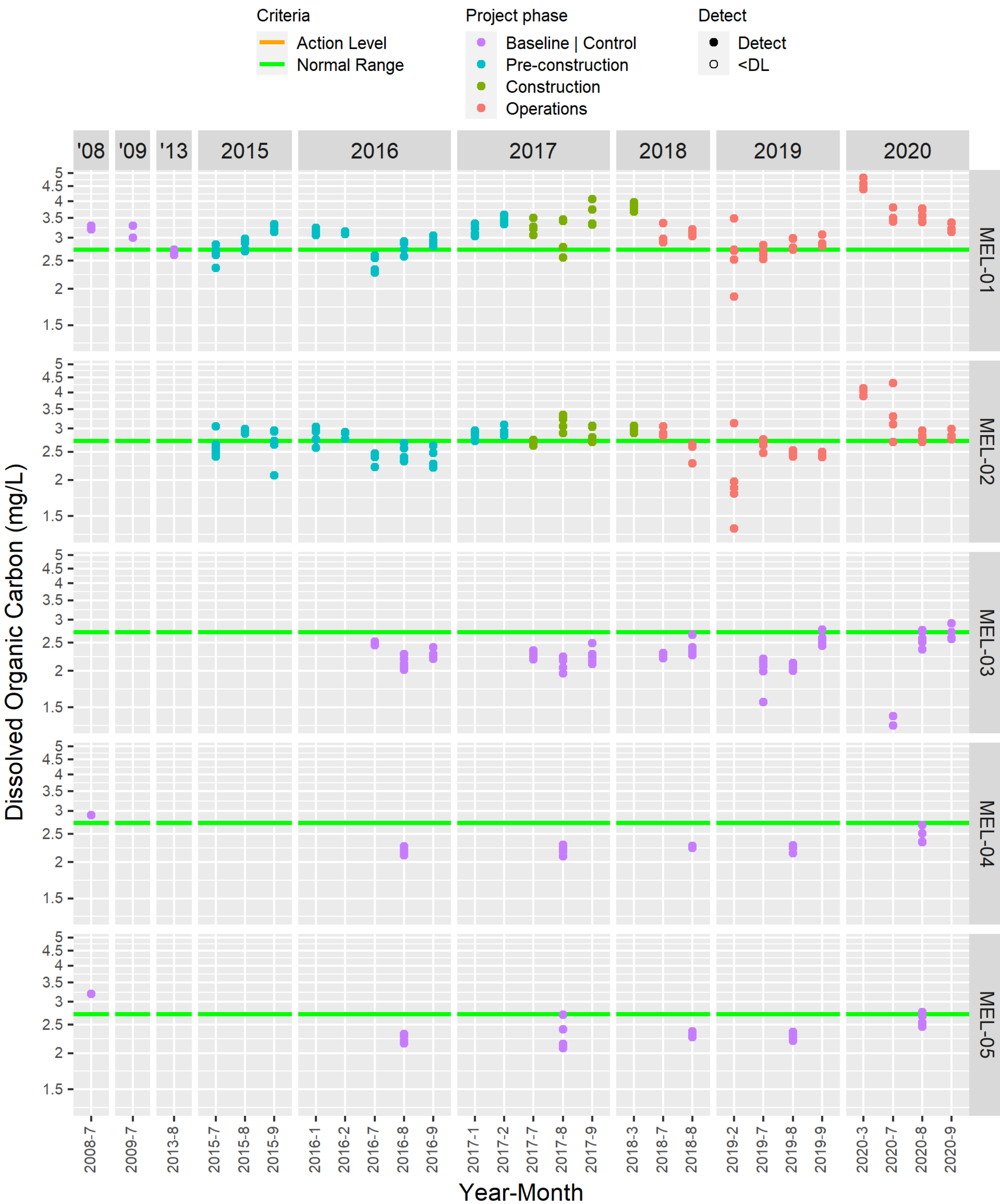


**Figure C2-24. Dissolved organic carbon (mg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-25. Total organic carbon (mg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

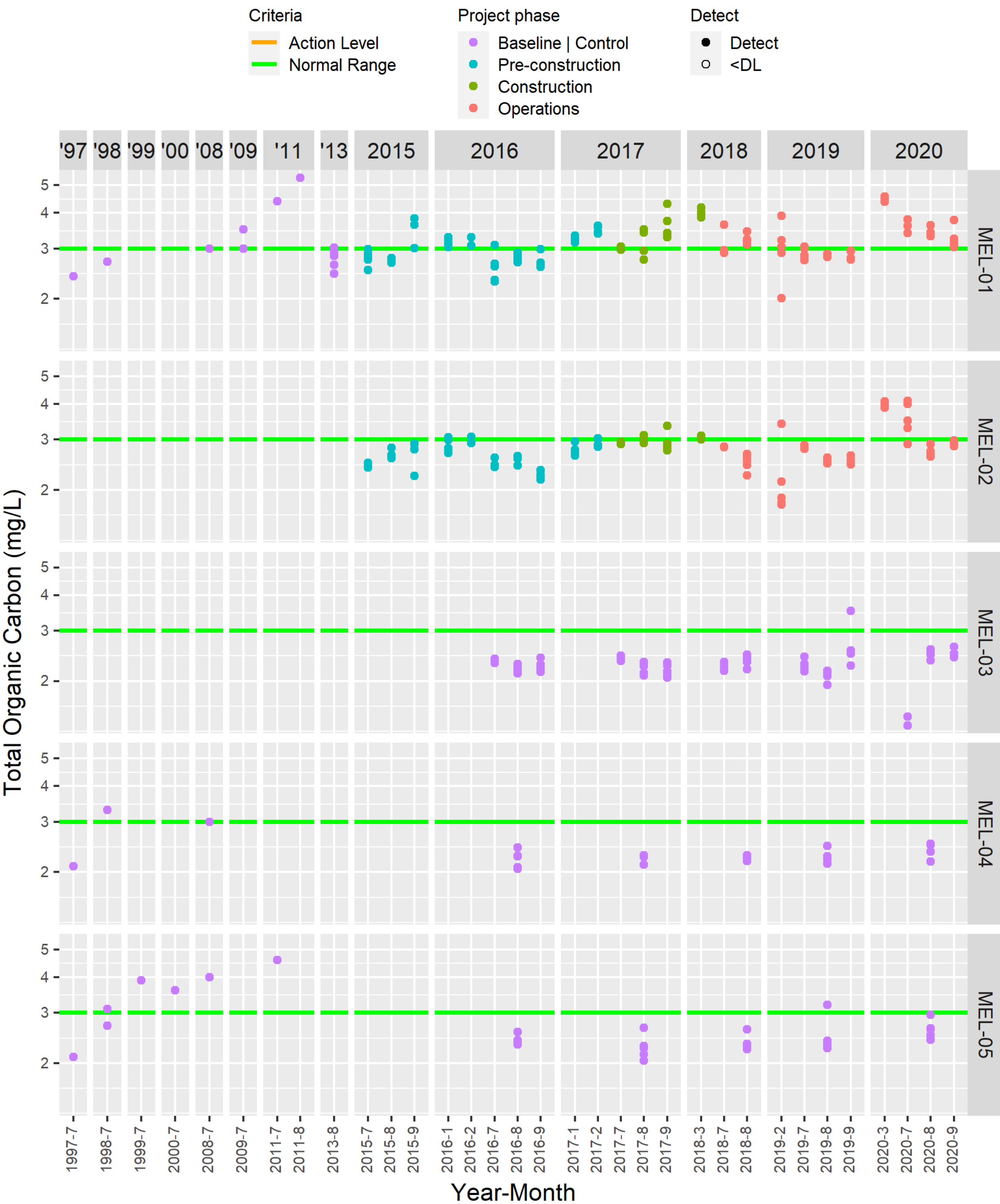
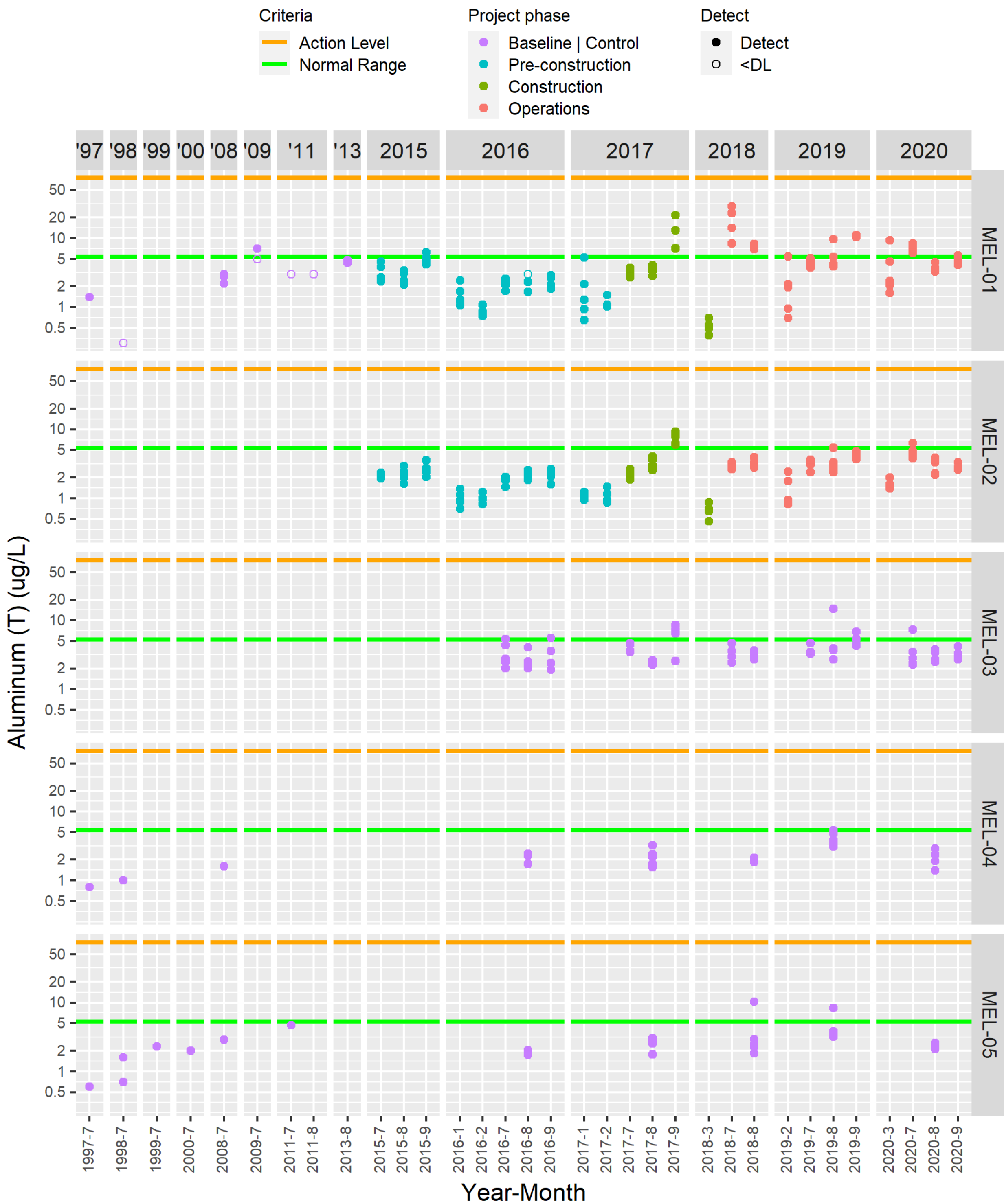


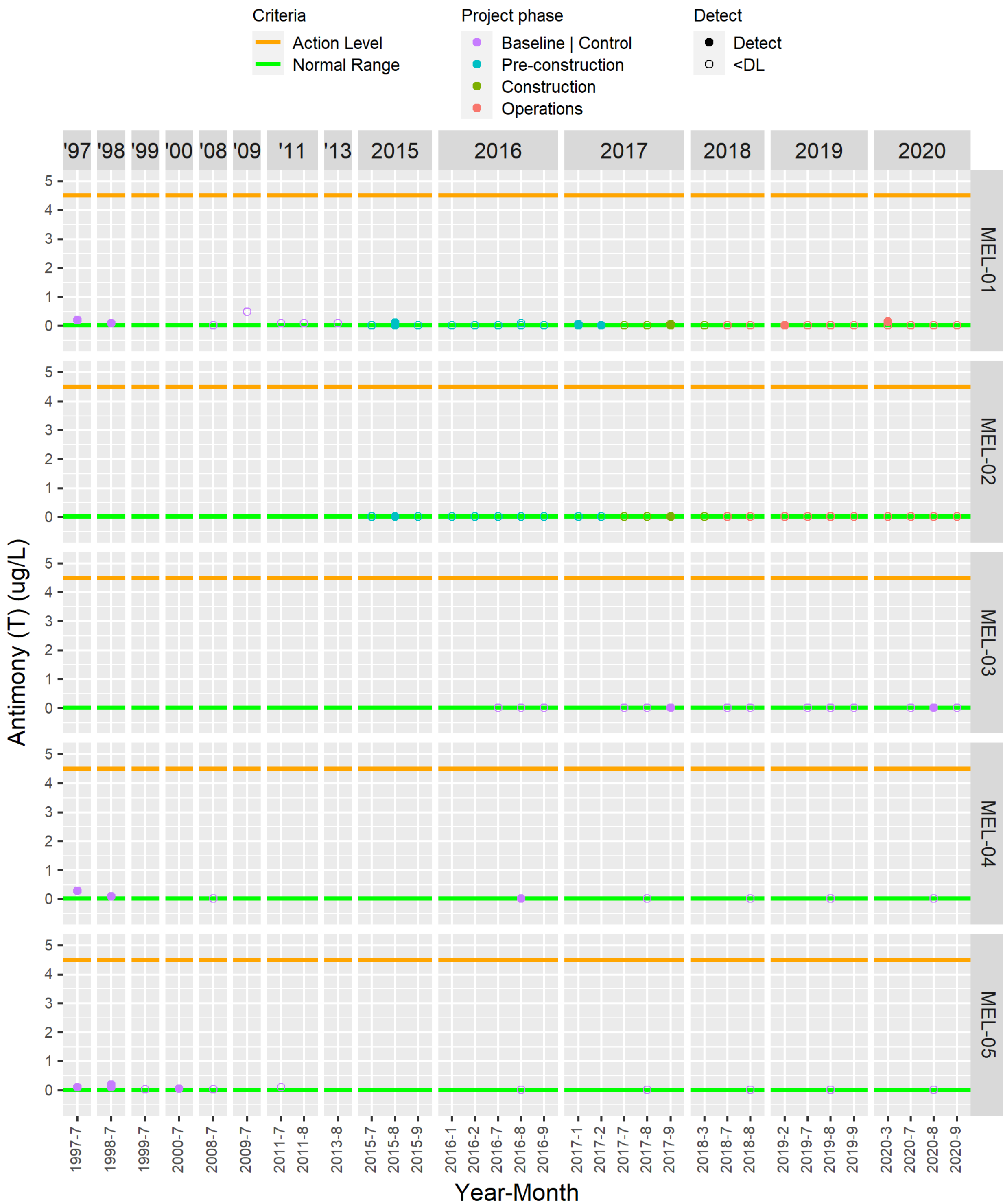
**Figure C2-26. Total aluminum (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



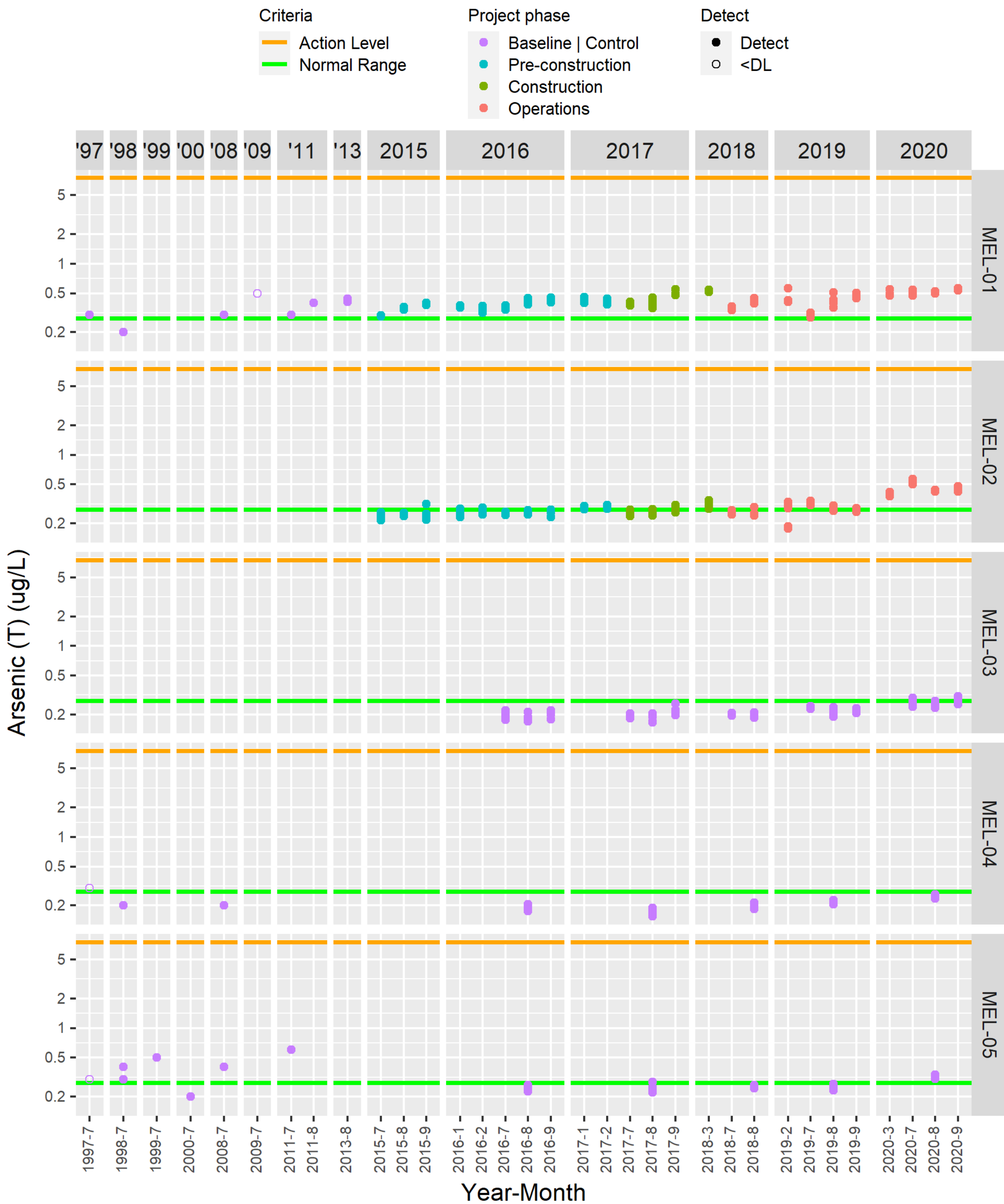
## Figure C2-27. Total antimony (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for antimony is equal to the current detection limit.



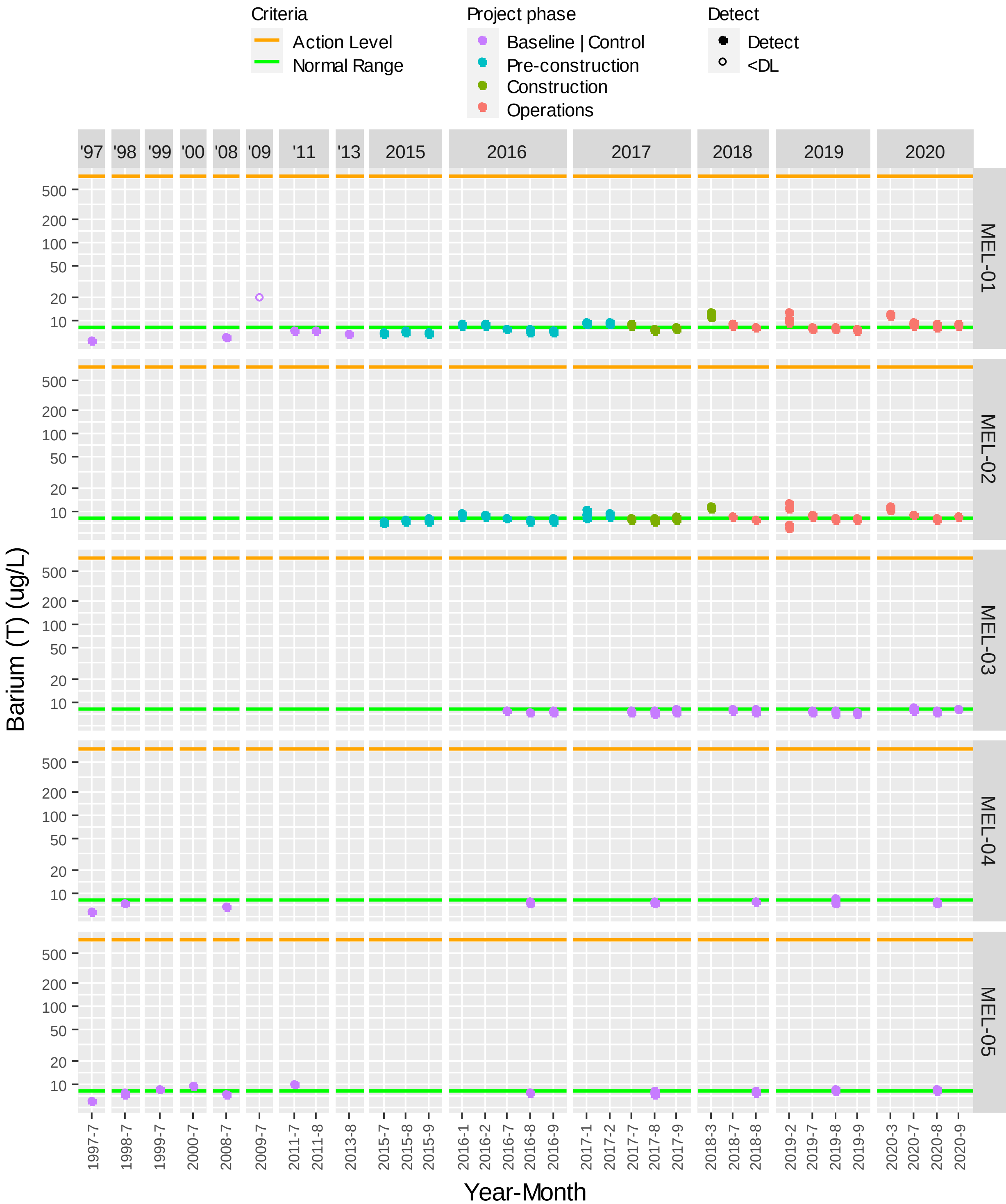
## Figure C2-28. Total arsenic (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



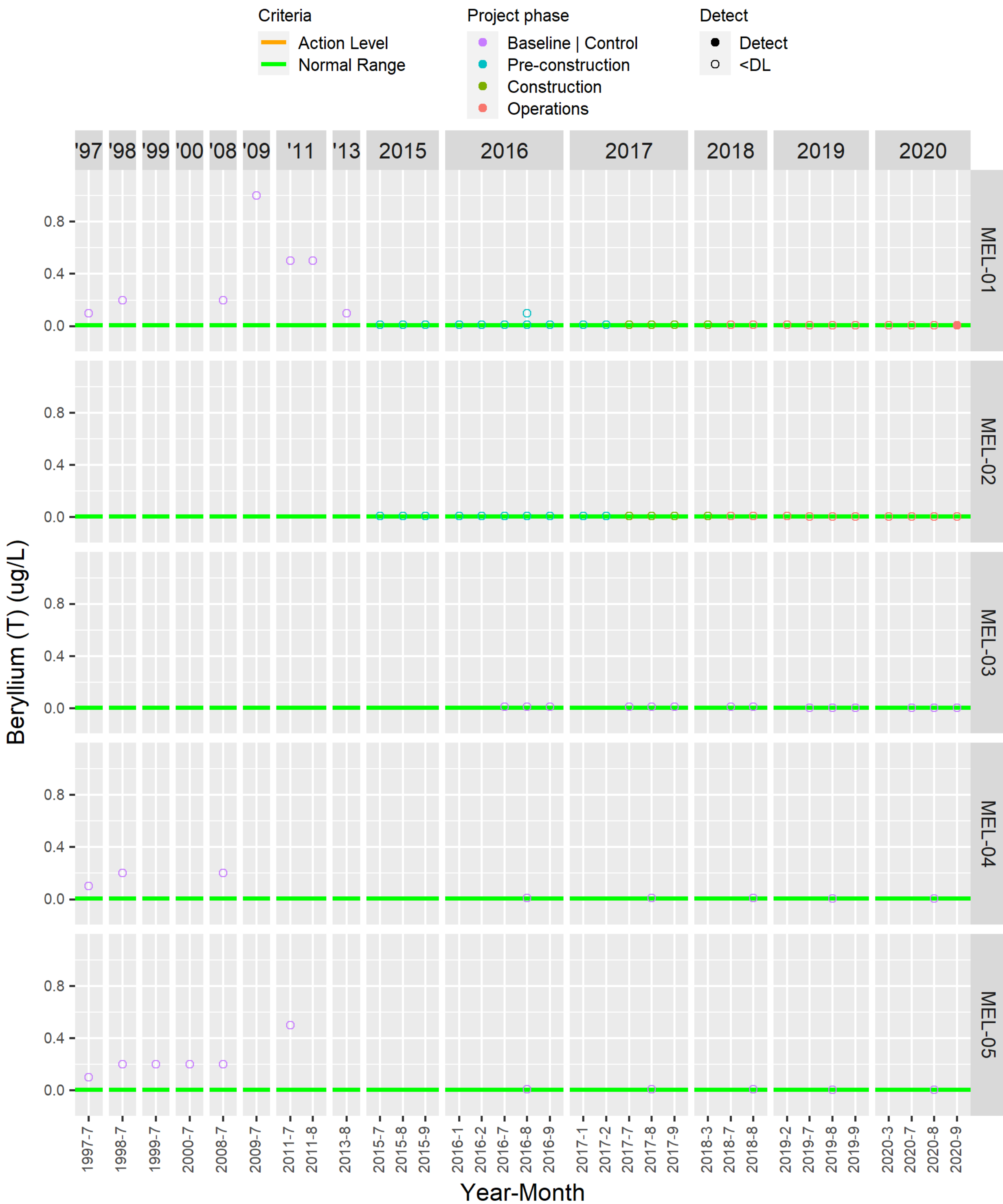
## Figure C2-29. Total barium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



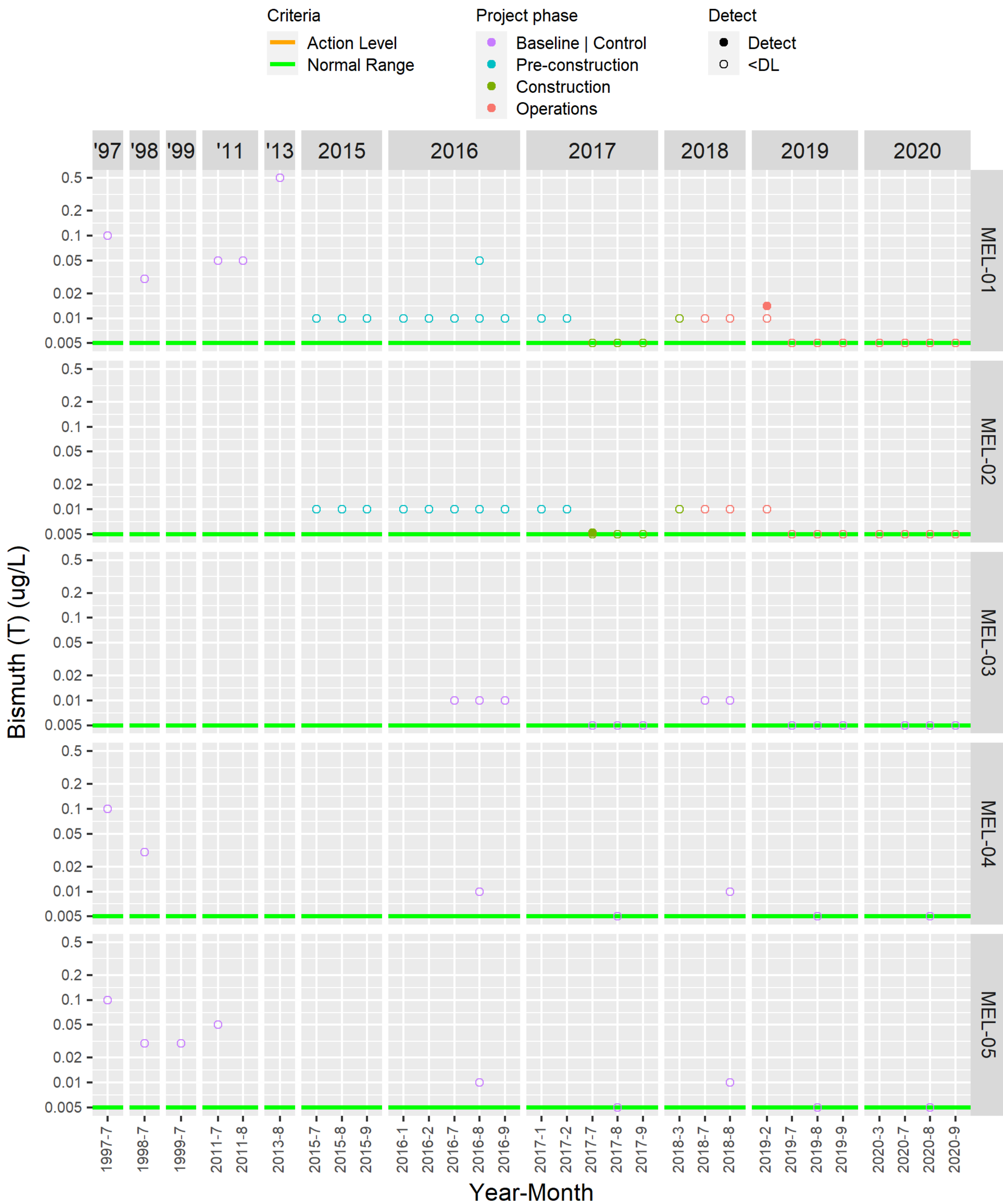
## Figure C2-30. Total beryllium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for beryllium is equal to the current detection limit.



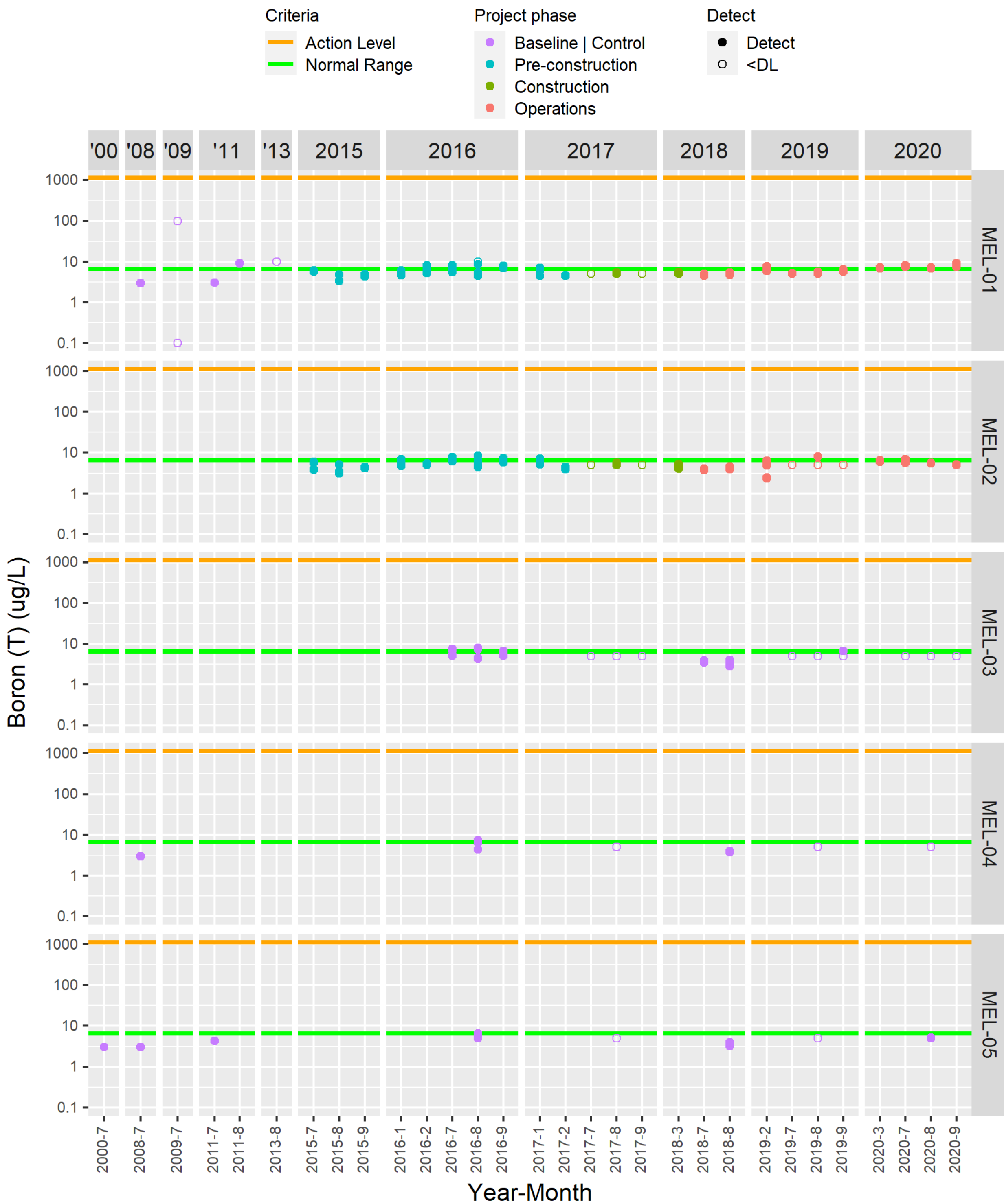
## Figure C2-31. Total bismuth (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for bismuth is equal to the current detection limit.



## Figure C2-32. Total boron (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-33. Total cadmium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for cadmium is equal to the current detection limit.

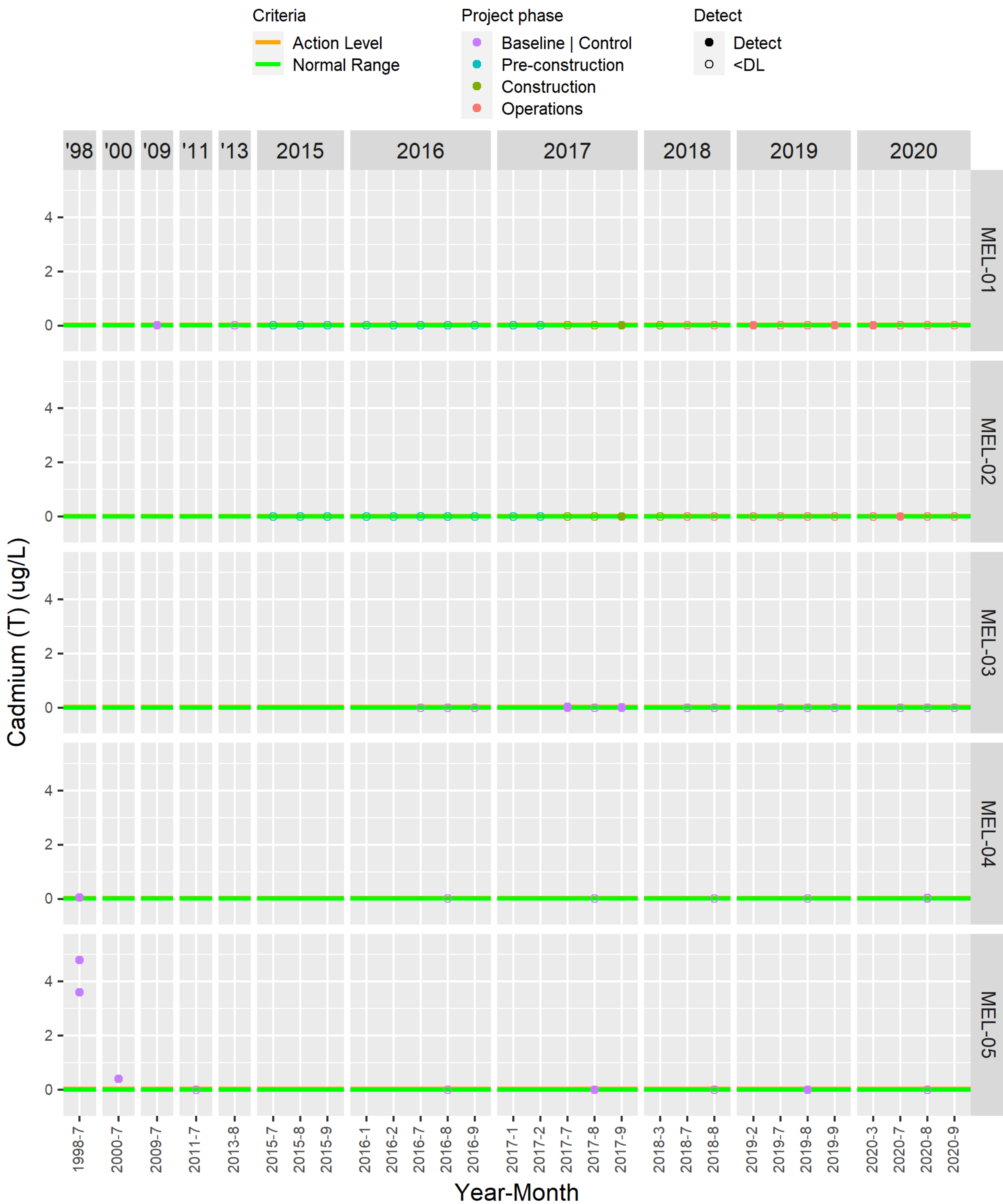
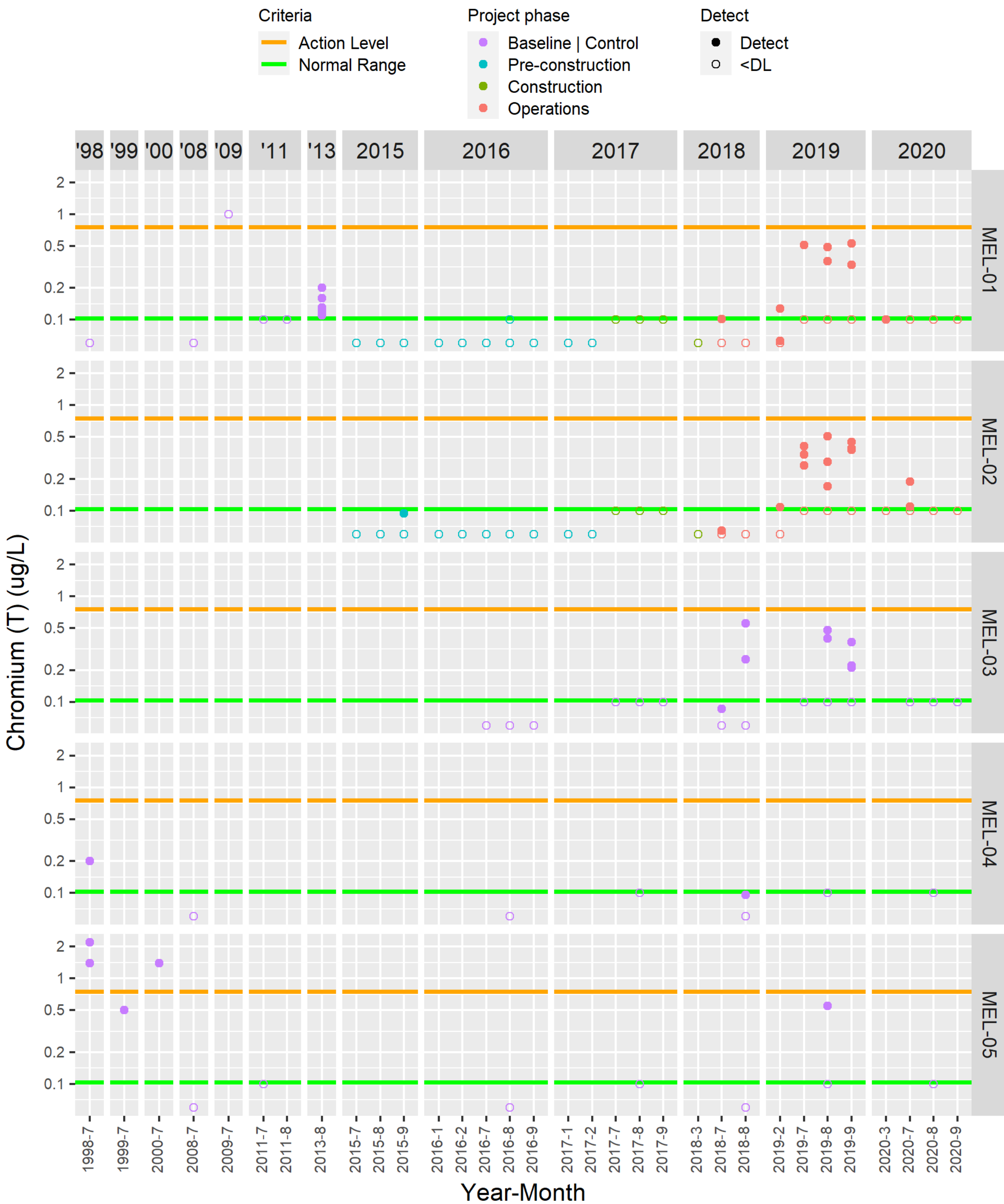


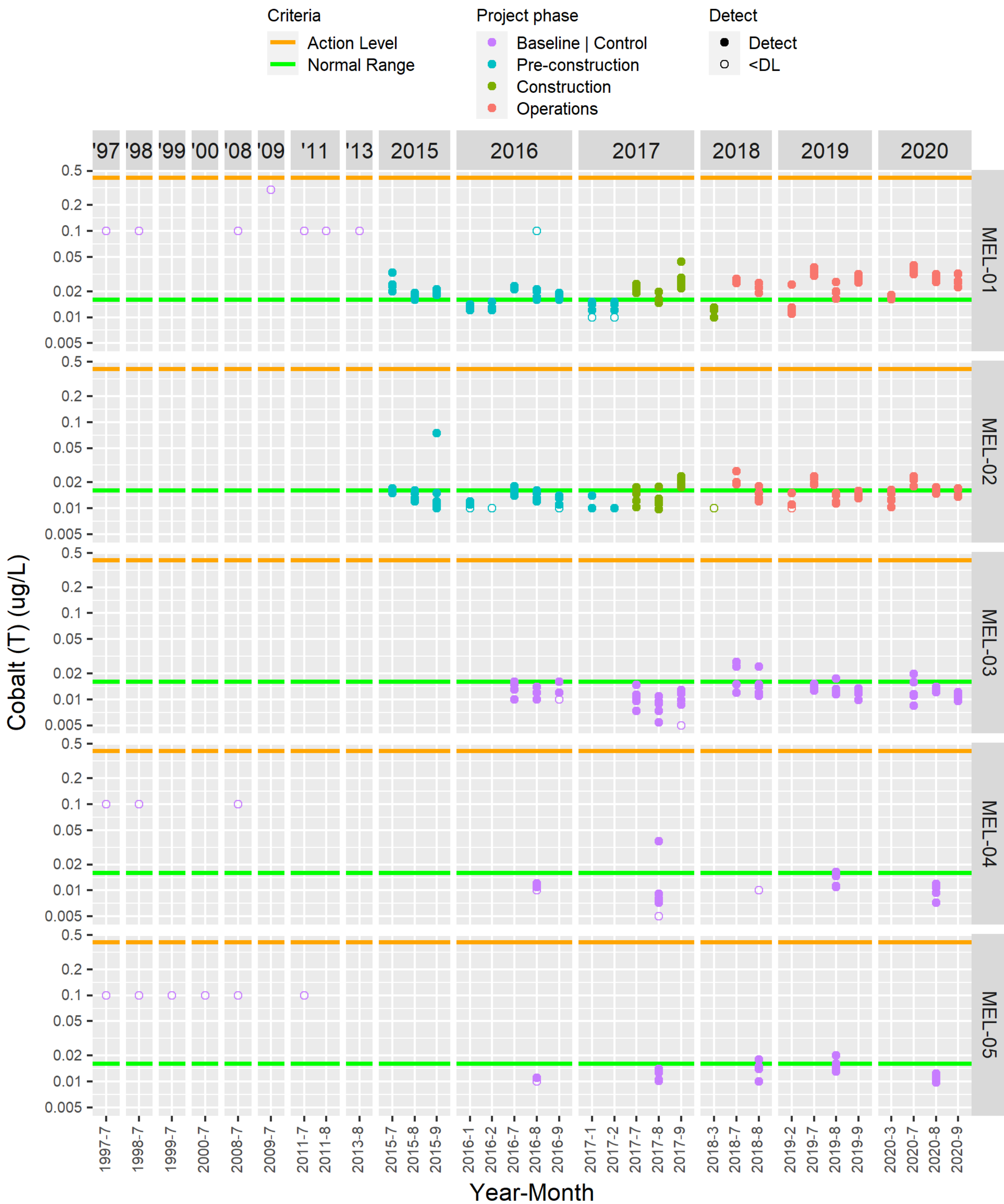
**Figure C2-34. Total chromium (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



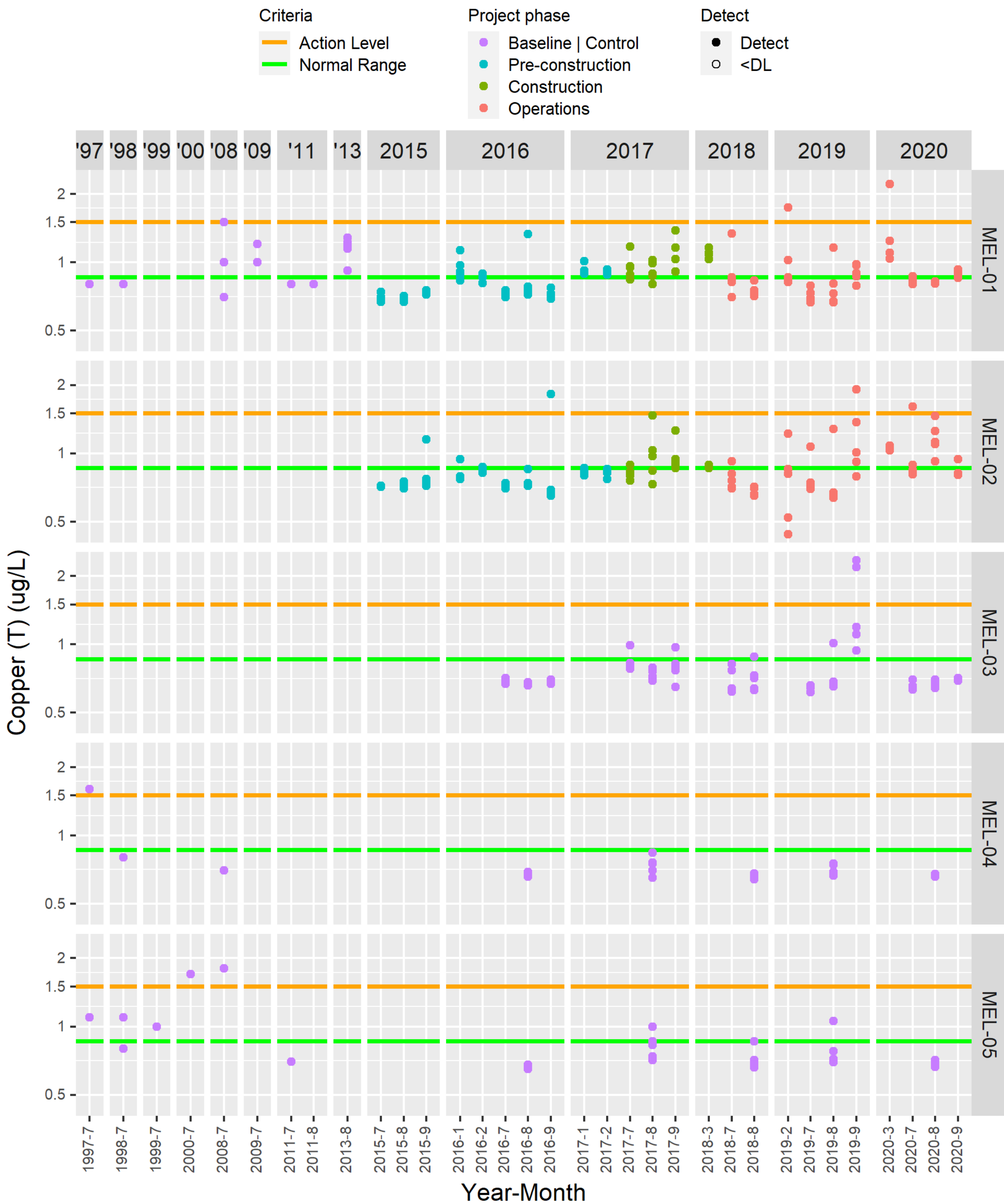
## Figure C2-35. Total cobalt (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



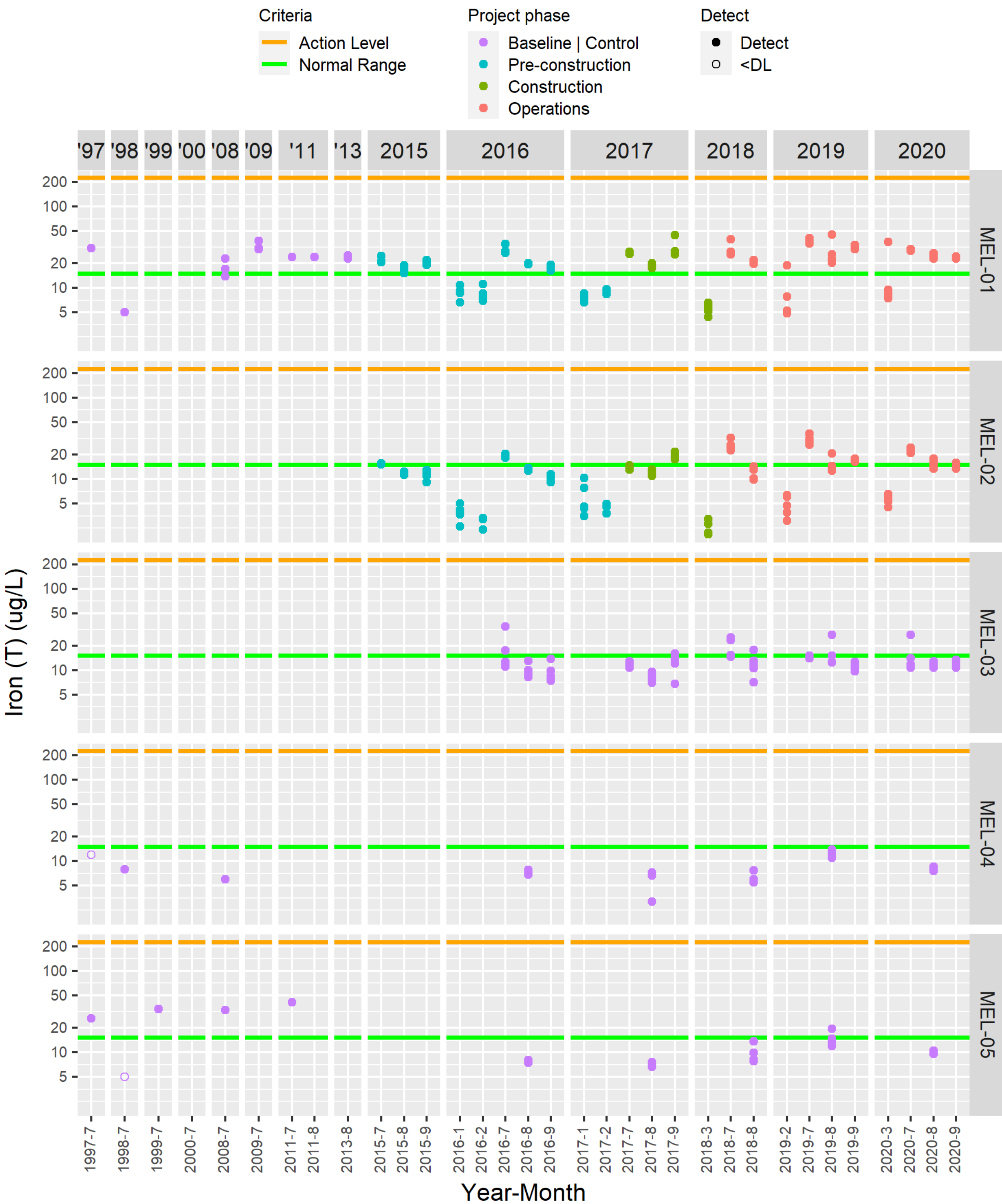
## Figure C2-36. Total copper (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-37. Total iron (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-38. Total lead (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

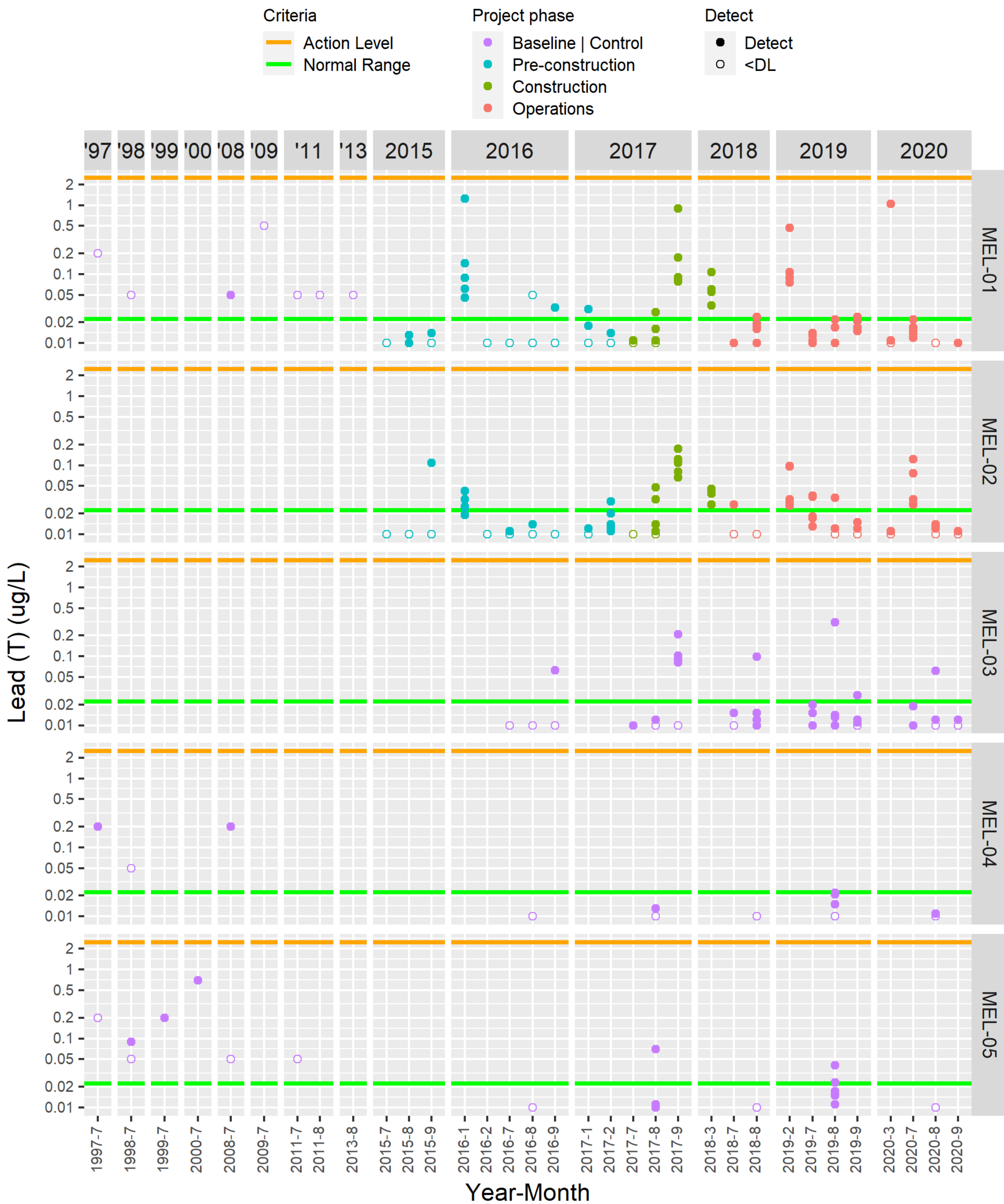


**Figure C2-39. Total lithium (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

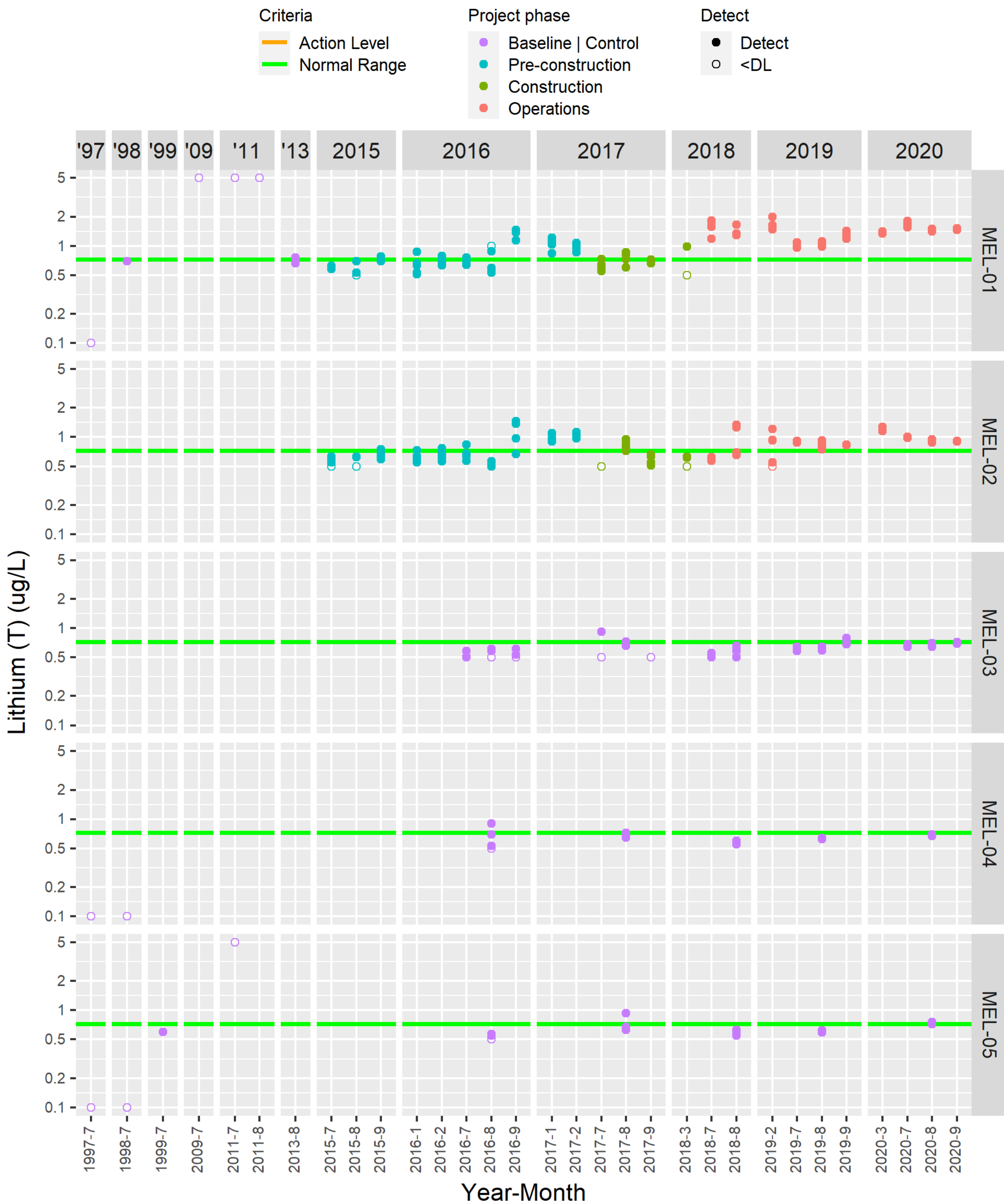


**Figure C2-40. Total manganese (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

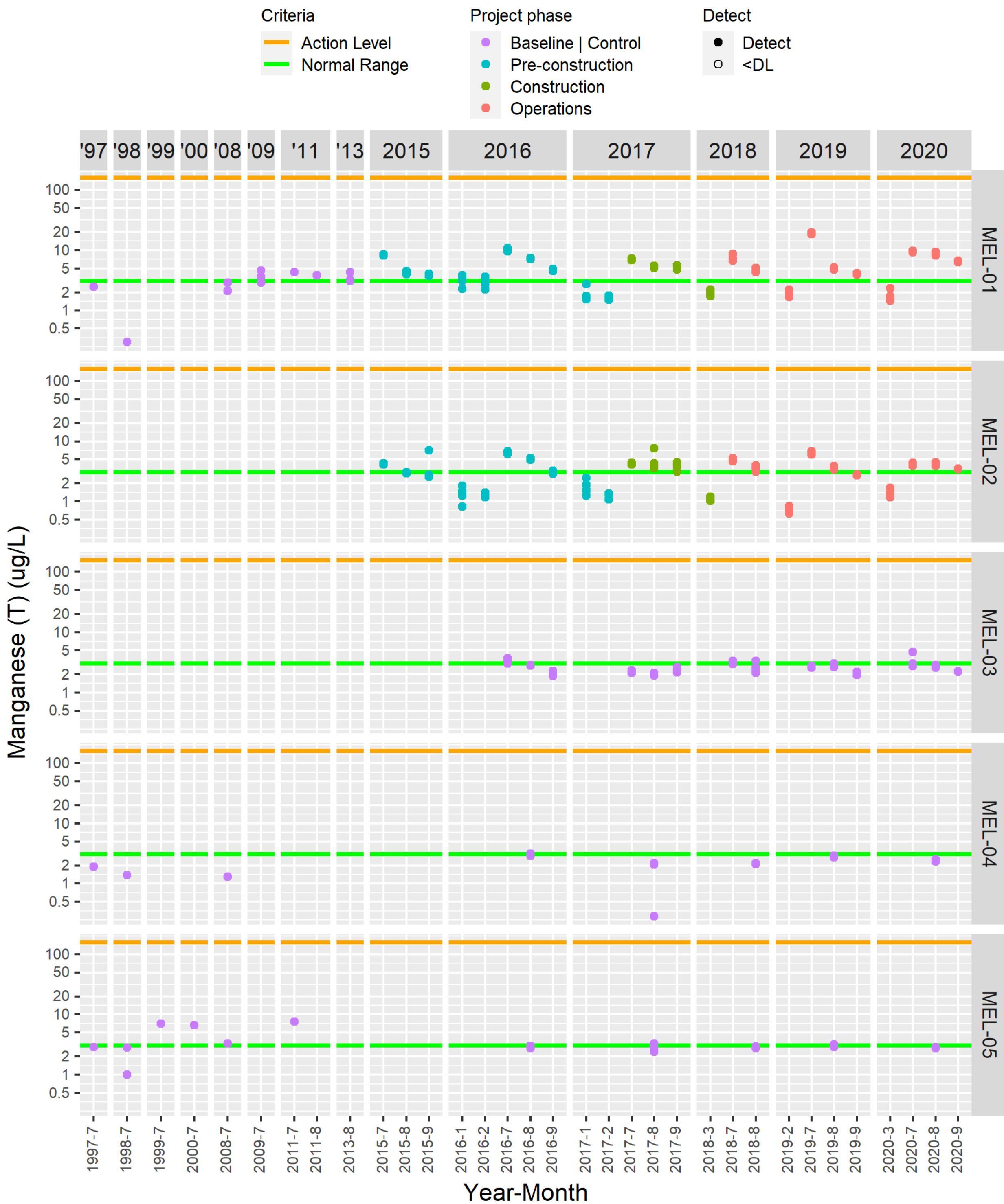


**Figure C2-41. Total mercury (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

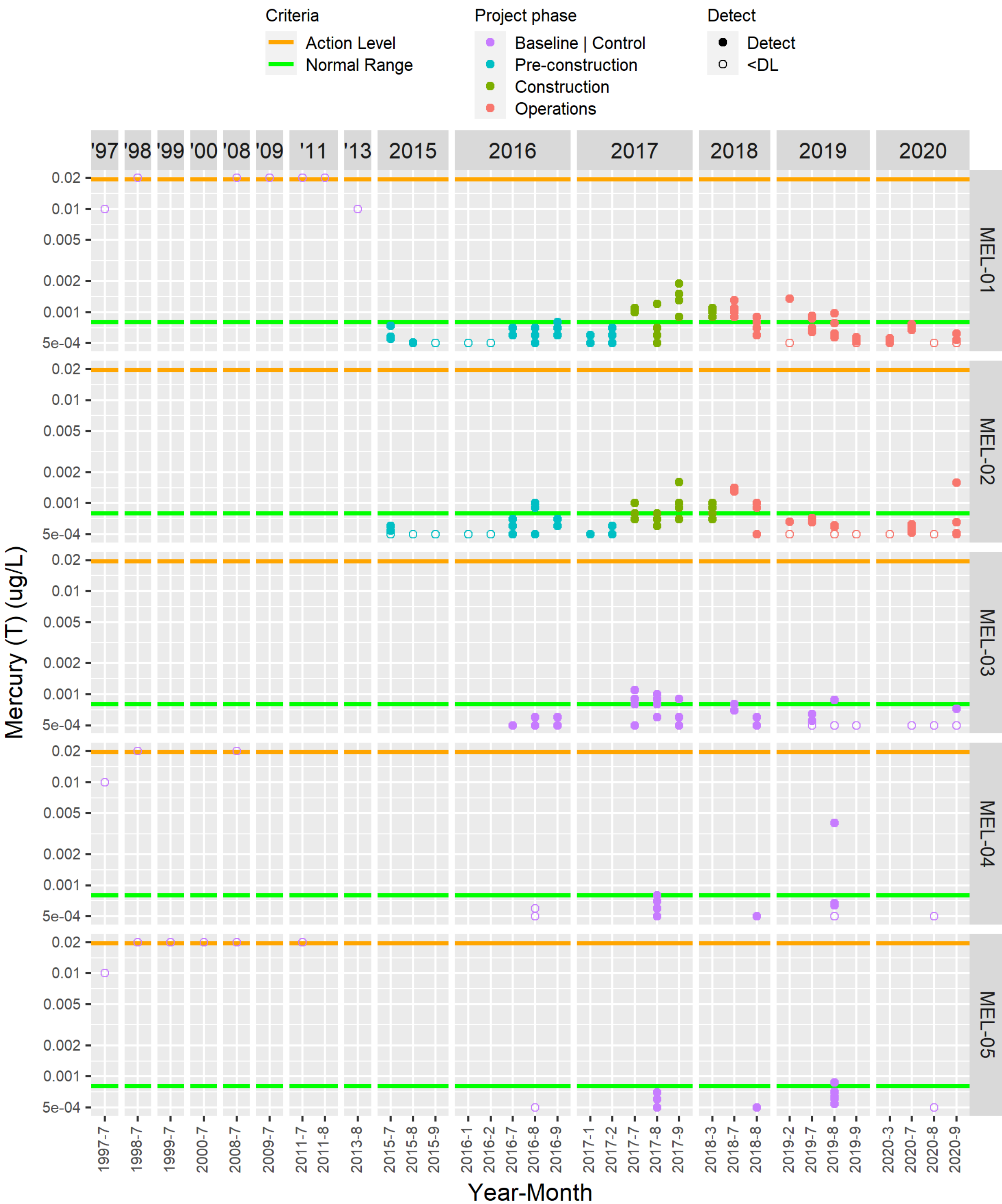
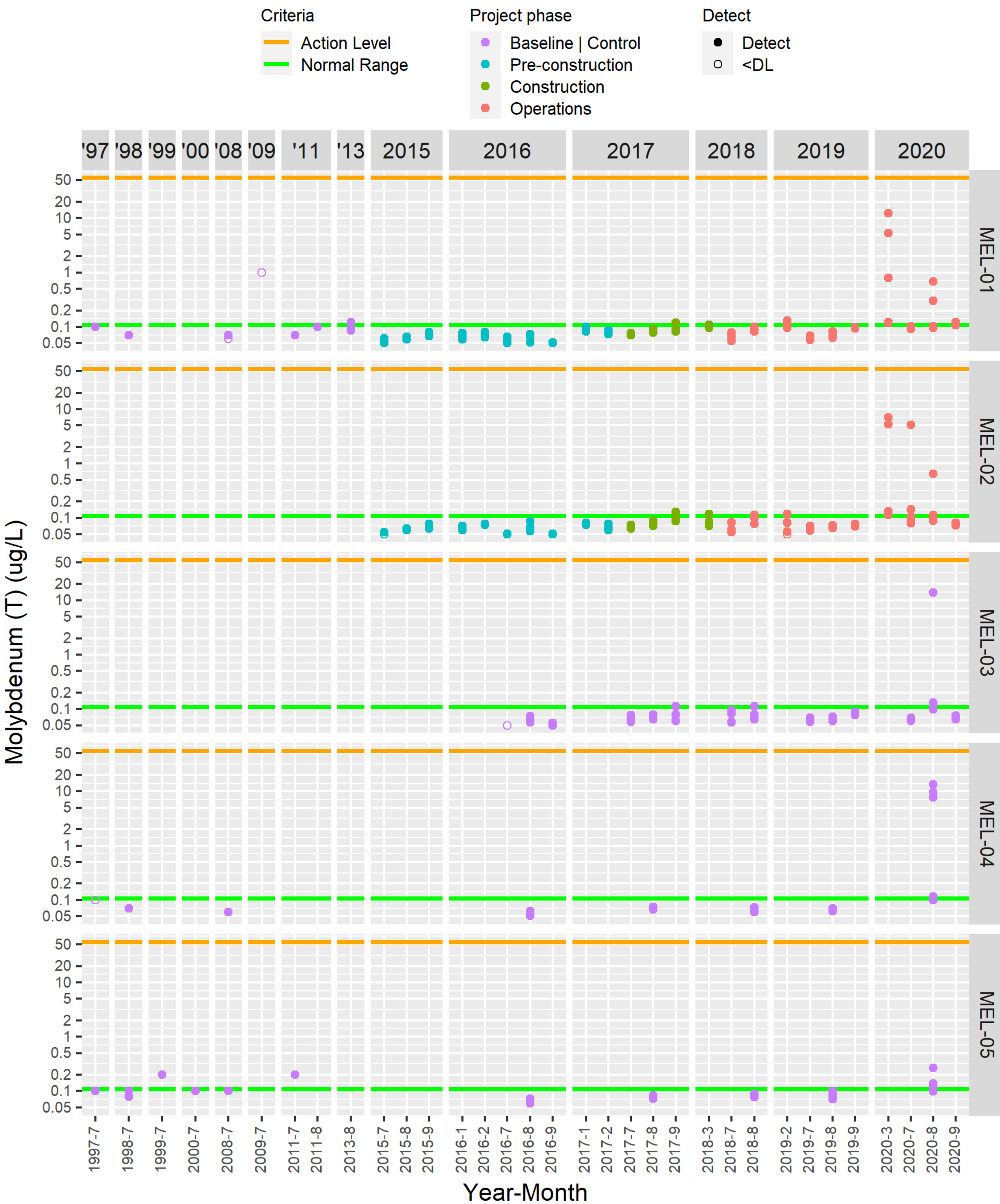


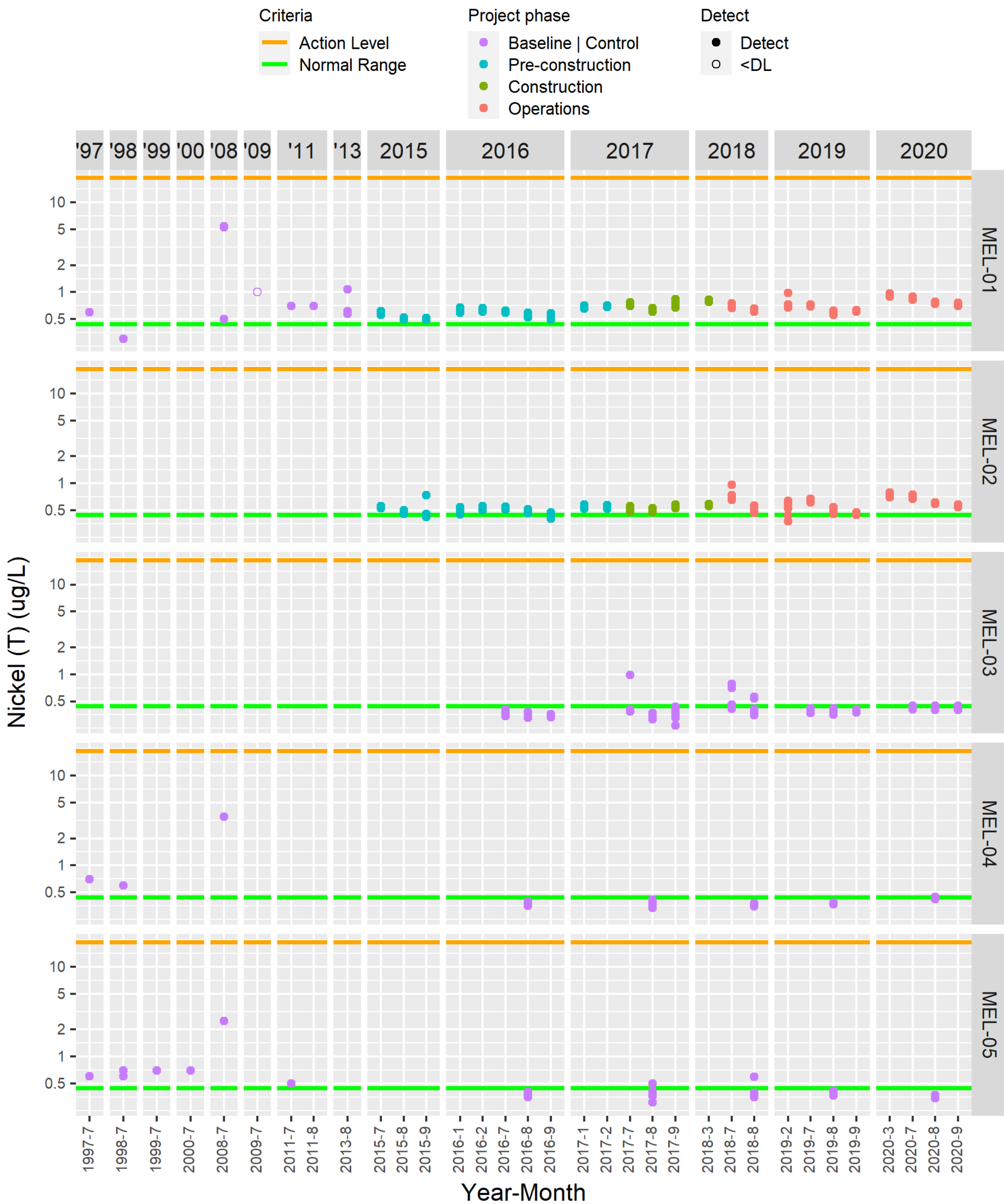
**Figure C2-42. Total molybdenum (µg/L)**

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-43. Total nickel (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

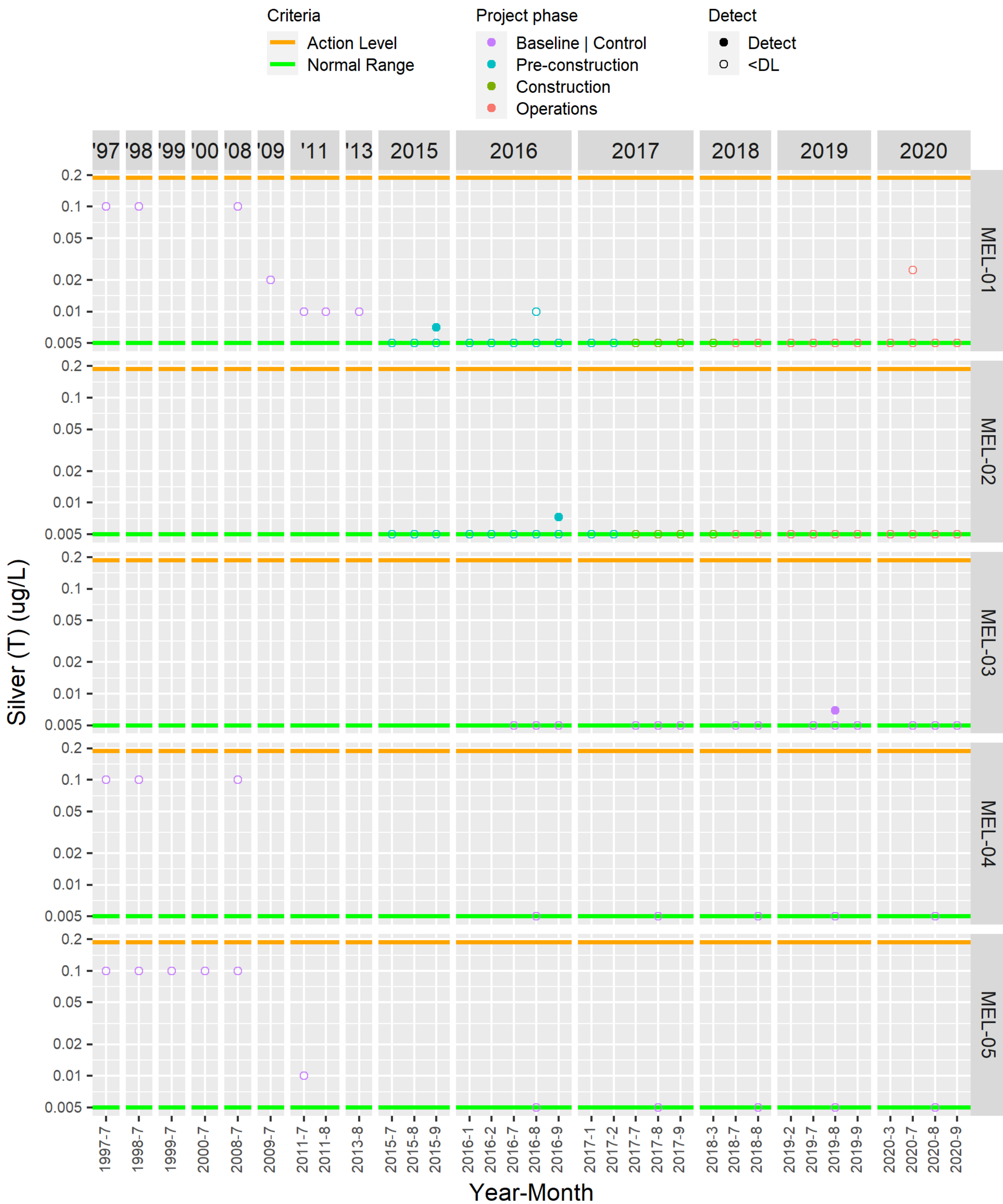


## Figure C2-44. Total selenium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

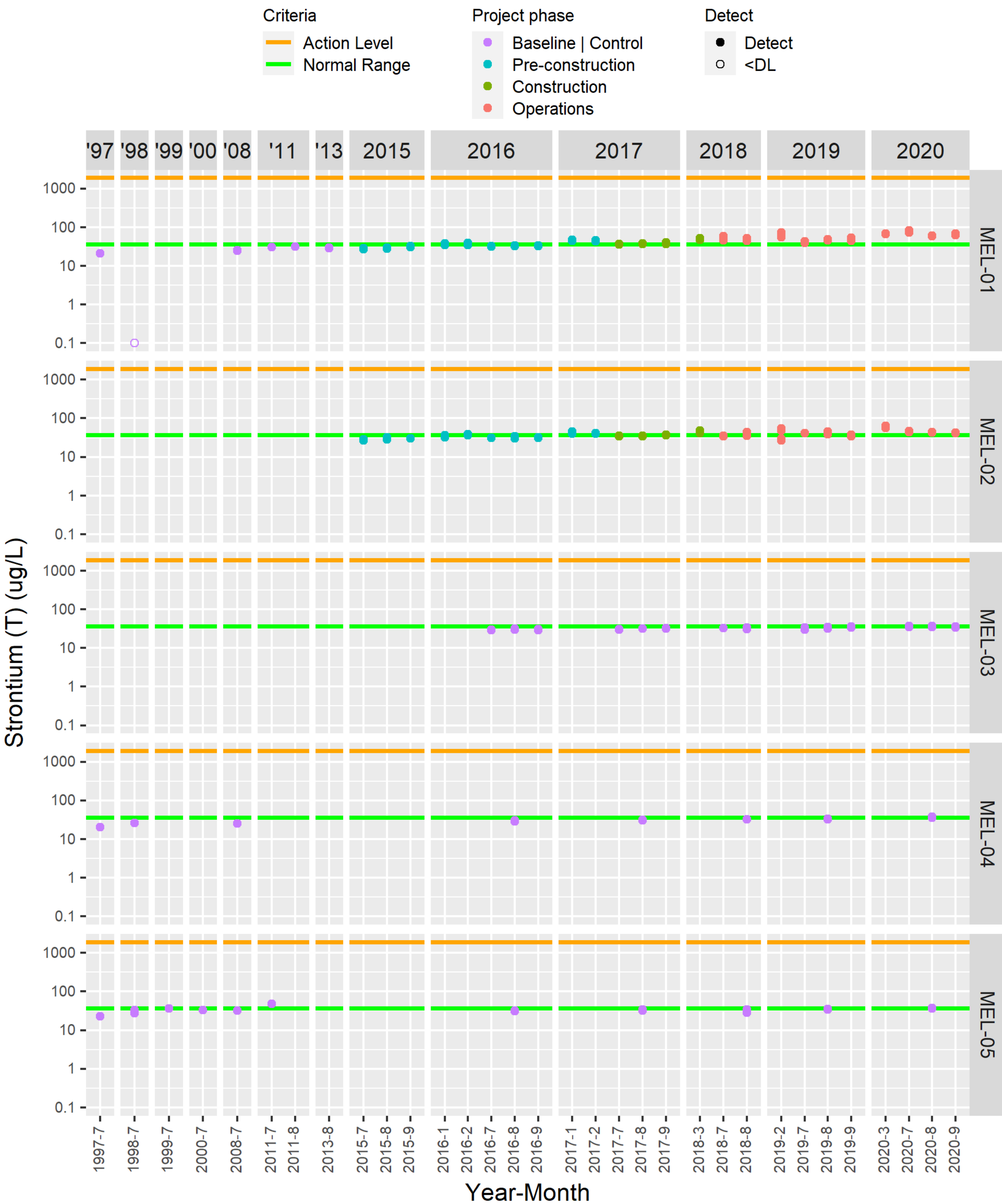
## Figure C2-45. Total silver (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for silver is equal to the current detection limit.



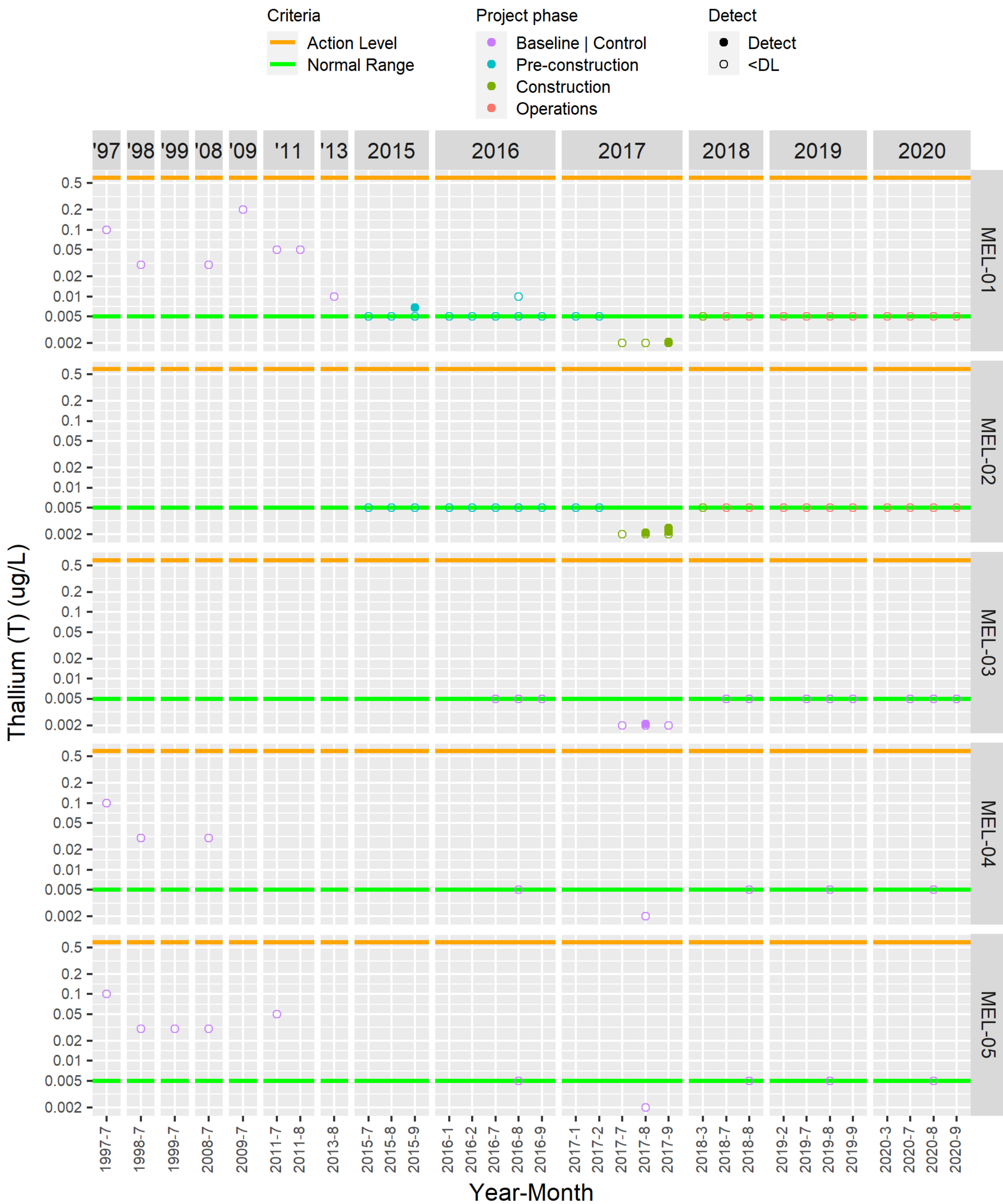
## Figure C2-46. Total strontium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



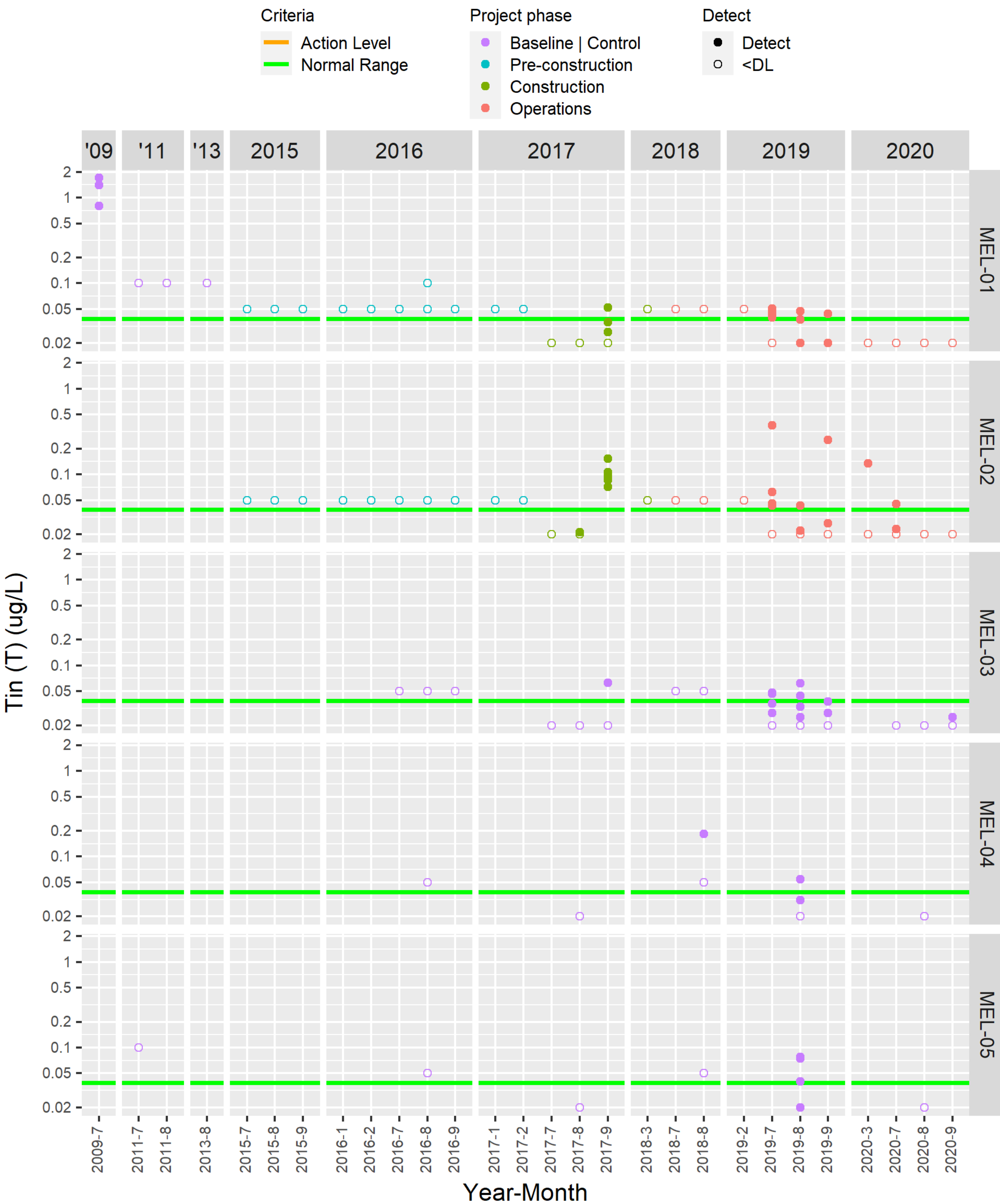
## Figure C2-47. Total thallium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for thallium is equal to the current detection limit.



## Figure C2-48. Total tin (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for tin is equal to the current detection limit.

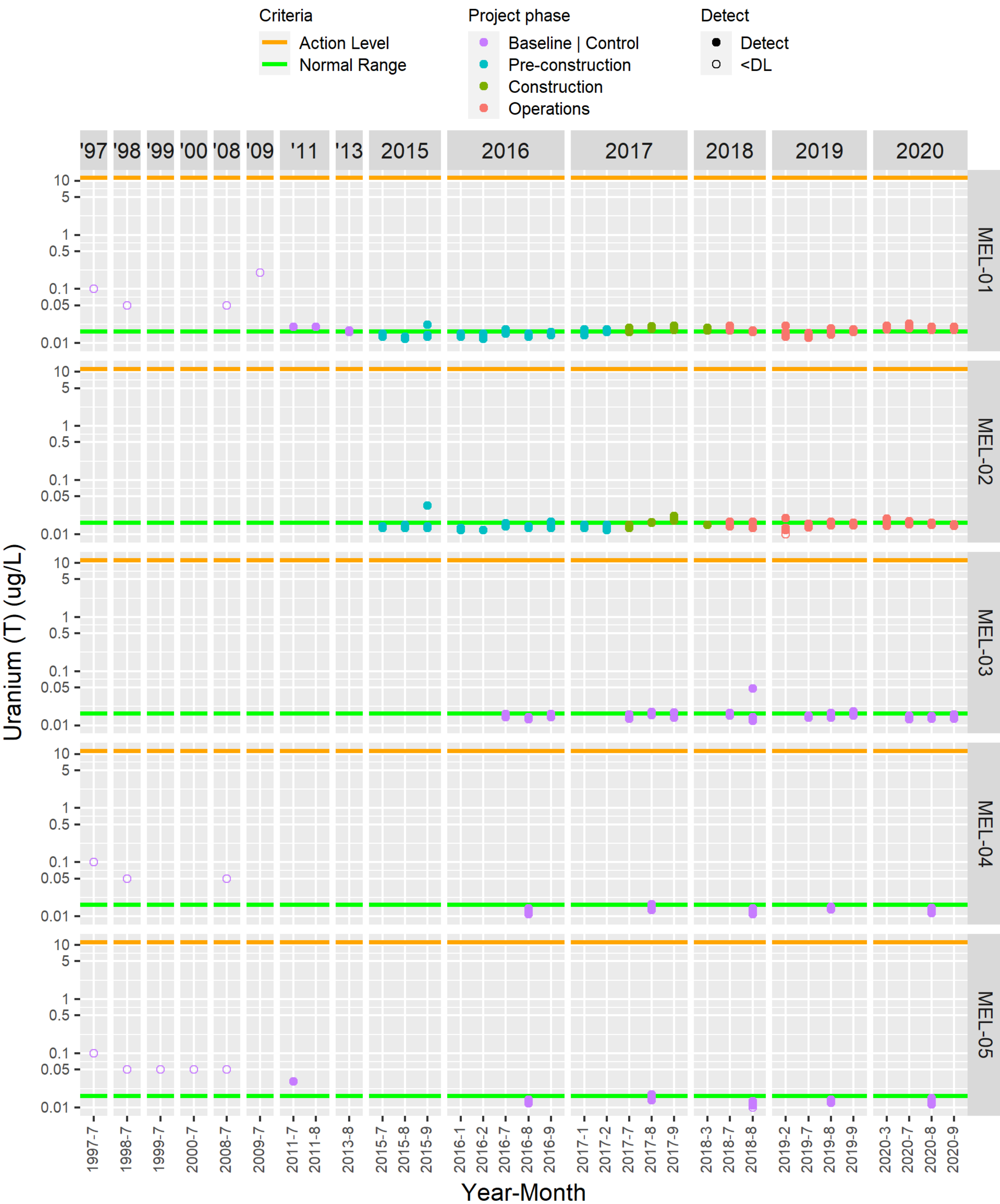


## Figure C2-49. Total titanium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).

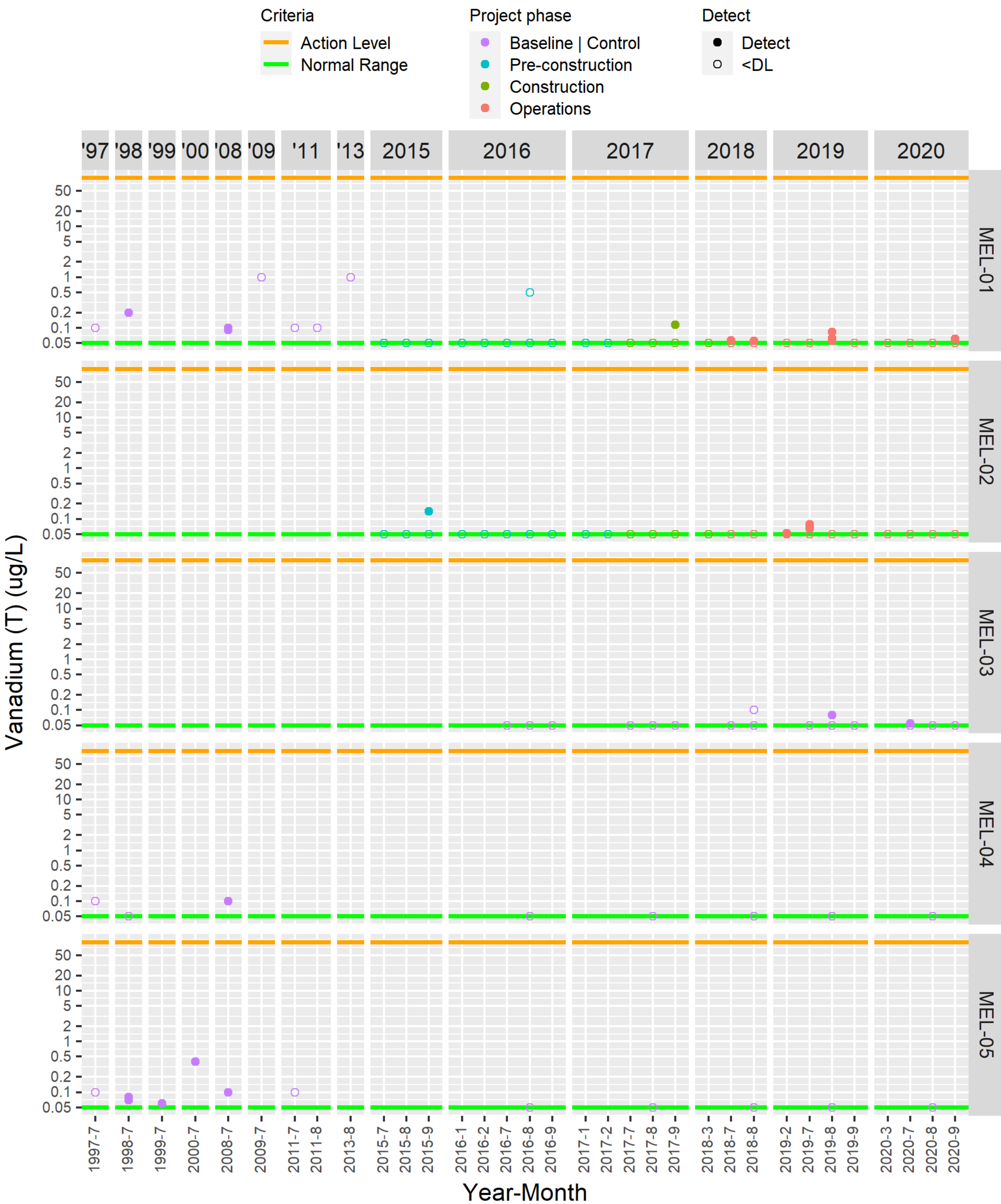
## Figure C2-50. Total uranium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



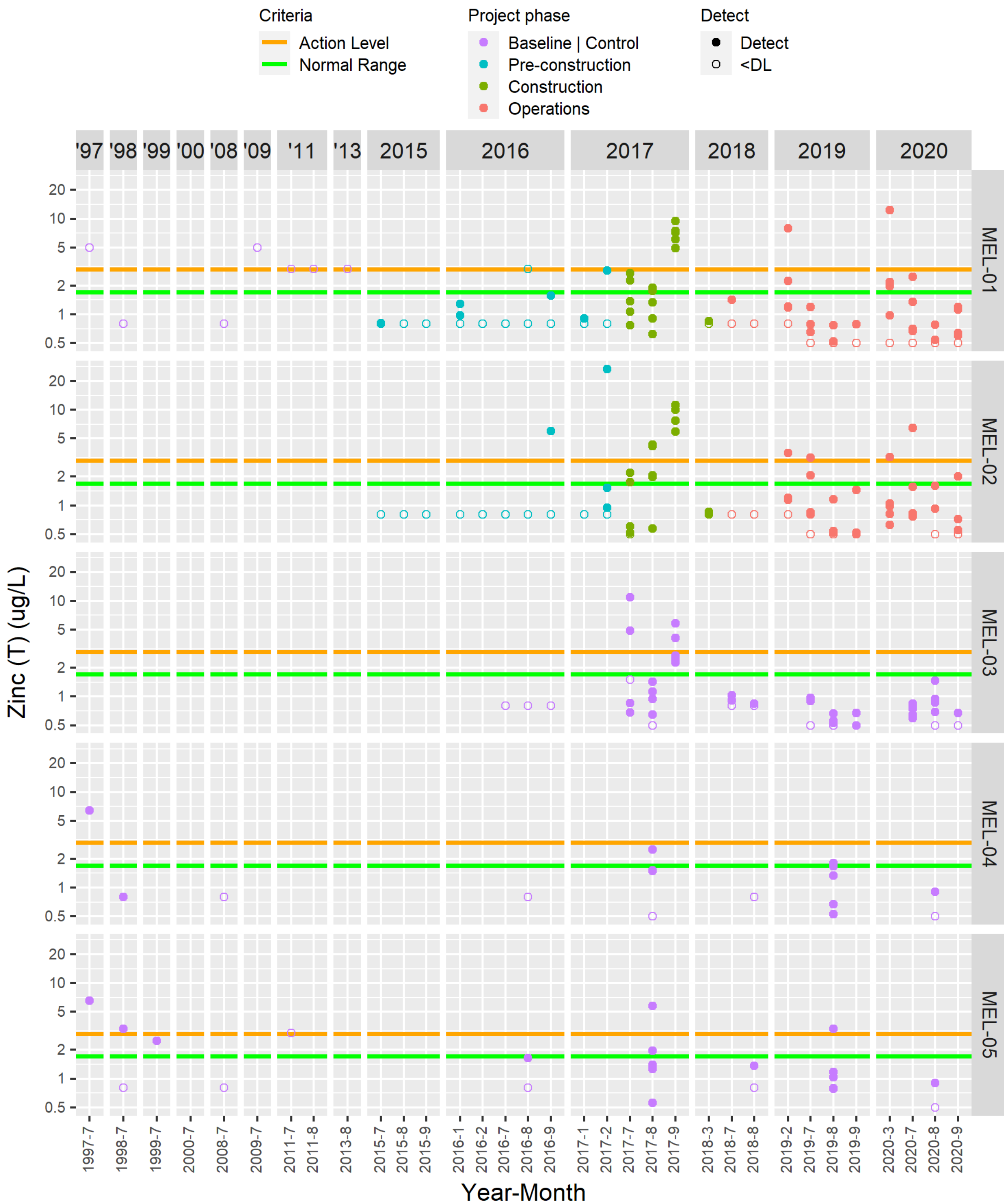
## Figure C2-51. Total vanadium (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The normal range for vanadium is equal to the current detection limit.



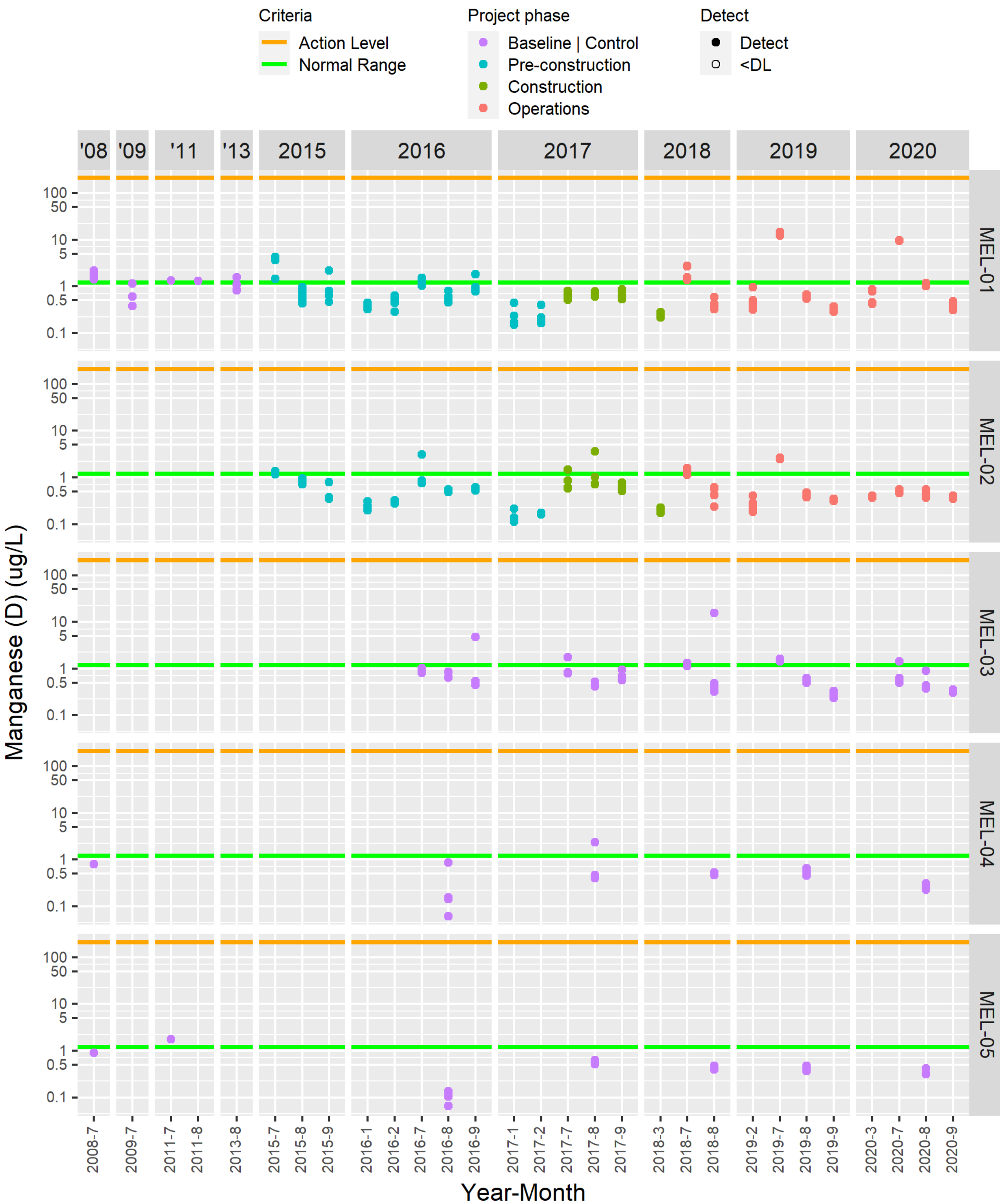
## Figure C2-52. Total zinc (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



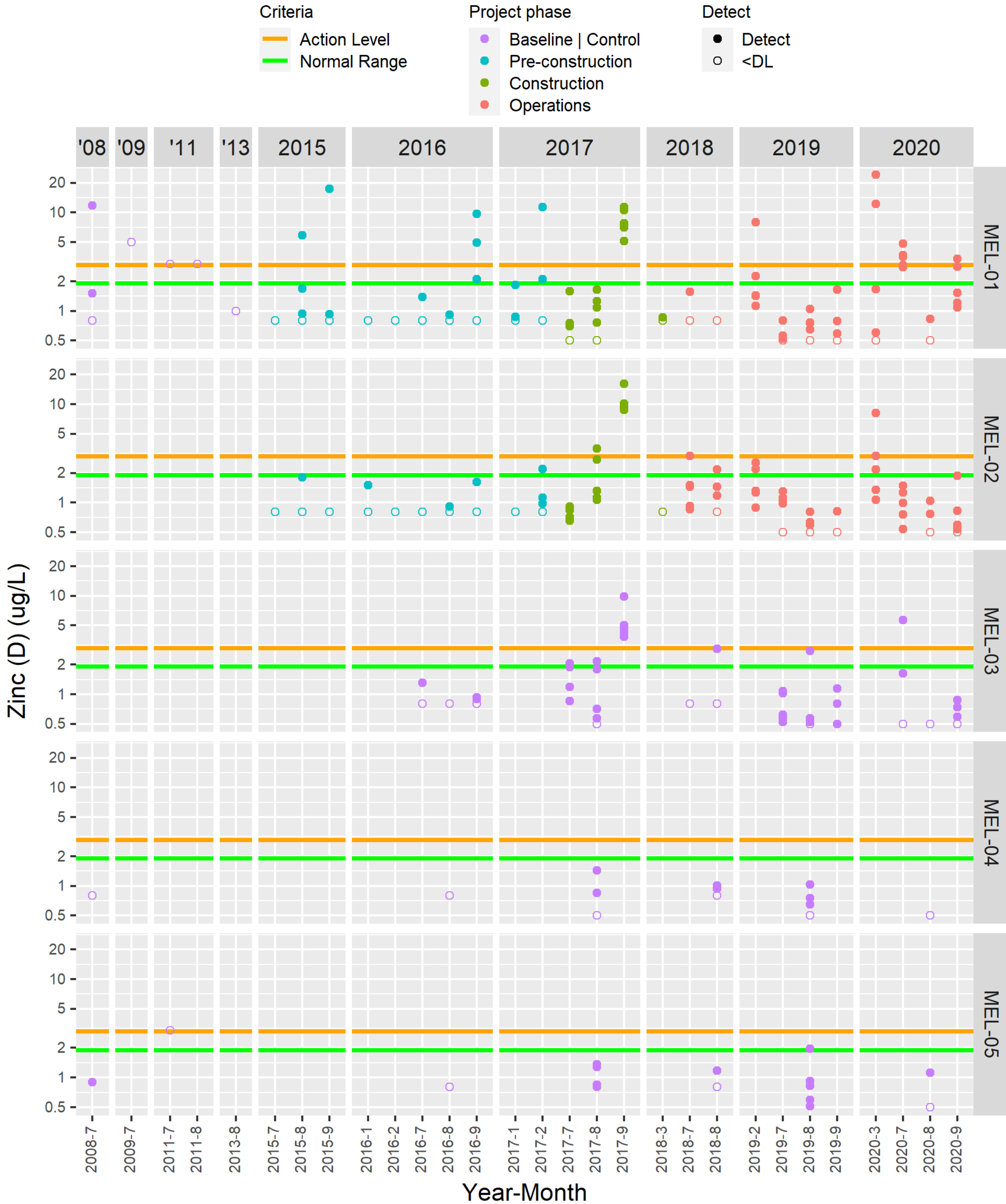
## Figure C2-53. Dissolved manganese (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01).



## Figure C2-54. Dissolved zinc (µg/L)

Notes: FEIS predictions (where applicable) represent predicted water quality at the edge of the mixing zone in the near-field area (MEL-01). The CCME guideline for dissolved zinc is hardness-dependent. The redline corresponds to the lowest calculated guideline in 2020. The sample from MEL-01 in February was below the hardness-dependent guideline of 9.6 µg/L for that sample.



# Appendix C3
# Meliadine Lake Water Chemistry Results, 2020

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | March | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Client Sample ID** | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 | MEL-02-02 | MEL-02-03 | MEL-02-05 | MEL-02-06 | MEL-02-08 |
| | **Sample Date** | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 |
| **Parameter** | **ALS Sample ID** | L2432715-1 | L2432715-2 | L2432715-3 | L2432715-4 | L2432715-5 | L2432715-6 | L2432715-7 | L2432715-8 | L2432715-9 | L2432715-10 |
| **Conventional Parameters** | **Units** | | | | | | | | | | |
| Conductivity | µs/cm | 121 | 119 | 118 | 116 | 117 | 108 | 109 | 109 | 105 | 112 |
| Hardness (as CaCO3) | - | 38.6 | 34.6 | 42.7 | 35.2 | 35.2 | 32.6 | 33.1 | 33.1 | 31.8 | 33.3 |
| pH | pH units | 7.35 | 7.33 | 7.29 | 7.27 | 7.28 | 7.29 | 7.29 | 7.34 | 7.33 | 7.37 |
| Total Suspended Solids | mg/L | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | 1.3 | *<1.0* | *<1.0* |
| Total Dissolved Solids | mg/L | 67 | 67 | 70 | 65 | 54 | 59 | 68 | 62 | 58 | 55 |
| TDS (Calculated) | mg/L | 64.5 | 59.1 | 64.2 | 60.8 | 61.3 | 56.9 | 57.6 | 56.9 | 53.9 | 59 |
| Turbidity | NTU | 0.16 | 0.31 | 0.19 | 0.23 | 0.19 | 0.22 | *<0.10* | 0.2 | 0.13 | 0.18 |
| **Anions and Nutrients** | | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 26.9 | 27.1 | 27.2 | 26.7 | 26.3 | 26.1 | 26.1 | 26.1 | 25.1 | 26.3 |
| Ammonia, Total (as N) | mg/L | 0.019 | 0.0123 | 0.0141 | 0.0148 | 0.0148 | 0.0194 | 0.0234 | 0.0153 | 0.0168 | 0.0167 |
| Bicarbonate (HCO3) | mg/L | 32.8 | 33.1 | 33.2 | 32.6 | 32.1 | 31.8 | 31.8 | 31.8 | 30.6 | 32.1 |
| Bromide (Br) | mg/L | - | - | - | - | - | - | - | - | - | - |
| Carbonate (CO3) | mg/L | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* |
| Chloride (Cl) | mg/L | 17.5 | 15.1 | 16.3 | 16.3 | 16.7 | 14.8 | 15.2 | 14.6 | 13.5 | 15.8 |
| Fluoride (F) | mg/L | 0.033 | 0.029 | 0.033 | 0.032 | 0.034 | 0.032 | 0.031 | 0.033 | 0.031 | 0.035 |
| Hydroxide (OH) | mg/L | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* |
| Ion Balance | % | 98.4 | 96.2 | 108 | 95.2 | 95.1 | 94.7 | 94.7 | 96.3 | 96.8 | 93.8 |
| Nitrate and Nitrite as N | mg/L | 0.111 | 0.0641 | 0.0386 | 0.0525 | 0.0548 | 0.028 | 0.0339 | 0.0269 | 0.039 | 0.0318 |
| Nitrate (as N) | mg/L | 0.111 | 0.047 | 0.0355 | 0.0455 | 0.0423 | 0.0259 | 0.0296 | 0.0213 | 0.0272 | 0.0236 |
| Nitrite (as N) | mg/L | *<0.0010* | 0.0171 | 0.0031 | 0.007 | 0.0126 | 0.0021 | 0.0043 | 0.0055 | 0.0117 | 0.0082 |
| Total Kjeldahl Nitrogen | mg/L | 0.305 | 0.274 | 0.257 | 0.214 | 0.221 | 0.307 | 0.235 | 0.224 | 0.268 | 0.425 |
| Total Nitrogen | mg/L | 0.416 | 0.338 | 0.295 | 0.266 | 0.276 | 0.335 | 0.269 | 0.25 | 0.307 | 0.457 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.227 | 0.239 | 0.245 | 0.222 | 0.226 | 0.259 | 0.239 | 0.245 | 0.296 | 0.265 |
| Total Dissolved Nitrogen | mg/L | 0.338 | 0.303 | 0.283 | 0.275 | 0.281 | 0.287 | 0.273 | 0.272 | 0.335 | 0.297 |
| Orthophosphate-Dissolved (as P) | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Phosphorus (P)-Total Dissolved | mg/L | 0.002 | 0.0022 | 0.002 | 0.0023 | 0.0013 | 0.0018 | 0.0027 | 0.0017 | 0.0023 | 0.0018 |
| Phosphorus (P)-Total | mg/L | 0.0053 | 0.0055 | 0.0051 | 0.0045 | 0.0049 | 0.0045 | 0.0034 | 0.0044 | 0.0039 | 0.0039 |
| Silica, Reactive (as SiO2) | mg/L | 0.616 | 0.624 | 0.597 | 0.623 | 0.595 | 0.501 | 0.425 | 0.452 | 0.409 | 0.441 |
| Sulfate (SO4) | mg/L | 6.63 | 5.87 | 6.34 | 6.23 | 6.44 | 5.7 | 5.81 | 5.69 | 5.34 | 6.1 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 4.81 | 4.61 | 4.43 | 4.42 | 4.4 | 4.04 | 4.13 | 4.07 | 3.88 | 4.13 |
| Total Organic Carbon | mg/L | 4.57 | 4.51 | 4.42 | 4.38 | 4.56 | 4.0 | 4.08 | 4.03 | 3.89 | 4.05 |
| **Total Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0021 | 0.0093 | 0.0016 | 0.0024 | 0.0046 | 0.002 | 0.0014 | 0.0015 | 0.0015 | 0.0016 |
| Antimony (Sb) | mg/L | *<0.000020* | 0.000157 | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Arsenic (As) | mg/L | 0.000483 | 0.000547 | 0.000489 | 0.000473 | 0.000486 | 0.00038 | 0.000382 | 0.000416 | 0.00039 | 0.000382 |
| Barium (Ba) | mg/L | 0.0112 | 0.012 | 0.0113 | 0.0111 | 0.0115 | 0.011 | 0.011 | 0.0112 | 0.0104 | 0.0111 |
| Beryllium (Be) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.0068 | 0.0071 | 0.007 | 0.0068 | 0.0069 | 0.0065 | 0.0065 | 0.0061 | 0.006 | 0.0065 |
| Cadmium (Cd) | mg/L | *<0.0000050* | 0.000009 | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 11.2 | 11.3 | 10.9 | 11.1 | 11.6 | 10.4 | 11 | 9.88 | 10.4 | 10.5 |
| Cesium (Cs) | mg/L | 0.0000067 | 0.0000066 | 0.0000065 | 0.0000065 | 0.0000068 | 0.000007 | 0.0000072 | 0.0000091 | 0.000007 | 0.000007 |
| Chromium (Cr) | mg/L | *<0.00010* | 0.0001 | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.000018 | 0.0000175 | 0.0000161 | 0.0000164 | 0.0000178 | 0.0000164 | 0.0000149 | 0.0000123 | 0.0000103 | 0.0000127 |
| Copper (Cu) | mg/L | 0.00124 | 0.00221 | 0.0011 | 0.0011 | 0.00104 | 0.00108 | 0.00103 | 0.00104 | 0.00107 | 0.00107 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0095 | 0.0367 | 0.0078 | 0.0086 | 0.0075 | 0.0065 | 0.0062 | 0.0059 | 0.0045 | 0.0053 |
| Lanthanum (La) | mg/L | 0.000041 | 0.000081 | 0.000039 | 0.000042 | 0.000037 | 0.000031 | 0.000028 | 0.000034 | 0.000027 | 0.00003 |
| Lead (Pb) | mg/L | 0.000011 | 0.00104 | *<0.000010* | *<0.000010* | *<0.000010* | 0.000011 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lithium (Li) | mg/L | 0.00138 | 0.0014 | 0.00138 | 0.00134 | 0.0014 | 0.00123 | 0.00127 | 0.00121 | 0.00115 | 0.00123 |
| Magnesium (Mg) | mg/L | 1.97 | 1.95 | 1.95 | 1.92 | 1.97 | 1.79 | 1.84 | 1.75 | 1.71 | 1.81 |
| Manganese (Mn) | mg/L | 0.00174 | 0.00232 | 0.00149 | 0.00158 | 0.00144 | 0.0017 | 0.00141 | 0.00124 | 0.00117 | 0.00124 |
| Mercury (Hg) | ug/L | *<0.00050* | 0.0051 | *<0.00050* | 0.0005 | 0.00056 | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.00527 | 0.000123 | 0.0122 | 0.000791 | 0.000116 | 0.00013 | 0.000132 | 0.00529 | 0.00709 | 0.000114 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Nickel (Ni) | mg/L | 0.000899 | 0.00097 | 0.000893 | 0.000901 | 0.000901 | 0.00077 | 0.000788 | 0.000759 | 0.0007 | 0.000762 |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 1.38 | 1.43 | 1.38 | 1.36 | 1.38 | 1.32 | 1.33 | 1.35 | 1.28 | 1.35 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00184 | 0.00189 | 0.00185 | 0.00182 | 0.00182 | 0.00177 | 0.00177 | 0.00183 | 0.00171 | 0.00182 |
| Selenium (Se) | mg/L | *<0.000040* | 0.000057 | 0.000068 | 0.000064 | 0.000047 | 0.000047 | 0.000053 | 0.000064 | 0.000063 | 0.000065 |
| Silicon (Si) | mg/L | 0.259 | 0.289 | 0.258 | 0.269 | 0.268 | 0.213 | 0.215 | 0.202 | 0.169 | 0.177 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 8.06 | 7.99 | 7.99 | 7.71 | 8.07 | 7.27 | 7.46 | 7.06 | 7.04 | 7.57 |
| Strontium (Sr) | mg/L | 0.0678 | 0.067 | 0.066 | 0.0666 | 0.0672 | 0.0596 | 0.0634 | 0.0567 | 0.0585 | 0.0619 |
| Sulfur (S) | mg/L | 2.09 | 2.11 | 2.04 | 2.05 | 2.18 | 1.94 | 1.99 | 2 | 1.76 | 1.87 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | 0.0000052 | 0.0000059 | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | 0.000135 | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | 0.000071 | 0.000183 | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000195 | 0.0000211 | 0.0000182 | 0.0000185 | 0.0000178 | 0.000016 | 0.0000151 | 0.0000193 | 0.0000142 | 0.0000182 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | 0.0000122 | 0.0000138 | 0.0000098 | 0.0000092 | 0.0000103 | 0.00001 | 0.0000068 | 0.0000136 | 0.0000097 | 0.000007 |
| Zinc (Zn) | mg/L | 0.00198 | 0.0123 | 0.00098 | *<0.00050* | 0.00219 | 0.00322 | 0.00082 | 0.00099 | 0.00105 | 0.00063 |
| Zirconium (Zr) | mg/L | 0.000021 | 0.000021 | 0.000012 | 0.000012 | 0.000221 | 0.000012 | 0.000187 | *<0.000010* | 0.000011 | *<0.000010* |
| **Dissolved Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.005 | 0.0042 | 0.0028 | 0.0013 | 0.0014 | 0.0012 | 0.0013 | 0.0011 | 0.0013 | 0.0012 |
| Antimony (Sb) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Arsenic (As) | mg/L | 0.000471 | 0.00044 | 0.000457 | 0.000461 | 0.000453 | 0.000374 | 0.000367 | 0.000353 | 0.000341 | 0.000378 |
| Barium (Ba) | mg/L | 0.011 | 0.0111 | 0.0111 | 0.0108 | 0.0108 | 0.0107 | 0.011 | 0.0108 | 0.0101 | 0.0113 |
| Beryllium (Be) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.0069 | 0.0069 | 0.007 | 0.0071 | 0.007 | 0.0064 | 0.0064 | 0.0065 | 0.0061 | 0.0065 |
| Cadmium (Cd) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 12.3 | 10.7 | 13.8 | 11 | 11 | 10.2 | 10.3 | 10.4 | 9.96 | 10.4 |
| Cesium (Cs) | mg/L | 0.0000068 | 0.0000063 | 0.0000063 | 0.0000068 | 0.0000066 | 0.0000068 | 0.0000075 | 0.0000076 | 0.0000068 | 0.0000078 |
| Chromium (Cr) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.0000135 | 0.0000113 | 0.0000166 | 0.0000111 | 0.0000117 | 0.0000112 | 0.0000127 | 0.000008 | 0.0000094 | 0.0000099 |

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | March | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 | MEL-02-02 | MEL-02-03 | MEL-02-05 | MEL-02-06 | MEL-02-08 |
| | Sample Date | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 | 3/21/2020 |
| **Parameter** | ALS Sample ID | L2432715-1 | L2432715-2 | L2432715-3 | L2432715-4 | L2432715-5 | L2432715-6 | L2432715-7 | L2432715-8 | L2432715-9 | L2432715-10 |
| Copper (Cu) | mg/L | 0.00122 | 0.00107 | 0.00113 | 0.00106 | 0.00105 | 0.000956 | 0.000981 | 0.000975 | 0.000959 | 0.00103 |
| Gallium (Ga) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Iron (Fe) | mg/L | 0.0066 | 0.0056 | 0.0086 | 0.0048 | 0.0048 | 0.0037 | 0.0039 | 0.0031 | 0.0027 | 0.0032 |
| Lanthanum (La) | mg/L | 0.000036 | 0.000034 | 0.000049 | 0.000033 | 0.000035 | 0.000029 | 0.000032 | 0.000027 | 0.000025 | 0.000028 |
| Lead (Pb) | mg/L | 0.000014 | <0.000010 | 0.000022 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Lithium (Li) | mg/L | 0.00136 | 0.00132 | 0.00134 | 0.00137 | 0.00134 | 0.00118 | 0.00121 | 0.00118 | 0.00113 | 0.0012 |
| Magnesium (Mg) | mg/L | 1.94 | 1.91 | 1.99 | 1.87 | 1.88 | 1.74 | 1.79 | 1.76 | 1.68 | 1.82 |
| Manganese (Mn) | mg/L | 0.000774 | 0.000422 | 0.000877 | 0.000454 | 0.000461 | 0.00039 | 0.000412 | 0.000409 | 0.000367 | 0.000378 |
| Mercury (Hg) | ug/L | <0.00050 | <0.00050 | <0.00050 | 0.00076 | <0.00050 | 0.00055 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Molybdenum (Mo) | mg/L | 0.000113 | 0.000102 | 0.000103 | 0.000111 | 0.000103 | 0.000093 | 0.000103 | 0.000104 | 0.000103 | 0.000139 |
| Nickel (Ni) | mg/L | 0.000935 | 0.000867 | 0.000877 | 0.000835 | 0.000864 | 0.000768 | 0.000765 | 0.000717 | 0.0007 | 0.000769 |
| Niobium (Nb) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Phosphorus (P) | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K) | mg/L | 1.37 | 1.35 | 1.36 | 1.33 | 1.35 | 1.31 | 1.33 | 1.33 | 1.29 | 1.37 |
| Rhenium (Re) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Rubidium (Rb) | mg/L | 0.00185 | 0.00184 | 0.00183 | 0.0018 | 0.00182 | 0.00173 | 0.00179 | 0.00178 | 0.00175 | 0.00184 |
| Selenium (Se) | mg/L | 0.000042 | <0.000040 | 0.00006 | 0.000051 | 0.000051 | <0.000040 | <0.000040 | 0.00005 | <0.000040 | 0.000048 |
| Silicon (Si) | mg/L | 0.245 | 0.258 | 0.262 | 0.268 | 0.258 | 0.212 | 0.201 | 0.191 | 0.17 | 0.193 |
| Silver (Ag) | mg/L | <0.0000050 | <0.000010 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Sodium (Na) | mg/L | 8.06 | 7.56 | 7.86 | 7.74 | 7.86 | 7.31 | 7.37 | 7.29 | 6.82 | 7.57 |
| Strontium (Sr) | mg/L | 0.0665 | 0.0663 | 0.0682 | 0.0643 | 0.0663 | 0.0596 | 0.0635 | 0.0622 | 0.0582 | 0.0648 |
| Sulfur (S) | mg/L | 2.28 | 2.06 | 2.15 | 2.13 | 2.11 | 1.92 | 2.04 | 2.13 | 1.94 | 1.98 |
| Tantalum (Ta) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Tellurium (Te) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Thallium (Tl) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Thorium (Th) | mg/L | 0.0000059 | 0.0000063 | 0.0000058 | 0.0000059 | 0.000006 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Tin (Sn) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Titanium (Ti) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Tungsten (W) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Uranium (U) | mg/L | 0.0000183 | 0.0000193 | 0.0000206 | 0.000018 | 0.0000194 | 0.0000155 | 0.0000169 | 0.0000168 | 0.0000164 | 0.0000159 |
| Vanadium (V) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Yttrium (Y) | mg/L | 0.0000191 | 0.0000127 | 0.0000384 | 0.0000112 | 0.0000126 | 0.0000094 | 0.0000084 | 0.0000103 | 0.0000063 | 0.0000097 |
| Zinc (Zn) | mg/L | 0.0122 | 0.0006 | 0.0241 | <0.00050 | 0.00166 | 0.00813 | 0.00107 | 0.00217 | 0.00296 | 0.00135 |
| Zirconium (Zr) | mg/L | 0.000063 | 0.000012 | 0.000014 | 0.000013 | 0.000013 | <0.000010 | 0.00001 | <0.000010 | <0.000010 | 0.00001 |
| **Cyanides** | | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0021 | <0.0010 | <0.0010 | <0.0010 |
| Cyanide, Total | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0024 | <0.0010 | <0.0010 | <0.0010 |
| Cyanide, Free | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0022 | <0.0010 | <0.0010 | <0.0010 |
| **Radium** | | | | | | | | | | | |
| Ra-226 | Bq/L | <0.0075 | <0.0062 | <0.0064 | <0.0059 | <0.0085 | <0.0086 | 0.0092 | <0.0031 | <0.0064 | <0.0077 |

**Notes**

*"<" indicates concentration was less than the detection limit*

"-" = Chemical not analyzed or criteria not defined.

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | **Sample Event** | **July** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Client Sample ID** | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 | MEL-02-01 | MEL-02-02 | MEL-02-03 | MEL-02-04 | MEL-02-05 |
| | **Sample Date** | 7/22/2020 | 7/22/2020 | 7/22/2020 | 7/22/2020 | 7/22/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 |
| **Parameter** | **ALS Sample ID** | L2482210-1 | L2482210-2 | L2482210-3 | L2482210-4 | L2482210-5 | L2484438-1 | L2484438-2 | L2484438-3 | L2484438-4 | L2484438-5 |
| **Conventional Parameters** | **Units** | | | | | | | | | | |
| Conductivity | µs/cm | 113 | 119 | 111 | 118 | 110 | 84.6 | 82.8 | 83 | 83.5 | 84.5 |
| Hardness (as CaCO3) | - | 29.7 | 30.5 | 29.9 | 30.6 | 29.5 | 23.8 | 23.7 | 23.6 | 24.3 | 24.2 |
| pH | pH units | 7.34 | 7.36 | 7.38 | 7.37 | 7.39 | 7.72 | 7.63 | 7.65 | 7.63 | 7.61 |
| Total Suspended Solids | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Total Dissolved Solids | mg/L | 88 | 89 | 78 | 84 | 78 | 48 | 47 | 48 | 53 | 49 |
| TDS (Calculated) | mg/L | 54.5 | 57.7 | 54.2 | 57.6 | 54.1 | 45.6 | 44.4 | 43.1 | 44.6 | 44.4 |
| Turbidity | NTU | 0.29 | 0.45 | 0.46 | 0.46 | 0.52 | 0.37 | 0.32 | 0.26 | 0.28 | 0.37 |
| **Anions and Nutrients** | | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 17.7 | 17.5 | 17.1 | 17.1 | 17 | 22.4 | 20.7 | 19.4 | 21.2 | 21.2 |
| Ammonia, Total (as N) | mg/L | 0.0124 | 0.0108 | 0.0098 | 0.0104 | 0.0104 | 0.0061 | 0.0056 | <0.0050 | <0.0050 | 0.0473 |
| Bicarbonate (HCO3) | mg/L | 21.6 | 21.4 | 20.9 | 20.9 | 20.7 | 27.3 | 25.3 | 23.7 | 25.9 | 25.9 |
| Bromide (Br) | mg/L | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Carbonate (CO3) | mg/L | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 |
| Chloride (Cl) | mg/L | 17.8 | 19.7 | 17.7 | 19.8 | 17.9 | 12 | 11.8 | 11.8 | 11.7 | 11.9 |
| Fluoride (F) | mg/L | 0.025 | 0.024 | 0.024 | 0.024 | 0.024 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 |
| Hydroxide (OH) | mg/L | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 |
| Ion Balance | % | 98.4 | 96.7 | 101 | 98.1 | 99.2 | Low EC | Low EC | Low EC | Low EC | Low EC |
| Nitrate and Nitrite as N | mg/L | 0.132 | 0.175 | 0.154 | 0.165 | 0.141 | 0.0504 | 0.0134 | 0.0091 | 0.0157 | 0.0082 |
| Nitrate (as N) | mg/L | 0.13 | 0.173 | 0.153 | 0.164 | 0.139 | 0.0504 | 0.0134 | 0.0091 | 0.0157 | 0.0082 |
| Nitrite (as N) | mg/L | 0.0011 | 0.0013 | 0.0011 | 0.0019 | 0.0012 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Kjeldahl Nitrogen | mg/L | 0.215 | 0.205 | 0.226 | 0.219 | 0.236 | 0.315 | 0.316 | 0.309 | 0.424 | 0.306 |
| Total Nitrogen | mg/L | 0.346 | 0.379 | 0.38 | 0.384 | 0.376 | 0.365 | 0.329 | 0.318 | 0.439 | 0.314 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.234 | 0.105 | 0.209 | 0.196 | 0.189 | 0.298 | 0.361 | 0.299 | 0.311 | 0.342 |
| Total Dissolved Nitrogen | mg/L | 0.366 | 0.28 | 0.364 | 0.361 | 0.33 | 0.348 | 0.375 | 0.308 | 0.326 | 0.35 |
| Orthophosphate-Dissolved (as P) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Phosphorus (P)-Total Dissolved | mg/L | 0.0024 | 0.003 | 0.0027 | <0.0010 | 0.0027 | 0.0022 | 0.0013 | 0.0018 | 0.0023 | 0.0017 |
| Phosphorus (P)-Total | mg/L | 0.0066 | 0.0065 | 0.0078 | 0.006 | 0.0066 | 0.0055 | 0.0035 | 0.0037 | 0.0049 | 0.0137 |
| Silica, Reactive (as SiO2) | mg/L | 0.438 | 0.447 | 0.425 | 0.441 | 0.394 | 0.278 | 0.286 | 0.283 | 0.309 | 0.288 |
| Sulfate (SO4) | mg/L | 5.64 | 5.97 | 5.56 | 5.94 | 5.6 | 4.41 | 4.7 | 4.33 | 4.31 | 4.28 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.4 | 3.4 | 3.4 | 3.5 | 3.8 | 4.3 | 2.7 | 3.3 | 3.1 | 3.1 |
| Total Organic Carbon | mg/L | 3.4 | 3.6 | 3.8 | 3.6 | 3.6 | 4.1 | 4 | 3.5 | 2.9 | 3.3 |
| **Total Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0084 | 0.0069 | 0.0061 | 0.0076 | 0.0073 | 0.0063 | 0.0038 | 0.0041 | 0.0049 | 0.0044 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000521 | 0.000524 | 0.000542 | 0.000504 | 0.000472 | 0.000567 | 0.000549 | 0.00051 | 0.000536 | 0.0005 |
| Barium (Ba) | mg/L | 0.00864 | 0.00911 | 0.00877 | 0.00884 | 0.00836 | 0.00883 | 0.00877 | 0.00872 | 0.00905 | 0.00877 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | 0.0075 | 0.008 | 0.0074 | 0.0081 | 0.0075 | 0.007 | 0.0064 | 0.0061 | 0.0058 | 0.0057 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000071 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 8.9 | 9.26 | 8.94 | 9.39 | 8.82 | 7.48 | 7.46 | 7.53 | 7.43 | 7.41 |
| Cesium (Cs) | mg/L | 0.0000106 | 0.0000129 | 0.0000106 | 0.0000118 | 0.00001 | 0.0000065 | 0.0000073 | 0.0000071 | 0.0000086 | 0.0000083 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00011 | 0.00019 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000358 | 0.0000402 | 0.0000322 | 0.0000315 | 0.0000377 | 0.0000213 | 0.0000179 | 0.0000233 | 0.000022 | 0.000022 |
| Copper (Cu) | mg/L | 0.000858 | 0.000864 | 0.000829 | 0.0008 | 0.000866 | 0.000888 | 0.000808 | 0.00161 | 0.000807 | 0.000842 |
| Gallium (Ga) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Iron (Fe) | mg/L | 0.0299 | 0.0289 | 0.0293 | 0.0292 | 0.0297 | 0.0229 | 0.021 | 0.0233 | 0.0241 | 0.0244 |
| Lanthanum (La) | mg/L | 0.000042 | 0.00004 | 0.000038 | 0.000036 | 0.000038 | 0.00003 | 0.000029 | 0.000033 | 0.000033 | 0.000031 |
| Lead (Pb) | mg/L | 0.000017 | 0.000022 | 0.000015 | 0.000012 | 0.000014 | 0.000123 | 0.000076 | 0.000027 | 0.000032 | 0.000032 |
| Lithium (Li) | mg/L | 0.00161 | 0.00178 | 0.00156 | 0.00181 | 0.00159 | 0.00101 | 0.00101 | 0.001 | 0.00098 | 0.001 |
| Magnesium (Mg) | mg/L | 1.73 | 1.81 | 1.7 | 1.81 | 1.71 | 1.37 | 1.33 | 1.34 | 1.34 | 1.34 |
| Manganese (Mn) | mg/L | 0.00947 | 0.00982 | 0.00924 | 0.00972 | 0.00957 | 0.00402 | 0.00386 | 0.00439 | 0.00434 | 0.00442 |
| Mercury (Hg) | ug/L | 0.0007 | 0.00072 | 0.00067 | 0.00072 | 0.00076 | 0.00058 | 0.00052 | 0.00054 | 0.00062 | 0.00059 |
| Molybdenum (Mo) | mg/L | 0.000102 | 0.000091 | 0.000096 | 0.000094 | 0.000091 | 0.000105 | 0.000143 | 0.000079 | 0.000094 | 0.00519 |
| Niobium (Nb) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Nickel (Ni) | mg/L | 0.000823 | 0.000854 | 0.000888 | 0.000833 | 0.000849 | 0.000726 | 0.000678 | 0.000687 | 0.000666 | 0.000748 |
| Phosphorus (P) | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K) | mg/L | 1.13 | 1.18 | 1.12 | 1.17 | 1.13 | 1.03 | 0.996 | 1 | 0.992 | 0.991 |
| Rhenium (Re) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Rubidium (Rb) | mg/L | 0.00146 | 0.00153 | 0.00147 | 0.00149 | 0.00151 | 0.00147 | 0.00142 | 0.00141 | 0.00141 | 0.00139 |
| Selenium (Se) | mg/L | <0.000040 | <0.000040 | <0.000040 | <0.000040 | <0.000040 | 0.000046 | 0.000065 | 0.000048 | <0.000040 | 0.000042 |
| Silicon (Si) | mg/L | 0.206 | 0.207 | 0.351 | 0.342 | 0.216 | 0.149 | 0.134 | 0.134 | 0.143 | 0.146 |
| Silver (Ag) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.000025 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Sodium (Na) | mg/L | 8.98 | 9.55 | 8.67 | 9.43 | 8.87 | 5.98 | 5.73 | 5.72 | 5.77 | 5.66 |
| Strontium (Sr) | mg/L | 0.0738 | 0.0821 | 0.0722 | 0.0819 | 0.0736 | 0.0455 | 0.0453 | 0.0443 | 0.0466 | 0.0457 |
| Sulfur (S) | mg/L | 1.93 | 1.92 | 2.08 | 1.99 | 1.67 | 1.4 | 1.45 | 1.57 | 1.38 | 1.39 |
| Tantalum (Ta) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Tellurium (Te) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Thallium (Tl) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Thorium (Th) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Tin (Sn) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.000023 | <0.000020 | <0.000020 | <0.000020 | 0.000045 |
| Titanium (Ti) | mg/L | 0.000098 | 0.000091 | 0.000099 | 0.000093 | 0.000093 | 0.000125 | 0.000084 | 0.000074 | 0.000082 | 0.000084 |
| Tungsten (W) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Uranium (U) | mg/L | 0.0000192 | 0.0000227 | 0.0000194 | 0.0000186 | 0.0000194 | 0.0000166 | 0.0000165 | 0.0000172 | 0.0000174 | 0.0000151 |
| Vanadium (V) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Yttrium (Y) | mg/L | 0.0000132 | 0.0000107 | 0.0000118 | 0.000009 | 0.0000112 | 0.000007 | <0.0000050 | 0.0000092 | 0.0000101 | 0.0000054 |
| Zinc (Zn) | mg/L | 0.0007 | <0.00050 | 0.00247 | 0.00067 | 0.00135 | 0.0236 | 0.00157 | 0.00645 | 0.00077 | 0.00083 |
| Zirconium (Zr) | mg/L | 0.000011 | <0.000010 | <0.000010 | 0.000013 | 0.000013 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.009 | 0.008 | 0.0071 | 0.0079 | 0.0069 | 0.0018 | 0.0017 | 0.0021 | 0.0017 | 0.0014 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000464 | 0.000483 | 0.000495 | 0.000485 | 0.000478 | 0.000499 | 0.000457 | 0.000431 | 0.000509 | 0.000487 |
| Barium (Ba) | mg/L | 0.00881 | 0.00889 | 0.0088 | 0.00872 | 0.00877 | 0.00799 | 0.00839 | 0.00829 | 0.00877 | 0.00831 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | 0.0096 | 0.0089 | 0.0079 | 0.0083 | 0.0077 | 0.0053 | 0.0052 | 0.0054 | 0.0056 | 0.0054 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 9.09 | 9.21 | 9.13 | 9.26 | 9.04 | 7.37 | 7.34 | 7.31 | 7.47 | 7.54 |
| Cesium (Cs) | mg/L | 0.0000113 | 0.0000119 | 0.0000124 | 0.0000121 | 0.0000112 | 0.0000079 | 0.0000073 | 0.0000076 | 0.0000081 | 0.0000078 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00016 | 0.00012 |
| Cobalt (Co) | mg/L | 0.0000378 | 0.00004 | 0.0000387 | 0.0000394 | 0.0000386 | 0.0000098 | 0.0000095 | 0.0000091 | 0.0000087 | 0.000008 |

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | July | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Client Sample ID** | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 | MEL-02-01 | MEL-02-02 | MEL-02-03 | MEL-02-04 | MEL-02-05 |
| | **Sample Date** | 7/22/2020 | 7/22/2020 | 7/22/2020 | 7/22/2020 | 7/22/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 |
| **Parameter** | **ALS Sample ID** | L2482210-1 | L2482210-2 | L2482210-3 | L2482210-4 | L2482210-5 | L2484438-1 | L2484438-2 | L2484438-3 | L2484438-4 | L2484438-5 |
| Copper (Cu) | mg/L | 0.000832 | 0.00083 | 0.000845 | 0.000792 | 0.000839 | 0.000776 | 0.000776 | 0.000787 | 0.000798 | 0.000761 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0369 | 0.0359 | 0.037 | 0.036 | 0.0361 | 0.0093 | 0.0081 | 0.0088 | 0.0087 | 0.008 |
| Lanthanum (La) | mg/L | 0.000037 | 0.000039 | 0.00004 | 0.000038 | 0.000039 | 0.000016 | 0.000016 | 0.000015 | 0.000016 | 0.000016 |
| Lead (Pb) | mg/L | 0.00002 | 0.000025 | 0.000018 | 0.000017 | 0.00002 | 0.000016 | 0.000013 | 0.000016 | 0.000013 | 0.000011 |
| Lithium (Li) | mg/L | 0.00173 | 0.00184 | 0.00162 | 0.00185 | 0.00167 | 0.00099 | 0.00098 | 0.00097 | 0.00099 | 0.001 |
| Magnesium (Mg) | mg/L | 1.71 | 1.81 | 1.72 | 1.81 | 1.69 | 1.31 | 1.31 | 1.31 | 1.36 | 1.31 |
| Manganese (Mn) | mg/L | 0.00948 | 0.00982 | 0.00939 | 0.00978 | 0.00938 | 0.000555 | 0.000507 | 0.000465 | 0.000553 | 0.000518 |
| Mercury (Hg) | ug/L | 0.00056 | 0.00055 | 0.00053 | 0.00078 | *<0.00050* | *<0.00050* | 0.00056 | 0.00052 | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.000095 | 0.000113 | 0.000108 | 0.000112 | 0.000101 | 0.000101 | 0.000072 | 0.000072 | 0.00008 | 0.000078 |
| Nickel (Ni) | mg/L | 0.000812 | 0.000837 | 0.000829 | 0.000815 | 0.000808 | 0.00063 | 0.000643 | 0.000658 | 0.000656 | 0.000655 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 1.09 | 1.13 | 1.09 | 1.12 | 1.08 | 0.984 | 0.984 | 0.986 | 1.02 | 0.979 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00144 | 0.00151 | 0.00149 | 0.00149 | 0.00145 | 0.00143 | 0.0014 | 0.0014 | 0.00141 | 0.00141 |
| Selenium (Se) | mg/L | 0.000052 | *<0.000040* | *<0.000040* | 0.000056 | *<0.000040* | 0.000046 | 0.000043 | 0.000042 | 0.000049 | *<0.000040* |
| Silicon (Si) | mg/L | 0.22 | 0.218 | 0.533 | 0.42 | 0.231 | 0.14 | 0.15 | 0.144 | 0.153 | 0.143 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 7.94 | 8.55 | 8.06 | 8.69 | 7.95 | 5.86 | 5.74 | 5.68 | 5.95 | 5.57 |
| Strontium (Sr) | mg/L | 0.0668 | 0.0728 | 0.0654 | 0.0759 | 0.0645 | 0.0444 | 0.0444 | 0.0436 | 0.0437 | 0.0449 |
| Sulfur (S) | mg/L | 2.19 | 1.95 | 1.82 | 2.02 | 1.98 | 1.5 | 1.53 | 1.69 | 1.66 | 1.6 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | 0.0000054 | *<0.0000050* | 0.0000053 | 0.000005 | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | 0.000119 | 0.000109 | 0.000102 | 0.000119 | 0.000151 | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000238 | 0.000022 | 0.0000236 | 0.000025 | 0.000022 | 0.0000175 | 0.0000182 | 0.0000185 | 0.0000166 | 0.0000173 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.0000050* | *<0.000050* | *<0.000050* | *<0.0000050* | *<0.0000050* |
| Yttrium (Y) | mg/L | 0.0000126 | 0.0000087 | 0.0000144 | 0.0000138 | 0.0000158 | 0.0000077 | 0.000008 | 0.0000101 | 0.0000069 | 0.0000053 |
| Zinc (Zn) | mg/L | 0.00369 | 0.0048 | 0.00357 | 0.00279 | 0.00292 | 0.00076 | 0.00054 | 0.00149 | 0.00099 | 0.00127 |
| Zirconium (Zr) | mg/L | 0.000013 | 0.000012 | 0.000011 | *<0.000010* | 0.000014 | *<0.000010* | *<0.000010* | 0.00001 | *<0.000010* | *<0.000010* |
| **Cyanides** | | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Total | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Free | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| **Radium** | | | | | | | | | | | |
| Ra-226 | Bq/L | *<0.030* | *<0.027* | *<0.025* | *<0.021* | 0.022 | - | - | - | - | - |

**Notes**

*"<" indicates concentration was less than the detection limit*

"-" = Chemical not analyzed or criteria not defined.

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | July | | | | | August | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-03-01 | MEL-03-02 | MEL-03-03 | MEL-03-04 | MEL-03-05 | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 |
| | Sample Date | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 8/15/2020 | 8/15/2020 | 8/15/2020 | 8/15/2020 | 8/15/2020 |
| Parameter | ALS Sample ID | L2484438-6 | L2484438-7 | L2484438-8 | L2484438-9 | L2484438-10 | L2492144-1 | L2492144-2 | L2492144-3 | L2492144-4 | L2492144-5 |
| **Conventional Parameters** | **Units** | | | | | | | | | | |
| Conductivity | µs/cm | 71.1 | 70.2 | 71 | 69.9 | 68.7 | 104 | 103 | 104 | 103 | 102 |
| Hardness (as CaCO3) | - | 20.8 | 20.7 | 20.7 | 20.9 | 20.6 | 28.2 | 28 | 27.9 | 28.5 | 27.8 |
| pH | pH units | 7.62 | 7.65 | 7.63 | 7.62 | 7.3 | 7.46 | 7.45 | 7.46 | 7.45 | 7.45 |
| Total Suspended Solids | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 1.3 | <1.0 | <1.0 | <1.0 |
| Total Dissolved Solids | mg/L | 55 | 54 | 50 | 47 | 50 | 64 | 66 | 53 | 63 | 59 |
| TDS (Calculated) | mg/L | 37.4 | 36.7 | 37.4 | 37.7 | 35.8 | 55.1 | 55.3 | 55.3 | 55.2 | 54.4 |
| Turbidity | NTU | 0.17 | 0.23 | 0.22 | 0.24 | 0.21 | 0.66 | 0.59 | 0.34 | 0.67 | 0.56 |
| **Anions and Nutrients** | | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 20 | 19.2 | 20.5 | 20.5 | 16.3 | 20.5 | 20.6 | 20.6 | 20.3 | 20.3 |
| Ammonia, Total (as N) | mg/L | <0.0050 | 0.0064 | 0.0076 | 0.0062 | 0.0156 | 0.0145 | 0.0389 | 0.0135 | 0.0265 | 0.0305 |
| Bicarbonate (HCO3) | mg/L | 24.4 | 23.4 | 25 | 25 | 19.9 | 25 | 25.1 | 25.1 | 24.8 | 24.8 |
| Bromide (Br) | mg/L | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Carbonate (CO3) | mg/L | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 |
| Chloride (Cl) | mg/L | 8.96 | 8.75 | 8.79 | 8.87 | 9.26 | 17.9 | 17.9 | 18 | 17.9 | 17.7 |
| Fluoride (F) | mg/L | 0.026 | 0.025 | 0.025 | 0.025 | 0.027 | 0.028 | 0.028 | 0.028 | 0.028 | 0.028 |
| Hydroxide (OH) | mg/L | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 |
| Ion Balance | % | Low EC | Low EC | Low EC | Low EC | Low EC | 89 | 89.9 | 88.5 | 90.7 | 88.9 |
| Nitrate and Nitrite as N | mg/L | 0.0093 | <0.0051 | 0.0059 | 0.0116 | 0.0271 | 0.012 | 0.0095 | 0.012 | 0.0109 | 0.0092 |
| Nitrate (as N) | mg/L | 0.0093 | <0.0050 | 0.0059 | 0.0116 | 0.0271 | 0.012 | 0.0095 | 0.012 | 0.0109 | 0.0092 |
| Nitrite (as N) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Kjeldahl Nitrogen | mg/L | 0.152 | 0.201 | 0.191 | 0.18 | 0.244 | 0.246 | 0.304 | 0.196 | 0.255 | 0.243 |
| Total Nitrogen | mg/L | 0.161 | 0.201 | 0.197 | 0.192 | 0.271 | 0.258 | 0.313 | 0.208 | 0.266 | 0.252 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.16 | 0.215 | 0.148 | 0.178 | 0.208 | 0.198 | 0.232 | 0.108 | 0.219 | 0.209 |
| Total Dissolved Nitrogen | mg/L | 0.169 | 0.215 | 0.154 | 0.19 | 0.235 | 0.21 | 0.242 | 0.12 | 0.23 | 0.219 |
| Orthophosphate-Dissolved (as P) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Phosphorus (P)-Total Dissolved | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0046 | 0.0041 | 0.0036 | 0.0032 | 0.0029 |
| Phosphorus (P)-Total | mg/L | 0.0039 | <0.0010 | 0.0031 | 0.0026 | 0.0033 | 0.01 | 0.0076 | 0.0097 | 0.0066 | 0.0087 |
| Silica, Reactive (as SiO2) | mg/L | 0.202 | 0.206 | 0.21 | 0.204 | 0.208 | 0.327 | 0.319 | 0.329 | 0.331 | 0.327 |
| Sulfate (SO4) | mg/L | 3.45 | 3.53 | 3.36 | 3.43 | 3.55 | 5.84 | 5.8 | 5.85 | 5.81 | 5.76 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 1.4 | 1.3 | 1.4 | 1.4 | 1.3 | 3.78 | 3.56 | 3.42 | 3.73 | 3.39 |
| Total Organic Carbon | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 3.4 | 3.39 | 3.42 | 3.62 | 3.31 |
| **Total Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0035 | 0.0028 | 0.0023 | 0.0024 | 0.0074 | 0.0045 | 0.0033 | 0.0037 | 0.0033 | 0.0045 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000288 | 0.000254 | 0.000241 | 0.000296 | 0.000274 | 0.000512 | 0.00051 | 0.000522 | 0.0005 | 0.000498 |
| Barium (Ba) | mg/L | 0.00787 | 0.00766 | 0.00791 | 0.00782 | 0.00826 | 0.00866 | 0.00827 | 0.00844 | 0.00835 | 0.00814 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0067 | 0.0068 | 0.0071 | 0.0071 | 0.0069 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 6.73 | 6.85 | 6.78 | 6.63 | 6.98 | 8.23 | 8.36 | 8.61 | 8.71 | 8.2 |
| Cesium (Cs) | mg/L | 0.0000086 | 0.0000083 | 0.0000087 | 0.000008 | 0.0000092 | 0.0000102 | 0.0000114 | 0.0000101 | 0.0000111 | 0.0000109 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000157 | 0.0000114 | 0.000011 | 0.0000084 | 0.0000197 | 0.0000264 | 0.0000256 | 0.0000284 | 0.0000265 | 0.0000317 |
| Copper (Cu) | mg/L | 0.000634 | 0.000655 | 0.000631 | 0.000638 | 0.000698 | 0.000822 | 0.000818 | 0.000807 | 0.00081 | 0.000812 |
| Gallium (Ga) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Iron (Fe) | mg/L | 0.0139 | 0.0117 | 0.0107 | 0.0112 | 0.027 | 0.0265 | 0.0246 | 0.0255 | 0.0231 | 0.0235 |
| Lanthanum (La) | mg/L | 0.000022 | 0.000017 | 0.000019 | 0.000018 | 0.000048 | 0.000027 | 0.000023 | 0.000023 | 0.000022 | 0.000025 |
| Lead (Pb) | mg/L | 0.00001 | <0.000010 | <0.000010 | <0.000010 | 0.000019 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Lithium (Li) | mg/L | 0.00064 | 0.00065 | 0.00064 | 0.00064 | 0.00068 | 0.00142 | 0.00141 | 0.00148 | 0.00149 | 0.0014 |
| Magnesium (Mg) | mg/L | 1.13 | 1.13 | 1.14 | 1.15 | 1.14 | 1.7 | 1.67 | 1.65 | 1.65 | 1.69 |
| Manganese (Mn) | mg/L | 0.00301 | 0.00289 | 0.00277 | 0.00278 | 0.00467 | 0.00944 | 0.00867 | 0.00941 | 0.00821 | 0.00851 |
| Mercury (Hg) | ug/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Molybdenum (Mo) | mg/L | 0.000062 | 0.000063 | 0.00006 | 0.000061 | 0.000069 | 0.000095 | 0.000102 | 0.00068 | 0.000301 | 0.000103 |
| Niobium (Nb) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Nickel (Ni) | mg/L | 0.000432 | 0.000407 | 0.000424 | 0.000446 | 0.000441 | 0.000782 | 0.000769 | 0.000741 | 0.000776 | 0.000781 |
| Phosphorus (P) | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K) | mg/L | 0.901 | 0.901 | 0.895 | 0.901 | 0.903 | 1.14 | 1.12 | 1.11 | 1.12 | 1.13 |
| Rhenium (Re) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Rubidium (Rb) | mg/L | 0.00131 | 0.00131 | 0.00127 | 0.00133 | 0.00132 | 0.00157 | 0.00156 | 0.00154 | 0.00153 | 0.00156 |
| Selenium (Se) | mg/L | 0.000047 | <0.000040 | 0.00004 | <0.000040 | 0.000043 | <0.000040 | <0.000040 | <0.000040 | <0.000040 | <0.000040 |
| Silicon (Si) | mg/L | 0.098 | 0.098 | 0.097 | 0.117 | 0.11 | 0.178 | 0.162 | 0.165 | 0.173 | 0.163 |
| Silver (Ag) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Sodium (Na) | mg/L | 4.39 | 4.55 | 4.45 | 4.58 | 4.66 | 7.86 | 7.59 | 7.49 | 7.48 | 7.54 |
| Strontium (Sr) | mg/L | 0.0366 | 0.0361 | 0.0358 | 0.0353 | 0.0357 | 0.0592 | 0.0598 | 0.0604 | 0.0591 | 0.0585 |
| Sulfur (S) | mg/L | 1.39 | 1.37 | 1.33 | 1.31 | 1.37 | 1.76 | 1.76 | 1.82 | 1.94 | 1.97 |
| Tantalum (Ta) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Tellurium (Te) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Thallium (Tl) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Thorium (Th) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Tin (Sn) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Titanium (Ti) | mg/L | 0.000132 | 0.000074 | <0.000050 | 0.000056 | 0.000501 | 0.000114 | 0.000074 | 0.000086 | 0.000058 | 0.000094 |
| Tungsten (W) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Uranium (U) | mg/L | 0.0000138 | 0.0000131 | 0.0000128 | 0.0000152 | 0.0000149 | 0.0000175 | 0.0000199 | 0.0000192 | 0.0000187 | 0.0000183 |
| Vanadium (V) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | 0.000055 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Yttrium (Y) | mg/L | <0.0000050 | <0.0000050 | 0.0000053 | 0.0000055 | 0.00001 | 0.0000095 | 0.0000089 | 0.0000068 | 0.0000071 | 0.0000089 |
| Zinc (Zn) | mg/L | 0.00065 | 0.00084 | 0.00059 | 0.00077 | 0.00074 | 0.00054 | <0.00050 | <0.00050 | <0.00050 | 0.00078 |
| Zirconium (Zr) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0012 | 0.0011 | 0.0012 | 0.0017 | 0.0014 | 0.0018 | 0.0025 | 0.0022 | 0.0022 | 0.0021 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000252 | 0.000249 | 0.000264 | 0.000266 | 0.000271 | 0.000466 | 0.000454 | 0.000465 | 0.000477 | 0.000439 |
| Barium (Ba) | mg/L | 0.00772 | 0.00794 | 0.00745 | 0.00785 | 0.00797 | 0.00771 | 0.00786 | 0.00769 | 0.00789 | 0.00802 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0071 | 0.0068 | 0.0068 | 0.0074 | 0.0068 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000054 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 6.45 | 6.41 | 6.42 | 6.5 | 6.34 | 8.61 | 8.46 | 8.5 | 8.73 | 8.47 |
| Cesium (Cs) | mg/L | 0.0000076 | 0.0000071 | 0.0000073 | 0.0000064 | 0.0000076 | 0.0000111 | 0.0000101 | 0.0000099 | 0.0000116 | 0.0000108 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000069 | 0.000006 | <0.0000050 | <0.0000050 | 0.0000054 | 0.0000138 | 0.0000173 | 0.0000131 | 0.0000139 | 0.0000163 |

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | July | | | | | August | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Client Sample ID** | MEL-03-01 | MEL-03-02 | MEL-03-03 | MEL-03-04 | MEL-03-05 | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 |
| | **Sample Date** | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 8/15/2020 | 8/15/2020 | 8/15/2020 | 8/15/2020 | 8/15/2020 |
| **Parameter** | **ALS Sample ID** | L2484438-6 | L2484438-7 | L2484438-8 | L2484438-9 | L2484438-10 | L2492144-1 | L2492144-2 | L2492144-3 | L2492144-4 | L2492144-5 |
| Copper (Cu) | mg/L | 0.000616 | 0.000601 | 0.000596 | 0.00063 | 0.000605 | 0.0008 | 0.000763 | 0.00083 | 0.000827 | 0.000814 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0042 | 0.004 | 0.0034 | 0.0041 | 0.0041 | 0.0079 | 0.0075 | 0.0079 | 0.008 | 0.0078 |
| Lanthanum (La) | mg/L | 0.00001 | *<0.000010* | 0.00001 | 0.00001 | 0.000011 | 0.00001 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lead (Pb) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lithium (Li) | mg/L | 0.00063 | 0.00062 | 0.00063 | 0.00063 | 0.00063 | 0.00146 | 0.00142 | 0.00142 | 0.00148 | 0.00141 |
| Magnesium (Mg) | mg/L | 1.13 | 1.14 | 1.12 | 1.14 | 1.15 | 1.62 | 1.67 | 1.63 | 1.63 | 1.61 |
| Manganese (Mn) | mg/L | 0.000624 | 0.000591 | 0.000525 | 0.0005 | 0.00143 | 0.00107 | 0.00106 | 0.00117 | 0.00119 | 0.00102 |
| Mercury (Hg) | ug/L | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.000063 | 0.000061 | 0.000052 | 0.000061 | 0.000051 | 0.000103 | 0.000114 | 0.000106 | 0.000111 | 0.000109 |
| Nickel (Ni) | mg/L | 0.000421 | 0.000429 | 0.000404 | 0.000411 | 0.000415 | 0.000706 | 0.000696 | 0.000725 | 0.0007 | 0.000718 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 0.892 | 0.898 | 0.889 | 0.885 | 0.905 | 1.11 | 1.13 | 1.12 | 1.12 | 1.12 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.0013 | 0.00129 | 0.00128 | 0.00126 | 0.00129 | 0.00151 | 0.00157 | 0.00154 | 0.00155 | 0.00152 |
| Selenium (Se) | mg/L | *<0.000040* | *<0.000040* | 0.000062 | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* | 0.000041 | *<0.000040* |
| Silicon (Si) | mg/L | 0.099 | 0.099 | 0.098 | 0.107 | 0.094 | 0.161 | 0.163 | 0.156 | 0.152 | 0.155 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 4.5 | 4.47 | 4.49 | 4.47 | 4.67 | 7.62 | 7.88 | 7.72 | 7.76 | 7.54 |
| Strontium (Sr) | mg/L | 0.0322 | 0.0324 | 0.0321 | 0.0318 | 0.0341 | 0.0589 | 0.0628 | 0.0609 | 0.0594 | 0.061 |
| Sulfur (S) | mg/L | 1.36 | 1.35 | 1.24 | 1.44 | 1.61 | 1.83 | 1.76 | 1.8 | 1.69 | 1.67 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000115 | 0.0000119 | 0.0000102 | 0.0000128 | 0.0000105 | 0.0000202 | 0.0000191 | 0.0000202 | 0.0000213 | 0.0000187 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | 0.0000051 | 0.0000077 | 0.0000086 | *<0.0000050* | 0.000008 |
| Zinc (Zn) | mg/L | *<0.00050* | 0.0057 | *<0.00050* | *<0.00050* | 0.00163 | *<0.00050* | *<0.00050* | 0.00083 | *<0.00050* | *<0.00050* |
| Zirconium (Zr) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| **Cyanides** | | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Total | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Free | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| **Radium** | | | | | | | | | | | |
| Ra-226 | Bq/L | *<0.0083* | *<0.0090* | *<0.0077* | *<0.0087* | *<0.0064* | *<0.0085* | *<0.0090* | *<0.0082* | *<0.0074* | *<0.0063* |

**Notes**

*"<" indicates concentration was less than the detection limit*

"-" = Chemical not analyzed or criteria not defined.

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | August | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-02-01 | MEL-02-02 | MEL-02-03 | MEL-02-04 | MEL-02-05 | MEL-03-01-PC | MEL-03-02-PC | MEL-03-03-PC | MEL-03-04-PC | MEL-03-05-PC |
| | Sample Date | 8/18/2020 | 8/18/2020 | 8/18/2020 | 8/18/2020 | 8/18/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 |
| **Parameter** | ALS Sample ID | L2492826-1 | L2492826-2 | L2492826-3 | L2492826-4 | L2492826-5 | L2492831-1 | L2492831-2 | L2492831-3 | L2492831-4 | L2492831-5 |
| **Conventional Parameters** | **Units** | | | | | | | | | | |
| Conductivity | µs/cm | 87.5 | 85.3 | 84.8 | 84.1 | 84.2 | 73.9 | 75.2 | 75.7 | 74.9 | 74.6 |
| Hardness (as CaCO3) | - | 24.2 | 24.1 | 24.1 | 24.2 | 23.8 | 22.1 | 21.7 | 21.3 | 21.8 | 21.8 |
| pH | pH units | 7.44 | 7.44 | 7.45 | 7.44 | 7.46 | 7.45 | 7.43 | 7.45 | 7.47 | 7.41 |
| Total Suspended Solids | mg/L | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* |
| Total Dissolved Solids | mg/L | 51 | 53 | 50 | 53 | 50 | 42 | 40 | 40 | 38 | 41 |
| TDS (Calculated) | mg/L | 45.7 | 44.5 | 44.5 | 44.5 | 44.1 | 39.5 | 39.6 | 39.1 | 39.6 | 39.5 |
| Turbidity | NTU | 0.28 | 0.22 | 0.21 | 0.2 | 0.21 | 0.18 | 0.14 | 0.18 | 0.14 | 0.18 |
| **Anions and Nutrients** | | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 20.8 | 20.4 | 20.4 | 20.7 | 20.8 | 20.2 | 20.7 | 20.4 | 20.5 | 20.2 |
| Ammonia, Total (as N) | mg/L | 0.0076 | 0.0162 | 0.0682 | 0.0292 | 0.0125 | 0.0594 | 0.0278 | *<0.0050* | 0.0793 | 0.0356 |
| Bicarbonate (HCO3) | mg/L | 25.4 | 24.9 | 24.9 | 25.3 | 25.4 | 24.6 | 25.3 | 24.9 | 25 | 24.6 |
| Bromide (Br) | mg/L | *<0.10* | *<0.10* | *<0.10* | *<0.10* | *<0.10* | *<0.10* | *<0.10* | *<0.10* | *<0.10* | *<0.10* |
| Carbonate (CO3) | mg/L | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* |
| Chloride (Cl) | mg/L | 12.7 | 12.3 | 12.3 | 12.1 | 12.1 | 9.63 | 9.62 | 9.59 | 9.61 | 9.62 |
| Fluoride (F) | mg/L | 0.027 | 0.028 | 0.026 | 0.027 | 0.028 | 0.027 | 0.028 | 0.027 | 0.027 | 0.028 |
| Hydroxide (OH) | mg/L | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* |
| Ion Balance | % | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC |
| Nitrate and Nitrite as N | mg/L | 0.0089 | *<0.0051* | *<0.0051* | *<0.0051* | *<0.0051* | *<0.0051* | *<0.0051* | *<0.0051* | *<0.0051* | *<0.0051* |
| Nitrate (as N) | mg/L | 0.0089 | *<0.0050* | *<0.0050* | *<0.0050* | *<0.0050* | *<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* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Total Kjeldahl Nitrogen | mg/L | 0.213 | 0.211 | 0.217 | 0.207 | 0.192 | 0.192 | 0.176 | 0.168 | 0.268 | 0.228 |
| Total Nitrogen | mg/L | 0.222 | 0.211 | 0.217 | 0.207 | 0.192 | 0.192 | 0.176 | 0.168 | 0.268 | 0.228 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.171 | 0.183 | 0.172 | 0.184 | 0.182 | 0.19 | 0.19 | 0.153 | 0.184 | 0.2 |
| Total Dissolved Nitrogen | mg/L | 0.18 | 0.183 | 0.172 | 0.184 | 0.182 | 0.19 | 0.19 | 0.153 | 0.184 | 0.2 |
| Orthophosphate-Dissolved (as P) | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Phosphorus (P)-Total Dissolved | mg/L | 0.0019 | 0.0017 | 0.0016 | 0.0019 | 0.0014 | 0.0104 | 0.0017 | 0.0012 | 0.0011 | 0.0012 |
| Phosphorus (P)-Total | mg/L | 0.0064 | 0.0067 | 0.005 | 0.006 | 0.0063 | 0.0029 | 0.005 | 0.0071 | 0.0025 | 0.0024 |
| Silica, Reactive (as SiO2) | mg/L | 0.311 | 0.306 | 0.319 | 0.315 | 0.311 | 0.249 | 0.243 | 0.248 | 0.249 | 0.254 |
| Sulfate (SO4) | mg/L | 4.61 | 4.66 | 4.57 | 4.56 | 4.57 | 3.88 | 3.86 | 3.85 | 3.89 | 3.93 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.83 | 2.7 | 2.96 | 2.84 | 2.77 | 2.72 | 2.76 | 2.51 | 2.59 | 2.37 |
| Total Organic Carbon | mg/L | 2.89 | 2.73 | 2.66 | 2.66 | 2.62 | 2.36 | 2.47 | 2.54 | 2.47 | 2.58 |
| **Total Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0022 | 0.0023 | 0.0033 | 0.0039 | 0.0034 | 0.0038 | 0.0034 | 0.0025 | 0.0027 | 0.0025 |
| Antimony (Sb) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | 0.000021 |
| Arsenic (As) | mg/L | 0.000421 | 0.000439 | 0.000438 | 0.000431 | 0.000425 | 0.000268 | 0.000269 | 0.000274 | 0.000259 | 0.000234 |
| Barium (Ba) | mg/L | 0.00772 | 0.00764 | 0.00764 | 0.00802 | 0.00794 | 0.00742 | 0.00749 | 0.00741 | 0.00745 | 0.00729 |
| Beryllium (Be) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.0056 | 0.0054 | 0.0054 | 0.0055 | 0.0054 | *<0.0050* | *<0.0050* | *<0.0050* | *<0.0050* | *<0.0050* |
| Cadmium (Cd) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 7.31 | 7.5 | 7.61 | 7.63 | 7.58 | 6.98 | 6.83 | 6.46 | 6.81 | 6.96 |
| Cesium (Cs) | mg/L | 0.0000113 | 0.0000076 | 0.0000096 | 0.0000095 | 0.0000094 | 0.000011 | 0.0000106 | 0.0000085 | 0.0000088 | 0.0000075 |
| Chromium (Cr) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.0000147 | 0.000015 | 0.0000166 | 0.0000166 | 0.0000176 | 0.0000134 | 0.0000131 | 0.0000129 | 0.0000121 | 0.000014 |
| Copper (Cu) | mg/L | 0.00112 | 0.0011 | 0.00146 | 0.00125 | 0.00092 | 0.00069 | 0.000686 | 0.000698 | 0.000642 | 0.000668 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0135 | 0.0142 | 0.0158 | 0.0178 | 0.0147 | 0.0125 | 0.0128 | 0.0113 | 0.0108 | 0.0111 |
| Lanthanum (La) | mg/L | 0.000022 | 0.000018 | 0.000025 | 0.00003 | 0.000022 | 0.000019 | 0.000017 | 0.000015 | 0.000017 | 0.000017 |
| Lead (Pb) | mg/L | *<0.000010* | *<0.000010* | 0.000014 | 0.000012 | *<0.000010* | 0.000012 | 0.000062 | *<0.000010* | *<0.000010* | *<0.000010* |
| Lithium (Li) | mg/L | 0.00088 | 0.00091 | 0.00094 | 0.00093 | 0.00094 | 0.0007 | 0.00069 | 0.00064 | 0.00069 | 0.0007 |
| Magnesium (Mg) | mg/L | 1.35 | 1.3 | 1.31 | 1.34 | 1.33 | 1.15 | 1.14 | 1.18 | 1.14 | 1.14 |
| Manganese (Mn) | mg/L | 0.00387 | 0.00405 | 0.00421 | 0.0045 | 0.0041 | 0.00273 | 0.00284 | 0.00269 | 0.00259 | 0.00258 |
| Mercury (Hg) | ug/L | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.000088 | 0.000102 | 0.000096 | 0.000113 | 0.00065 | 0.000099 | 0.000098 | 0.0137 | 0.000132 | 0.000106 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Nickel (Ni) | mg/L | 0.000591 | 0.000586 | 0.000607 | 0.000608 | 0.000595 | 0.000447 | 0.000418 | 0.000415 | 0.000402 | 0.000406 |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 1.01 | 1.01 | 1.01 | 1.01 | 1.04 | 0.954 | 0.947 | 0.96 | 0.937 | 0.947 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00142 | 0.00142 | 0.00145 | 0.00147 | 0.00144 | 0.00136 | 0.00138 | 0.00137 | 0.00135 | 0.00137 |
| Selenium (Se) | mg/L | 0.000051 | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* | 0.000042 | *<0.000040* | *<0.000040* | 0.000045 |
| Silicon (Si) | mg/L | 0.155 | 0.162 | 0.157 | 0.166 | 0.153 | 0.128 | 0.124 | 0.115 | 0.125 | 0.113 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 6.12 | 5.69 | 5.81 | 5.6 | 5.82 | 4.85 | 4.94 | 4.87 | 4.77 | 4.93 |
| Strontium (Sr) | mg/L | 0.0422 | 0.044 | 0.0435 | 0.0429 | 0.0436 | 0.036 | 0.0369 | 0.0346 | 0.0365 | 0.0351 |
| Sulfur (S) | mg/L | 1.38 | 1.4 | 1.4 | 1.44 | 1.42 | 1.08 | 1.29 | 1.3 | 1.42 | 1.21 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | *<0.000050* | *<0.000050* | 0.000088 | 0.000119 | 0.000058 | 0.000101 | 0.000114 | 0.000069 | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.000015 | 0.0000156 | 0.0000162 | 0.0000162 | 0.0000155 | 0.0000138 | 0.0000135 | 0.0000136 | 0.0000149 | 0.0000131 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | 0.0000051 | 0.0000091 | 0.0000064 | *<0.0000050* | 0.0000067 | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Zinc (Zn) | mg/L | *<0.00050* | *<0.00050* | *<0.00050* | 0.00092 | 0.00161 | 0.00146 | 0.00094 | 0.00086 | *<0.00050* | 0.00069 |
| Zirconium (Zr) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| **Dissolved Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0013 | 0.0012 | 0.0014 | 0.0012 | 0.0051 | 0.0033 | 0.0016 | 0.0013 | 0.002 | 0.0016 |
| Antimony (Sb) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Arsenic (As) | mg/L | 0.00038 | 0.000351 | 0.000387 | 0.000429 | 0.000394 | 0.000268 | 0.000252 | 0.000258 | 0.000257 | 0.00025 |
| Barium (Ba) | mg/L | 0.0074 | 0.00752 | 0.00726 | 0.00748 | 0.00696 | 0.007 | 0.00725 | 0.00706 | 0.00711 | 0.007 |
| Beryllium (Be) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.0051 | 0.0051 | 0.005 | 0.0051 | 0.0051 | *<0.0050* | *<0.0050* | *<0.0050* | *<0.0050* | *<0.0050* |
| Cadmium (Cd) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 7.48 | 7.51 | 7.53 | 7.49 | 7.52 | 6.95 | 6.78 | 6.67 | 6.85 | 6.84 |
| Cesium (Cs) | mg/L | 0.0000107 | 0.0000095 | 0.000009 | 0.0000087 | 0.0000086 | 0.0000091 | 0.0000097 | 0.0000084 | 0.0000097 | 0.0000095 |
| Chromium (Cr) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.000009 | 0.0000058 | 0.0000086 | 0.0000087 | 0.0000086 | 0.0000072 | 0.0000058 | 0.0000057 | *<0.0000050* | *<0.0000050* |

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | August | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-02-01 | MEL-02-02 | MEL-02-03 | MEL-02-04 | MEL-02-05 | MEL-03-01-PC | MEL-03-02-PC | MEL-03-03-PC | MEL-03-04-PC | MEL-03-05-PC |
| | Sample Date | 8/18/2020 | 8/18/2020 | 8/18/2020 | 8/18/2020 | 8/18/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 |
| **Parameter** | **ALS Sample ID** | L2492826-1 | L2492826-2 | L2492826-3 | L2492826-4 | L2492826-5 | L2492831-1 | L2492831-2 | L2492831-3 | L2492831-4 | L2492831-5 |
| Copper (Cu) | mg/L | 0.000848 | 0.000821 | 0.000965 | 0.000814 | 0.000733 | 0.000662 | 0.00068 | 0.000654 | 0.000604 | 0.000658 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0067 | 0.0063 | 0.0063 | 0.0063 | 0.006 | 0.0077 | 0.0057 | 0.0045 | 0.0049 | 0.0054 |
| Lanthanum (La) | mg/L | 0.000011 | *<0.000010* | 0.000011 | 0.000013 | 0.000011 | 0.000013 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lead (Pb) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | 0.000011 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lithium (Li) | mg/L | 0.00089 | 0.00091 | 0.0009 | 0.00088 | 0.00089 | 0.00067 | 0.00067 | 0.00065 | 0.00066 | 0.00066 |
| Magnesium (Mg) | mg/L | 1.34 | 1.29 | 1.29 | 1.33 | 1.21 | 1.16 | 1.17 | 1.14 | 1.14 | 1.15 |
| Manganese (Mn) | mg/L | 0.000421 | 0.000498 | 0.000559 | 0.000553 | 0.000372 | 0.000887 | 0.000439 | 0.00042 | 0.000396 | 0.000374 |
| Mercury (Hg) | ug/L | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.00009 | 0.000075 | 0.000084 | 0.000095 | 0.000089 | 0.000085 | 0.000096 | 0.000074 | 0.000078 | 0.000079 |
| Nickel (Ni) | mg/L | 0.000565 | 0.000563 | 0.00055 | 0.000563 | 0.000532 | 0.000422 | 0.000397 | 0.000428 | 0.000409 | 0.000409 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 0.994 | 0.978 | 0.984 | 0.988 | 0.903 | 0.93 | 0.939 | 0.914 | 0.927 | 0.927 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00141 | 0.00139 | 0.00141 | 0.00144 | 0.0013 | 0.00138 | 0.00136 | 0.00133 | 0.00131 | 0.00138 |
| Selenium (Se) | mg/L | *<0.000040* | 0.000046 | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* | 0.000048 | *<0.000040* | *<0.000040* |
| Silicon (Si) | mg/L | 0.139 | 0.149 | 0.153 | 0.148 | 0.154 | 0.109 | 0.115 | 0.118 | 0.11 | 0.116 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 6.03 | 5.52 | 5.55 | 5.63 | 5.3 | 4.81 | 4.77 | 4.71 | 4.81 | 4.88 |
| Strontium (Sr) | mg/L | 0.0433 | 0.0423 | 0.0447 | 0.0442 | 0.0433 | 0.0365 | 0.0346 | 0.0365 | 0.0361 | 0.0351 |
| Sulfur (S) | mg/L | 1.5 | 1.3 | 1.36 | 1.29 | 1.3 | 1.28 | 1.16 | 1.27 | 1.19 | 1.37 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | 0.000136 | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.000016 | 0.0000153 | 0.0000157 | 0.0000161 | 0.0000144 | 0.0000136 | 0.0000132 | 0.0000126 | 0.000014 | 0.0000129 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | 0.0000076 | 0.0000058 | 0.0000065 | *<0.0000050* | *<0.0000050* | 0.0000052 | *<0.0000050* | *<0.0000050* | *<0.0000050* | 0.0000056 |
| Zinc (Zn) | mg/L | 0.00077 | *<0.00050* | *<0.00050* | *<0.00050* | 0.00104 | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Zirconium (Zr) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| **Cyanides** | | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Total | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Free | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| **Radium** | | | | | | | | | | | |
| Ra-226 | Bq/L | - | - | - | - | - | *<0.0080* | 0.031 | *<0.0077* | *<0.0082* | *<0.0073* |

**Notes**

*"<" indicates concentration was less than the detection limit*

"-" = Chemical not analyzed or criteria not defined.

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| Parameter | Sample Event | August | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-04-01-PC | MEL-04-02-PC | MEL-04-03-PC | MEL-04-04-PC | MEL-04-05-PC | MEL-05-01 | MEL-05-02 | MEL-05-03 | MEL-05-04 | MEL-05-05 |
| | Sample Date | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/23/2020 | 8/23/2020 | 8/23/2020 | 8/23/2020 | 8/23/2020 |
| | ALS Sample ID | L2492831-7 | L2492831-8 | L2492831-9 | L2492831-10 | L2492831-11 | L2496258-1 | L2496258-2 | L2496258-3 | L2496258-4 | L2496258-5 |
| **Conventional Parameters** | **Units** | | | | | | | | | | |
| Conductivity | µs/cm | 73.9 | 72.8 | 73.9 | 74.2 | 74 | 78 | 77.5 | 77.8 | 77.5 | 77.1 |
| Hardness (as CaCO3) | - | 21.5 | 22 | 21.6 | 21.5 | 22 | 24.3 | 24.5 | 24.4 | 24.3 | 24.1 |
| pH | pH units | 7.4 | 7.42 | 7.43 | 7.43 | 7.42 | 7.44 | 7.44 | 7.44 | 7.44 | 7.44 |
| Total Suspended Solids | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Total Dissolved Solids | mg/L | 54 | 51 | 40 | 45 | 47 | 41 | 40 | 44 | 46 | 59 |
| TDS (Calculated) | mg/L | 38.9 | 39.3 | 39.1 | 39.1 | 39.3 | 40.8 | 41.3 | 41 | 41.1 | 40.9 |
| Turbidity | NTU | 0.14 | 0.29 | 0.14 | 0.14 | 0.15 | 0.25 | 0.22 | 0.9 | 0.27 | 0.17 |
| **Anions and Nutrients** | | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 20.1 | 20.3 | 20.2 | 20.2 | 20.3 | 21.4 | 21.2 | 21 | 21.2 | 21.3 |
| Ammonia, Total (as N) | mg/L | 0.0405 | <0.0050 | 0.0723 | 0.0056 | 0.0246 | 0.0088 | 0.0147 | <0.0050 | 0.0086 | 0.006 |
| Bicarbonate (HCO3) | mg/L | 24.5 | 24.8 | 24.6 | 24.6 | 24.8 | 26.1 | 25.9 | 25.6 | 25.9 | 26 |
| Bromide (Br) | mg/L | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Carbonate (CO3) | mg/L | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 |
| Chloride (Cl) | mg/L | 9.51 | 9.55 | 9.58 | 9.57 | 9.59 | 9.44 | 9.42 | 9.44 | 9.41 | 9.4 |
| Fluoride (F) | mg/L | 0.027 | 0.027 | 0.027 | 0.027 | 0.028 | 0.026 | 0.026 | 0.027 | 0.026 | 0.026 |
| Hydroxide (OH) | mg/L | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 |
| Ion Balance | % | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC |
| Nitrate and Nitrite as N | mg/L | <0.0051 | <0.0051 | <0.0051 | <0.0051 | <0.0051 | <0.0051 | <0.0051 | 0.0134 | <0.0051 | 0.0077 |
| Nitrate (as N) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0134 | <0.0050 | 0.0077 |
| Nitrite (as N) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Kjeldahl Nitrogen | mg/L | 0.314 | 0.223 | 0.283 | 0.188 | 0.196 | 0.228 | 0.248 | 0.17 | 0.244 | 0.214 |
| Total Nitrogen | mg/L | 0.314 | 0.223 | 0.283 | 0.188 | 0.196 | 0.228 | 0.248 | 0.184 | 0.244 | 0.222 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.218 | 0.215 | 0.171 | 0.18 | 0.218 | 0.191 | 0.177 | 0.165 | 0.232 | 0.185 |
| Total Dissolved Nitrogen | mg/L | 0.218 | 0.215 | 0.171 | 0.18 | 0.218 | 0.191 | 0.177 | 0.178 | 0.232 | 0.192 |
| Orthophosphate-Dissolved (as P) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Phosphorus (P)-Total Dissolved | mg/L | 0.0012 | 0.0014 | 0.0018 | 0.0013 | 0.0012 | 0.0012 | 0.0015 | 0.0014 | 0.0014 | 0.0015 |
| Phosphorus (P)-Total | mg/L | 0.0056 | 0.0026 | 0.0019 | 0.0029 | 0.0021 | 0.0026 | 0.0029 | 0.0025 | 0.0022 | 0.0024 |
| Silica, Reactive (as SiO2) | mg/L | 0.242 | 0.24 | 0.244 | 0.248 | 0.249 | 0.289 | 0.282 | 0.28 | 0.277 | 0.276 |
| Sulfate (SO4) | mg/L | 3.87 | 3.88 | 3.94 | 3.89 | 3.89 | 3.84 | 3.86 | 3.84 | 3.82 | 3.86 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.51 | 2.34 | 2.34 | 2.35 | 2.68 | 2.55 | 2.46 | 2.47 | 2.77 | 2.68 |
| Total Organic Carbon | mg/L | 2.49 | 2.18 | 2.36 | 2.51 | 2.5 | 2.51 | 2.42 | 2.65 | 2.63 | 2.95 |
| **Total Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0029 | 0.0024 | 0.0023 | 0.0014 | 0.0019 | 0.0024 | 0.0021 | 0.0026 | 0.0021 | 0.0022 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000259 | 0.000237 | 0.000258 | 0.000239 | 0.000256 | 0.000303 | 0.000336 | 0.00031 | 0.00033 | 0.000316 |
| Barium (Ba) | mg/L | 0.00725 | 0.00721 | 0.00758 | 0.00749 | 0.00724 | 0.00828 | 0.00823 | 0.00829 | 0.00853 | 0.00831 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0051 |
| Cadmium (Cd) | mg/L | <0.000020 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 6.87 | 6.97 | 6.91 | 6.95 | 6.71 | 7.74 | 7.53 | 7.53 | 7.85 | 7.72 |
| Cesium (Cs) | mg/L | 0.000009 | 0.0000093 | 0.0000094 | 0.000008 | 0.000009 | 0.0000091 | 0.0000088 | 0.0000095 | 0.0000089 | 0.0000094 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000108 | 0.0000072 | 0.0000113 | 0.0000094 | 0.0000119 | 0.0000098 | 0.0000124 | 0.0000118 | 0.0000099 | 0.0000108 |
| Copper (Cu) | mg/L | 0.000658 | 0.000657 | 0.000658 | 0.00067 | 0.000675 | 0.000677 | 0.000684 | 0.000712 | 0.000665 | 0.000683 |
| Gallium (Ga) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Iron (Fe) | mg/L | 0.0085 | 0.0079 | 0.0083 | 0.0076 | 0.008 | 0.01 | 0.0097 | 0.0097 | 0.0096 | 0.0105 |
| Lanthanum (La) | mg/L | 0.000014 | 0.000015 | 0.000016 | 0.000015 | 0.000013 | 0.000013 | 0.000014 | 0.000012 | 0.000014 | 0.000014 |
| Lead (Pb) | mg/L | 0.000011 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Lithium (Li) | mg/L | 0.00069 | 0.00069 | 0.00068 | 0.0007 | 0.00067 | 0.00074 | 0.00072 | 0.00073 | 0.00076 | 0.00074 |
| Magnesium (Mg) | mg/L | 1.14 | 1.14 | 1.15 | 1.15 | 1.15 | 1.18 | 1.19 | 1.2 | 1.16 | 1.19 |
| Manganese (Mn) | mg/L | 0.00247 | 0.00237 | 0.00252 | 0.00234 | 0.00244 | 0.00277 | 0.00281 | 0.00276 | 0.00276 | 0.00287 |
| Mercury (Hg) | ug/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Molybdenum (Mo) | mg/L | 0.0135 | 0.00957 | 0.000117 | 0.0001 | 0.00776 | 0.000115 | 0.000099 | 0.000138 | 0.000128 | 0.000266 |
| Niobium (Nb) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Nickel (Ni) | mg/L | 0.000421 | 0.000425 | 0.00044 | 0.000426 | 0.000442 | 0.000342 | 0.000365 | 0.000355 | 0.000342 | 0.000372 |
| Phosphorus (P) | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K) | mg/L | 0.951 | 0.939 | 0.936 | 0.932 | 0.942 | 1.02 | 1.02 | 1.03 | 1 | 1.01 |
| Rhenium (Re) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Rubidium (Rb) | mg/L | 0.00135 | 0.00136 | 0.00133 | 0.00137 | 0.00133 | 0.00133 | 0.00134 | 0.00132 | 0.00131 | 0.00131 |
| Selenium (Se) | mg/L | <0.000040 | <0.000040 | <0.000040 | <0.000040 | 0.000048 | 0.000046 | 0.000064 | 0.00005 | 0.000049 | 0.000049 |
| Silicon (Si) | mg/L | 0.119 | 0.119 | 0.128 | 0.112 | 0.131 | 0.148 | 0.134 | 0.148 | 0.146 | 0.161 |
| Silver (Ag) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Sodium (Na) | mg/L | 4.8 | 4.74 | 4.76 | 4.68 | 4.86 | 4.76 | 4.7 | 4.75 | 4.54 | 4.58 |
| Strontium (Sr) | mg/L | 0.0375 | 0.036 | 0.0363 | 0.0365 | 0.0361 | 0.037 | 0.0365 | 0.0367 | 0.0359 | 0.0366 |
| Sulfur (S) | mg/L | 1.04 | 1.19 | 1.36 | 1.31 | 1.28 | 1.45 | 1.33 | 1.42 | 1.3 | 1.24 |
| Tantalum (Ta) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Tellurium (Te) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Thallium (Tl) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Thorium (Th) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Tin (Sn) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Titanium (Ti) | mg/L | 0.00007 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Tungsten (W) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Uranium (U) | mg/L | 0.0000125 | 0.0000127 | 0.0000142 | 0.0000116 | 0.000013 | 0.0000145 | 0.0000148 | 0.0000132 | 0.0000127 | 0.0000115 |
| Vanadium (V) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Yttrium (Y) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Zinc (Zn) | mg/L | <0.00050 | <0.00050 | 0.00091 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.0009 | <0.00050 | <0.00050 |
| Zirconium (Zr) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0015 | 0.0012 | 0.0012 | 0.0012 | 0.0014 | 0.0014 | 0.0012 | 0.0014 | 0.0013 | 0.0015 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000238 | 0.000264 | 0.000248 | 0.000225 | 0.000248 | 0.000313 | 0.000308 | 0.000281 | 0.000276 | 0.000268 |
| Barium (Ba) | mg/L | 0.00728 | 0.00727 | 0.00714 | 0.00701 | 0.00686 | 0.00719 | 0.00778 | 0.00774 | 0.00778 | 0.00759 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 6.71 | 6.91 | 6.78 | 6.73 | 6.9 | 7.75 | 7.77 | 7.78 | 7.75 | 7.66 |
| Cesium (Cs) | mg/L | 0.000009 | 0.0000074 | 0.0000087 | 0.0000082 | 0.0000082 | 0.0000073 | 0.0000083 | 0.0000061 | 0.0000072 | 0.0000079 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000056 | <0.0000050 | <0.0000050 | 0.0000062 | <0.0000050 | 0.000006 | 0.0000054 | <0.0000050 | <0.0000050 | <0.0000050 |

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | August | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-04-01-PC | MEL-04-02-PC | MEL-04-03-PC | MEL-04-04-PC | MEL-04-05-PC | MEL-05-01 | MEL-05-02 | MEL-05-03 | MEL-05-04 | MEL-05-05 |
| | Sample Date | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/19/2020 | 8/23/2020 | 8/23/2020 | 8/23/2020 | 8/23/2020 | 8/23/2020 |
| **Parameter** | **ALS Sample ID** | L2492831-7 | L2492831-8 | L2492831-9 | L2492831-10 | L2492831-11 | L2496258-1 | L2496258-2 | L2496258-3 | L2496258-4 | L2496258-5 |
| Copper (Cu) | mg/L | 0.00065 | 0.000647 | 0.000667 | 0.000627 | 0.000645 | 0.000683 | 0.000684 | 0.000706 | 0.000634 | 0.000697 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.003 | 0.0028 | 0.0032 | 0.0029 | 0.0028 | 0.0043 | 0.0043 | 0.0045 | 0.0039 | 0.0049 |
| Lanthanum (La) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lead (Pb) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lithium (Li) | mg/L | 0.00065 | 0.00066 | 0.00063 | 0.00063 | 0.00066 | 0.00073 | 0.00074 | 0.00073 | 0.00073 | 0.0007 |
| Magnesium (Mg) | mg/L | 1.16 | 1.16 | 1.15 | 1.14 | 1.15 | 1.19 | 1.23 | 1.21 | 1.21 | 1.2 |
| Manganese (Mn) | mg/L | 0.000245 | 0.000308 | 0.000291 | 0.000226 | 0.00026 | 0.000421 | 0.000413 | 0.000316 | 0.000323 | 0.000413 |
| Mercury (Hg) | ug/L | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.000073 | 0.00135 | 0.000078 | 0.000083 | 0.00297 | 0.00007 | 0.000062 | 0.000125 | 0.00012 | 0.000068 |
| Nickel (Ni) | mg/L | 0.000413 | 0.000404 | 0.000398 | 0.000417 | 0.000455 | 0.000405 | 0.000388 | 0.000418 | 0.000401 | 0.000417 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 0.922 | 0.917 | 0.919 | 0.909 | 0.923 | 0.949 | 0.962 | 0.954 | 0.938 | 0.937 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00133 | 0.00136 | 0.00134 | 0.00133 | 0.00138 | 0.00137 | 0.0014 | 0.00135 | 0.00137 | 0.00136 |
| Selenium (Se) | mg/L | 0.000068 | *<0.000040* | *<0.000040* | 0.000052 | *<0.000040* | 0.000042 | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* |
| Silicon (Si) | mg/L | 0.115 | 0.119 | 0.119 | 0.108 | 0.11 | 0.133 | 0.134 | 0.137 | 0.13 | 0.142 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 4.67 | 4.64 | 4.6 | 4.67 | 4.61 | 4.73 | 5.27 | 5.08 | 5.22 | 4.98 |
| Strontium (Sr) | mg/L | 0.0349 | 0.0344 | 0.0362 | 0.0351 | 0.0345 | 0.0351 | 0.034 | 0.0349 | 0.0346 | 0.0337 |
| Sulfur (S) | mg/L | 1.23 | 1.35 | 1.2 | 1.28 | 1.1 | 1.4 | 1.43 | 1.26 | 1.43 | 1.37 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000128 | 0.0000121 | 0.000013 | 0.0000122 | 0.0000126 | 0.0000158 | 0.0000137 | 0.0000131 | 0.000013 | 0.0000158 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Zinc (Zn) | mg/L | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | 0.00112 | *<0.00050* | *<0.00050* |
| Zirconium (Zr) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| **Cyanides** | | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Total | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Free | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| **Radium** | | | | | | | | | | | |
| Ra-226 | Bq/L | - | - | - | - | - | - | - | - | - | - |

**Notes**

*"<" indicates concentration was less than the detection limit*

"-" = Chemical not analyzed or criteria not defined.

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | September | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-02-01 | MEL-02-02 | MEL-02-03 | MEL-02-04 | MEL-02-05 | MEL-03-01 | MEL-03-02 | MEL-03-03 | MEL-03-04 | MEL-03-05 |
| | Sample Date | 9/7/2020 | 9/7/2020 | 9/7/2020 | 9/7/2020 | 9/7/2020 | 9/8/2020 | 9/8/2020 | 9/8/2020 | 9/8/2020 | 9/8/2020 |
| Parameter | ALS Sample ID | L2501979-1 | L2501979-2 | L2501979-3 | L2501979-4 | L2501979-5 | L2502391-1 | L2502391-2 | L2502391-3 | L2502391-4 | L2502391-5 |
| **Conventional Parameters** | **Units** | | | | | | | | | | |
| Conductivity | µs/cm | 87.3 | 82.3 | 82.6 | 82.6 | 82.4 | 78.7 | 73.2 | 73.3 | 74.8 | 73.5 |
| Hardness (as CaCO3) | - | 24.8 | 24.7 | 25 | 25 | 25.2 | 23.2 | 23 | 23.1 | 23 | 22.9 |
| pH | pH units | 7.46 | 7.43 | 7.42 | 7.43 | 7.44 | 7.51 | 7.48 | 7.48 | 7.42 | 7.47 |
| Total Suspended Solids | mg/L | <1.0 | 2.2 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Total Dissolved Solids | mg/L | 51 | 48 | 46 | 44 | 46 | 50 | 54 | 42 | 38 | 36 |
| TDS (Calculated) | mg/L | 43.8 | 41.8 | 44.8 | 41.5 | 44.1 | 40.5 | 39.8 | 39.9 | 37.8 | 39.7 |
| Turbidity | NTU | <0.10 | 0.21 | 0.31 | 0.25 | 0.3 | 0.33 | 0.18 | 0.2 | 0.21 | 0.25 |
| **Anions and Nutrients** | | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 20.3 | 17.5 | 21.4 | 16.3 | 20.5 | 20.6 | 20.3 | 20.2 | 17 | 19.9 |
| Ammonia, Total (as N) | mg/L | 0.014 | 0.0158 | 0.0124 | 0.0096 | 0.0102 | 0.0099 | 0.0122 | 0.0128 | 0.0144 | 0.0083 |
| Bicarbonate (HCO3) | mg/L | 24.8 | 21.4 | 26.1 | 19.9 | 25 | 25.1 | 24.8 | 24.6 | 20.7 | 24.3 |
| Bromide (Br) | mg/L | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Carbonate (CO3) | mg/L | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 | <0.60 |
| Chloride (Cl) | mg/L | 11.7 | 11.5 | 11.7 | 11.7 | 11.6 | 9.74 | 9.61 | 9.62 | 9.54 | 9.61 |
| Fluoride (F) | mg/L | 0.027 | 0.027 | 0.027 | 0.026 | 0.026 | 0.032 | 0.031 | 0.032 | 0.026 | 0.026 |
| Hydroxide (OH) | mg/L | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 | <0.34 |
| Ion Balance | % | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC | Low EC |
| Nitrate and Nitrite as N | mg/L | <0.0051 | <0.0051 | <0.0051 | <0.0051 | <0.0051 | <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 | <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 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Kjeldahl Nitrogen | mg/L | 0.239 | 0.264 | 0.326 | 0.176 | 0.244 | 0.226 | 0.186 | 0.249 | 0.237 | 0.24 |
| Total Nitrogen | mg/L | 0.239 | 0.264 | 0.326 | 0.176 | 0.244 | 0.226 | 0.186 | 0.249 | 0.237 | 0.24 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.206 | 0.293 | 0.215 | 0.185 | 0.218 | 0.177 | 0.157 | 0.231 | 0.202 | 0.2 |
| Total Dissolved Nitrogen | mg/L | 0.206 | 0.293 | 0.215 | 0.185 | 0.218 | 0.177 | 0.157 | 0.231 | 0.202 | 0.2 |
| Orthophosphate-Dissolved (as P) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Phosphorus (P)-Total Dissolved | mg/L | 0.0017 | 0.0021 | 0.0014 | 0.0021 | 0.0024 | 0.0027 | 0.0023 | 0.0014 | 0.0019 | 0.0026 |
| Phosphorus (P)-Total | mg/L | 0.0047 | 0.0048 | 0.0047 | 0.0052 | 0.0042 | 0.003 | 0.0031 | 0.0034 | 0.0026 | 0.0032 |
| Silica, Reactive (as SiO2) | mg/L | 0.281 | 0.283 | 0.277 | 0.28 | 0.273 | 0.228 | 0.234 | 0.233 | 0.237 | 0.238 |
| Sulfate (SO4) | mg/L | 4.29 | 4.26 | 4.32 | 4.28 | 4.22 | 3.95 | 3.88 | 3.87 | 3.85 | 3.93 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 2.83 | 2.75 | 2.77 | 2.99 | 2.83 | 2.57 | 2.91 | 2.58 | 2.72 | 2.6 |
| Total Organic Carbon | mg/L | 2.93 | 2.98 | 2.9 | 2.85 | 2.86 | 2.5 | 2.49 | 2.42 | 2.45 | 2.63 |
| **Total Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0028 | 0.0026 | 0.0028 | 0.0033 | 0.0028 | 0.0027 | 0.0027 | 0.0042 | 0.0033 | 0.0028 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000459 | 0.000478 | 0.000448 | 0.000449 | 0.000421 | 0.000279 | 0.000284 | 0.000307 | 0.000289 | 0.000255 |
| Barium (Ba) | mg/L | 0.00825 | 0.00835 | 0.00841 | 0.00832 | 0.00837 | 0.008 | 0.00788 | 0.00796 | 0.00794 | 0.00813 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | <0.0050 | 0.005 | 0.0051 | 0.0051 | 0.005 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 7.17 | 7.36 | 7.38 | 7.44 | 7.31 | 6.75 | 6.78 | 6.9 | 6.73 | 6.8 |
| Cesium (Cs) | mg/L | 0.0000087 | 0.0000082 | 0.0000076 | 0.0000083 | 0.0000084 | 0.0000091 | 0.0000099 | 0.0000105 | 0.0000081 | 0.0000083 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000166 | 0.0000169 | 0.0000167 | 0.0000136 | 0.0000141 | 0.000011 | 0.0000096 | 0.0000121 | 0.0000103 | 0.0000114 |
| Copper (Cu) | mg/L | 0.000942 | 0.000816 | 0.000807 | 0.000807 | 0.000804 | 0.000701 | 0.000695 | 0.000691 | 0.000707 | 0.000711 |
| Gallium (Ga) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Iron (Fe) | mg/L | 0.0158 | 0.0134 | 0.0153 | 0.0147 | 0.0136 | 0.0108 | 0.0115 | 0.0134 | 0.0119 | 0.0126 |
| Lanthanum (La) | mg/L | 0.000023 | 0.000022 | 0.000025 | 0.000023 | 0.000022 | 0.000019 | 0.000019 | 0.000023 | 0.000021 | 0.00002 |
| Lead (Pb) | mg/L | 0.000011 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000012 | <0.000010 | <0.000010 |
| Lithium (Li) | mg/L | 0.00091 | 0.0009 | 0.00091 | 0.00091 | 0.0009 | 0.00069 | 0.0007 | 0.00072 | 0.00071 | 0.0007 |
| Magnesium (Mg) | mg/L | 1.34 | 1.33 | 1.36 | 1.37 | 1.35 | 1.19 | 1.19 | 1.19 | 1.2 | 1.19 |
| Manganese (Mn) | mg/L | 0.00347 | 0.00344 | 0.00346 | 0.00351 | 0.00347 | 0.00227 | 0.00227 | 0.00227 | 0.00227 | 0.00219 |
| Mercury (Hg) | ug/L | 0.00158 | 0.00065 | <0.00050 | <0.00050 | 0.00051 | <0.00050 | <0.00050 | 0.00072 | <0.00050 | <0.00050 |
| Molybdenum (Mo) | mg/L | 0.000075 | 0.000078 | 0.000072 | 0.000077 | 0.000081 | 0.000075 | 0.000072 | 0.000071 | 0.000064 | 0.000076 |
| Niobium (Nb) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Nickel (Ni) | mg/L | 0.000564 | 0.000577 | 0.000544 | 0.000547 | 0.000551 | 0.000405 | 0.000413 | 0.000423 | 0.000448 | 0.000403 |
| Phosphorus (P) | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K) | mg/L | 1.01 | 1.01 | 1.03 | 1.03 | 1.01 | 0.967 | 0.95 | 0.952 | 0.966 | 0.958 |
| Rhenium (Re) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Rubidium (Rb) | mg/L | 0.00143 | 0.00144 | 0.00145 | 0.00145 | 0.00143 | 0.00137 | 0.00137 | 0.00139 | 0.0014 | 0.00137 |
| Selenium (Se) | mg/L | <0.000040 | 0.000043 | <0.000040 | 0.000066 | 0.000058 | 0.000044 | 0.000068 | 0.000052 | 0.000061 | 0.000057 |
| Silicon (Si) | mg/L | 0.139 | 0.122 | 0.14 | 0.151 | 0.132 | 0.11 | 0.112 | 0.117 | 0.097 | 0.114 |
| Silver (Ag) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Sodium (Na) | mg/L | 5.65 | 5.5 | 5.7 | 5.7 | 5.68 | 4.75 | 4.85 | 4.86 | 4.85 | 4.84 |
| Strontium (Sr) | mg/L | 0.0411 | 0.0416 | 0.0423 | 0.0424 | 0.0421 | 0.0355 | 0.035 | 0.0353 | 0.034 | 0.0349 |
| Sulfur (S) | mg/L | 1.63 | 1.55 | 1.52 | 1.58 | 1.73 | 1.52 | 1.36 | 1.56 | 1.41 | 1.35 |
| Tantalum (Ta) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Tellurium (Te) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Thallium (Tl) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Thorium (Th) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Tin (Sn) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.000025 | <0.000020 | <0.000020 |
| Titanium (Ti) | mg/L | 0.000075 | 0.00007 | 0.000065 | 0.000081 | 0.000061 | 0.00005 | 0.000065 | 0.000142 | 0.000086 | <0.000050 |
| Tungsten (W) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Uranium (U) | mg/L | 0.0000151 | 0.0000141 | 0.0000142 | 0.0000153 | 0.0000153 | 0.0000133 | 0.0000145 | 0.0000151 | 0.0000158 | 0.0000153 |
| Vanadium (V) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Yttrium (Y) | mg/L | 0.0000081 | 0.0000071 | 0.0000077 | 0.0000076 | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000067 | <0.0000050 | 0.0000066 |
| Zinc (Zn) | mg/L | 0.00201 | 0.00072 | 0.00055 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00067 | <0.00050 | <0.00050 |
| Zirconium (Zr) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Dissolved Metals** | | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0012 | 0.0015 | <0.0010 | 0.0013 | <0.0010 | 0.0014 | 0.003 | 0.0028 | 0.0019 | 0.0026 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.000416 | 0.000423 | 0.000458 | 0.000473 | 0.000431 | 0.000281 | 0.000267 | 0.000308 | 0.000282 | 0.000299 |
| Barium (Ba) | mg/L | 0.00875 | 0.00858 | 0.00881 | 0.00876 | 0.00872 | 0.0084 | 0.00835 | 0.00859 | 0.00836 | 0.0081 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | 0.0053 | 0.0067 | 0.0065 | 0.0062 | 0.0061 | 0.005 | 0.005 | <0.0050 | <0.0050 | <0.0050 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 7.71 | 7.66 | 7.76 | 7.8 | 7.8 | 7.24 | 7.2 | 7.28 | 7.18 | 7.16 |
| Cesium (Cs) | mg/L | 0.0000089 | 0.0000091 | 0.000011 | 0.0000093 | 0.0000084 | 0.0000091 | 0.000009 | 0.0000083 | 0.0000096 | 0.000008 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000089 | 0.0000102 | 0.0000067 | 0.0000064 | 0.0000067 | <0.0000050 | <0.0000050 | 0.0000053 | 0.0000051 | 0.0000051 |

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | September | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Client Sample ID** | MEL-02-01 | MEL-02-02 | MEL-02-03 | MEL-02-04 | MEL-02-05 | MEL-03-01 | MEL-03-02 | MEL-03-03 | MEL-03-04 | MEL-03-05 |
| | **Sample Date** | 9/7/2020 | 9/7/2020 | 9/7/2020 | 9/7/2020 | 9/7/2020 | 9/8/2020 | 9/8/2020 | 9/8/2020 | 9/8/2020 | 9/8/2020 |
| **Parameter** | **ALS Sample ID** | L2501979-1 | L2501979-2 | L2501979-3 | L2501979-4 | L2501979-5 | L2502391-1 | L2502391-2 | L2502391-3 | L2502391-4 | L2502391-5 |
| Copper (Cu) | mg/L | 0.000771 | 0.000742 | 0.000745 | 0.000731 | 0.000761 | 0.000675 | 0.000642 | 0.000705 | 0.00066 | 0.000687 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0044 | 0.0039 | 0.0039 | 0.0041 | 0.004 | 0.0039 | 0.0042 | 0.0053 | 0.0041 | 0.0051 |
| Lanthanum (La) | mg/L | 0.000012 | 0.000012 | *<0.000010* | 0.000011 | *<0.000010* | 0.00001 | *<0.000010* | 0.000011 | *<0.000010* | 0.000012 |
| Lead (Pb) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | 0.000262 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lithium (Li) | mg/L | 0.00098 | 0.00095 | 0.00098 | 0.00097 | 0.00098 | 0.00075 | 0.00074 | 0.00075 | 0.00075 | 0.00073 |
| Magnesium (Mg) | mg/L | 1.35 | 1.36 | 1.36 | 1.35 | 1.38 | 1.23 | 1.22 | 1.2 | 1.22 | 1.22 |
| Manganese (Mn) | mg/L | 0.000376 | 0.000404 | 0.000358 | 0.000387 | 0.000348 | 0.000301 | 0.000301 | 0.000353 | 0.000334 | 0.000336 |
| Mercury (Hg) | ug/L | 0.00084 | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.000101 | 0.000088 | 0.000097 | 0.000102 | 0.000089 | 0.000072 | 0.00007 | 0.00008 | 0.000075 | 0.000073 |
| Nickel (Ni) | mg/L | 0.000525 | 0.000532 | 0.000559 | 0.000529 | 0.000566 | 0.000413 | 0.000448 | 0.000439 | 0.000436 | 0.000426 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 0.987 | 0.998 | 0.992 | 0.996 | 1.01 | 0.951 | 0.939 | 0.971 | 0.952 | 0.938 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00142 | 0.00141 | 0.00141 | 0.0014 | 0.00146 | 0.00136 | 0.00134 | 0.00134 | 0.00135 | 0.00136 |
| Selenium (Se) | mg/L | *<0.000040* | *<0.000040* | 0.00005 | 0.000055 | *<0.000040* | 0.000051 | 0.000049 | 0.00006 | *<0.000040* | *<0.000040* |
| Silicon (Si) | mg/L | 0.149 | 0.141 | 0.139 | 0.135 | 0.126 | 0.123 | 0.121 | 0.12 | 0.132 | 0.109 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 5.52 | 5.48 | 5.76 | 5.56 | 5.72 | 4.95 | 4.78 | 4.85 | 4.85 | 4.86 |
| Strontium (Sr) | mg/L | 0.0437 | 0.0444 | 0.0439 | 0.0442 | 0.0433 | 0.036 | 0.0365 | 0.0362 | 0.0371 | 0.0365 |
| Sulfur (S) | mg/L | 1.5 | 1.57 | 1.51 | 1.61 | 1.72 | 1.53 | 1.36 | 1.43 | 1.48 | 1.26 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | 0.000093 | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000157 | 0.0000165 | 0.0000157 | 0.000015 | 0.0000142 | 0.0000135 | 0.0000132 | 0.0000167 | 0.0000152 | 0.0000149 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Zinc (Zn) | mg/L | 0.00186 | 0.00082 | *<0.00050* | 0.00054 | 0.00059 | 0.00074 | *<0.00050* | 0.00087 | 0.00059 | *<0.00050* |
| Zirconium (Zr) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| **Cyanides** | | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Total | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Free | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| **Radium** | | | | | | | | | | | |
| Ra-226 | Bq/L | - | - | - | - | - | *<0.0063* | *<0.0092* | *<0.0086* | *<0.0070* | *<0.0071* |

**Notes**

*"<" indicates concentration was less than the detection limit*

"-" = Chemical not analyzed or criteria not defined.

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | September | | | | |
|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 |
| | Sample Date | 9/11/2020 | 9/11/2020 | 9/11/2020 | 9/11/2020 | 9/11/2020 |
| **Parameter** | ALS Sample ID | L2504254-1 | L2504254-2 | L2504254-3 | L2504254-4 | L2504254-5 |
| **Conventional Parameters** | **Units** | | | | | |
| Conductivity | µs/cm | 110 | 108 | 109 | 108 | 108 |
| Hardness (as CaCO3) | - | 30 | 30.9 | 31.3 | 31.1 | 28.6 |
| pH | pH units | 7.37 | 7.43 | 7.43 | 7.44 | 7.45 |
| Total Suspended Solids | mg/L | *<1.0* | 1.2 | 1.1 | *<1.0* | *<1.0* |
| Total Dissolved Solids | mg/L | 68 | 62 | 65 | 68 | 74 |
| TDS (Calculated) | mg/L | 54.9 | 55.7 | 56 | 55.3 | 54.2 |
| Turbidity | NTU | 0.41 | 0.44 | 0.42 | 0.55 | 0.47 |
| **Anions and Nutrients** | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 20.7 | 21.1 | 20.7 | 20.5 | 21.1 |
| Ammonia, Total (as N) | mg/L | 0.0185 | 0.0275 | 0.0102 | 0.025 | 0.0212 |
| Bicarbonate (HCO3) | mg/L | 25.3 | 25.7 | 25.3 | 25 | 25.7 |
| 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 | 16.8 | 17 | 17.2 | 16.9 | 16.8 |
| Fluoride (F) | mg/L | 0.024 | 0.024 | 0.025 | 0.024 | 0.024 |
| Hydroxide (OH) | mg/L | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* |
| Ion Balance | % | 98.3 | 98.5 | 100 | 101 | 93.3 |
| 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 | 0.337 | 0.398 | 0.314 | 0.34 | 0.276 |
| Total Nitrogen | mg/L | 0.337 | 0.398 | 0.314 | 0.34 | 0.276 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.281 | 0.359 | 0.288 | 0.293 | 0.275 |
| Total Dissolved Nitrogen | mg/L | 0.281 | 0.359 | 0.288 | 0.293 | 0.275 |
| Orthophosphate-Dissolved (as P) | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Phosphorus (P)-Total Dissolved | mg/L | 0.0029 | 0.0027 | 0.0031 | 0.0031 | 0.0019 |
| Phosphorus (P)-Total | mg/L | 0.0087 | 0.0077 | 0.0085 | 0.0076 | 0.0092 |
| Silica, Reactive (as SiO2) | mg/L | 0.246 | 0.237 | 0.245 | 0.238 | 0.247 |
| Sulfate (SO4) | mg/L | 5.43 | 5.48 | 5.54 | 5.48 | 5.46 |
| **Organic/Inorganic Carbon** | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.22 | 3.38 | 3.13 | 3.37 | 3.19 |
| Total Organic Carbon | mg/L | 3.78 | 3.04 | 3.14 | 3.19 | 3.25 |
| **Total Metals** | | | | | | |
| Aluminum (Al) | mg/L | 0.0056 | 0.0043 | 0.0052 | 0.0047 | 0.0041 |
| Antimony (Sb) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Arsenic (As) | mg/L | 0.000551 | 0.000545 | 0.000537 | 0.000549 | 0.000561 |
| Barium (Ba) | mg/L | 0.00866 | 0.00837 | 0.00829 | 0.00827 | 0.00824 |
| Beryllium (Be) | mg/L | 0.0000061 | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.009 | 0.0085 | 0.008 | 0.008 | 0.0074 |
| Cadmium (Cd) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 8.95 | 8.92 | 8.81 | 9.02 | 8.77 |
| Cesium (Cs) | mg/L | 0.0000126 | 0.0000104 | 0.0000093 | 0.0000096 | 0.0000096 |
| Chromium (Cr) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.0000316 | 0.0000321 | 0.0000253 | 0.0000224 | 0.0000262 |
| Copper (Cu) | mg/L | 0.00093 | 0.000852 | 0.000887 | 0.000868 | 0.000898 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0239 | 0.0239 | 0.0229 | 0.0243 | 0.0239 |
| Lanthanum (La) | mg/L | 0.000023 | 0.000021 | 0.000022 | 0.000022 | 0.000023 |
| Lead (Pb) | mg/L | 0.00001 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Lithium (Li) | mg/L | 0.00151 | 0.0015 | 0.00148 | 0.00148 | 0.00146 |
| Magnesium (Mg) | mg/L | 1.81 | 1.81 | 1.82 | 1.8 | 1.79 |
| Manganese (Mn) | mg/L | 0.00652 | 0.00664 | 0.00656 | 0.00634 | 0.00662 |
| Mercury (Hg) | ug/L | 0.00054 | *<0.00050* | *<0.00050* | *<0.00050* | 0.00062 |
| Molybdenum (Mo) | mg/L | 0.000121 | 0.000107 | 0.000118 | 0.000116 | 0.000112 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Nickel (Ni) | mg/L | 0.00072 | 0.000729 | 0.000759 | 0.000705 | 0.000701 |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 1.2 | 1.21 | 1.2 | 1.2 | 1.19 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00165 | 0.00163 | 0.00162 | 0.00163 | 0.00158 |
| Selenium (Se) | mg/L | 0.000055 | *<0.000040* | *<0.000040* | *<0.000040* | *<0.000040* |
| Silicon (Si) | mg/L | 0.141 | 0.145 | 0.163 | 0.137 | 0.154 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 7.78 | 7.96 | 7.78 | 7.71 | 7.82 |
| Strontium (Sr) | mg/L | 0.0641 | 0.0631 | 0.065 | 0.0655 | 0.0679 |
| Sulfur (S) | mg/L | 1.89 | 1.89 | 2.05 | 1.96 | 1.93 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | 0.000189 | 0.000132 | 0.000158 | 0.000163 | 0.000164 |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000201 | 0.000018 | 0.0000176 | 0.0000178 | 0.0000175 |
| Vanadium (V) | mg/L | 0.000061 | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | 0.0000059 | *<0.0000050* | *<0.0000050* | 0.0000088 | 0.0000075 |
| Zinc (Zn) | mg/L | 0.00112 | 0.0006 | *<0.00050* | 0.0012 | 0.00064 |
| Zirconium (Zr) | mg/L | 0.00001 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| **Dissolved Metals** | | | | | | |
| Aluminum (Al) | mg/L | 0.0021 | 0.0027 | 0.0022 | 0.0018 | 0.0033 |
| Antimony (Sb) | mg/L | 0.000023 | 0.00002 | 0.00002 | 0.000021 | *<0.000020* |
| Arsenic (As) | mg/L | 0.000492 | 0.000488 | 0.000486 | 0.0005 | 0.000492 |
| Barium (Ba) | mg/L | 0.00823 | 0.00835 | 0.00818 | 0.00845 | 0.00826 |
| Beryllium (Be) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.007 | 0.0076 | 0.0077 | 0.0077 | 0.0077 |
| Cadmium (Cd) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 9.04 | 9.43 | 9.56 | 9.53 | 8.61 |
| Cesium (Cs) | mg/L | 0.0000101 | 0.0000099 | 0.0000098 | 0.0000105 | 0.000012 |
| Chromium (Cr) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.0000129 | 0.0000143 | 0.0000127 | 0.0000129 | 0.0000148 |

Table C3-1. Meliadine Lake water chemistry data, Meliadine Lake AEMP 2020.

| | Sample Event | September | | | | |
|---|---|---|---|---|---|---|
| | Client Sample ID | MEL-01-01 | MEL-01-06 | MEL-01-07 | MEL-01-08 | MEL-01-09 |
| | Sample Date | 9/11/2020 | 9/11/2020 | 9/11/2020 | 9/11/2020 | 9/11/2020 |
| **Parameter** | **ALS Sample ID** | L2504254-1 | L2504254-2 | L2504254-3 | L2504254-4 | L2504254-5 |
| Copper (Cu) | mg/L | 0.000897 | 0.000826 | 0.000856 | 0.00081 | 0.000841 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0058 | 0.0076 | 0.0067 | 0.0072 | 0.0074 |
| Lanthanum (La) | mg/L | *<0.000010* | 0.000011 | *<0.000010* | 0.000011 | 0.000011 |
| Lead (Pb) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | 0.000014 | 0.000014 |
| Lithium (Li) | mg/L | 0.00144 | 0.00154 | 0.00156 | 0.00155 | 0.00146 |
| Magnesium (Mg) | mg/L | 1.8 | 1.78 | 1.82 | 1.78 | 1.73 |
| Manganese (Mn) | mg/L | 0.000403 | 0.000368 | 0.000481 | 0.000309 | 0.000443 |
| Mercury (Hg) | ug/L | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.000132 | 0.000119 | 0.000126 | 0.000135 | 0.000121 |
| Nickel (Ni) | mg/L | 0.000746 | 0.000668 | 0.000726 | 0.00068 | 0.000739 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 1.22 | 1.21 | 1.23 | 1.22 | 1.15 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00167 | 0.00168 | 0.00163 | 0.00165 | 0.00154 |
| Selenium (Se) | mg/L | 0.00005 | 0.000045 | 0.000048 | *<0.000040* | 0.000045 |
| Silicon (Si) | mg/L | 0.133 | 0.126 | 0.134 | 0.14 | 0.125 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 8.15 | 8.07 | 8.22 | 8.1 | 7.8 |
| Strontium (Sr) | mg/L | 0.0653 | 0.0638 | 0.0644 | 0.0653 | 0.0623 |
| Sulfur (S) | mg/L | 1.91 | 1.87 | 2.31 | 1.87 | 2.19 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | *<0.000050* | 0.000056 | *<0.000050* | *<0.000050* | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000175 | 0.0000172 | 0.0000187 | 0.0000172 | 0.0000189 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Yttrium (Y) | mg/L | 0.0000056 | 0.0000053 | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Zinc (Zn) | mg/L | 0.00153 | 0.0028 | 0.0034 | 0.00121 | 0.00109 |
| Zirconium (Zr) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |
| **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* |
| **Radium** | | | | | | |
| Ra-226 | Bq/L | *<0.0094* | *<0.0050* | *<0.0053* | *<0.0074* | 0.0089 |

**Notes**

*"<" indicates concentration was less than the detection limit*

"-" = Chemical not analyzed or criteria not defined.

# APPENDIX D
# PENINSULA LAKES – SUPPORTING TABLES

Table D1-1. Peninsula Lakes laboratory water chemistry data, Meliadine Lake AEMP 2020.

| Parameter | Sample Event | July | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | A8-01 | A8-02 | A8-03 | B7-01 | B7-02 | B7-03 | D7-01 | D7-02 | D7-03 |
| | Sample Date | 7/28/2020 | 7/28/2020 | 7/28/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/31/2020 | 7/31/2020 | 7/31/2020 |
| | ALS Sample ID | L2484438-11 | L2484438-12 | L2484438-13 | L2484438-14 | L2484438-15 | L2484438-16 | L2485199-1 | L2485199-2 | L2485199-3 |
| | Units | | | | | | | | | |
| **Physical Tests** | | | | | | | | | | |
| Conductivity | umhos/cm | 222 | 226 | 226 | 209 | 205 | 207 | 118 | 117 | 116 |
| Hardness (as CaCO3) | - | 84.5 | 85.6 | 86.3 | 78.9 | 77.6 | 78.6 | 41 | 40.9 | 41.1 |
| pH | pH units | 7.71 | 7.71 | 7.71 | 7.66 | 7.65 | 7.65 | 7.73 | 7.71 | 7.73 |
| Total Suspended Solids | mg/L | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | 1.9 | 1.2 | *<1.0* |
| Total Dissolved Solids | mg/L | 144 | 144 | 145 | 144 | 140 | 140 | 74 | 72 | 57 |
| Turbidity | NTU | 0.35 | 0.48 | 0.35 | 0.32 | 0.41 | 0.3 | 0.86 | 0.71 | 0.84 |
| **Anions and Nutrients** | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 47.8 | 48.7 | 48.6 | 41.9 | 41 | 41 | 46.7 | 45.1 | 44.6 |
| Ammonia, Total (as N) | mg/L | 0.0421 | 0.0352 | 0.0227 | 0.0399 | 0.0062 | 0.0188 | *<0.0050* | 0.0377 | 0.0519 |
| Bicarbonate (HCO3) | mg/L | 58.3 | 59.4 | 59.3 | 51.1 | 50 | 50 | 57 | 55 | 54.4 |
| Bromide (Br) | mg/L | 0.24 | 0.24 | 0.23 | 0.15 | 0.14 | 0.14 | *<0.10* | *<0.10* | *<0.10* |
| Carbonate (CO3) | mg/L | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* |
| Chloride (Cl) | mg/L | 41.2 | 41.3 | 40.4 | 37.3 | 37.1 | 37.6 | 9.05 | 8.96 | 9.06 |
| Fluoride (F) | mg/L | 0.033 | 0.032 | 0.031 | 0.03 | 0.029 | 0.03 | 0.039 | 0.039 | 0.039 |
| Hydroxide (OH) | mg/L | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* |
| Ion Balance | % | 90.1 | 90.2 | 92.5 | 92.7 | 92.5 | 91.8 | 89.4 | 91.8 | 92 |
| Nitrate and Nitrite as N | mg/L | *<0.0051* | 0.0064 | 0.0139 | 0.0075 | 0.0206 | *<0.0051* | 0.0311 | 0.0178 | 0.0078 |
| Nitrate (as N) | mg/L | *<0.0050* | 0.0064 | 0.0139 | 0.0075 | 0.0206 | *<0.0050* | 0.0311 | 0.0167 | 0.0078 |
| Nitrite (as N) | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | 0.0011 | *<0.0010* |
| Total Kjeldahl Nitrogen | mg/L | 0.481 | 0.408 | 0.43 | 0.432 | 0.448 | 0.407 | 0.263 | 0.391 | 0.406 |
| Total Nitrogen | mg/L | 0.481 | 0.414 | 0.443 | 0.439 | 0.469 | 0.407 | 0.294 | 0.408 | 0.414 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.318 | 0.365 | 0.378 | 0.204 | 0.477 | 0.367 | 0.227 | 0.269 | 0.2 |
| Total Dissolved Nitrogen | mg/L | 0.318 | 0.372 | 0.392 | 0.212 | 0.497 | 0.367 | 0.258 | 0.286 | 0.207 |
| Orthophosphate-Dissolved (as P) | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Phosphorus (P)-Total Dissolved | mg/L | 0.0023 | 0.0029 | 0.0033 | 0.0033 | 0.0033 | 0.0031 | 0.0038 | 0.0038 | 0.0033 |
| Phosphorus (P)-Total | mg/L | 0.0069 | 0.0058 | 0.0059 | 0.0065 | 0.007 | 0.008 | 0.0099 | 0.0102 | 0.0107 |
| Silica, Reactive (as SiO2) | mg/L | 0.554 | 0.562 | 0.556 | 0.69 | 0.734 | 0.717 | 0.282 | 0.278 | 0.269 |
| TDS (Calculated) | mg/L | 118 | 119 | 118 | 109 | 108 | 109 | 64 | 62.6 | 62.4 |
| Sulfate (SO4) | mg/L | 7.79 | 7.47 | 7.29 | 8.14 | 8.13 | 8.56 | 3.98 | 3.9 | 3.96 |
| **Cyanides** | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Total | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Free | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| **Organic / Inorganic Carbon** | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 3.9 | 4.2 | 4.2 | 5 | 4.8 | 4.8 | 4.6 | 5.1 | 4.8 |
| Total Organic Carbon | mg/L | 4 | 4 | 3.9 | 4.9 | 4.9 | 4.7 | 4.5 | 4.8 | 4.6 |
| **Total Metals (Undigested)** | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0033 | 0.0032 | 0.0035 | 0.0031 | 0.0031 | 0.0024 | 0.0068 | 0.0063 | 0.0057 |
| Antimony (Sb) | mg/L | 0.000034 | 0.000057 | 0.000034 | 0.000035 | 0.000035 | 0.000038 | *<0.000020* | *<0.000020* | *<0.000020* |
| Arsenic (As) | mg/L | 0.0058 | 0.00591 | 0.00592 | 0.00733 | 0.00521 | 0.00505 | 0.00144 | 0.00135 | 0.00131 |
| Barium (Ba) | mg/L | 0.026 | 0.0258 | 0.0252 | 0.0257 | 0.0258 | 0.0251 | 0.0171 | 0.0166 | 0.0168 |
| Beryllium (Be) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.0056 | 0.0057 | 0.0056 | 0.0149 | 0.0155 | 0.0156 | 0.0149 | 0.0146 | 0.0147 |
| Cadmium (Cd) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.000020* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 28.5 | 27.8 | 28.7 | 26.5 | 27.4 | 27.4 | 13 | 12.7 | 12.7 |
| Cesium (Cs) | mg/L | 0.0000182 | 0.0000181 | 0.0000174 | 0.0000452 | 0.0000441 | 0.0000454 | 0.0000068 | 0.0000074 | 0.0000065 |
| Chromium (Cr) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.0000416 | 0.0000473 | 0.0000446 | 0.0000731 | 0.0000768 | 0.0000784 | 0.0000644 | 0.0000609 | 0.0000542 |
| Copper (Cu) | mg/L | 0.00084 | 0.00166 | 0.0017 | 0.000919 | 0.000901 | 0.000914 | 0.000818 | 0.000837 | 0.000833 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0636 | 0.0616 | 0.0634 | 0.064 | 0.066 | 0.0647 | 0.0895 | 0.0874 | 0.0848 |
| Lanthanum (La) | mg/L | 0.000013 | 0.000013 | 0.000012 | 0.000015 | 0.000017 | 0.000016 | 0.000032 | 0.000029 | 0.000029 |
| Lead (Pb) | mg/L | 0.000067 | 0.000081 | 0.00007 | 0.000077 | 0.000073 | 0.000067 | 0.000025 | 0.00002 | 0.000021 |
| Lithium (Li) | mg/L | 0.00755 | 0.00751 | 0.00751 | 0.0189 | 0.02 | 0.0202 | 0.0014 | 0.00136 | 0.00139 |
| Magnesium (Mg) | mg/L | 4.01 | 3.98 | 4.04 | 2.73 | 2.7 | 2.71 | 2.48 | 2.47 | 2.46 |
| Manganese (Mn) | mg/L | 0.00935 | 0.00947 | 0.00959 | 0.00685 | 0.00706 | 0.00662 | 0.0132 | 0.0123 | 0.0122 |
| Mercury (Hg) | ug/L | 0.00052 | 0.00078 | *<0.00050* | 0.00054 | 0.00056 | *<0.00050* | 0.00069 | 0.00061 | 0.00059 |
| Molybdenum (Mo) | mg/L | 0.000276 | 0.000297 | 0.000269 | 0.000267 | 0.00219 | 0.00527 | 0.000767 | 0.000427 | 0.00045 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Nickel (Ni) | mg/L | 0.000792 | 0.000789 | 0.000766 | 0.000836 | 0.000848 | 0.000847 | 0.00073 | 0.000718 | 0.000678 |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 1.87 | 1.83 | 1.85 | 1.75 | 1.75 | 1.72 | 1.2 | 1.22 | 1.21 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00197 | 0.00192 | 0.00196 | 0.00198 | 0.00195 | 0.00195 | 0.00111 | 0.00108 | 0.00108 |
| Selenium (Se) | mg/L | *<0.000040* | *<0.000040* | 0.000042 | *<0.000040* | *<0.000040* | 0.000046 | 0.000053 | 0.000062 | 0.000069 |
| Silicon (Si) | mg/L | 0.267 | 0.258 | 0.276 | 0.323 | 0.333 | 0.346 | 0.144 | 0.142 | 0.143 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | 0.0000095 | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 7.48 | 7.39 | 7.5 | 6.49 | 6.41 | 6.47 | 6.67 | 6.93 | 6.65 |
| Strontium (Sr) | mg/L | 0.201 | 0.2 | 0.204 | 0.283 | 0.281 | 0.285 | 0.0669 | 0.0691 | 0.0678 |
| Sulfur (S) | mg/L | 2.65 | 2.59 | 2.69 | 2.76 | 2.75 | 2.95 | 1.33 | 1.31 | 1.33 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | 0.000033 | 0.000027 | 0.000031 | 0.000037 | 0.000035 | 0.000039 | *<0.000020* | *<0.000020* | 0.000022 |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | 0.0000058 | 0.0000057 | 0.0000058 | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | 0.000021 | 0.000034 | *<0.000020* | *<0.000020* | *<0.000020* |
| Titanium (Ti) | mg/L | 0.000086 | 0.000075 | 0.000057 | *<0.000050* | *<0.000050* | *<0.000050* | *<0.00030* | 0.000307 | 0.000303 |
| Tungsten (W) | mg/L | 0.000059 | 0.000058 | 0.00006 | 0.000044 | 0.000042 | 0.00004 | *<0.000010* | *<0.000010* | *<0.000010* |
| Uranium (U) | mg/L | 0.0000463 | 0.0000458 | 0.000045 | 0.0000389 | 0.0000417 | 0.0000403 | 0.0000507 | 0.0000488 | 0.0000488 |
| Vanadium (V) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | 0.00005 | *<0.000050* | *<0.000050* | 0.000088 | 0.000082 | 0.00008 |
| Yttrium (Y) | mg/L | 0.0000072 | *<0.0000050* | *<0.0000050* | 0.0000052 | *<0.0000050* | 0.0000051 | 0.0000084 | 0.0000128 | 0.0000094 |
| Zinc (Zn) | mg/L | 0.00089 | 0.0018 | 0.00062 | *<0.00050* | 0.00139 | 0.00072 | *<0.00050* | 0.0006 | 0.0005 |
| Zirconium (Zr) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |

Table D1-1. Peninsula Lakes laboratory water chemistry data, Meliadine Lake AEMP 2020.

| Parameter | Sample Event | July | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | A8-01 | A8-02 | A8-03 | B7-01 | B7-02 | B7-03 | D7-01 | D7-02 | D7-03 |
| | Sample Date | 7/28/2020 | 7/28/2020 | 7/28/2020 | 7/27/2020 | 7/27/2020 | 7/27/2020 | 7/31/2020 | 7/31/2020 | 7/31/2020 |
| | ALS Sample ID | L2484438-11 | L2484438-12 | L2484438-13 | L2484438-14 | L2484438-15 | L2484438-16 | L2485199-1 | L2485199-2 | L2485199-3 |
| | Units | | | | | | | | | |
| **Dissolved Metals** | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0029 | 0.0022 | 0.002 | 0.0025 | 0.0029 | 0.0029 | 0.0025 | 0.0025 | 0.0022 |
| Antimony (Sb) | mg/L | 0.00003 | 0.000036 | 0.00003 | 0.000034 | 0.000034 | 0.000034 | <0.000020 | <0.000020 | <0.000020 |
| Arsenic (As) | mg/L | 0.00489 | 0.00502 | 0.00494 | 0.00624 | 0.00444 | 0.00482 | 0.00111 | 0.00103 | 0.00104 |
| Barium (Ba) | mg/L | 0.0241 | 0.0251 | 0.0239 | 0.0248 | 0.0241 | 0.0245 | 0.0162 | 0.0164 | 0.0157 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | 0.0052 | 0.0054 | 0.0054 | 0.0149 | 0.0148 | 0.0151 | 0.015 | 0.0147 | 0.0142 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 27.5 | 27.8 | 28.2 | 27.1 | 26.6 | 27 | 12.4 | 12.4 | 12.5 |
| Cesium (Cs) | mg/L | 0.0000174 | 0.0000194 | 0.0000175 | 0.000043 | 0.0000416 | 0.0000418 | 0.0000068 | 0.0000064 | 0.000006 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00023 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000196 | 0.0000239 | 0.0000231 | 0.0000531 | 0.0000509 | 0.0000691 | 0.0000187 | 0.0000168 | 0.0000173 |
| Copper (Cu) | mg/L | 0.000791 | 0.00155 | 0.00161 | 0.000929 | 0.000912 | 0.000893 | 0.000785 | 0.000747 | 0.00077 |
| Gallium (Ga) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Iron (Fe) | mg/L | 0.0331 | 0.0309 | 0.0324 | 0.0343 | 0.0347 | 0.0658 | 0.0302 | 0.0321 | 0.0312 |
| Lanthanum (La) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.00001 | 0.000017 | <0.000010 | 0.00001 | <0.000010 |
| Lead (Pb) | mg/L | 0.000037 | 0.000039 | 0.000038 | 0.000045 | 0.000043 | 0.000068 | 0.000013 | 0.000011 | 0.00001 |
| Lithium (Li) | mg/L | 0.00728 | 0.00739 | 0.00735 | 0.0196 | 0.0193 | 0.0198 | 0.00133 | 0.00134 | 0.00134 |
| Magnesium (Mg) | mg/L | 3.85 | 3.9 | 3.88 | 2.73 | 2.74 | 2.7 | 2.41 | 2.42 | 2.39 |
| Manganese (Mn) | mg/L | 0.00101 | 0.00109 | 0.00121 | 0.000512 | 0.000407 | 0.00661 | 0.000758 | 0.000444 | 0.000418 |
| Mercury (Hg) | ug/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00061 | 0.00063 | 0.0005 |
| Molybdenum (Mo) | mg/L | 0.000259 | 0.000392 | 0.000306 | 0.00028 | 0.00029 | 0.00526 | 0.000443 | 0.000461 | 0.000464 |
| Niobium (Nb) | mg/L | 0.000711 | 0.000765 | 0.000716 | 0.000876 | 0.000886 | 0.000853 | 0.000652 | 0.000676 | 0.000627 |
| Nickel (Ni) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Phosphorus (P) | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K) | mg/L | 1.8 | 1.81 | 1.83 | 1.75 | 1.75 | 1.73 | 1.19 | 1.2 | 1.16 |
| Rhenium (Re) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Rubidium (Rb) | mg/L | 0.00192 | 0.00189 | 0.00191 | 0.00197 | 0.002 | 0.00195 | 0.00109 | 0.00108 | 0.00105 |
| Selenium (Se) | mg/L | <0.000040 | <0.000040 | 0.000044 | <0.000040 | <0.000040 | <0.000040 | 0.000041 | 0.000046 | <0.000040 |
| Silicon (Si) | mg/L | 0.283 | 0.27 | 0.273 | 0.338 | 0.356 | 0.364 | 0.15 | 0.151 | 0.145 |
| Silver (Ag) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Sodium (Na) | mg/L | 7.29 | 7.21 | 7.38 | 6.57 | 6.59 | 6.36 | 6.74 | 6.58 | 6.53 |
| Strontium (Sr) | mg/L | 0.194 | 0.2 | 0.201 | 0.271 | 0.271 | 0.277 | 0.0661 | 0.0693 | 0.0692 |
| Sulfur (S) | mg/L | 2.73 | 2.7 | 2.84 | 3.04 | 3.01 | 3.01 | 1.32 | 1.27 | 1.42 |
| Tantalum (Ta) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Tellurium (Te) | mg/L | 0.000021 | 0.000021 | 0.000025 | 0.00003 | 0.000027 | 0.000035 | <0.000020 | <0.000020 | <0.000020 |
| Thallium (Tl) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000067 | 0.0000063 | 0.0000067 | <0.0000050 | <0.0000050 | <0.0000050 |
| Thorium (Th) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Tin (Sn) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.000035 | <0.000020 | <0.000020 | <0.000020 |
| Titanium (Ti) | mg/L | 0.000057 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | 0.000055 | <0.000050 | <0.000050 |
| Tungsten (W) | mg/L | 0.000061 | 0.000057 | 0.000057 | 0.000047 | 0.000038 | 0.000041 | <0.000010 | <0.000010 | <0.000010 |
| Uranium (U) | mg/L | 0.0000493 | 0.0000515 | 0.0000478 | 0.0000447 | 0.000042 | 0.000045 | 0.0000556 | 0.0000537 | 0.0000573 |
| Vanadium (V) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Yttrium (Y) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000055 | 0.00001 | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000057 |
| Zinc (Zn) | mg/L | 0.0011 | 0.00106 | 0.00052 | <0.00050 | 0.00459 | 0.00062 | 0.00062 | <0.00050 | <0.00050 |
| Zirconium (Zr) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |

**Notes**

"<" indicates parameter was below the detection limit

"-" = Chemical not analyzed or criteria not defined

Table D1-1. Peninsula Lakes laboratory water chemistry data, Meliadine Lake AEMP 2020.

| Parameter | Sample Event | August | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Client Sample ID** | D7-01 | D7-02 | D7-03 | A8-01 | A8-02 | A8-03 | B7-01 | B7-02 | B7-03 |
| | **Sample Date** | 8/24/2020 | 8/24/2020 | 8/24/2020 | 8/21/2020 | 8/21/2020 | 8/21/2020 | 8/22/2020 | 8/22/2020 | 8/22/2020 |
| | **ALS Sample ID** | L2496238-1 | L2496238-2 | L2496238-3 | L2496246-1 | L2496246-2 | L2496246-3 | L2496246-4 | L2496246-5 | L2496246-6 |
| | **Units** | | | | | | | | | |
| **Physical Tests** | | | | | | | | | | |
| Conductivity | umhos/cm | 133 | 133 | 133 | 256 | 251 | 234 | 235 | 232 | 232 |
| Hardness (as CaCO3) | - | 49.3 | 48.9 | 49.4 | 103 | 103 | 96.8 | 94.6 | 91.1 | 91.9 |
| pH | pH units | 7.69 | 7.7 | 7.72 | 7.82 | 7.82 | 7.82 | 7.71 | 7.75 | 7.78 |
| Total Suspended Solids | mg/L | 2 | 2 | 1.6 | *<1.0* | 1.2 | *<1.0* | 2.8 | 1.7 | 1.3 |
| Total Dissolved Solids | mg/L | 82 | 76 | 79 | 174 | 172 | 149 | 152 | 161 | 164 |
| Turbidity | NTU | 0.9 | 0.95 | 0.74 | 0.48 | 0.45 | 0.71 | 0.41 | 0.44 | 0.44 |
| **Anions and Nutrients** | | | | | | | | | | |
| Alkalinity, Total (as CaCO3) | mg/L | 49.3 | 48.9 | 49 | 52.1 | 51.9 | 57.5 | 45.4 | 46.5 | 46.6 |
| Ammonia, Total (as N) | mg/L | 0.0153 | 0.0719 | 0.0076 | 0.0506 | 0.0438 | 0.0656 | 0.0127 | 0.0098 | 0.0444 |
| Bicarbonate (HCO3) | mg/L | 60.1 | 59.7 | 59.8 | 63.6 | 63.3 | 70.2 | 55.4 | 56.7 | 56.9 |
| Bromide (Br) | mg/L | *<0.10* | *<0.10* | *<0.10* | 0.24 | 0.26 | 0.21 | 0.16 | 0.16 | 0.16 |
| Carbonate (CO3) | mg/L | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* | *<0.60* |
| Chloride (Cl) | mg/L | 10.2 | 10.2 | 10.1 | 43.8 | 43.8 | 36 | 41 | 40.3 | 40.1 |
| Fluoride (F) | mg/L | 0.044 | 0.044 | 0.044 | 0.034 | 0.035 | 0.038 | 0.033 | 0.034 | 0.034 |
| Hydroxide (OH) | mg/L | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* | *<0.34* |
| Ion Balance | % | 98 | 99.6 | 99.7 | 101 | 101 | 99.6 | 100 | 97.8 | 98.4 |
| Nitrate and Nitrite as N | mg/L | 0.0071 | *<0.0051* | 0.0058 | *<0.0051* | 0.0069 | *<0.0051* | *<0.0051* | *<0.0051* | *<0.0051* |
| Nitrate (as N) | mg/L | 0.0071 | *<0.0050* | 0.0058 | *<0.0050* | 0.0069 | *<0.0050* | *<0.0050* | *<0.0050* | *<0.0050* |
| Nitrite (as N) | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Total Kjeldahl Nitrogen | mg/L | 0.406 | 0.453 | 0.365 | 0.406 | 0.431 | 0.469 | 0.438 | 0.394 | 0.423 |
| Total Nitrogen | mg/L | 0.413 | 0.453 | 0.37 | 0.406 | 0.437 | 0.469 | 0.438 | 0.394 | 0.423 |
| Dissolved Kjeldahl Nitrogen | mg/L | 0.328 | 0.337 | 0.343 | 0.403 | 0.312 | 0.368 | 0.38 | 0.434 | 0.362 |
| Total Dissolved Nitrogen | mg/L | 0.336 | 0.337 | 0.349 | 0.403 | 0.319 | 0.368 | 0.38 | 0.434 | 0.362 |
| Orthophosphate-Dissolved (as P) | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Phosphorus (P)-Total Dissolved | mg/L | 0.0034 | 0.0033 | 0.0035 | 0.003 | 0.0027 | 0.0026 | 0.0026 | 0.0027 | 0.0027 |
| Phosphorus (P)-Total | mg/L | 0.0112 | 0.0113 | 0.0108 | 0.0056 | 0.0064 | 0.007 | 0.0133 | 0.0061 | 0.0065 |
| Silica, Reactive (as SiO2) | mg/L | 0.488 | 0.495 | 0.499 | 0.915 | 0.881 | 1.3 | 0.967 | 1.03 | 1 |
| TDS (Calculated) | mg/L | 71.5 | 71.2 | 70.9 | 131 | 132 | 122 | 121 | 120 | 120 |
| Sulfate (SO4) | mg/L | 4.82 | 4.6 | 4.44 | 8.02 | 7.99 | 6.39 | 8.23 | 8.15 | 8.14 |
| **Cyanides** | | | | | | | | | | |
| Cyanide, Weak Acid Diss | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Total | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| Cyanide, Free | mg/L | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* | *<0.0010* |
| **Organic / Inorganic Carbon** | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 4.62 | 4.64 | 4.77 | 4.11 | 3.86 | 5.11 | 4.93 | 4.88 | 5.1 |
| Total Organic Carbon | mg/L | 4.6 | 4.72 | 4.63 | 4.12 | 4.04 | 5.05 | 4.83 | 4.74 | 4.89 |
| **Total Metals (Undigested)** | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0077 | 0.0082 | 0.0082 | 0.004 | 0.0049 | 0.0079 | 0.0032 | 0.0047 | 0.0016 |
| Antimony (Sb) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | 0.000043 | 0.000312 | 0.000057 | 0.000117 | 0.000144 | 0.000047 |
| Arsenic (As) | mg/L | 0.00122 | 0.00123 | 0.00118 | 0.00575 | 0.0054 | 0.00358 | 0.00568 | 0.00482 | 0.00462 |
| Barium (Ba) | mg/L | 0.0148 | 0.0161 | 0.0162 | 0.0243 | 0.0239 | 0.0245 | 0.0234 | 0.024 | 0.024 |
| Beryllium (Be) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Bismuth (Bi) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Boron (B) | mg/L | 0.0158 | 0.0164 | 0.0166 | 0.0057 | *<0.0050* | *<0.0050* | 0.0145 | 0.0148 | 0.0146 |
| Cadmium (Cd) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | 0.0000076 | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Calcium (Ca) | mg/L | 14.6 | 14.8 | 14.9 | 32.7 | 34.1 | 31.8 | 32.8 | 33.1 | 31.2 |
| Cesium (Cs) | mg/L | 0.0000068 | 0.0000066 | 0.0000088 | 0.0000182 | 0.0000187 | 0.0000169 | 0.0000388 | 0.000039 | 0.0000432 |
| Chromium (Cr) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Cobalt (Co) | mg/L | 0.0000639 | 0.0000644 | 0.0000663 | 0.0000492 | 0.0000401 | 0.0000633 | 0.0000706 | 0.0000607 | 0.0000585 |
| Copper (Cu) | mg/L | 0.000919 | 0.000955 | 0.000932 | 0.000955 | 0.000758 | 0.0019 | 0.000878 | 0.000888 | 0.000957 |
| Gallium (Ga) | mg/L | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* | *<0.000050* |
| Iron (Fe) | mg/L | 0.0693 | 0.0699 | 0.0687 | 0.0723 | 0.0623 | 0.113 | 0.0577 | 0.0548 | 0.0507 |
| Lanthanum (La) | mg/L | 0.000041 | 0.000042 | 0.000039 | 0.000019 | 0.00002 | 0.000025 | 0.00002 | 0.000031 | 0.000014 |
| Lead (Pb) | mg/L | 0.000025 | 0.000029 | 0.000023 | 0.000072 | 0.000059 | 0.000049 | 0.000045 | 0.000047 | 0.000025 |
| Lithium (Li) | mg/L | 0.00144 | 0.00148 | 0.00148 | 0.00753 | 0.00742 | 0.00603 | 0.02 | 0.0195 | 0.019 |
| Magnesium (Mg) | mg/L | 2.82 | 2.8 | 2.84 | 4.56 | 4.63 | 4.19 | 3.11 | 3.2 | 3.07 |
| Manganese (Mn) | mg/L | 0.0135 | 0.0136 | 0.0124 | 0.00985 | 0.00839 | 0.0184 | 0.00522 | 0.00533 | 0.00571 |
| Mercury (Hg) | ug/L | 0.00053 | 0.00056 | 0.00054 | *<0.00050* | *<0.00050* | 0.00059 | *<0.00050* | *<0.00050* | *<0.00050* |
| Molybdenum (Mo) | mg/L | 0.000468 | 0.00047 | 0.000452 | 0.000275 | 0.000261 | 0.000263 | 0.000263 | 0.000275 | 0.000241 |
| Niobium (Nb) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Nickel (Ni) | mg/L | 0.00082 | 0.000862 | 0.000809 | 0.000871 | 0.000744 | 0.001 | 0.000851 | 0.000781 | 0.000809 |
| Phosphorus (P) | mg/L | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* | *<0.050* |
| Potassium (K) | mg/L | 1.32 | 1.34 | 1.34 | 1.95 | 1.92 | 1.78 | 1.8 | 1.83 | 1.8 |
| Rhenium (Re) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Rubidium (Rb) | mg/L | 0.00122 | 0.00125 | 0.00122 | 0.00207 | 0.00203 | 0.00189 | 0.00202 | 0.00209 | 0.00202 |
| Selenium (Se) | mg/L | 0.00007 | 0.000057 | 0.000052 | *<0.000040* | *<0.000040* | 0.000043 | 0.000054 | *<0.000040* | 0.000052 |
| Silicon (Si) | mg/L | 0.258 | 0.253 | 0.245 | 0.451 | 0.443 | 0.677 | 0.472 | 0.541 | 0.531 |
| Silver (Ag) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Sodium (Na) | mg/L | 7.65 | 7.48 | 8.37 | 8.41 | 8.32 | 6.96 | 7.21 | 7.45 | 7.11 |
| Strontium (Sr) | mg/L | 0.0677 | 0.0683 | 0.068 | 0.184 | 0.189 | 0.173 | 0.254 | 0.27 | 0.263 |
| Sulfur (S) | mg/L | 1.7 | 1.7 | 1.68 | 2.87 | 2.88 | 2.29 | 2.92 | 3.1 | 2.81 |
| Tantalum (Ta) | mg/L | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* | *<0.00010* |
| Tellurium (Te) | mg/L | *<0.000020* | *<0.000020* | *<0.000020* | *<0.000020* | 0.000021 | *<0.000020* | 0.000024 | 0.000024 | *<0.000020* |
| Thallium (Tl) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Thorium (Th) | mg/L | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* | *<0.0000050* |
| Tin (Sn) | mg/L | 0.000022 | *<0.000020* | *<0.000020* | *<0.000020* | 0.000022 | *<0.000020* | *<0.000020* | 0.000035 | *<0.000020* |
| Titanium (Ti) | mg/L | 0.000518 | *<0.00050* | 0.000536 | 0.000164 | 0.000138 | 0.000346 | *<0.00020* | 0.000303 | *<0.000050* |
| Tungsten (W) | mg/L | *<0.000010* | *<0.000010* | *<0.000010* | 0.000059 | 0.000061 | 0.000023 | 0.000035 | 0.000036 | 0.000037 |
| Uranium (U) | mg/L | 0.0000617 | 0.0000635 | 0.0000604 | 0.0000557 | 0.000051 | 0.0000467 | 0.0000477 | 0.0000488 | 0.0000439 |
| Vanadium (V) | mg/L | 0.000097 | 0.000105 | 0.000101 | 0.000053 | 0.000051 | 0.000064 | 0.000059 | 0.000063 | 0.000051 |
| Yttrium (Y) | mg/L | 0.0000072 | 0.0000105 | 0.0000085 | 0.0000076 | 0.0000055 | 0.0000064 | 0.000007 | 0.0000106 | *<0.0000050* |
| Zinc (Zn) | mg/L | 0.00144 | 0.00195 | 0.00053 | 0.00109 | 0.00092 | 0.00157 | 0.00078 | 0.00067 | 0.00052 |
| Zirconium (Zr) | mg/L | 0.000025 | *<0.000010* | *<0.000010* | 0.000132 | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* | *<0.000010* |

Table D1-1. Peninsula Lakes laboratory water chemistry data, Meliadine Lake AEMP 2020.

| Parameter | Sample Event | August | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Client Sample ID | D7-01 | D7-02 | D7-03 | A8-01 | A8-02 | A8-03 | B7-01 | B7-02 | B7-03 |
| | Sample Date | 8/24/2020 | 8/24/2020 | 8/24/2020 | 8/21/2020 | 8/21/2020 | 8/21/2020 | 8/22/2020 | 8/22/2020 | 8/22/2020 |
| | ALS Sample ID | L2496238-1 | L2496238-2 | L2496238-3 | L2496246-1 | L2496246-2 | L2496246-3 | L2496246-4 | L2496246-5 | L2496246-6 |
| | Units | | | | | | | | | |
| **Dissolved Metals** | | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.0034 | 0.0022 | 0.0019 | 0.0021 | 0.0011 | 0.0026 | 0.0023 | 0.002 | 0.0013 |
| Antimony (Sb) | mg/L | <0.000020 | <0.000020 | <0.000020 | 0.000106 | 0.000084 | 0.000062 | 0.000107 | 0.000208 | 0.000045 |
| Arsenic (As) | mg/L | 0.000991 | 0.000918 | 0.00095 | 0.00446 | 0.00456 | 0.0028 | 0.00494 | 0.00407 | 0.00414 |
| Barium (Ba) | mg/L | 0.0154 | 0.0156 | 0.0152 | 0.0229 | 0.0233 | 0.0234 | 0.023 | 0.0225 | 0.0226 |
| Beryllium (Be) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Bismuth (Bi) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Boron (B) | mg/L | 0.0156 | 0.0154 | 0.0158 | 0.0053 | 0.0051 | <0.0050 | 0.0143 | 0.0143 | 0.0145 |
| Cadmium (Cd) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000062 | <0.0000050 | <0.0000050 | <0.0000050 |
| Calcium (Ca) | mg/L | 15 | 14.8 | 14.9 | 33.5 | 33.9 | 31.9 | 32.6 | 31.3 | 31.8 |
| Cesium (Cs) | mg/L | 0.0000066 | 0.0000065 | 0.0000062 | 0.000017 | 0.0000168 | 0.0000139 | 0.0000403 | 0.0000444 | 0.0000433 |
| Chromium (Cr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co) | mg/L | 0.0000202 | 0.0000197 | 0.000018 | 0.0000198 | 0.0000197 | 0.0000305 | 0.0000474 | 0.0000465 | 0.0000451 |
| Copper (Cu) | mg/L | 0.000842 | 0.000847 | 0.000852 | 0.000702 | 0.00077 | 0.00072 | 0.000837 | 0.00094 | 0.000832 |
| Gallium (Ga) | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Iron (Fe) | mg/L | 0.0226 | 0.0215 | 0.0202 | 0.0286 | 0.0256 | 0.0512 | 0.0328 | 0.0287 | 0.0282 |
| Lanthanum (La) | mg/L | 0.00001 | 0.000012 | 0.000012 | 0.000011 | <0.000010 | 0.00001 | <0.000010 | 0.000012 | <0.000010 |
| Lead (Pb) | mg/L | 0.000011 | <0.000010 | <0.000010 | 0.000029 | 0.000021 | 0.00002 | 0.000034 | 0.000023 | 0.000018 |
| Lithium (Li) | mg/L | 0.00148 | 0.00146 | 0.00148 | 0.00763 | 0.00769 | 0.00601 | 0.0198 | 0.0194 | 0.0194 |
| Magnesium (Mg) | mg/L | 2.86 | 2.91 | 2.97 | 4.78 | 4.51 | 4.16 | 3.19 | 3.16 | 3.03 |
| Manganese (Mn) | mg/L | 0.00051 | 0.000561 | 0.000605 | 0.00107 | 0.000879 | 0.00329 | 0.00123 | 0.000856 | 0.000587 |
| Mercury (Hg) | ug/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00108 | 0.00216 | 0.00075 | <0.00050 | <0.00050 |
| Molybdenum (Mo) | mg/L | 0.00444 | 0.000607 | 0.00533 | 0.000295 | 0.0003 | 0.000263 | 0.000294 | 0.000259 | 0.000265 |
| Niobium (Nb) | mg/L | 0.000746 | 0.000796 | 0.000768 | 0.000778 | 0.000741 | 0.000993 | 0.000815 | 0.000871 | 0.000839 |
| Nickel (Ni) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Phosphorus (P) | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K) | mg/L | 1.31 | 1.33 | 1.32 | 1.89 | 1.94 | 1.78 | 1.8 | 1.82 | 1.79 |
| Rhenium (Re) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Rubidium (Rb) | mg/L | 0.00118 | 0.0012 | 0.00119 | 0.00199 | 0.00205 | 0.00186 | 0.0021 | 0.00211 | 0.00206 |
| Selenium (Se) | mg/L | 0.000041 | 0.000058 | 0.00006 | <0.000040 | <0.000040 | 0.000043 | <0.000040 | <0.000040 | 0.000042 |
| Silicon (Si) | mg/L | 0.242 | 0.232 | 0.232 | 0.42 | 0.439 | 0.652 | 0.478 | 0.489 | 0.503 |
| Silver (Ag) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Sodium (Na) | mg/L | 7.62 | 7.96 | 7.69 | 8.03 | 8.16 | 7.18 | 6.95 | 7.35 | 7.29 |
| Strontium (Sr) | mg/L | 0.0681 | 0.0725 | 0.0667 | 0.187 | 0.192 | 0.177 | 0.293 | 0.258 | 0.267 |
| Sulfur (S) | mg/L | 1.75 | 1.66 | 1.63 | 2.82 | 2.78 | 2.27 | 2.86 | 2.71 | 2.78 |
| Tantalum (Ta) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Tellurium (Te) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.00002 | <0.000020 | 0.000024 | 0.000027 | 0.000025 |
| Thallium (Tl) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Thorium (Th) | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Tin (Sn) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.000065 | <0.000020 |
| Titanium (Ti) | mg/L | <0.000050 | 0.000056 | <0.000050 | <0.000050 | <0.000050 | 0.000097 | 0.000063 | <0.000050 | <0.000050 |
| Tungsten (W) | mg/L | <0.000010 | <0.000010 | <0.000010 | 0.000061 | 0.000056 | 0.000015 | 0.000038 | 0.000035 | 0.000037 |
| Uranium (U) | mg/L | 0.0000635 | 0.00006 | 0.000064 | 0.0000539 | 0.0000511 | 0.0000439 | 0.0000486 | 0.0000443 | 0.0000451 |
| Vanadium (V) | mg/L | <0.000050 | 0.00005 | 0.000053 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | 0.000051 | <0.000050 |
| Yttrium (Y) | mg/L | 0.0000057 | 0.0000069 | 0.0000057 | 0.0000066 | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000056 | <0.0000050 |
| Zinc (Zn) | mg/L | 0.00116 | 0.00056 | <0.00050 | 0.001 | 0.00081 | 0.00104 | 0.00054 | 0.00054 | <0.00050 |
| Zirconium (Zr) | mg/L | <0.000010 | 0.000016 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |

**Notes**

"<" indicates parameter was below the detection limit

"-" = Chemical not analyzed or criteria not defined

# APPENDIX E
# PHYTOPLANKTON DATA

# Appendix E1
# 2020 Phytoplankton Taxonomy (Plankton R Us)

**Phytoplankton species data for Meliadine 2020**
** 1st number in **species code** = group 1=cyanophyte 2=chlorophyte
3= Euglenophyte 4=chrysophyte 5=diatoms 6=Cryptophyte 7=Dinoflagellates

***RECOUNT = QA\QC sample

** total daily biomass is sum of all species on a date.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| DUP - 01 - PC | 1-Aug-20 | 1073 | Snowella sp | 3600 | 1.8 | 0 | 0 | 500 |
| DUP - 01 - PC | 1-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 854896 | 12.05403 | 3 | 3 | 14.1 |
| DUP - 01 - PC | 1-Aug-20 | 2121 | Oocystis lacustris Chodat | 114944 | 5.78168 | 6 | 4 | 50.3 |
| DUP - 01 - PC | 1-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 7184 | 0.12428 | 11 | 2 | 17.3 |
| DUP - 01 - PC | 1-Aug-20 | 2178 | Cosmarium sp. | 1000 | 1.3963 | 20 | 20 | 1396.3 |
| DUP - 01 - PC | 1-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 1000 | 0.4105 | 14 | 12 | 410.5 |
| DUP - 01 - PC | 1-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 86208 | 3.25004 | 6 | 6 | 37.7 |
| DUP - 01 - PC | 1-Aug-20 | 4351 | Small chrysophyceae | 272992 | 2.23853 | 2.5 | 2.5 | 8.2 |
| DUP - 01 - PC | 1-Aug-20 | 4357 | Chrysococcus sp. | 201152 | 13.15534 | 5 | 5 | 65.4 |
| DUP - 01 - PC | 1-Aug-20 | 4358 | Chrysostephanosphaera globulifera Scherffel | 7184 | 2.2292 | 8.4 | 8.4 | 310.3 |
| DUP - 01 - PC | 1-Aug-20 | 4361 | Kephyrion boreale Skuja | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| DUP - 01 - PC | 1-Aug-20 | 4362 | Kephyrion sp. | 21552 | 0.27587 | 2.9 | 2.9 | 12.8 |
| DUP - 01 - PC | 1-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 600 | 0.60948 | 19.4 | 10 | 1015.8 |
| DUP - 01 - PC | 1-Aug-20 | 4375 | Synura sphagnicola Korschikow | 400 | 6.28 | 0 | 0 | 15700 |
| DUP - 01 - PC | 1-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| DUP - 01 - PC | 1-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 3000 | 15.255 | 0 | 0 | 5085 |
| DUP - 01 - PC | 1-Aug-20 | 4414 | Stichogloea spp. | 244256 | 12.28608 | 6 | 4 | 50.3 |
| DUP - 01 - PC | 1-Aug-20 | 4415 | Bicosoeca lacustris Clark | 7184 | 0.34268 | 4.5 | 4.5 | 47.7 |
| DUP - 01 - PC | 1-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 308912 | 9.94697 | 6 | 3.2 | 32.2 |
| DUP - 01 - PC | 1-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 3800 | 9.0782 | 11.5 | 23 | 2389 |
| DUP - 01 - PC | 1-Aug-20 | 5509 | Cyclotella ocellata Pant. | 43104 | 4.33195 | 4 | 8 | 100.5 |
| DUP - 01 - PC | 1-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 3600 | 2.98584 | 88 | 6 | 829.4 |
| DUP - 01 - PC | 1-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 200 | 0.05446 | 65 | 4 | 272.3 |
| DUP - 01 - PC | 1-Aug-20 | 5524 | Asterionella formosa Hassall | 49200 | 5.30868 | 103 | 2 | 107.9 |
| DUP - 01 - PC | 1-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 229888 | 3.83913 | 2.2 | 4.4 | 16.7 |
| DUP - 01 - PC | 1-Aug-20 | 6554 | Rhodomonas minuta Skuja | 193968 | 14.79976 | 9.9 | 4.7 | 76.3 |
| DUP - 01 - PC | 1-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 28600 | 45.39678 | 23.2 | 14 | 1587.3 |
| DUP - 01 - PC | 1-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 15200 | 11.1416 | 21 | 10 | 733 |
| DUP - 01 - PC | 1-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 3800 | 9.09948 | 35 | 14 | 2394.6 |
| DUP - 01 - PC | 1-Aug-20 | 7632 | Gymnodinium sp. | 7184 | 2.64802 | 11 | 8 | 368.6 |
| DUP - 01 - PC | 1-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2800 | 11.38032 | 19.8 | 19.8 | 4064.4 |
| DUP - 02 - PC | 1-Aug-20 | 1073 | Snowella sp | 1200 | 0.6 | 0 | 0 | 500 |
| DUP - 02 - PC | 1-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 14368 | 0.20259 | 3 | 3 | 14.1 |
| DUP - 02 - PC | 1-Aug-20 | 2121 | Oocystis lacustris Chodat | 114944 | 5.78168 | 6 | 4 | 50.3 |
| DUP - 02 - PC | 1-Aug-20 | 2143 | Monoraphidium minutum (Nag.) Komarkova-Legnerova | 7184 | 0.45116 | 10 | 4 | 62.8 |
| DUP - 02 - PC | 1-Aug-20 | 2182 | Euastrum spp. | 200 | 0.37168 | 22 | 22 | 1858.4 |
| DUP - 02 - PC | 1-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 1200 | 0.46488 | 13.6 | 12 | 387.4 |
| DUP - 02 - PC | 1-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 57472 | 2.16669 | 6 | 6 | 37.7 |
| DUP - 02 - PC | 1-Aug-20 | 2206 | Botryococcus braunii Kutzing | 200 | 0.28736 | 14 | 14 | 1436.8 |
| DUP - 02 - PC | 1-Aug-20 | 4351 | Small chrysophyceae | 589088 | 6.06761 | 2.7 | 2.7 | 10.3 |
| DUP - 02 - PC | 1-Aug-20 | 4352 | Large chrysophyceae | 71840 | 12.90246 | 7 | 7 | 179.6 |
| DUP - 02 - PC | 1-Aug-20 | 4357 | Chrysococcus sp. | 617824 | 40.40569 | 5 | 5 | 65.4 |
| DUP - 02 - PC | 1-Aug-20 | 4363 | Spiniferomonas serrata | 14368 | 1.70692 | 6.1 | 6.1 | 118.8 |
| DUP - 02 - PC | 1-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 400 | 0.41888 | 20 | 10 | 1047.2 |
| DUP - 02 - PC | 1-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 7184 | 0.94039 | 10 | 5 | 130.9 |
| DUP - 02 - PC | 1-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| DUP - 02 - PC | 1-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 800 | 2.712 | 0 | 0 | 3390 |
| DUP - 02 - PC | 1-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| DUP - 02 - PC | 1-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 79024 | 8.93761 | 6 | 6 | 113.1 |
| DUP - 02 - PC | 1-Aug-20 | 4411 | Bitrichia chodatii (Reverdin) Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| DUP - 02 - PC | 1-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 7184 | 2.92892 | 9.2 | 9.2 | 407.7 |
| DUP - 02 - PC | 1-Aug-20 | 4414 | Stichogloea spp. | 21552 | 1.08407 | 6 | 4 | 50.3 |
| DUP - 02 - PC | 1-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 136496 | 4.39517 | 6 | 3.2 | 32.2 |
| DUP - 02 - PC | 1-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4800 | 11.4672 | 11.5 | 23 | 2389 |
| DUP - 02 - PC | 1-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.72199 | 4 | 8 | 100.5 |
| DUP - 02 - PC | 1-Aug-20 | 5514 | Tabellaria flocculosa (Roth) Kutzing | 600 | 0.75738 | 24.6 | 14 | 1262.3 |
| DUP - 02 - PC | 1-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| DUP - 02 - PC | 1-Aug-20 | 5524 | Asterionella formosa Hassall | 36800 | 3.97072 | 103 | 2 | 107.9 |
| DUP - 02 - PC | 1-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 201152 | 3.842 | 2.3 | 4.6 | 19.1 |
| DUP - 02 - PC | 1-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 800 | 6.7348 | 17.5 | 35 | 8418.5 |
| DUP - 02 - PC | 1-Aug-20 | 6554 | Rhodomonas minuta Skuja | 265808 | 17.78256 | 9.9 | 4.4 | 66.9 |
| DUP - 02 - PC | 1-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 6200 | 10.1804 | 24 | 14 | 1642 |
| DUP - 02 - PC | 1-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 4200 | 2.96142 | 20.2 | 10 | 705.1 |
| DUP - 02 - PC | 1-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 1200 | 2.87352 | 35 | 14 | 2394.6 |
| DUP - 02 - PC | 1-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2200 | 8.94168 | 19.8 | 19.8 | 4064.4 |
| DUP - 03 - PC | 1-Aug-20 | 1073 | Snowella sp | 200 | 0.1 | 0 | 0 | 500 |
| DUP - 03 - PC | 1-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 86208 | 1.21553 | 3 | 3 | 14.1 |
| DUP - 03 - PC | 1-Aug-20 | 2121 | Oocystis lacustris Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| DUP - 03 - PC | 1-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 7184 | 0.12428 | 11 | 2 | 17.3 |
| DUP - 03 - PC | 1-Aug-20 | 2178 | Cosmarium sp. | 400 | 0.55852 | 20 | 20 | 1396.3 |
| DUP - 03 - PC | 1-Aug-20 | 4351 | Small chrysophyceae | 890816 | 7.30469 | 2.5 | 2.5 | 8.2 |
| DUP - 03 - PC | 1-Aug-20 | 4352 | Large chrysophyceae | 7184 | 1.29025 | 7 | 7 | 179.6 |
| DUP - 03 - PC | 1-Aug-20 | 4355 | Chrysochromulina parva Lackey | 7184 | 0.46983 | 5 | 5 | 65.4 |
| DUP - 03 - PC | 1-Aug-20 | 4357 | Chrysococcus sp. | 589088 | 38.52636 | 5 | 5 | 65.4 |
| DUP - 03 - PC | 1-Aug-20 | 4362 | Kephyrion sp. | 71840 | 1.01294 | 3 | 3 | 14.1 |
| DUP - 03 - PC | 1-Aug-20 | 4363 | Spiniferomonas serrata | 35920 | 4.2673 | 6.1 | 6.1 | 118.8 |
| DUP - 03 - PC | 1-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20526 | 19.6 | 10 | 1026.3 |
| DUP - 03 - PC | 1-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 400 | 0.7964 | 0 | 0 | 1991 |
| DUP - 03 - PC | 1-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 136496 | 30.8754 | 12 | 6 | 226.2 |
| DUP - 03 - PC | 1-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 100576 | 11.37515 | 6 | 6 | 113.1 |
| DUP - 03 - PC | 1-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 71840 | 29.28917 | 9.2 | 9.2 | 407.7 |
| DUP - 03 - PC | 1-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 107760 | 3.46987 | 6 | 3.2 | 32.2 |
| DUP - 03 - PC | 1-Aug-20 | 5509 | Cyclotella ocellata Pant. | 86208 | 9.33633 | 4.1 | 8.2 | 108.3 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| DUP - 03 - PC | 1-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 57472 | 1.40806 | 2.5 | 5 | 24.5 |
| DUP - 03 - PC | 1-Aug-20 | 6554 | Rhodomonas minuta Skuja | 208336 | 14.08351 | 10 | 4.4 | 67.6 |
| DUP - 03 - PC | 1-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1600 | 2.57248 | 23.5 | 14 | 1607.8 |
| DUP - 03 - PC | 1-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 2000 | 1.466 | 21 | 10 | 733 |
| DUP - 03 - PC | 1-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 200 | 0.45156 | 33 | 14 | 2257.8 |
| DUP - 03 - PC | 1-Aug-20 | 6568 | Katablepharis ovalis Skuja | 21552 | 0.96337 | 8 | 4 | 44.7 |
| DUP - 03 - PC | 1-Aug-20 | 7632 | Gymnodinium sp. | 600 | 5.52168 | 26 | 26 | 9202.8 |
| DUP - 03 - PC | 1-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1600 | 5.9296 | 19.2 | 19.2 | 3706 |
| MEL - 0108R - PC | 15-Aug-20 | 1073 | Snowella sp | 2600 | 1.3 | 0 | 0 | 500 |
| MEL - 0108R - PC | 15-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 215520 | 3.03883 | 3 | 3 | 14.1 |
| MEL - 0108R - PC | 15-Aug-20 | 2121 | Oocystis lacustris Chodat | 64656 | 3.2522 | 6 | 4 | 50.3 |
| MEL - 0108R - PC | 15-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 21552 | 0.37285 | 11 | 2 | 17.3 |
| MEL - 0108R - PC | 15-Aug-20 | 2178 | Cosmarium sp. | 400 | 0.55852 | 20 | 20 | 1396.3 |
| MEL - 0108R - PC | 15-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 400 | 0.1642 | 14 | 12 | 410.5 |
| MEL - 0108R - PC | 15-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 400 | 0.73864 | 23 | 20 | 1846.6 |
| MEL - 0108R - PC | 15-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 150864 | 5.68757 | 6 | 6 | 37.7 |
| MEL - 0108R - PC | 15-Aug-20 | 2206 | Botryococcus braunii Kutzing | 200 | 0.28736 | 14 | 14 | 1436.8 |
| MEL - 0108R - PC | 15-Aug-20 | 4351 | Small chrysophyceae | 280176 | 2.29744 | 2.5 | 2.5 | 8.2 |
| MEL - 0108R - PC | 15-Aug-20 | 4352 | Large chrysophyceae | 21552 | 3.87074 | 7 | 7 | 179.6 |
| MEL - 0108R - PC | 15-Aug-20 | 4357 | Chrysococcus sp. | 50288 | 3.28884 | 5 | 5 | 65.4 |
| MEL - 0108R - PC | 15-Aug-20 | 4358 | Chrysostephanosphaera globulifera Scherffel | 14368 | 4.45839 | 8.4 | 8.4 | 310.3 |
| MEL - 0108R - PC | 15-Aug-20 | 4361 | Kephyrion boreale Skuja | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| MEL - 0108R - PC | 15-Aug-20 | 4362 | Kephyrion sp. | 64656 | 0.91165 | 3 | 3 | 14.1 |
| MEL - 0108R - PC | 15-Aug-20 | 4363 | Spiniferomonas serrata | 14368 | 1.88077 | 6.3 | 6.3 | 130.9 |
| MEL - 0108R - PC | 15-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 400 | 0.41888 | 20 | 10 | 1047.2 |
| MEL - 0108R - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 50288 | 11.37515 | 12 | 6 | 226.2 |
| MEL - 0108R - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 3000 | 15.255 | 0 | 0 | 5085 |
| MEL - 0108R - PC | 15-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 14368 | 6.65526 | 9.6 | 9.6 | 463.2 |
| MEL - 0108R - PC | 15-Aug-20 | 4414 | Stichogloea spp. | 258624 | 13.00879 | 6 | 4 | 50.3 |
| MEL - 0108R - PC | 15-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 14368 | 0.46265 | 6 | 3.2 | 32.2 |
| MEL - 0108R - PC | 15-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 5000 | 11.945 | 11.5 | 23 | 2389 |
| MEL - 0108R - PC | 15-Aug-20 | 5509 | Cyclotella ocellata Pant. | 28736 | 2.88797 | 4 | 8 | 100.5 |
| MEL - 0108R - PC | 15-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 7800 | 6.46932 | 88 | 6 | 829.4 |
| MEL - 0108R - PC | 15-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 4800 | 1.30704 | 65 | 4 | 272.3 |
| MEL - 0108R - PC | 15-Aug-20 | 5524 | Asterionella formosa Hassall | 59200 | 6.38768 | 103 | 2 | 107.9 |
| MEL - 0108R - PC | 15-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 186784 | 3.11929 | 2.2 | 4.4 | 16.7 |
| MEL - 0108R - PC | 15-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 3.08692 | 17 | 34 | 7717.3 |
| MEL - 0108R - PC | 15-Aug-20 | 6554 | Rhodomonas minuta Skuja | 158048 | 12.05906 | 9.9 | 4.7 | 76.3 |
| MEL - 0108R - PC | 15-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 26400 | 42.44592 | 23.5 | 14 | 1607.8 |
| MEL - 0108R - PC | 15-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 12400 | 9.0458 | 20.9 | 10 | 729.5 |
| MEL - 0108R - PC | 15-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 3800 | 8.57964 | 33 | 14 | 2257.8 |
| MEL - 0108R - PC | 15-Aug-20 | 7632 | Gymnodinium sp. | 7184 | 2.64802 | 11 | 8 | 368.6 |
| MEL - 0108R - PC | 15-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2800 | 11.38032 | 19.8 | 19.8 | 4064.4 |
| MEL - 0108R - PC | 15-Aug-20 | 7641 | Peridinium aciculiferum Lemmermann | 400 | 3.61912 | 30 | 24 | 9047.8 |
| MEL - 0101 - PC | 15-Aug-20 | 1073 | Snowella sp | 2600 | 1.3 | 0 | 0 | 500 |
| MEL - 0101 - PC | 15-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 21552 | 0.3 | 3 | 3 | 14.1 |
| MEL - 0101 - PC | 15-Aug-20 | 2113 | Pediastrum duplex Meyen | 4800 | 0.4 | 9.4 | 5.6 | 86.4 |
| MEL - 0101 - PC | 15-Aug-20 | 2121 | Oocystis lacustris Chodat | 43104 | 2.2 | 6 | 4 | 50.3 |
| MEL - 0101 - PC | 15-Aug-20 | 2130 | Scenedesmus quadricauda (Turp.) Brebisson | 28736 | 1.3 | 8.2 | 4 | 45.8 |
| MEL - 0101 - PC | 15-Aug-20 | 2178 | Cosmarium sp. | 600 | 0.8 | 20 | 20 | 1396.3 |
| MEL - 0101 - PC | 15-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.1 | 14 | 12 | 410.5 |
| MEL - 0101 - PC | 15-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 0.4 | 23 | 20 | 1846.6 |
| MEL - 0101 - PC | 15-Aug-20 | 2206 | Botryococcus braunii Kutzing | 800 | 1.1 | 14 | 14 | 1436.8 |
| MEL - 0101 - PC | 15-Aug-20 | 2247 | Oocystis gigas Archer | 200 | 0.5 | 18 | 16 | 2412.7 |
| MEL - 0106 - PC | 15-Aug-20 | 4415 | Bicosoeca lacustris Clark | 7184 | 0.34268 | 4.5 | 4.5 | 47.7 |
| MEL - 0101 - PC | 15-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 7184 | 3.3 | 9.6 | 9.6 | 463.2 |
| MEL - 0107 - PC | 15-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 7184 | 3.32763 | 9.6 | 9.6 | 463.2 |
| MEL - 0108 - PC | 15-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 7184 | 3.32763 | 9.6 | 9.6 | 463.2 |
| MEL - 0109 - PC | 15-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 7184 | 3.32763 | 9.6 | 9.6 | 463.2 |
| MEL - 0107 - PC | 15-Aug-20 | 4355 | Chrysochromulina parva Lackey | 7184 | 0.46983 | 5 | 5 | 65.4 |
| MEL - 0101 - PC | 15-Aug-20 | 4357 | Chrysococcus sp. | 64656 | 4.2 | 5 | 5 | 65.4 |
| MEL - 0106 - PC | 15-Aug-20 | 4357 | Chrysococcus sp. | 136496 | 8.92684 | 5 | 5 | 65.4 |
| MEL - 0107 - PC | 15-Aug-20 | 4357 | Chrysococcus sp. | 150864 | 9.86651 | 5 | 5 | 65.4 |
| MEL - 0108 - PC | 15-Aug-20 | 4357 | Chrysococcus sp. | 7184 | 0.46983 | 5 | 5 | 65.4 |
| MEL - 0101 - PC | 15-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4800 | 11.5 | 11.5 | 23 | 2389 |
| MEL - 0101 - PC | 15-Aug-20 | 5509 | Cyclotella ocellata Pant. | 35920 | 3.6 | 4 | 8 | 100.5 |
| MEL - 0101 - PC | 15-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 22000 | 18.2 | 88 | 6 | 829.4 |
| MEL - 0101 - PC | 15-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 200 | 0.1 | 65 | 4 | 272.3 |
| MEL - 0101 - PC | 15-Aug-20 | 5524 | Asterionella formosa Hassall | 78400 | 8.5 | 103 | 2 | 107.9 |
| MEL - 0101 - PC | 15-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 186784 | 3.1 | 2.2 | 4.4 | 16.7 |
| MEL - 0101 - PC | 15-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 800 | 6.2 | 17 | 34 | 7717.3 |
| MEL - 0101 - PC | 15-Aug-20 | 6554 | Rhodomonas minuta Skuja | 114944 | 8.4 | 9.9 | 4.6 | 73.1 |
| MEL - 0101 - PC | 15-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 32400 | 52.1 | 23.5 | 14 | 1607.8 |
| MEL - 0101 - PC | 15-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 12200 | 8.9 | 20.9 | 10 | 729.5 |
| MEL - 0101 - PC | 15-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 6200 | 14.0 | 33 | 14 | 2257.8 |
| MEL - 0101 - PC | 15-Aug-20 | 6568 | Katablepharis ovalis Skuja | 21552 | 0.9 | 7.9 | 4 | 43.6 |
| MEL - 0101 - PC | 15-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2000 | 8.1 | 19.8 | 19.8 | 4064.4 |
| MEL - 0101 - PC | 15-Aug-20 | 7641 | Peridinium aciculiferum Lemmermann | 400 | 3.6 | 30 | 24 | 9047.8 |
| MEL - 0106 - PC | 15-Aug-20 | 1073 | Snowella sp | 3000 | 1.5 | 0 | 0 | 500 |
| MEL - 0106 - PC | 15-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 689664 | 9.72426 | 3 | 3 | 14.1 |
| MEL - 0106 - PC | 15-Aug-20 | 2121 | Oocystis lacustris Chodat | 193968 | 9.75659 | 6 | 4 | 50.3 |
| MEL - 0106 - PC | 15-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 21552 | 0.37285 | 11 | 2 | 17.3 |
| MEL - 0106 - PC | 15-Aug-20 | 2178 | Cosmarium sp. | 600 | 0.83778 | 20 | 20 | 1396.3 |
| MEL - 0106 - PC | 15-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 400 | 0.1642 | 14 | 12 | 410.5 |
| MEL - 0106 - PC | 15-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 64656 | 2.43753 | 6 | 6 | 37.7 |
| MEL - 0109 - PC | 15-Aug-20 | 4357 | Chrysococcus sp. | 100576 | 6.57767 | 5 | 5 | 65.4 |
| MEL - 0106 - PC | 15-Aug-20 | 4358 | Chrysostephanosphaera globulifera Scherffel | 7184 | 2.2292 | 8.4 | 8.4 | 310.3 |
| MEL - 0101 - PC | 15-Aug-20 | 4383 | Dinobryon bavaricum Imhof | 7184 | 1.6 | 12 | 6 | 226.2 |
| MEL - 0108 - PC | 15-Aug-20 | 4383 | Dinobryon bavaricum Imhof | 35920 | 8.1251 | 12 | 6 | 226.2 |
| MEL - 0101 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 3200 | 16.3 | 0 | 0 | 5085 |
| MEL - 0106 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 43104 | 9.75012 | 12 | 6 | 226.2 |
| MEL - 0106 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 2200 | 11.187 | 0 | 0 | 5085 |
| MEL - 0107 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 57472 | 13.00017 | 12 | 6 | 226.2 |
| MEL - 0107 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 1800 | 9.153 | 0 | 0 | 5085 |

Table E1-1.  Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0108 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 2600 | 13.221 | 0 | 0 | 5085 |
| MEL - 0109 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 100576 | 22.75029 | 12 | 6 | 226.2 |
| MEL - 0109 - PC | 15-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 1600 | 8.136 | 0 | 0 | 5085 |
| MEL - 0106 - PC | 15-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 3000 | 7.167 | 11.5 | 23 | 2389 |
| MEL - 0106 - PC | 15-Aug-20 | 5509 | Cyclotella ocellata Pant. | 28736 | 2.88797 | 4 | 8 | 100.5 |
| MEL - 0106 - PC | 15-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 6000 | 4.9764 | 88 | 6 | 829.4 |
| MEL - 0106 - PC | 15-Aug-20 | 5524 | Asterionella formosa Hassall | 44400 | 4.79076 | 103 | 2 | 107.9 |
| MEL - 0106 - PC | 15-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 258624 | 4.31902 | 2.2 | 4.4 | 16.7 |
| MEL - 0106 - PC | 15-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0106 - PC | 15-Aug-20 | 6554 | Rhodomonas minuta Skuja | 150864 | 10.0928 | 9.9 | 4.4 | 66.9 |
| MEL - 0106 - PC | 15-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 33000 | 52.3809 | 23.2 | 14 | 1587.3 |
| MEL - 0106 - PC | 15-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 13000 | 9.529 | 21 | 10 | 733 |
| MEL - 0106 - PC | 15-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 2800 | 6.70488 | 35 | 14 | 2394.6 |
| MEL - 0106 - PC | 15-Aug-20 | 6568 | Katablepharis ovalis Skuja | 7184 | 0.32112 | 8 | 4 | 44.7 |
| MEL - 0106 - PC | 15-Aug-20 | 7632 | Gymnodinium sp. | 21552 | 7.94407 | 11 | 8 | 368.6 |
| MEL - 0106 - PC | 15-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2400 | 9.75456 | 19.8 | 19.8 | 4064.4 |
| MEL - 0107 - PC | 15-Aug-20 | 1008 | Aphanocapsa sp. | 64656 | 6.4656 | 0 | 0 | 100 |
| MEL - 0107 - PC | 15-Aug-20 | 1012 | Aphanothece sp. | 7184 | 0.3592 | 0 | 0 | 50 |
| MEL - 0107 - PC | 15-Aug-20 | 1073 | Snowella sp | 3600 | 1.8 | 0 | 0 | 500 |
| MEL - 0107 - PC | 15-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 272992 | 3.84919 | 3 | 3 | 14.1 |
| MEL - 0107 - PC | 15-Aug-20 | 2113 | Pediastrum duplex Meyen | 4000 | 0.2756 | 8.8 | 5.1 | 68.9 |
| MEL - 0107 - PC | 15-Aug-20 | 2121 | Oocystis lacustris Chodat | 93392 | 4.69762 | 6 | 4 | 50.3 |
| MEL - 0107 - PC | 15-Aug-20 | 2143 | Monoraphidium minutum (Nag.) Komarkova-Legnerova | 7184 | 0.45116 | 10 | 4 | 62.8 |
| MEL - 0107 - PC | 15-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 21552 | 0.37285 | 11 | 2 | 17.3 |
| MEL - 0107 - PC | 15-Aug-20 | 2178 | Cosmarium sp. | 400 | 0.55852 | 20 | 20 | 1396.3 |
| MEL - 0107 - PC | 15-Aug-20 | 2182 | Euastrum spp. | 200 | 0.37168 | 22 | 22 | 1858.4 |
| MEL - 0107 - PC | 15-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 800 | 0.3284 | 14 | 12 | 410.5 |
| MEL - 0107 - PC | 15-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 0.56632 | 26 | 24 | 2831.6 |
| MEL - 0107 - PC | 15-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 43104 | 1.62502 | 6 | 6 | 37.7 |
| MEL - 0107 - PC | 15-Aug-20 | 2206 | Botryococcus braunii Kutzing | 800 | 1.14944 | 14 | 14 | 1436.8 |
| MEL - 0109 - PC | 15-Aug-20 | 4361 | Kephyrion boreale Skuja | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| MEL - 0101 - PC | 15-Aug-20 | 4362 | Kephyrion sp. | 43104 | 0.6 | 3 | 3 | 14.1 |
| MEL - 0106 - PC | 15-Aug-20 | 4362 | Kephyrion sp. | 35920 | 0.45978 | 2.9 | 2.9 | 12.8 |
| MEL - 0107 - PC | 15-Aug-20 | 4362 | Kephyrion sp. | 35920 | 0.45978 | 2.9 | 2.9 | 12.8 |
| MEL - 0108 - PC | 15-Aug-20 | 4362 | Kephyrion sp. | 35920 | 0.50647 | 3 | 3 | 14.1 |
| MEL - 0109 - PC | 15-Aug-20 | 4362 | Kephyrion sp. | 7184 | 0.10129 | 3 | 3 | 14.1 |
| MEL - 0101 - PC | 15-Aug-20 | 4352 | Large chrysophyceae | 35920 | 6.5 | 7 | 7 | 179.6 |
| MEL - 0106 - PC | 15-Aug-20 | 4352 | Large chrysophyceae | 14368 | 2.58049 | 7 | 7 | 179.6 |
| MEL - 0107 - PC | 15-Aug-20 | 4352 | Large chrysophyceae | 79024 | 14.19271 | 7 | 7 | 179.6 |
| MEL - 0108 - PC | 15-Aug-20 | 4352 | Large chrysophyceae | 21552 | 3.87074 | 7 | 7 | 179.6 |
| MEL - 0109 - PC | 15-Aug-20 | 4352 | Large chrysophyceae | 35920 | 6.45123 | 7 | 7 | 179.6 |
| MEL - 0107 - PC | 15-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0107 - PC | 15-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4000 | 9.556 | 11.5 | 23 | 2389 |
| MEL - 0107 - PC | 15-Aug-20 | 5509 | Cyclotella ocellata Pant. | 64656 | 6.49793 | 4 | 8 | 100.5 |
| MEL - 0107 - PC | 15-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 5800 | 4.81052 | 88 | 6 | 829.4 |
| MEL - 0107 - PC | 15-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 1200 | 0.32676 | 65 | 4 | 272.3 |
| MEL - 0107 - PC | 15-Aug-20 | 5524 | Asterionella formosa Hassall | 62400 | 6.73296 | 103 | 2 | 107.9 |
| MEL - 0107 - PC | 15-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 287360 | 4.79891 | 2.2 | 4.4 | 16.7 |
| MEL - 0107 - PC | 15-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0107 - PC | 15-Aug-20 | 6554 | Rhodomonas minuta Skuja | 258624 | 17.30195 | 9.9 | 4.4 | 66.9 |
| MEL - 0107 - PC | 15-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 22400 | 36.01472 | 23.5 | 14 | 1607.8 |
| MEL - 0107 - PC | 15-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 11400 | 8.3163 | 20.9 | 10 | 729.5 |
| MEL - 0107 - PC | 15-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 2200 | 4.96716 | 33 | 14 | 2257.8 |
| MEL - 0107 - PC | 15-Aug-20 | 6568 | Katablepharis ovalis Skuja | 7184 | 0.31322 | 7.9 | 4 | 43.6 |
| MEL - 0107 - PC | 15-Aug-20 | 7631 | Gymnodinium helveticum Penard | 200 | 4.24116 | 45 | 30 | 21205.8 |
| MEL - 0107 - PC | 15-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2600 | 10.56744 | 19.8 | 19.8 | 4064.4 |
| MEL - 0107 - PC | 15-Aug-20 | 7641 | Peridinium aciculiferum Lemmermann | 400 | 3.61912 | 30 | 24 | 9047.8 |
| MEL - 0108 - PC | 15-Aug-20 | 1073 | Snowella sp | 3000 | 1.5 | 0 | 0 | 500 |
| MEL - 0108 - PC | 15-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 229888 | 3.24142 | 3 | 3 | 14.1 |
| MEL - 0108 - PC | 15-Aug-20 | 2121 | Oocystis lacustris Chodat | 114944 | 5.78168 | 6 | 4 | 50.3 |
| MEL - 0108 - PC | 15-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0108 - PC | 15-Aug-20 | 2182 | Euastrum spp. | 200 | 0.37168 | 22 | 22 | 1858.4 |
| MEL - 0108 - PC | 15-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 400 | 0.73864 | 23 | 20 | 1846.6 |
| MEL - 0108 - PC | 15-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 114944 | 4.33339 | 6 | 6 | 37.7 |
| MEL - 0108 - PC | 15-Aug-20 | 2206 | Botryococcus braunii Kutzing | 200 | 0.28736 | 14 | 14 | 1436.8 |
| MEL - 0108 - PC | 15-Aug-20 | 2247 | Oocystis gigas Archer | 200 | 0.48254 | 18 | 16 | 2412.7 |
| MEL - 0108 - PC | 15-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0109 - PC | 15-Aug-20 | 4364 | Mallomonas caudata Ivanov | 600 | 3.21702 | 40 | 16 | 5361.7 |
| MEL - 0106 - PC | 15-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 400 | 0.40632 | 19.4 | 10 | 1015.8 |
| MEL - 0107 - PC | 15-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20944 | 20 | 10 | 1047.2 |
| MEL - 0108 - PC | 15-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20944 | 20 | 10 | 1047.2 |
| MEL - 0108 - PC | 15-Aug-20 | 4400 | Ochromonas sp. | 7184 | 0.44541 | 7.4 | 4 | 62 |
| MEL - 0109 - PC | 15-Aug-20 | 4400 | Ochromonas sp. | 7184 | 0.40949 | 6.8 | 4 | 57 |
| MEL - 0101 - PC | 15-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 21552 | 0.7 | 6 | 3.2 | 32.2 |
| MEL - 0106 - PC | 15-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 316096 | 10.17829 | 6 | 3.2 | 32.2 |
| MEL - 0107 - PC | 15-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 1020128 | 32.84812 | 6 | 3.2 | 32.2 |
| MEL - 0108 - PC | 15-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 7184 | 0.23132 | 6 | 3.2 | 32.2 |
| MEL - 0109 - PC | 15-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 294544 | 9.48432 | 6 | 3.2 | 32.2 |
| MEL - 0108 - PC | 15-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 5800 | 13.8562 | 11.5 | 23 | 2389 |
| MEL - 0108 - PC | 15-Aug-20 | 5509 | Cyclotella ocellata Pant. | 43104 | 4.33195 | 4 | 8 | 100.5 |
| MEL - 0108 - PC | 15-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 6600 | 5.47404 | 88 | 6 | 829.4 |
| MEL - 0108 - PC | 15-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 3000 | 0.8169 | 65 | 4 | 272.3 |
| MEL - 0108 - PC | 15-Aug-20 | 5524 | Asterionella formosa Hassall | 56000 | 6.0424 | 103 | 2 | 107.9 |
| MEL - 0108 - PC | 15-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 215520 | 3.59918 | 2.2 | 4.4 | 16.7 |
| MEL - 0108 - PC | 15-Aug-20 | 6554 | Rhodomonas minuta Skuja | 186784 | 14.25162 | 9.9 | 4.7 | 76.3 |
| MEL - 0108 - PC | 15-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 24200 | 38.90876 | 23.5 | 14 | 1607.8 |
| MEL - 0108 - PC | 15-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 15400 | 11.2343 | 20.9 | 10 | 729.5 |
| MEL - 0108 - PC | 15-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 3400 | 7.67652 | 33 | 14 | 2257.8 |
| MEL - 0108 - PC | 15-Aug-20 | 7632 | Gymnodinium sp. | 7184 | 2.64802 | 11 | 8 | 368.6 |
| MEL - 0108 - PC | 15-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 3000 | 12.1932 | 19.8 | 19.8 | 4064.4 |
| MEL - 0108 - PC | 15-Aug-20 | 7641 | Peridinium aciculiferum Lemmermann | 200 | 1.80956 | 30 | 24 | 9047.8 |
| MEL - 0109 - PC | 15-Aug-20 | 1073 | Snowella sp | 3000 | 1.5 | 0 | 0 | 500 |
| MEL - 0109 - PC | 15-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 114944 | 1.62071 | 3 | 3 | 14.1 |
| MEL - 0109 - PC | 15-Aug-20 | 2121 | Oocystis lacustris Chodat | 193968 | 9.75659 | 6 | 4 | 50.3 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0109 - PC | 15-Aug-20 | 2143 | Monoraphidium minutum (Nag.) Komarkova-Legnerova | 7184 | 0.4059 | 9 | 4 | 56.5 |
| MEL - 0109 - PC | 15-Aug-20 | 2164 | Quadrigula closterioides (Bohl.) Printz | 143680 | 3.16096 | 14 | 2 | 22 |
| MEL - 0109 - PC | 15-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 21552 | 0.33837 | 10 | 2 | 15.7 |
| MEL - 0109 - PC | 15-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 400 | 0.1642 | 14 | 12 | 410.5 |
| MEL - 0109 - PC | 15-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 0.36932 | 23 | 20 | 1846.6 |
| MEL - 0109 - PC | 15-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 57472 | 2.16669 | 6 | 6 | 37.7 |
| MEL - 0109 - PC | 15-Aug-20 | 2206 | Botryococcus braunii Kutzing | 600 | 0.86208 | 14 | 14 | 1436.8 |
| MEL - 0101 - PC | 15-Aug-20 | 4351 | Small chrysophyceae | 373568 | 3.1 | 2.5 | 2.5 | 8.2 |
| MEL - 0106 - PC | 15-Aug-20 | 4351 | Small chrysophyceae | 287360 | 2.35635 | 2.5 | 2.5 | 8.2 |
| MEL - 0107 - PC | 15-Aug-20 | 4351 | Small chrysophyceae | 308912 | 2.53308 | 2.5 | 2.5 | 8.2 |
| MEL - 0108 - PC | 15-Aug-20 | 4351 | Small chrysophyceae | 308912 | 2.53308 | 2.5 | 2.5 | 8.2 |
| MEL - 0109 - PC | 15-Aug-20 | 4351 | Small chrysophyceae | 215520 | 1.76726 | 2.5 | 2.5 | 8.2 |
| MEL - 0108 - PC | 15-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.94039 | 6.3 | 6.3 | 130.9 |
| MEL - 0101 - PC | 15-Aug-20 | 4414 | Stichogloea spp. | 57472 | 2.9 | 6 | 4 | 50.3 |
| MEL - 0106 - PC | 15-Aug-20 | 4414 | Stichogloea spp. | 215520 | 10.84066 | 6 | 4 | 50.3 |
| MEL - 0107 - PC | 15-Aug-20 | 4414 | Stichogloea spp. | 301728 | 15.17692 | 6 | 4 | 50.3 |
| MEL - 0109 - PC | 15-Aug-20 | 4414 | Stichogloea spp. | 316096 | 15.89963 | 6 | 4 | 50.3 |
| MEL - 0106 - PC | 15-Aug-20 | 4375 | Synura sphagnicola Korschikow | 600 | 9.42 | 0 | 0 | 15700 |
| MEL - 0101 - PC | 15-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 100576 | 11.4 | 6 | 6 | 113.1 |
| MEL - 0109 - PC | 15-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4200 | 10.0338 | 11.5 | 23 | 2389 |
| MEL - 0109 - PC | 15-Aug-20 | 5509 | Cyclotella ocellata Pant. | 57472 | 5.77594 | 4 | 8 | 100.5 |
| MEL - 0109 - PC | 15-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 200 | 0.05446 | 65 | 4 | 272.3 |
| MEL - 0109 - PC | 15-Aug-20 | 5524 | Asterionella formosa Hassall | 47200 | 5.09288 | 103 | 2 | 107.9 |
| MEL - 0109 - PC | 15-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 143680 | 2.39946 | 2.2 | 4.4 | 16.7 |
| MEL - 0109 - PC | 15-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 200 | 1.41124 | 16.5 | 33 | 7056.2 |
| MEL - 0109 - PC | 15-Aug-20 | 6554 | Rhodomonas minuta Skuja | 373568 | 20.65831 | 9.9 | 4 | 55.3 |
| MEL - 0109 - PC | 15-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 26000 | 41.8028 | 23.5 | 14 | 1607.8 |
| MEL - 0109 - PC | 15-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 9200 | 6.7436 | 21 | 10 | 733 |
| MEL - 0109 - PC | 15-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 4800 | 10.83744 | 33 | 14 | 2257.8 |
| MEL - 0109 - PC | 15-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2000 | 8.1288 | 19.8 | 19.8 | 4064.4 |
| MEL - 0204R - PC | 18-Aug-20 | 1073 | Snowella sp | 400 | 0.2 | 0 | 0 | 500 |
| MEL - 0204R - PC | 18-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 86208 | 1.21553 | 3 | 3 | 14.1 |
| MEL - 0204R - PC | 18-Aug-20 | 2121 | Oocystis lacustris Chodat | 28736 | 1.44542 | 6 | 4 | 50.3 |
| MEL - 0204R - PC | 18-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 28736 | 0.49713 | 11 | 2 | 17.3 |
| MEL - 0204R - PC | 18-Aug-20 | 2178 | Cosmarium sp. | 400 | 0.55852 | 20 | 20 | 1396.3 |
| MEL - 0204R - PC | 18-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0204R - PC | 18-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 28736 | 1.08335 | 6 | 6 | 37.7 |
| MEL - 0204R - PC | 18-Aug-20 | 2206 | Botryococcus braunii Kutzing | 200 | 0.28736 | 14 | 14 | 1436.8 |
| MEL - 0204R - PC | 18-Aug-20 | 4351 | Small chrysophyceae | 617824 | 6.36359 | 2.7 | 2.7 | 10.3 |
| MEL - 0204R - PC | 18-Aug-20 | 4352 | Large chrysophyceae | 71840 | 12.90246 | 7 | 7 | 179.6 |
| MEL - 0204R - PC | 18-Aug-20 | 4357 | Chrysococcus sp. | 581904 | 38.05652 | 5 | 5 | 65.4 |
| MEL - 0204R - PC | 18-Aug-20 | 4362 | Kephyrion sp. | 14368 | 0.20259 | 3 | 3 | 14.1 |
| MEL - 0204R - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 64656 | 14.62519 | 12 | 6 | 226.2 |
| MEL - 0204R - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 200 | 1.017 | 0 | 0 | 5085 |
| MEL - 0204R - PC | 18-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 150864 | 17.06272 | 6 | 6 | 113.1 |
| MEL - 0204R - PC | 18-Aug-20 | 4411 | Bitrichia chodatii (Reverdin) Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0204R - PC | 18-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 43104 | 19.96577 | 9.6 | 9.6 | 463.2 |
| MEL - 0204R - PC | 18-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 28736 | 0.9253 | 6 | 3.2 | 32.2 |
| MEL - 0204R - PC | 18-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 3800 | 9.0782 | 11.5 | 23 | 2389 |
| MEL - 0204R - PC | 18-Aug-20 | 5509 | Cyclotella ocellata Pant. | 14368 | 1.44398 | 4 | 8 | 100.5 |
| MEL - 0204R - PC | 18-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 8000 | 6.2584 | 83 | 6 | 782.3 |
| MEL - 0204R - PC | 18-Aug-20 | 5514 | Tabellaria flocculosa (Roth) Kutzing | 400 | 0.53364 | 26 | 14 | 1334.1 |
| MEL - 0204R - PC | 18-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 3000 | 0.8169 | 65 | 4 | 272.3 |
| MEL - 0204R - PC | 18-Aug-20 | 5524 | Asterionella formosa Hassall | 12800 | 1.38112 | 103 | 2 | 107.9 |
| MEL - 0204R - PC | 18-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 79024 | 1.50936 | 2.3 | 4.6 | 19.1 |
| MEL - 0204R - PC | 18-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 1200 | 10.1022 | 17.5 | 35 | 8418.5 |
| MEL - 0204R - PC | 18-Aug-20 | 6554 | Rhodomonas minuta Skuja | 380752 | 25.47231 | 9.9 | 4.4 | 66.9 |
| MEL - 0204R - PC | 18-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 8800 | 14.4496 | 24 | 14 | 1642 |
| MEL - 0204R - PC | 18-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 3800 | 2.67938 | 20.2 | 10 | 705.1 |
| MEL - 0204R - PC | 18-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 3000 | 7.1838 | 35 | 14 | 2394.6 |
| MEL - 0204R - PC | 18-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 600 | 2.43864 | 19.8 | 19.8 | 4064.4 |
| MEL - 0201 - PC | 18-Aug-20 | 1073 | Snowella sp | 800 | 0.4 | 0 | 0 | 500 |
| MEL - 0201 - PC | 18-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 28736 | 0.40518 | 3 | 3 | 14.1 |
| MEL - 0201 - PC | 18-Aug-20 | 2113 | Pediastrum duplex Meyen | 2800 | 0.23828 | 8.8 | 6.3 | 85.1 |
| MEL - 0201 - PC | 18-Aug-20 | 2121 | Oocystis lacustris Chodat | 459776 | 23.12673 | 6 | 4 | 50.3 |
| MEL - 0201 - PC | 18-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0201 - PC | 18-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 400 | 0.1642 | 14 | 12 | 410.5 |
| MEL - 0201 - PC | 18-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 600 | 2.13462 | 28 | 26 | 3557.7 |
| MEL - 0201 - PC | 18-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 7184 | 0.27084 | 6 | 6 | 37.7 |
| MEL - 0201 - PC | 18-Aug-20 | 2206 | Botryococcus braunii Kutzing | 600 | 0.86208 | 14 | 14 | 1436.8 |
| MEL - 0201 - PC | 18-Aug-20 | 4351 | Small chrysophyceae | 524432 | 5.40165 | 2.7 | 2.7 | 10.3 |
| MEL - 0201 - PC | 18-Aug-20 | 4352 | Large chrysophyceae | 7184 | 1.29025 | 7 | 7 | 179.6 |
| MEL - 0201 - PC | 18-Aug-20 | 4357 | Chrysococcus sp. | 244256 | 15.97434 | 5 | 5 | 65.4 |
| MEL - 0201 - PC | 18-Aug-20 | 4362 | Kephyrion sp. | 7184 | 0.10129 | 3 | 3 | 14.1 |
| MEL - 0201 - PC | 18-Aug-20 | 4363 | Spiniferomonas serrata | 35920 | 4.2673 | 6.1 | 6.1 | 118.8 |
| MEL - 0201 - PC | 18-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0201 - PC | 18-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 21552 | 2.82116 | 10 | 5 | 130.9 |
| MEL - 0201 - PC | 18-Aug-20 | 4383 | Dinobryon bavaricum Imhof | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0201 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 35920 | 8.1251 | 12 | 6 | 226.2 |
| MEL - 0201 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 600 | 1.1946 | 0 | 0 | 1991 |
| MEL - 0201 - PC | 18-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 100576 | 11.37515 | 6 | 6 | 113.1 |
| MEL - 0201 - PC | 18-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 50288 | 23.2934 | 9.6 | 9.6 | 463.2 |
| MEL - 0201 - PC | 18-Aug-20 | 4414 | Stichogloea spp. | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0201 - PC | 18-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 35920 | 1.15662 | 6 | 3.2 | 32.2 |
| MEL - 0201 - PC | 18-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4000 | 9.556 | 11.5 | 23 | 2389 |
| MEL - 0201 - PC | 18-Aug-20 | 5509 | Cyclotella ocellata Pant. | 43104 | 4.33195 | 4 | 8 | 100.5 |
| MEL - 0201 - PC | 18-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 3600 | 2.78208 | 82 | 6 | 772.8 |
| MEL - 0201 - PC | 18-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0201 - PC | 18-Aug-20 | 5524 | Asterionella formosa Hassall | 18400 | 1.98536 | 103 | 2 | 107.9 |
| MEL - 0201 - PC | 18-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 186784 | 3.56757 | 2.3 | 4.6 | 19.1 |
| MEL - 0201 - PC | 18-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 1800 | 12.70116 | 16.5 | 33 | 7056.2 |
| MEL - 0201 - PC | 18-Aug-20 | 6554 | Rhodomonas minuta Skuja | 359200 | 24.03048 | 9.9 | 4.4 | 66.9 |
| MEL - 0201 - PC | 18-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 4200 | 6.8964 | 24 | 14 | 1642 |
| MEL - 0201 - PC | 18-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 3600 | 2.53836 | 20.2 | 10 | 705.1 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0201 - PC | 18-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 1600 | 3.83136 | 35 | 14 | 2394.6 |
| MEL - 0201 - PC | 18-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 800 | 3.25152 | 19.8 | 19.8 | 4064.4 |
| MEL - 0202 - PC | 18-Aug-20 | 1073 | Snowella sp | 800 | 0.4 | 0 | 0 | 500 |
| MEL - 0202 - PC | 18-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 86208 | 1.21553 | 3 | 3 | 14.1 |
| MEL - 0202 - PC | 18-Aug-20 | 2113 | Pediastrum duplex Meyen | 2000 | 0.1134 | 7.3 | 6.1 | 56.7 |
| MEL - 0202 - PC | 18-Aug-20 | 2121 | Oocystis lacustris Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0202 - PC | 18-Aug-20 | 2145 | Crucigenia quadrata Morr. | 229888 | 0.32184 | 2 | 2 | 1.4 |
| MEL - 0202 - PC | 18-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 21552 | 0.37285 | 11 | 2 | 17.3 |
| MEL - 0202 - PC | 18-Aug-20 | 2206 | Botryococcus braunii Kutzing | 1200 | 1.72416 | 14 | 14 | 1436.8 |
| MEL - 0202 - PC | 18-Aug-20 | 2247 | Oocystis gigas Archer | 200 | 0.48254 | 18 | 16 | 2412.7 |
| MEL - 0202 - PC | 18-Aug-20 | 4351 | Small chrysophyceae | 732768 | 7.54751 | 2.7 | 2.7 | 10.3 |
| MEL - 0202 - PC | 18-Aug-20 | 4352 | Large chrysophyceae | 64656 | 11.61222 | 7 | 7 | 179.6 |
| MEL - 0202 - PC | 18-Aug-20 | 4357 | Chrysococcus sp. | 229888 | 15.03468 | 5 | 5 | 65.4 |
| MEL - 0202 - PC | 18-Aug-20 | 4362 | Kephyrion sp. | 7184 | 0.10129 | 3 | 3 | 14.1 |
| MEL - 0202 - PC | 18-Aug-20 | 4363 | Spiniferomonas serrata | 14368 | 1.54456 | 5.9 | 5.9 | 107.5 |
| MEL - 0202 - PC | 18-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20526 | 19.6 | 10 | 1026.3 |
| MEL - 0202 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 28736 | 6.50008 | 12 | 6 | 226.2 |
| MEL - 0202 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 200 | 0.678 | 0 | 0 | 3390 |
| MEL - 0202 - PC | 18-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 57472 | 6.50008 | 6 | 6 | 113.1 |
| MEL - 0202 - PC | 18-Aug-20 | 4411 | Bitrichia chodatii (Reverdin) Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0202 - PC | 18-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 21552 | 8.78675 | 9.2 | 9.2 | 407.7 |
| MEL - 0202 - PC | 18-Aug-20 | 4414 | Stichogloea spp. | 28736 | 1.44542 | 6 | 4 | 50.3 |
| MEL - 0202 - PC | 18-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 7184 | 0.23132 | 6 | 3.2 | 32.2 |
| MEL - 0202 - PC | 18-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4800 | 11.4672 | 11.5 | 23 | 2389 |
| MEL - 0202 - PC | 18-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.72199 | 4 | 8 | 100.5 |
| MEL - 0202 - PC | 18-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 72600 | 56.10528 | 82 | 6 | 772.8 |
| MEL - 0202 - PC | 18-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0202 - PC | 18-Aug-20 | 5524 | Asterionella formosa Hassall | 16800 | 1.81272 | 103 | 2 | 107.9 |
| MEL - 0202 - PC | 18-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 172416 | 3.29315 | 2.3 | 4.6 | 19.1 |
| MEL - 0202 - PC | 18-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 800 | 5.64496 | 16.5 | 33 | 7056.2 |
| MEL - 0202 - PC | 18-Aug-20 | 6554 | Rhodomonas minuta Skuja | 265808 | 17.78256 | 9.9 | 4.4 | 66.9 |
| MEL - 0202 - PC | 18-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 7600 | 12.4792 | 24 | 14 | 1642 |
| MEL - 0202 - PC | 18-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 3000 | 2.1153 | 20.2 | 10 | 705.1 |
| MEL - 0202 - PC | 18-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 1600 | 3.83136 | 35 | 14 | 2394.6 |
| MEL - 0202 - PC | 18-Aug-20 | 7632 | Gymnodinium sp. | 400 | 3.68112 | 26 | 26 | 9202.8 |
| MEL - 0202 - PC | 18-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1000 | 4.0644 | 19.8 | 19.8 | 4064.4 |
| MEL - 0203 - PC | 18-Aug-20 | 1073 | Snowella sp | 1000 | 0.5 | 0 | 0 | 500 |
| MEL - 0203 - PC | 18-Aug-20 | 2121 | Oocystis lacustris Chodat | 28736 | 1.44542 | 6 | 4 | 50.3 |
| MEL - 0203 - PC | 18-Aug-20 | 2145 | Crucigenia quadrata Morr. | 28736 | 0.32184 | 4 | 4 | 11.2 |
| MEL - 0203 - PC | 18-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0203 - PC | 18-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 400 | 0.1642 | 14 | 12 | 410.5 |
| MEL - 0203 - PC | 18-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 1.1404 | 33 | 30 | 5702 |
| MEL - 0203 - PC | 18-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 7184 | 0.27084 | 6 | 6 | 37.7 |
| MEL - 0203 - PC | 18-Aug-20 | 4351 | Small chrysophyceae | 538800 | 5.54964 | 2.7 | 2.7 | 10.3 |
| MEL - 0203 - PC | 18-Aug-20 | 4352 | Large chrysophyceae | 43104 | 7.74148 | 7 | 7 | 179.6 |
| MEL - 0203 - PC | 18-Aug-20 | 4355 | Chrysochromulina parva Lackey | 7184 | 0.46983 | 5 | 5 | 65.4 |
| MEL - 0203 - PC | 18-Aug-20 | 4357 | Chrysococcus sp. | 215520 | 14.09501 | 5 | 5 | 65.4 |
| MEL - 0203 - PC | 18-Aug-20 | 4361 | Kephyrion boreale Skuja | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| MEL - 0203 - PC | 18-Aug-20 | 4362 | Kephyrion sp. | 28736 | 0.40518 | 3 | 3 | 14.1 |
| MEL - 0203 - PC | 18-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| MEL - 0203 - PC | 18-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 400 | 0.41052 | 19.6 | 10 | 1026.3 |
| MEL - 0203 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 57472 | 13.00017 | 12 | 6 | 226.2 |
| MEL - 0203 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 400 | 2.034 | 0 | 0 | 5085 |
| MEL - 0203 - PC | 18-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 21552 | 2.43753 | 6 | 6 | 113.1 |
| MEL - 0203 - PC | 18-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 35920 | 16.63814 | 9.6 | 9.6 | 463.2 |
| MEL - 0203 - PC | 18-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 7184 | 0.23132 | 6 | 3.2 | 32.2 |
| MEL - 0203 - PC | 18-Aug-20 | 4437 | Pteridomonas sp. | 7184 | 1.59485 | 8.6 | 8.6 | 222 |
| MEL - 0203 - PC | 18-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4600 | 10.9894 | 11.5 | 23 | 2389 |
| MEL - 0203 - PC | 18-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.72199 | 4 | 8 | 100.5 |
| MEL - 0203 - PC | 18-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 2800 | 2.16384 | 82 | 6 | 772.8 |
| MEL - 0203 - PC | 18-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0203 - PC | 18-Aug-20 | 5524 | Asterionella formosa Hassall | 7200 | 0.77688 | 103 | 2 | 107.9 |
| MEL - 0203 - PC | 18-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 208336 | 3.97922 | 2.3 | 4.6 | 19.1 |
| MEL - 0203 - PC | 18-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 3.3674 | 17.5 | 35 | 8418.5 |
| MEL - 0203 - PC | 18-Aug-20 | 6554 | Rhodomonas minuta Skuja | 136496 | 9.13158 | 9.9 | 4.4 | 66.9 |
| MEL - 0203 - PC | 18-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 5800 | 9.5236 | 24 | 14 | 1642 |
| MEL - 0203 - PC | 18-Aug-20 | 6559 | Cryptomonas ovata Ehrenberg | 200 | 1.11702 | 40 | 20 | 5585.1 |
| MEL - 0203 - PC | 18-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 4000 | 2.8204 | 20.2 | 10 | 705.1 |
| MEL - 0203 - PC | 18-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 1200 | 2.87352 | 35 | 14 | 2394.6 |
| MEL - 0203 - PC | 18-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1200 | 4.87728 | 19.8 | 19.8 | 4064.4 |
| MEL - 0204 - PC | 18-Aug-20 | 1073 | Snowella sp | 1000 | 0.5 | 0 | 0 | 500 |
| MEL - 0204 - PC | 18-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 43104 | 0.60777 | 3 | 3 | 14.1 |
| MEL - 0204 - PC | 18-Aug-20 | 2121 | Oocystis lacustris Chodat | 57472 | 2.89084 | 6 | 4 | 50.3 |
| MEL - 0204 - PC | 18-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 21552 | 0.37285 | 11 | 2 | 17.3 |
| MEL - 0204 - PC | 18-Aug-20 | 2178 | Cosmarium sp. | 600 | 0.83778 | 20 | 20 | 1396.3 |
| MEL - 0204 - PC | 18-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 400 | 0.1642 | 14 | 12 | 410.5 |
| MEL - 0204 - PC | 18-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 7184 | 0.27084 | 6 | 6 | 37.7 |
| MEL - 0204 - PC | 18-Aug-20 | 2206 | Botryococcus braunii Kutzing | 400 | 0.57472 | 14 | 14 | 1436.8 |
| MEL - 0204 - PC | 18-Aug-20 | 4351 | Small chrysophyceae | 646560 | 6.65957 | 2.7 | 2.7 | 10.3 |
| MEL - 0204 - PC | 18-Aug-20 | 4352 | Large chrysophyceae | 71840 | 12.90246 | 7 | 7 | 179.6 |
| MEL - 0204 - PC | 18-Aug-20 | 4357 | Chrysococcus sp. | 502880 | 32.88835 | 5 | 5 | 65.4 |
| MEL - 0204 - PC | 18-Aug-20 | 4362 | Kephyrion sp. | 21552 | 0.30388 | 3 | 3 | 14.1 |
| MEL - 0204 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 50288 | 11.37515 | 12 | 6 | 226.2 |
| MEL - 0204 - PC | 18-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 143680 | 16.25021 | 6 | 6 | 113.1 |
| MEL - 0204 - PC | 18-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 43104 | 19.96577 | 9.6 | 9.6 | 463.2 |
| MEL - 0204 - PC | 18-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 7184 | 0.23132 | 6 | 3.2 | 32.2 |
| MEL - 0204 - PC | 18-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4600 | 10.9894 | 11.5 | 23 | 2389 |
| MEL - 0204 - PC | 18-Aug-20 | 5509 | Cyclotella ocellata Pant. | 21552 | 2.16598 | 4 | 8 | 100.5 |
| MEL - 0204 - PC | 18-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 8800 | 6.88424 | 83 | 6 | 782.3 |
| MEL - 0204 - PC | 18-Aug-20 | 5514 | Tabellaria flocculosa (Roth) Kutzing | 800 | 0.9852 | 24 | 14 | 1231.5 |
| MEL - 0204 - PC | 18-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 3800 | 1.03474 | 65 | 4 | 272.3 |
| MEL - 0204 - PC | 18-Aug-20 | 5524 | Asterionella formosa Hassall | 10400 | 1.12216 | 103 | 2 | 107.9 |
| MEL - 0204 - PC | 18-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 107760 | 2.05822 | 2.3 | 4.6 | 19.1 |
| MEL - 0204 - PC | 18-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 800 | 6.7348 | 17.5 | 35 | 8418.5 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0204 - PC | 18-Aug-20 | 6554 | Rhodomonas minuta Skuja | 337648 | 22.58865 | 9.9 | 4.4 | 66.9 |
| MEL - 0204 - PC | 18-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 7400 | 12.1508 | 24 | 14 | 1642 |
| MEL - 0204 - PC | 18-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 4800 | 3.38448 | 20.2 | 10 | 705.1 |
| MEL - 0204 - PC | 18-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 2200 | 5.26812 | 35 | 14 | 2394.6 |
| MEL - 0204 - PC | 18-Aug-20 | 7631 | Gymnodinium helveticum Penard | 200 | 4.90088 | 52 | 30 | 24504.4 |
| MEL - 0204 - PC | 18-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 400 | 1.62576 | 19.8 | 19.8 | 4064.4 |
| MEL - 0205 - PC | 18-Aug-20 | 1073 | Snowella sp | 200 | 0.1 | 0 | 0 | 500 |
| MEL - 0205 - PC | 18-Aug-20 | 2121 | Oocystis lacustris Chodat | 495696 | 24.93351 | 6 | 4 | 50.3 |
| MEL - 0205 - PC | 18-Aug-20 | 2164 | Quadrigula closterioides (Bohl.) Printz | 28736 | 0.63219 | 14 | 2 | 22 |
| MEL - 0205 - PC | 18-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0205 - PC | 18-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 43104 | 1.62502 | 6 | 6 | 37.7 |
| MEL - 0205 - PC | 18-Aug-20 | 4351 | Small chrysophyceae | 502880 | 5.17966 | 2.7 | 2.7 | 10.3 |
| MEL - 0205 - PC | 18-Aug-20 | 4352 | Large chrysophyceae | 57472 | 10.32197 | 7 | 7 | 179.6 |
| MEL - 0205 - PC | 18-Aug-20 | 4357 | Chrysococcus sp. | 323280 | 21.14251 | 5 | 5 | 65.4 |
| MEL - 0205 - PC | 18-Aug-20 | 4362 | Kephyrion sp. | 21552 | 0.30388 | 3 | 3 | 14.1 |
| MEL - 0205 - PC | 18-Aug-20 | 4370 | Mallomonas akrokomos Asmund and Kristiansen | 7184 | 1.09269 | 15 | 4.4 | 152.1 |
| MEL - 0205 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 21552 | 4.87506 | 12 | 6 | 226.2 |
| MEL - 0205 - PC | 18-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 600 | 2.034 | 0 | 0 | 3390 |
| MEL - 0205 - PC | 18-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 100576 | 11.37515 | 6 | 6 | 113.1 |
| MEL - 0205 - PC | 18-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 35920 | 16.63814 | 9.6 | 9.6 | 463.2 |
| MEL - 0205 - PC | 18-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 150864 | 4.85782 | 6 | 3.2 | 32.2 |
| MEL - 0205 - PC | 18-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 4400 | 10.5116 | 11.5 | 23 | 2389 |
| MEL - 0205 - PC | 18-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.72199 | 4 | 8 | 100.5 |
| MEL - 0205 - PC | 18-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 400 | 0.30912 | 82 | 6 | 772.8 |
| MEL - 0205 - PC | 18-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0205 - PC | 18-Aug-20 | 5524 | Asterionella formosa Hassall | 12000 | 1.2948 | 103 | 2 | 107.9 |
| MEL - 0205 - PC | 18-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 237072 | 4.52808 | 2.3 | 4.6 | 19.1 |
| MEL - 0205 - PC | 18-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 3.3674 | 17.5 | 35 | 8418.5 |
| MEL - 0205 - PC | 18-Aug-20 | 6554 | Rhodomonas minuta Skuja | 244256 | 16.34073 | 9.9 | 4.4 | 66.9 |
| MEL - 0205 - PC | 18-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 6800 | 11.1656 | 24 | 14 | 1642 |
| MEL - 0205 - PC | 18-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 5800 | 4.08958 | 20.2 | 10 | 705.1 |
| MEL - 0205 - PC | 18-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 1200 | 2.87352 | 35 | 14 | 2394.6 |
| MEL - 0205 - PC | 18-Aug-20 | 6568 | Katablepharis ovalis Skuja | 7184 | 0.31322 | 7.9 | 4 | 43.6 |
| MEL - 0205 - PC | 18-Aug-20 | 7632 | Gymnodinium sp. | 200 | 1.84056 | 26 | 26 | 9202.8 |
| MEL - 0205 - PC | 18-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1400 | 5.69016 | 19.8 | 19.8 | 4064.4 |
| MEL - 0301 - PC | 19-Aug-20 | 1073 | Snowella sp | 200 | 0.1 | 0 | 0 | 500 |
| MEL - 0301 - PC | 19-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 71840 | 1.01294 | 3 | 3 | 14.1 |
| MEL - 0301 - PC | 19-Aug-20 | 2113 | Pediastrum duplex Meyen | 4800 | 0.44928 | 9.3 | 6.2 | 93.6 |
| MEL - 0301 - PC | 19-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 28736 | 0.49713 | 11 | 2 | 17.3 |
| MEL - 0301 - PC | 19-Aug-20 | 2169 | Planctonema lauterbornii Schmidle | 600 | 1.58334 | 210 | 4 | 2638.9 |
| MEL - 0301 - PC | 19-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0301 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0301 - PC | 19-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 28736 | 1.08335 | 6 | 6 | 37.7 |
| MEL - 0301 - PC | 19-Aug-20 | 2206 | Botryococcus braunii Kutzing | 200 | 0.28736 | 14 | 14 | 1436.8 |
| MEL - 0301 - PC | 19-Aug-20 | 2247 | Oocystis gigas Archer | 200 | 0.48254 | 18 | 16 | 2412.7 |
| MEL - 0301 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 718400 | 5.89088 | 2.5 | 2.5 | 8.2 |
| MEL - 0301 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 14368 | 2.58049 | 7 | 7 | 179.6 |
| MEL - 0301 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 660928 | 43.22469 | 5 | 5 | 65.4 |
| MEL - 0301 - PC | 19-Aug-20 | 4361 | Kephyrion boreale Skuja | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| MEL - 0301 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 35920 | 0.50647 | 3 | 3 | 14.1 |
| MEL - 0301 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 35920 | 4.2673 | 6.1 | 6.1 | 118.8 |
| MEL - 0301 - PC | 19-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 7184 | 0.90303 | 9.6 | 5 | 125.7 |
| MEL - 0301 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 200 | 0.678 | 0 | 0 | 3390 |
| MEL - 0301 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 122128 | 27.62535 | 12 | 6 | 226.2 |
| MEL - 0301 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 200 | 0.25 | 0 | 0 | 1250 |
| MEL - 0301 - PC | 19-Aug-20 | 4396 | Chrysolykos skuja (Nauwerck) Willen | 28736 | 0.87932 | 5.7 | 3.2 | 30.6 |
| MEL - 0301 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 193968 | 21.93778 | 6 | 6 | 113.1 |
| MEL - 0301 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 93392 | 38.07592 | 9.2 | 9.2 | 407.7 |
| MEL - 0301 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 122128 | 3.93252 | 6 | 3.2 | 32.2 |
| MEL - 0301 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 800 | 1.9112 | 11.5 | 23 | 2389 |
| MEL - 0301 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 28736 | 2.88797 | 4 | 8 | 100.5 |
| MEL - 0301 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 200 | 0.05446 | 65 | 4 | 272.3 |
| MEL - 0301 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 21552 | 0.52802 | 2.5 | 5 | 24.5 |
| MEL - 0301 - PC | 19-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 600 | 4.23372 | 16.5 | 33 | 7056.2 |
| MEL - 0301 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 229888 | 15.54043 | 10 | 4.4 | 67.6 |
| MEL - 0301 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1400 | 2.25092 | 23.5 | 14 | 1607.8 |
| MEL - 0301 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 2000 | 1.466 | 21 | 10 | 733 |
| MEL - 0301 - PC | 19-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 200 | 0.45156 | 33 | 14 | 2257.8 |
| MEL - 0301 - PC | 19-Aug-20 | 7632 | Gymnodinium sp. | 200 | 1.84056 | 26 | 26 | 9202.8 |
| MEL - 0301 - PC | 19-Aug-20 | 7635 | Peridinium willei Huitfeldt-Kaas | 200 | 4.8858 | 36 | 36 | 24429 |
| MEL - 0301 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2000 | 7.2968 | 19.1 | 19.1 | 3648.4 |
| MEL - 0302 - PC | 19-Aug-20 | 2101 | Carteria spp. | 7184 | 6.50008 | 12 | 12 | 904.8 |
| MEL - 0302 - PC | 19-Aug-20 | 2113 | Pediastrum duplex Meyen | 4000 | 0.3744 | 9.3 | 6.2 | 93.6 |
| MEL - 0302 - PC | 19-Aug-20 | 2137 | Dictyosphaerium simplex Sukja | 57472 | 0.24138 | 2 | 2 | 4.2 |
| MEL - 0302 - PC | 19-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 28736 | 1.08335 | 6 | 6 | 37.7 |
| MEL - 0302 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 416672 | 3.41671 | 2.5 | 2.5 | 8.2 |
| MEL - 0302 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 21552 | 3.87074 | 7 | 7 | 179.6 |
| MEL - 0302 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 409488 | 26.78052 | 5 | 5 | 65.4 |
| MEL - 0302 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 43104 | 0.60777 | 3 | 3 | 14.1 |
| MEL - 0302 - PC | 19-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0302 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 222704 | 50.37564 | 12 | 6 | 226.2 |
| MEL - 0302 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 71840 | 8.1251 | 6 | 6 | 113.1 |
| MEL - 0302 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 186784 | 76.15184 | 9.2 | 9.2 | 407.7 |
| MEL - 0302 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 186784 | 6.01444 | 6 | 3.2 | 32.2 |
| MEL - 0302 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 1800 | 4.3002 | 11.5 | 23 | 2389 |
| MEL - 0302 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 28736 | 2.88797 | 4 | 8 | 100.5 |
| MEL - 0302 - PC | 19-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 200 | 0.16022 | 85 | 6 | 801.1 |
| MEL - 0302 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 114944 | 2.81613 | 2.5 | 5 | 24.5 |
| MEL - 0302 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 301728 | 20.39681 | 10 | 4.4 | 67.6 |
| MEL - 0302 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1600 | 2.57248 | 23.5 | 14 | 1607.8 |
| MEL - 0302 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 2200 | 1.6126 | 21 | 10 | 733 |
| MEL - 0302 - PC | 19-Aug-20 | 7632 | Gymnodinium sp. | 400 | 3.68112 | 26 | 26 | 9202.8 |
| MEL - 0302 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1000 | 3.6484 | 19.1 | 19.1 | 3648.4 |
| MEL - 0303 - PC | 19-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 57472 | 0.81036 | 3 | 3 | 14.1 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^{3}$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0303 - PC | 19-Aug-20 | 2121 | Oocystis lacustris Chodat | 294544 | 14.81556 | 6 | 4 | 50.3 |
| MEL - 0303 - PC | 19-Aug-20 | 2137 | Dictyosphaerium simplex Sukja | 14368 | 0.06035 | 2 | 2 | 4.2 |
| MEL - 0303 - PC | 19-Aug-20 | 2143 | Monoraphidium minutum (Nag.) Komarkova-Legnerova | 7184 | 0.45116 | 10 | 4 | 62.8 |
| MEL - 0303 - PC | 19-Aug-20 | 2164 | Quadrigula closterioides (Bohl.) Printz | 28736 | 0.63219 | 14 | 2 | 22 |
| MEL - 0303 - PC | 19-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 143680 | 2.02589 | 9 | 2 | 14.1 |
| MEL - 0303 - PC | 19-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0303 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0303 - PC | 19-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 0.56632 | 26 | 24 | 2831.6 |
| MEL - 0303 - PC | 19-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 57472 | 2.16669 | 6 | 6 | 37.7 |
| MEL - 0303 - PC | 19-Aug-20 | 2206 | Botryococcus braunii Kutzing | 600 | 0.86208 | 14 | 14 | 1436.8 |
| MEL - 0303 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 675296 | 5.53743 | 2.5 | 2.5 | 8.2 |
| MEL - 0303 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 14368 | 2.58049 | 7 | 7 | 179.6 |
| MEL - 0303 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 474144 | 31.00902 | 5 | 5 | 65.4 |
| MEL - 0303 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 143680 | 2.02589 | 3 | 3 | 14.1 |
| MEL - 0303 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 21552 | 2.56038 | 6.1 | 6.1 | 118.8 |
| MEL - 0303 - PC | 19-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0303 - PC | 19-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20944 | 20 | 10 | 1047.2 |
| MEL - 0303 - PC | 19-Aug-20 | 4378 | Dinobryon borgei Lemmermann | 7184 | 0.32544 | 9 | 3.1 | 45.3 |
| MEL - 0303 - PC | 19-Aug-20 | 4383 | Dinobryon bavaricum Imhof | 200 | 0.25 | 0 | 0 | 1250 |
| MEL - 0303 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0303 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 800 | 1.5928 | 0 | 0 | 1991 |
| MEL - 0303 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 222704 | 50.37564 | 12 | 6 | 226.2 |
| MEL - 0303 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 100576 | 11.37515 | 6 | 6 | 113.1 |
| MEL - 0303 - PC | 19-Aug-20 | 4411 | Bitrichia chodatii (Reverdin) Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0303 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 208336 | 84.93859 | 9.2 | 9.2 | 407.7 |
| MEL - 0303 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 600 | 1.4334 | 11.5 | 23 | 2389 |
| MEL - 0303 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 21552 | 2.16598 | 4 | 8 | 100.5 |
| MEL - 0303 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 200 | 0.05446 | 65 | 4 | 272.3 |
| MEL - 0303 - PC | 19-Aug-20 | 5524 | Asterionella formosa Hassall | 200 | 0.02158 | 103 | 2 | 107.9 |
| MEL - 0303 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 86208 | 2.1121 | 2.5 | 5 | 24.5 |
| MEL - 0303 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 344832 | 23.31064 | 10 | 4.4 | 67.6 |
| MEL - 0303 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1000 | 1.6078 | 23.5 | 14 | 1607.8 |
| MEL - 0303 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 2200 | 1.6126 | 21 | 10 | 733 |
| MEL - 0303 - PC | 19-Aug-20 | 7632 | Gymnodinium sp. | 200 | 1.84056 | 26 | 26 | 9202.8 |
| MEL - 0303 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 600 | 2.18904 | 19.1 | 19.1 | 3648.4 |
| MEL - 0304 - PC | 19-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 86208 | 1.21553 | 3 | 3 | 14.1 |
| MEL - 0304 - PC | 19-Aug-20 | 2121 | Oocystis lacustris Chodat | 28736 | 1.44542 | 6 | 4 | 50.3 |
| MEL - 0304 - PC | 19-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 14368 | 0.24857 | 11 | 2 | 17.3 |
| MEL - 0304 - PC | 19-Aug-20 | 2169 | Planctonema lauterbornii Schmidle | 200 | 0.37448 | 149 | 4 | 1872.4 |
| MEL - 0304 - PC | 19-Aug-20 | 2178 | Cosmarium sp. | 600 | 0.83778 | 20 | 20 | 1396.3 |
| MEL - 0304 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 800 | 0.3284 | 14 | 12 | 410.5 |
| MEL - 0304 - PC | 19-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 400 | 1.13264 | 26 | 24 | 2831.6 |
| MEL - 0304 - PC | 19-Aug-20 | 2206 | Botryococcus braunii Kutzing | 400 | 0.57472 | 14 | 14 | 1436.8 |
| MEL - 0304 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 725584 | 5.94979 | 2.5 | 2.5 | 8.2 |
| MEL - 0304 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 14368 | 2.58049 | 7 | 7 | 179.6 |
| MEL - 0304 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 553168 | 36.17719 | 5 | 5 | 65.4 |
| MEL - 0304 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 86208 | 1.21553 | 3 | 3 | 14.1 |
| MEL - 0304 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 14368 | 1.70692 | 6.1 | 6.1 | 118.8 |
| MEL - 0304 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 200 | 0.3982 | 0 | 0 | 1991 |
| MEL - 0304 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 136496 | 30.8754 | 12 | 6 | 226.2 |
| MEL - 0304 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 136496 | 15.4377 | 6 | 6 | 113.1 |
| MEL - 0304 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 71840 | 29.28917 | 9.2 | 9.2 | 407.7 |
| MEL - 0304 - PC | 19-Aug-20 | 4414 | Stichogloea spp. | 14368 | 0.72271 | 6 | 4 | 50.3 |
| MEL - 0304 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 64656 | 2.08192 | 6 | 3.2 | 32.2 |
| MEL - 0304 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 1000 | 2.389 | 11.5 | 23 | 2389 |
| MEL - 0304 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 71840 | 7.21992 | 4 | 8 | 100.5 |
| MEL - 0304 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0304 - PC | 19-Aug-20 | 5524 | Asterionella formosa Hassall | 1600 | 0.17264 | 103 | 2 | 107.9 |
| MEL - 0304 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 57472 | 1.40806 | 2.5 | 5 | 24.5 |
| MEL - 0304 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 222704 | 15.05479 | 10 | 4.4 | 67.6 |
| MEL - 0304 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1400 | 2.25092 | 23.5 | 14 | 1607.8 |
| MEL - 0304 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 400 | 0.2932 | 21 | 10 | 733 |
| MEL - 0304 - PC | 19-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 200 | 0.45156 | 33 | 14 | 2257.8 |
| MEL - 0304 - PC | 19-Aug-20 | 7632 | Gymnodinium sp. | 1000 | 9.2028 | 26 | 26 | 9202.8 |
| MEL - 0304 - PC | 19-Aug-20 | 7635 | Peridinium willei Huitfeldt-Kaas | 200 | 4.8858 | 36 | 36 | 24429 |
| MEL - 0304 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1200 | 4.37808 | 19.1 | 19.1 | 3648.4 |
| MEL - 0305 - PC | 19-Aug-20 | 1073 | Snowella sp | 200 | 0.1 | 0 | 0 | 500 |
| MEL - 0305 - PC | 19-Aug-20 | 2121 | Oocystis lacustris Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0305 - PC | 19-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 7184 | 0.12428 | 11 | 2 | 17.3 |
| MEL - 0305 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0305 - PC | 19-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 400 | 1.13264 | 26 | 24 | 2831.6 |
| MEL - 0305 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 660928 | 5.41961 | 2.5 | 2.5 | 8.2 |
| MEL - 0305 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 35920 | 6.45123 | 7 | 7 | 179.6 |
| MEL - 0305 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 466960 | 30.53918 | 5 | 5 | 65.4 |
| MEL - 0305 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 71840 | 1.01294 | 3 | 3 | 14.1 |
| MEL - 0305 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| MEL - 0305 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0305 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 107760 | 24.37531 | 12 | 6 | 226.2 |
| MEL - 0305 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 57472 | 6.50008 | 6 | 6 | 113.1 |
| MEL - 0305 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 50288 | 20.50242 | 9.2 | 9.2 | 407.7 |
| MEL - 0305 - PC | 19-Aug-20 | 4414 | Stichogloea spp. | 28736 | 1.44542 | 6 | 4 | 50.3 |
| MEL - 0305 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 86208 | 2.7759 | 6 | 3.2 | 32.2 |
| MEL - 0305 - PC | 19-Aug-20 | 4437 | Pteridomonas sp. | 7184 | 1.70907 | 8.8 | 8.8 | 237.9 |
| MEL - 0305 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 1200 | 2.8668 | 11.5 | 23 | 2389 |
| MEL - 0305 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 21552 | 2.16598 | 4 | 8 | 100.5 |
| MEL - 0305 - PC | 19-Aug-20 | 5514 | Tabellaria flocculosa (Roth) Kutzing | 200 | 0.26682 | 26 | 14 | 1334.1 |
| MEL - 0305 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 71840 | 1.76008 | 2.5 | 5 | 24.5 |
| MEL - 0305 - PC | 19-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0305 - PC | 19-Aug-20 | 5776 | Rhopalodia gibba (Ehrenberg) O. Muller | 200 | 5.57528 | 220 | 22 | 27876.4 |
| MEL - 0305 - PC | 19-Aug-20 | 5880 | Didymosphenia geminata Schmidt | 200 | 8.0073 | 118 | 36 | 40036.5 |
| MEL - 0305 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 229888 | 15.54043 | 10 | 4.4 | 67.6 |
| MEL - 0305 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1400 | 2.25092 | 23.5 | 14 | 1607.8 |
| MEL - 0305 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 600 | 0.4398 | 21 | 10 | 733 |
| MEL - 0305 - PC | 19-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 200 | 0.45156 | 33 | 14 | 2257.8 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0305 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2200 | 8.02648 | 19.1 | 19.1 | 3648.4 |
| MEL - 0401 - PC | 19-Aug-20 | 1073 | Snowella sp | 400 | 0.2 | 0 | 0 | 500 |
| MEL - 0401 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 1000 | 0.4105 | 14 | 12 | 410.5 |
| MEL - 0401 - PC | 19-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 0.81682 | 30 | 26 | 4084.1 |
| MEL - 0401 - PC | 19-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 7184 | 0.27084 | 6 | 6 | 37.7 |
| MEL - 0401 - PC | 19-Aug-20 | 2206 | Botryococcus braunii Kutzing | 400 | 0.57472 | 14 | 14 | 1436.8 |
| MEL - 0401 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 373568 | 3.06326 | 2.5 | 2.5 | 8.2 |
| MEL - 0401 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 7184 | 1.29025 | 7 | 7 | 179.6 |
| MEL - 0401 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 431040 | 28.19002 | 5 | 5 | 65.4 |
| MEL - 0401 - PC | 19-Aug-20 | 4358 | Chrysostephanosphaera globulifera Scherffel | 7184 | 2.39227 | 8.6 | 8.6 | 333 |
| MEL - 0401 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 7184 | 0.10129 | 3 | 3 | 14.1 |
| MEL - 0401 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.77228 | 5.9 | 5.9 | 107.5 |
| MEL - 0401 - PC | 19-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0401 - PC | 19-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 400 | 0.41888 | 20 | 10 | 1047.2 |
| MEL - 0401 - PC | 19-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 7184 | 0.94039 | 10 | 5 | 130.9 |
| MEL - 0401 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0401 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 400 | 1.356 | 0 | 0 | 3390 |
| MEL - 0401 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 71840 | 16.25021 | 12 | 6 | 226.2 |
| MEL - 0401 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 93392 | 10.56264 | 6 | 6 | 113.1 |
| MEL - 0401 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 86208 | 35.147 | 9.2 | 9.2 | 407.7 |
| MEL - 0401 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 7184 | 0.23132 | 6 | 3.2 | 32.2 |
| MEL - 0401 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 1000 | 2.389 | 11.5 | 23 | 2389 |
| MEL - 0401 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 14368 | 1.44398 | 4 | 8 | 100.5 |
| MEL - 0401 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 600 | 0.16338 | 65 | 4 | 272.3 |
| MEL - 0401 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 71840 | 1.76008 | 2.5 | 5 | 24.5 |
| MEL - 0401 - PC | 19-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0401 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 186784 | 12.6266 | 10 | 4.4 | 67.6 |
| MEL - 0401 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 3800 | 6.2396 | 24 | 14 | 1642 |
| MEL - 0401 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 1600 | 1.12816 | 20.2 | 10 | 705.1 |
| MEL - 0401 - PC | 19-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 600 | 1.43676 | 35 | 14 | 2394.6 |
| MEL - 0401 - PC | 19-Aug-20 | 7632 | Gymnodinium sp. | 200 | 1.84056 | 26 | 26 | 9202.8 |
| MEL - 0402 - PC | 19-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 28736 | 0.40518 | 3 | 3 | 14.1 |
| MEL - 0402 - PC | 19-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0402 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0402 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 653744 | 5.3607 | 2.5 | 2.5 | 8.2 |
| MEL - 0402 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 79024 | 14.19271 | 7 | 7 | 179.6 |
| MEL - 0402 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 287360 | 18.79334 | 5 | 5 | 65.4 |
| MEL - 0402 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 21552 | 0.30388 | 3 | 3 | 14.1 |
| MEL - 0402 - PC | 19-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20526 | 19.6 | 10 | 1026.3 |
| MEL - 0402 - PC | 19-Aug-20 | 4383 | Dinobryon bavaricum Imhof | 200 | 0.678 | 0 | 0 | 3390 |
| MEL - 0402 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0402 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 201152 | 45.50058 | 12 | 6 | 226.2 |
| MEL - 0402 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 86208 | 35.147 | 9.2 | 9.2 | 407.7 |
| MEL - 0402 - PC | 19-Aug-20 | 4414 | Stichogloea spp. | 373568 | 18.79047 | 6 | 4 | 50.3 |
| MEL - 0402 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 21552 | 0.69397 | 6 | 3.2 | 32.2 |
| MEL - 0402 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 400 | 0.9556 | 11.5 | 23 | 2389 |
| MEL - 0402 - PC | 19-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 800 | 0.62584 | 83 | 6 | 782.3 |
| MEL - 0402 - PC | 19-Aug-20 | 5514 | Tabellaria flocculosa (Roth) Kutzing | 200 | 0.26682 | 26 | 14 | 1334.1 |
| MEL - 0402 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 1600 | 0.43568 | 65 | 4 | 272.3 |
| MEL - 0402 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 179600 | 4.4002 | 2.5 | 5 | 24.5 |
| MEL - 0402 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 93392 | 6.3133 | 10 | 4.4 | 67.6 |
| MEL - 0402 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 2600 | 4.2692 | 24 | 14 | 1642 |
| MEL - 0402 - PC | 19-Aug-20 | 6559 | Cryptomonas ovata Ehrenberg | 200 | 1.11702 | 40 | 20 | 5585.1 |
| MEL - 0402 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 1600 | 1.11696 | 20 | 10 | 698.1 |
| MEL - 0402 - PC | 19-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 600 | 1.43676 | 35 | 14 | 2394.6 |
| MEL - 0402 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 200 | 0.81288 | 19.8 | 19.8 | 4064.4 |
| MEL - 0403 - PC | 19-Aug-20 | 1073 | Snowella sp | 800 | 0.4 | 0 | 0 | 500 |
| MEL - 0403 - PC | 19-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 71840 | 1.01294 | 3 | 3 | 14.1 |
| MEL - 0403 - PC | 19-Aug-20 | 2169 | Planctonema lauterbornii Schmidle | 28736 | 5.77881 | 16 | 4 | 201.1 |
| MEL - 0403 - PC | 19-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0403 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 2000 | 0.821 | 14 | 12 | 410.5 |
| MEL - 0403 - PC | 19-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 28736 | 1.08335 | 6 | 6 | 37.7 |
| MEL - 0403 - PC | 19-Aug-20 | 2206 | Botryococcus braunii Kutzing | 800 | 1.14944 | 14 | 14 | 1436.8 |
| MEL - 0403 - PC | 19-Aug-20 | 2247 | Oocystis gigas Archer | 400 | 0.96508 | 18 | 16 | 2412.7 |
| MEL - 0403 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 330464 | 2.7098 | 2.5 | 2.5 | 8.2 |
| MEL - 0403 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 495696 | 32.41852 | 5 | 5 | 65.4 |
| MEL - 0403 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 43104 | 0.60777 | 3 | 3 | 14.1 |
| MEL - 0403 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.77228 | 5.9 | 5.9 | 107.5 |
| MEL - 0403 - PC | 19-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 600 | 0.62832 | 20 | 10 | 1047.2 |
| MEL - 0403 - PC | 19-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 7184 | 0.94039 | 10 | 5 | 130.9 |
| MEL - 0403 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0403 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0403 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 100576 | 11.37515 | 6 | 6 | 113.1 |
| MEL - 0403 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 93392 | 38.07592 | 9.2 | 9.2 | 407.7 |
| MEL - 0403 - PC | 19-Aug-20 | 4414 | Stichogloea spp. | 79024 | 3.97491 | 6 | 4 | 50.3 |
| MEL - 0403 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 172416 | 5.5518 | 6 | 3.2 | 32.2 |
| MEL - 0403 - PC | 19-Aug-20 | 4437 | Pteridomonas sp. | 7184 | 1.59485 | 8.6 | 8.6 | 222 |
| MEL - 0403 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 1000 | 2.389 | 11.5 | 23 | 2389 |
| MEL - 0403 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 35920 | 3.60996 | 4 | 8 | 100.5 |
| MEL - 0403 - PC | 19-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 2000 | 1.5456 | 82 | 6 | 772.8 |
| MEL - 0403 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 800 | 0.21784 | 65 | 4 | 272.3 |
| MEL - 0403 - PC | 19-Aug-20 | 5524 | Asterionella formosa Hassall | 4000 | 0.4316 | 103 | 2 | 107.9 |
| MEL - 0403 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 35920 | 0.88004 | 2.5 | 5 | 24.5 |
| MEL - 0403 - PC | 19-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0403 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 150864 | 10.19841 | 10 | 4.4 | 67.6 |
| MEL - 0403 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 4000 | 6.568 | 24 | 14 | 1642 |
| MEL - 0403 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 400 | 0.27924 | 20 | 10 | 698.1 |
| MEL - 0403 - PC | 19-Aug-20 | 6568 | Katablepharis ovalis Skuja | 28736 | 1.04024 | 7.2 | 4 | 36.2 |
| MEL - 0403 - PC | 19-Aug-20 | 7631 | Gymnodinium helveticum Penard | 200 | 4.71238 | 50 | 30 | 23561.9 |
| MEL - 0403 - PC | 19-Aug-20 | 7632 | Gymnodinium sp. | 200 | 2.82744 | 30 | 30 | 14137.2 |
| MEL - 0403 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 200 | 0.81288 | 19.8 | 19.8 | 4064.4 |
| MEL - 0404 - PC | 19-Aug-20 | 2121 | Oocystis lacustris Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0404 - PC | 19-Aug-20 | 2143 | Monoraphidium minutum (Nag.) Komarkova-Legnerova | 7184 | 0.4059 | 9 | 4 | 56.5 |
| MEL - 0404 - PC | 19-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 43104 | 0.67673 | 10 | 2 | 15.7 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0404 - PC | 19-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0404 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 400 | 0.1642 | 14 | 12 | 410.5 |
| MEL - 0404 - PC | 19-Aug-20 | 2206 | Botryococcus braunii Kutzing | 1000 | 1.4368 | 14 | 14 | 1436.8 |
| MEL - 0404 - PC | 19-Aug-20 | 2216 | Zygnema sp. | 200 | 3.84846 | 245 | 10 | 19242.3 |
| MEL - 0404 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 344832 | 2.82762 | 2.5 | 2.5 | 8.2 |
| MEL - 0404 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 21552 | 3.87074 | 7 | 7 | 179.6 |
| MEL - 0404 - PC | 19-Aug-20 | 4355 | Chrysochromulina parva Lackey | 7184 | 0.46983 | 5 | 5 | 65.4 |
| MEL - 0404 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 459776 | 30.06935 | 5 | 5 | 65.4 |
| MEL - 0404 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 43104 | 0.67242 | 3.1 | 3.1 | 15.6 |
| MEL - 0404 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.81251 | 6 | 6 | 113.1 |
| MEL - 0404 - PC | 19-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 400 | 0.41888 | 20 | 10 | 1047.2 |
| MEL - 0404 - PC | 19-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 7184 | 0.94039 | 10 | 5 | 130.9 |
| MEL - 0404 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 86208 | 19.50025 | 12 | 6 | 226.2 |
| MEL - 0404 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 28736 | 6.50008 | 12 | 6 | 226.2 |
| MEL - 0404 - PC | 19-Aug-20 | 4396 | Chrysolykos skuja (Nauwerck) Willen | 14368 | 0.49139 | 6 | 3.3 | 34.2 |
| MEL - 0404 - PC | 19-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 21552 | 2.43753 | 6 | 6 | 113.1 |
| MEL - 0404 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 107760 | 43.93375 | 9.2 | 9.2 | 407.7 |
| MEL - 0404 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 79024 | 2.54457 | 6 | 3.2 | 32.2 |
| MEL - 0404 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 200 | 0.4778 | 11.5 | 23 | 2389 |
| MEL - 0404 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 64656 | 6.49793 | 4 | 8 | 100.5 |
| MEL - 0404 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 200 | 0.05446 | 65 | 4 | 272.3 |
| MEL - 0404 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 93392 | 2.2881 | 2.5 | 5 | 24.5 |
| MEL - 0404 - PC | 19-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 200 | 1.41124 | 16.5 | 33 | 7056.2 |
| MEL - 0404 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 172416 | 11.65532 | 10 | 4.4 | 67.6 |
| MEL - 0404 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 3800 | 6.2396 | 24 | 14 | 1642 |
| MEL - 0404 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 1400 | 0.98714 | 20.2 | 10 | 705.1 |
| MEL - 0404 - PC | 19-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 400 | 0.95784 | 35 | 14 | 2394.6 |
| MEL - 0404 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 600 | 2.43864 | 19.8 | 19.8 | 4064.4 |
| MEL - 0405 - PC | 19-Aug-20 | 1073 | Snowella sp | 200 | 0.1 | 0 | 0 | 500 |
| MEL - 0405 - PC | 19-Aug-20 | 2105 | Chlamydomonas spp. | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0405 - PC | 19-Aug-20 | 2145 | Crucigenia quadrata Morr. | 143680 | 0.6753 | 3 | 3 | 4.7 |
| MEL - 0405 - PC | 19-Aug-20 | 2178 | Cosmarium sp. | 400 | 0.55852 | 20 | 20 | 1396.3 |
| MEL - 0405 - PC | 19-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0405 - PC | 19-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 0.56632 | 26 | 24 | 2831.6 |
| MEL - 0405 - PC | 19-Aug-20 | 2206 | Botryococcus braunii Kutzing | 800 | 1.14944 | 14 | 14 | 1436.8 |
| MEL - 0405 - PC | 19-Aug-20 | 4351 | Small chrysophyceae | 574720 | 4.7127 | 2.5 | 2.5 | 8.2 |
| MEL - 0405 - PC | 19-Aug-20 | 4352 | Large chrysophyceae | 35920 | 6.45123 | 7 | 7 | 179.6 |
| MEL - 0405 - PC | 19-Aug-20 | 4355 | Chrysochromulina parva Lackey | 7184 | 0.46983 | 5 | 5 | 65.4 |
| MEL - 0405 - PC | 19-Aug-20 | 4357 | Chrysococcus sp. | 316096 | 20.67268 | 5 | 5 | 65.4 |
| MEL - 0405 - PC | 19-Aug-20 | 4362 | Kephyrion sp. | 43104 | 0.60777 | 3 | 3 | 14.1 |
| MEL - 0405 - PC | 19-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.77228 | 5.9 | 5.9 | 107.5 |
| MEL - 0405 - PC | 19-Aug-20 | 4378 | Dinobryon borgei Lemmermann | 7184 | 0.36854 | 9 | 3.3 | 51.3 |
| MEL - 0405 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 57472 | 13.00017 | 12 | 6 | 226.2 |
| MEL - 0405 - PC | 19-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 400 | 2.034 | 0 | 0 | 5085 |
| MEL - 0405 - PC | 19-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 43104 | 9.75012 | 12 | 6 | 226.2 |
| MEL - 0405 - PC | 19-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 7184 | 2.92892 | 9.2 | 9.2 | 407.7 |
| MEL - 0405 - PC | 19-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 7184 | 0.23132 | 6 | 3.2 | 32.2 |
| MEL - 0405 - PC | 19-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 200 | 0.4778 | 11.5 | 23 | 2389 |
| MEL - 0405 - PC | 19-Aug-20 | 5509 | Cyclotella ocellata Pant. | 21552 | 2.16598 | 4 | 8 | 100.5 |
| MEL - 0405 - PC | 19-Aug-20 | 5513 | Tabellaria fenestrata (Lyngbye) Kutzing | 400 | 0.30912 | 82 | 6 | 772.8 |
| MEL - 0405 - PC | 19-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0405 - PC | 19-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 43104 | 1.05605 | 2.5 | 5 | 24.5 |
| MEL - 0405 - PC | 19-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0405 - PC | 19-Aug-20 | 6554 | Rhodomonas minuta Skuja | 179600 | 12.14096 | 10 | 4.4 | 67.6 |
| MEL - 0405 - PC | 19-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 2600 | 4.2692 | 24 | 14 | 1642 |
| MEL - 0405 - PC | 19-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 1000 | 0.7051 | 20.2 | 10 | 705.1 |
| MEL - 0405 - PC | 19-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 200 | 0.47892 | 35 | 14 | 2394.6 |
| MEL - 0405 - PC | 19-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 400 | 1.62576 | 19.8 | 19.8 | 4064.4 |
| MEL - 0503R - PC | 23-Aug-20 | 1014 | Chroococcus limneticus Lemmermann | 28736 | 3.58625 | 6.2 | 6.2 | 124.8 |
| MEL - 0503R - PC | 23-Aug-20 | 1073 | Snowella sp | 400 | 0.2 | 0 | 0 | 500 |
| MEL - 0503R - PC | 23-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 28736 | 0.40518 | 3 | 3 | 14.1 |
| MEL - 0503R - PC | 23-Aug-20 | 2121 | Oocystis lacustris Chodat | 28736 | 0.81323 | 6 | 3 | 28.3 |
| MEL - 0503R - PC | 23-Aug-20 | 2137 | Dictyosphaerium simplex Sukja | 172416 | 0.72415 | 2 | 2 | 4.2 |
| MEL - 0503R - PC | 23-Aug-20 | 2178 | Cosmarium sp. | 800 | 1.11704 | 20 | 20 | 1396.3 |
| MEL - 0503R - PC | 23-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 600 | 0.2463 | 14 | 12 | 410.5 |
| MEL - 0503R - PC | 23-Aug-20 | 2206 | Botryococcus braunii Kutzing | 600 | 0.86208 | 14 | 14 | 1436.8 |
| MEL - 0503R - PC | 23-Aug-20 | 4351 | Small chrysophyceae | 682480 | 6.27882 | 2.6 | 2.6 | 9.2 |
| MEL - 0503R - PC | 23-Aug-20 | 4352 | Large chrysophyceae | 21552 | 3.87074 | 7 | 7 | 179.6 |
| MEL - 0503R - PC | 23-Aug-20 | 4357 | Chrysococcus sp. | 337648 | 22.08218 | 5 | 5 | 65.4 |
| MEL - 0503R - PC | 23-Aug-20 | 4358 | Chrysostephanosphaera globulifera Scherffel | 7184 | 2.39227 | 8.6 | 8.6 | 333 |
| MEL - 0503R - PC | 23-Aug-20 | 4362 | Kephyrion sp. | 43104 | 0.74139 | 3.2 | 3.2 | 17.2 |
| MEL - 0503R - PC | 23-Aug-20 | 4363 | Spiniferomonas serrata | 14368 | 1.70692 | 6.1 | 6.1 | 118.8 |
| MEL - 0503R - PC | 23-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0503R - PC | 23-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20316 | 19.4 | 10 | 1015.8 |
| MEL - 0503R - PC | 23-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 600 | 1.1946 | 0 | 0 | 1991 |
| MEL - 0503R - PC | 23-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 7184 | 1.62502 | 12 | 6 | 226.2 |
| MEL - 0503R - PC | 23-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 28736 | 3.25004 | 6 | 6 | 113.1 |
| MEL - 0503R - PC | 23-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 86208 | 37.49186 | 9.4 | 9.4 | 434.9 |
| MEL - 0503R - PC | 23-Aug-20 | 4414 | Stichogloea spp. | 21552 | 1.08407 | 6 | 4 | 50.3 |
| MEL - 0503R - PC | 23-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 79024 | 2.54457 | 6 | 3.2 | 32.2 |
| MEL - 0503R - PC | 23-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 2600 | 6.2114 | 11.5 | 23 | 2389 |
| MEL - 0503R - PC | 23-Aug-20 | 5509 | Cyclotella ocellata Pant. | 21552 | 2.33408 | 4.1 | 8.2 | 108.3 |
| MEL - 0503R - PC | 23-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 800 | 0.21784 | 65 | 4 | 272.3 |
| MEL - 0503R - PC | 23-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 165232 | 4.04818 | 2.5 | 5 | 24.5 |
| MEL - 0503R - PC | 23-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0503R - PC | 23-Aug-20 | 6554 | Rhodomonas minuta Skuja | 165232 | 11.16968 | 10 | 4.4 | 67.6 |
| MEL - 0503R - PC | 23-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 2400 | 3.85872 | 23.5 | 14 | 1607.8 |
| MEL - 0503R - PC | 23-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 600 | 0.4398 | 21 | 10 | 733 |
| MEL - 0503R - PC | 23-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 600 | 1.35468 | 33 | 14 | 2257.8 |
| MEL - 0503R - PC | 23-Aug-20 | 7632 | Gymnodinium sp. | 200 | 1.84056 | 26 | 26 | 9202.8 |
| MEL - 0503R - PC | 23-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 400 | 1.45936 | 19.1 | 19.1 | 3648.4 |
| MEL - 0501 - PC | 23-Aug-20 | 1014 | Chroococcus limneticus Lemmermann | 28736 | 2.50291 | 5.5 | 5.5 | 87.1 |
| MEL - 0501 - PC | 23-Aug-20 | 1073 | Snowella sp | 600 | 0.3 | 0 | 0 | 500 |
| MEL - 0501 - PC | 23-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 28736 | 0.49713 | 11 | 2 | 17.3 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L$^{-1}$ | Biomass mg/m$^{-3}$ | Length µ | Width µ | Cell Volume µ$^3$ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0501 - PC | 23-Aug-20 | 2178 | Cosmarium sp. | 200 | 0.27926 | 20 | 20 | 1396.3 |
| MEL - 0501 - PC | 23-Aug-20 | 2182 | Euastrum spp. | 400 | 0.74336 | 22 | 22 | 1858.4 |
| MEL - 0501 - PC | 23-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 1000 | 0.4105 | 14 | 12 | 410.5 |
| MEL - 0501 - PC | 23-Aug-20 | 2206 | Botryococcus braunii Kutzing | 1200 | 1.72416 | 14 | 14 | 1436.8 |
| MEL - 0501 - PC | 23-Aug-20 | 4351 | Small chrysophyceae | 459776 | 4.22994 | 2.6 | 2.6 | 9.2 |
| MEL - 0501 - PC | 23-Aug-20 | 4352 | Large chrysophyceae | 50288 | 9.03172 | 7 | 7 | 179.6 |
| MEL - 0501 - PC | 23-Aug-20 | 4357 | Chrysococcus sp. | 452592 | 29.59952 | 5 | 5 | 65.4 |
| MEL - 0501 - PC | 23-Aug-20 | 4362 | Kephyrion sp. | 86208 | 1.48278 | 3.2 | 3.2 | 17.2 |
| MEL - 0501 - PC | 23-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 400 | 0.41888 | 20 | 10 | 1047.2 |
| MEL - 0501 - PC | 23-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 7184 | 0.94039 | 10 | 5 | 130.9 |
| MEL - 0501 - PC | 23-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 122128 | 27.62535 | 12 | 6 | 226.2 |
| MEL - 0501 - PC | 23-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 201152 | 22.75029 | 6 | 6 | 113.1 |
| MEL - 0501 - PC | 23-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 71840 | 31.24322 | 9.4 | 9.4 | 434.9 |
| MEL - 0501 - PC | 23-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 50288 | 1.61927 | 6 | 3.2 | 32.2 |
| MEL - 0501 - PC | 23-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 1600 | 3.8224 | 11.5 | 23 | 2389 |
| MEL - 0501 - PC | 23-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.72199 | 4 | 8 | 100.5 |
| MEL - 0501 - PC | 23-Aug-20 | 5514 | Tabellaria flocculosa (Roth) Kutzing | 1600 | 2.29888 | 28 | 14 | 1436.8 |
| MEL - 0501 - PC | 23-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 1000 | 0.2723 | 65 | 4 | 272.3 |
| MEL - 0501 - PC | 23-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 57472 | 1.40806 | 2.5 | 5 | 24.5 |
| MEL - 0501 - PC | 23-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 800 | 5.64496 | 16.5 | 33 | 7056.2 |
| MEL - 0501 - PC | 23-Aug-20 | 6554 | Rhodomonas minuta Skuja | 136496 | 9.22713 | 10 | 4.4 | 67.6 |
| MEL - 0501 - PC | 23-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 2400 | 3.85872 | 23.5 | 14 | 1607.8 |
| MEL - 0501 - PC | 23-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 1400 | 1.0262 | 21 | 10 | 733 |
| MEL - 0501 - PC | 23-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 600 | 1.35468 | 33 | 14 | 2257.8 |
| MEL - 0501 - PC | 23-Aug-20 | 7632 | Gymnodinium sp. | 200 | 1.84056 | 26 | 26 | 9202.8 |
| MEL - 0501 - PC | 23-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 200 | 0.72968 | 19.1 | 19.1 | 3648.4 |
| MEL - 0501 - PC | 23-Aug-20 | 7641 | Peridinium aciculiferum Lemmermann | 200 | 1.80956 | 30 | 24 | 9047.8 |
| MEL - 0502 - PC | 23-Aug-20 | 1073 | Snowella sp | 600 | 0.3 | 0 | 0 | 500 |
| MEL - 0502 - PC | 23-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 57472 | 0.81036 | 3 | 3 | 14.1 |
| MEL - 0502 - PC | 23-Aug-20 | 2121 | Oocystis lacustris Chodat | 43104 | 1.21984 | 6 | 3 | 28.3 |
| MEL - 0502 - PC | 23-Aug-20 | 2143 | Monoraphidium minutum (Nag.) Komarkova-Legnerova | 7184 | 0.4059 | 9 | 4 | 56.5 |
| MEL - 0502 - PC | 23-Aug-20 | 2178 | Cosmarium sp. | 800 | 1.11704 | 20 | 20 | 1396.3 |
| MEL - 0502 - PC | 23-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0502 - PC | 23-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 7184 | 0.27084 | 6 | 6 | 37.7 |
| MEL - 0502 - PC | 23-Aug-20 | 2206 | Botryococcus braunii Kutzing | 200 | 0.28736 | 14 | 14 | 1436.8 |
| MEL - 0502 - PC | 23-Aug-20 | 2215 | Tetraedron caudatum (Corda) Hansgrig | 7184 | 0.03376 | 3 | 3 | 4.7 |
| MEL - 0502 - PC | 23-Aug-20 | 2247 | Oocystis gigas Archer | 200 | 0.48254 | 18 | 16 | 2412.7 |
| MEL - 0502 - PC | 23-Aug-20 | 4351 | Small chrysophyceae | 560352 | 5.15524 | 2.6 | 2.6 | 9.2 |
| MEL - 0502 - PC | 23-Aug-20 | 4352 | Large chrysophyceae | 7184 | 1.29025 | 7 | 7 | 179.6 |
| MEL - 0502 - PC | 23-Aug-20 | 4357 | Chrysococcus sp. | 409488 | 26.78052 | 5 | 5 | 65.4 |
| MEL - 0502 - PC | 23-Aug-20 | 4362 | Kephyrion sp. | 7184 | 0.12356 | 3.2 | 3.2 | 17.2 |
| MEL - 0502 - PC | 23-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20944 | 20 | 10 | 1047.2 |
| MEL - 0502 - PC | 23-Aug-20 | 4378 | Dinobryon borgei Lemmermann | 7184 | 0.36854 | 9 | 3.3 | 51.3 |
| MEL - 0502 - PC | 23-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 400 | 0.5 | 0 | 0 | 1250 |
| MEL - 0502 - PC | 23-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 114944 | 13.00017 | 6 | 6 | 113.1 |
| MEL - 0502 - PC | 23-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 100576 | 43.7405 | 9.4 | 9.4 | 434.9 |
| MEL - 0502 - PC | 23-Aug-20 | 4414 | Stichogloea spp. | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0502 - PC | 23-Aug-20 | 4437 | Pteridomonas sp. | 7184 | 1.70907 | 8.8 | 8.8 | 237.9 |
| MEL - 0502 - PC | 23-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 2000 | 4.778 | 11.5 | 23 | 2389 |
| MEL - 0502 - PC | 23-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.72199 | 4 | 8 | 100.5 |
| MEL - 0502 - PC | 23-Aug-20 | 5514 | Tabellaria flocculosa (Roth) Kutzing | 600 | 0.80046 | 26 | 14 | 1334.1 |
| MEL - 0502 - PC | 23-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 200 | 0.05446 | 65 | 4 | 272.3 |
| MEL - 0502 - PC | 23-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 93392 | 2.2881 | 2.5 | 5 | 24.5 |
| MEL - 0502 - PC | 23-Aug-20 | 6554 | Rhodomonas minuta Skuja | 186784 | 12.6266 | 10 | 4.4 | 67.6 |
| MEL - 0502 - PC | 23-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1800 | 2.89404 | 23.5 | 14 | 1607.8 |
| MEL - 0502 - PC | 23-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 600 | 0.4398 | 21 | 10 | 733 |
| MEL - 0502 - PC | 23-Aug-20 | 7631 | Gymnodinium helveticum Penard | 200 | 4.71238 | 50 | 30 | 23561.9 |
| MEL - 0502 - PC | 23-Aug-20 | 7632 | Gymnodinium sp. | 400 | 3.68112 | 26 | 26 | 9202.8 |
| MEL - 0502 - PC | 23-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1000 | 3.6484 | 19.1 | 19.1 | 3648.4 |
| MEL - 0503 - PC | 23-Aug-20 | 1014 | Chroococcus limneticus Lemmermann | 28736 | 3.58625 | 6.2 | 6.2 | 124.8 |
| MEL - 0503 - PC | 23-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 28736 | 0.40518 | 3 | 3 | 14.1 |
| MEL - 0503 - PC | 23-Aug-20 | 2137 | Dictyosphaerium simplex Sukja | 222704 | 0.93536 | 2 | 2 | 4.2 |
| MEL - 0503 - PC | 23-Aug-20 | 2178 | Cosmarium sp. | 400 | 0.55852 | 20 | 20 | 1396.3 |
| MEL - 0503 - PC | 23-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0503 - PC | 23-Aug-20 | 2206 | Botryococcus braunii Kutzing | 400 | 0.57472 | 14 | 14 | 1436.8 |
| MEL - 0503 - PC | 23-Aug-20 | 4351 | Small chrysophyceae | 589088 | 5.41961 | 2.6 | 2.6 | 9.2 |
| MEL - 0503 - PC | 23-Aug-20 | 4352 | Large chrysophyceae | 35920 | 6.45123 | 7 | 7 | 179.6 |
| MEL - 0503 - PC | 23-Aug-20 | 4355 | Chrysochromulina parva Lackey | 7184 | 0.46983 | 5 | 5 | 65.4 |
| MEL - 0503 - PC | 23-Aug-20 | 4357 | Chrysococcus sp. | 308912 | 20.20284 | 5 | 5 | 65.4 |
| MEL - 0503 - PC | 23-Aug-20 | 4358 | Chrysostephanosphaera globulifera Scherffel | 7184 | 2.39227 | 8.6 | 8.6 | 333 |
| MEL - 0503 - PC | 23-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.85346 | 6.1 | 6.1 | 118.8 |
| MEL - 0503 - PC | 23-Aug-20 | 4364 | Mallomonas caudata Ivanov | 200 | 1.07234 | 40 | 16 | 5361.7 |
| MEL - 0503 - PC | 23-Aug-20 | 4368 | Mallomonas crassisquama (Asmund) Fott | 200 | 0.20316 | 19.4 | 10 | 1015.8 |
| MEL - 0503 - PC | 23-Aug-20 | 4381 | Dinobryon mucronatom Nygaard | 7184 | 0.94039 | 10 | 5 | 130.9 |
| MEL - 0503 - PC | 23-Aug-20 | 4388 | Dinobryon sertularia Ehrenberg | 200 | 0.3982 | 0 | 0 | 1991 |
| MEL - 0503 - PC | 23-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 86208 | 19.50025 | 12 | 6 | 226.2 |
| MEL - 0503 - PC | 23-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 57472 | 6.50008 | 6 | 6 | 113.1 |
| MEL - 0503 - PC | 23-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 86208 | 37.49186 | 9.4 | 9.4 | 434.9 |
| MEL - 0503 - PC | 23-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 50288 | 1.61927 | 6 | 3.2 | 32.2 |
| MEL - 0503 - PC | 23-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 2200 | 5.2558 | 11.5 | 23 | 2389 |
| MEL - 0503 - PC | 23-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.77803 | 4.1 | 8.2 | 108.3 |
| MEL - 0503 - PC | 23-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0503 - PC | 23-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 165232 | 4.04818 | 2.5 | 5 | 24.5 |
| MEL - 0503 - PC | 23-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 200 | 1.41124 | 16.5 | 33 | 7056.2 |
| MEL - 0503 - PC | 23-Aug-20 | 6554 | Rhodomonas minuta Skuja | 136496 | 9.22713 | 10 | 4.4 | 67.6 |
| MEL - 0503 - PC | 23-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1800 | 2.89404 | 23.5 | 14 | 1607.8 |
| MEL - 0503 - PC | 23-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 800 | 0.5864 | 21 | 10 | 733 |
| MEL - 0503 - PC | 23-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 200 | 0.45156 | 33 | 14 | 2257.8 |
| MEL - 0503 - PC | 23-Aug-20 | 6568 | Katablepharis ovalis Skuja | 7184 | 0.32112 | 8 | 4 | 44.7 |
| MEL - 0503 - PC | 23-Aug-20 | 7632 | Gymnodinium sp. | 400 | 3.68112 | 26 | 26 | 9202.8 |
| MEL - 0503 - PC | 23-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 400 | 1.45936 | 19.1 | 19.1 | 3648.4 |
| MEL - 0503 - PC | 23-Aug-20 | 7644 | Ceratium hirundinella (Muller) Schrank | 200 | 10.0531 | 60 | 40 | 50265.5 |
| MEL - 0504 - PC | 23-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 71840 | 1.01294 | 3 | 3 | 14.1 |
| MEL - 0504 - PC | 23-Aug-20 | 2167 | Elakatothrix gelatinosa Willen | 35920 | 0.62142 | 11 | 2 | 17.3 |

Table E1-1. Phytoplankton species data, Meliadine study lakes, 2020.

| Station | Date | Species code | Species name | Density cells/L⁻¹ | Biomass mg/m⁻³ | Length µ | Width µ | Cell Volume µ³ |
|---|---|---|---|---|---|---|---|---|
| MEL - 0504 - PC | 23-Aug-20 | 2182 | Euastrum spp. | 200 | 0.37168 | 22 | 22 | 1858.4 |
| MEL - 0504 - PC | 23-Aug-20 | 2185 | Micrasterias sp. | 200 | 0.20358 | 18 | 18 | 1017.9 |
| MEL - 0504 - PC | 23-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 600 | 0.2463 | 14 | 12 | 410.5 |
| MEL - 0504 - PC | 23-Aug-20 | 2193 | Staurodesmus paradoxum Meyen | 200 | 0.81682 | 30 | 26 | 4084.1 |
| MEL - 0504 - PC | 23-Aug-20 | 2199 | Spondylosium planum (Wolle) W. and G.S. West | 28736 | 1.08335 | 6 | 6 | 37.7 |
| MEL - 0504 - PC | 23-Aug-20 | 2206 | Botryococcus braunii Kutzing | 400 | 0.57472 | 14 | 14 | 1436.8 |
| MEL - 0504 - PC | 23-Aug-20 | 2247 | Oocystis gigas Archer | 200 | 0.48254 | 18 | 16 | 2412.7 |
| MEL - 0504 - PC | 23-Aug-20 | 4351 | Small chrysophyceae | 617824 | 5.68398 | 2.6 | 2.6 | 9.2 |
| MEL - 0504 - PC | 23-Aug-20 | 4352 | Large chrysophyceae | 7184 | 1.29025 | 7 | 7 | 179.6 |
| MEL - 0504 - PC | 23-Aug-20 | 4357 | Chrysococcus sp. | 581904 | 38.05652 | 5 | 5 | 65.4 |
| MEL - 0504 - PC | 23-Aug-20 | 4362 | Kephyrion sp. | 28736 | 0.49426 | 3.2 | 3.2 | 17.2 |
| MEL - 0504 - PC | 23-Aug-20 | 4363 | Spiniferomonas serrata | 7184 | 0.77228 | 5.9 | 5.9 | 107.5 |
| MEL - 0504 - PC | 23-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 86208 | 19.50025 | 12 | 6 | 226.2 |
| MEL - 0504 - PC | 23-Aug-20 | 4396 | Chrysolykos skuja (Nauwerck) Willen | 21552 | 0.69397 | 6 | 3.2 | 32.2 |
| MEL - 0504 - PC | 23-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 143680 | 16.25021 | 6 | 6 | 113.1 |
| MEL - 0504 - PC | 23-Aug-20 | 4411 | Bitrichia chodatii (Reverdin) Chodat | 7184 | 0.36136 | 6 | 4 | 50.3 |
| MEL - 0504 - PC | 23-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 43104 | 18.74593 | 9.4 | 9.4 | 434.9 |
| MEL - 0504 - PC | 23-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 2200 | 5.2558 | 11.5 | 23 | 2389 |
| MEL - 0504 - PC | 23-Aug-20 | 5509 | Cyclotella ocellata Pant. | 64656 | 6.49793 | 4 | 8 | 100.5 |
| MEL - 0504 - PC | 23-Aug-20 | 5515 | Fragilaria crotonensis Kitton | 400 | 0.10892 | 65 | 4 | 272.3 |
| MEL - 0504 - PC | 23-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 35920 | 0.88004 | 2.5 | 5 | 24.5 |
| MEL - 0504 - PC | 23-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 600 | 4.23372 | 16.5 | 33 | 7056.2 |
| MEL - 0504 - PC | 23-Aug-20 | 6554 | Rhodomonas minuta Skuja | 172416 | 11.65532 | 10 | 4.4 | 67.6 |
| MEL - 0504 - PC | 23-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 2800 | 4.50184 | 23.5 | 14 | 1607.8 |
| MEL - 0504 - PC | 23-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 200 | 0.1466 | 21 | 10 | 733 |
| MEL - 0504 - PC | 23-Aug-20 | 6565 | Cryptomonas rostratiformis Skuja | 200 | 0.45156 | 33 | 14 | 2257.8 |
| MEL - 0504 - PC | 23-Aug-20 | 7632 | Gymnodinium sp. | 1200 | 11.04336 | 26 | 26 | 9202.8 |
| MEL - 0504 - PC | 23-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 1400 | 5.10776 | 19.1 | 19.1 | 3648.4 |
| MEL - 0505 - PC | 23-Aug-20 | 1073 | Snowella sp | 1000 | 0.5 | 0 | 0 | 500 |
| MEL - 0505 - PC | 23-Aug-20 | 2112 | Sphaerocystis schroeteri Chodat | 28736 | 0.40518 | 3 | 3 | 14.1 |
| MEL - 0505 - PC | 23-Aug-20 | 2187 | Staurodesmus extensus (Andersson) Teiling | 200 | 0.0821 | 14 | 12 | 410.5 |
| MEL - 0505 - PC | 23-Aug-20 | 2206 | Botryococcus braunii Kutzing | 1000 | 1.4368 | 14 | 14 | 1436.8 |
| MEL - 0505 - PC | 23-Aug-20 | 4351 | Small chrysophyceae | 704032 | 6.47709 | 2.6 | 2.6 | 9.2 |
| MEL - 0505 - PC | 23-Aug-20 | 4352 | Large chrysophyceae | 21552 | 3.87074 | 7 | 7 | 179.6 |
| MEL - 0505 - PC | 23-Aug-20 | 4357 | Chrysococcus sp. | 646560 | 42.28502 | 5 | 5 | 65.4 |
| MEL - 0505 - PC | 23-Aug-20 | 4362 | Kephyrion sp. | 57472 | 0.98852 | 3.2 | 3.2 | 17.2 |
| MEL - 0505 - PC | 23-Aug-20 | 4363 | Spiniferomonas serrata | 21552 | 2.31684 | 5.9 | 5.9 | 107.5 |
| MEL - 0505 - PC | 23-Aug-20 | 4390 | Dinobryon sociale Ehrenberg | 35920 | 8.1251 | 12 | 6 | 226.2 |
| MEL - 0505 - PC | 23-Aug-20 | 4400 | Ochromonas sp. | 7184 | 0.42745 | 7.1 | 4 | 59.5 |
| MEL - 0505 - PC | 23-Aug-20 | 4401 | Uroglena volvox Ehrenberg | 35920 | 4.06255 | 6 | 6 | 113.1 |
| MEL - 0505 - PC | 23-Aug-20 | 4413 | Chrysochromulina laurentiana Kling | 28736 | 12.49729 | 9.4 | 9.4 | 434.9 |
| MEL - 0505 - PC | 23-Aug-20 | 4418 | Salpingoeca frequentissima (Zach.) Lemmermann | 28736 | 0.9253 | 6 | 3.2 | 32.2 |
| MEL - 0505 - PC | 23-Aug-20 | 4437 | Pteridomonas sp. | 35920 | 8.54537 | 8.8 | 8.8 | 237.9 |
| MEL - 0505 - PC | 23-Aug-20 | 5507 | Cyclotella stelligera Cleve and Grunow | 2200 | 5.2558 | 11.5 | 23 | 2389 |
| MEL - 0505 - PC | 23-Aug-20 | 5509 | Cyclotella ocellata Pant. | 7184 | 0.72199 | 4 | 8 | 100.5 |
| MEL - 0505 - PC | 23-Aug-20 | 5524 | Asterionella formosa Hassall | 1600 | 0.17264 | 103 | 2 | 107.9 |
| MEL - 0505 - PC | 23-Aug-20 | 5551 | Cyclotella michiganiana Skvortzow | 57472 | 1.40806 | 2.5 | 5 | 24.5 |
| MEL - 0505 - PC | 23-Aug-20 | 5720 | Cyclotella bodanica Eulenst. | 400 | 2.82248 | 16.5 | 33 | 7056.2 |
| MEL - 0505 - PC | 23-Aug-20 | 6554 | Rhodomonas minuta Skuja | 71840 | 4.85638 | 10 | 4.4 | 67.6 |
| MEL - 0505 - PC | 23-Aug-20 | 6558 | Cryptomonas erosa Ehrenberg | 1800 | 2.89404 | 23.5 | 14 | 1607.8 |
| MEL - 0505 - PC | 23-Aug-20 | 6562 | Cryptomonas reflexa (Marsson) Skuja | 1800 | 1.3194 | 21 | 10 | 733 |
| MEL - 0505 - PC | 23-Aug-20 | 7632 | Gymnodinium sp. | 400 | 3.68112 | 26 | 26 | 9202.8 |
| MEL - 0505 - PC | 23-Aug-20 | 7639 | Peridinium pusillum (Penard) Lemmermann | 2200 | 8.02648 | 19.1 | 19.1 | 3648.4 |

# Appendix E2

# Phytoplankton Major Taxa Biomass and Density (2013-2019)

**Table E2-1. Major Taxa Biomass and Density from the Phytoplankton Study in Meliadine Lake in 2019**

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| | | | | | | | | | | | | | | | |
| ***2019*** | | | | | | | | | | | | | | | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL -0101 - PC | 8-Aug-19 | 0 | 29.82 | 295 | 28.42 | 28.21 | 63.23 | 445.00 | 600 | 304,528 | 2,363,952 | 149,712 | 38,952 | 7,800 | 2,865,544 |
| MEL -0106 - PC | 8-Aug-19 | 0 | 14.07 | 254 | 20.62 | 35.32 | 61.85 | 386.54 | 600 | 144,680 | 2,181,752 | 110,592 | 40,952 | 8,400 | 2,486,976 |
| MEL -0107 - PC | 8-Aug-19 | 0.40 | 26.43 | 242 | 35.13 | 37.86 | 79.20 | 421.00 | 800 | 231,488 | 2,334,416 | 164,864 | 91,040 | 10,200 | 2,832,808 |
| MEL -0108 - PC | 8-Aug-19 | 0.30 | 19.31 | 320 | 30.11 | 27.70 | 40.19 | 437.35 | 600 | 239,472 | 2,715,368 | 176,464 | 69,672 | 5,600 | 3,207,176 |
| MEL -0109 - PC | 8-Aug-19 | 0.30 | 24.40 | 279 | 42.54 | 42.90 | 49.16 | 438.66 | 600 | 339,248 | 2,267,160 | 268,256 | 145,312 | 8,000 | 3,028,576 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***5.36*** | ***65.33*** | ***7.37*** | ***8.08*** | ***13.79*** | | ***<0.1*** | ***8.73*** | ***82.26*** | ***6.03*** | ***2.68*** | ***0.28*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL -0201 - PC | 10-Aug-19 | 0 | 12.06 | 196 | 30.82 | 6.75 | 21.25 | 266.52 | 0 | 117,144 | 1,553,944 | 129,328 | 52,288 | 2,600 | 1,855,304 |
| MEL -0202 - PC | 10-Aug-19 | 0 | 10.29 | 124 | 19.58 | 7.44 | 20.14 | 181.56 | 0 | 173,816 | 1,286,936 | 108,576 | 67,256 | 2,600 | 1,639,184 |
| MEL -0203 - PC | 10-Aug-19 | 0 | 8.91 | 174 | 35.21 | 10.66 | 16.75 | 245.13 | 0 | 140,096 | 1,683,256 | 111,192 | 68,056 | 2,400 | 2,005,000 |
| MEL -0204 - PC | 10-Aug-19 | 0.00 | 19.23 | 168 | 19.95 | 118.76 | 17.34 | 343.73 | 0 | 166,632 | 1,535,192 | 75,056 | 1,331,240 | 2,200 | 3,110,320 |
| MEL -0205 - PC | 10-Aug-19 | 0.10 | 13.79 | 187 | 29.17 | 10.31 | 23.35 | 263.86 | 200 | 155,064 | 1,935,896 | 117,960 | 75,240 | 9,384 | 2,293,744 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***4.94*** | ***65.26*** | ***10.36*** | ***11.83*** | ***7.60*** | | ***<0.1*** | ***6.90*** | ***73.33*** | ***4.97*** | ***14.62*** | ***0.18*** | |
| **MEL-03** | | | | | | | | | | | | | | | |
| MEL -0301 | 9-Aug-19 | 0 | 3 | 154 | 19.91 | 6.67 | 25.31 | 209.29 | 0 | 122,728 | 1,281,952 | 105,176 | 37,720 | 3,000 | 1,550,576 |
| MEL -0302 | 9-Aug-19 | 0 | 8 | 202 | 13.27 | 5.45 | 14.86 | 243.44 | 0 | 65,456 | 1,749,312 | 159,248 | 24,352 | 2,000 | 2,000,368 |
| MEL -0303 | 9-Aug-19 | 0 | 13.02 | 206 | 11.36 | 3.95 | 11.00 | 245.03 | 200 | 102,176 | 1,455,568 | 138,496 | 29,736 | 1,600 | 1,727,776 |
| MEL -0304 | 9-Aug-19 | 0 | 12.46 | 185 | 5.01 | 7.68 | 1 | 211.61 | 200 | 74,040 | 1,705,208 | 53,688 | 53,088 | 200 | 1,886,424 |
| MEL -0305 | 9-Aug-19 | 1 | 7.59 | 181 | 27.13 | 8.20 | 11.63 | 237.37 | 28,736 | 87,408 | 1,719,976 | 154,264 | 32,936 | 1,400 | 2,024,720 |
| ***Percent Density or Biomass*** | | ***0.15*** | ***3.86*** | ***80.92*** | ***6.69*** | ***2.79*** | ***5.60*** | | ***0.32*** | ***4.92*** | ***86.10*** | ***6.65*** | ***1.94*** | ***<0.1*** | |
| **MEL-04** | | | | | | | | | | | | | | | |
| MEL -0401 | 14-Aug-19 | 0.1 | 11.30 | 200 | 11.08 | 15.66 | 6.55 | 244.3 | 200 | 137,296 | 1,626,384 | 89,408 | 152,664 | 1,000 | 2,006,952 |
| MEL -0402 | 14-Aug-19 | 0 | 5.021 | 183 | 13.18 | 11.41 | 4.74 | 217.2 | 0 | 166,232 | 1,906,960 | 67,872 | 82,024 | 800 | 2,223,888 |
| MEL -0403 | 14-Aug-19 | 0 | 2.199 | 177 | 15.16 | 9.64 | 11.98 | 215.7 | 0 | 52,288 | 1,804,984 | 70,256 | 88,408 | 600 | 2,016,536 |
| MEL -0404 | 14-Aug-19 | 0.57 | 4.94 | 144 | 9.09 | 6.50 | 3.65 | 168.40 | 57,472 | 67,056 | 1,337,424 | 110,360 | 65,856 | 1,000 | 1,639,168 |
| MEL -0405 | 14-Aug-19 | 0 | 10.68 | 187 | 13.55 | 7.80 | 6.56 | 225.92 | 0 | 88,008 | 1,661,904 | 98,992 | 80,024 | 800 | 1,929,728 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***3.19*** | ***83.07*** | ***5.79*** | ***4.76*** | ***3.13*** | | ***0.59*** | ***5.20*** | ***84.94*** | ***4.45*** | ***4.78*** | ***<0.1*** | |
| **MEL-05** | | | | | | | | | | | | | | | |
| MEL -0501 - PC | 16-Aug-19 | 0 | 6.50 | 133 | 10.04 | 7.93 | 24 | 182.27 | 0 | 123,528 | 1,101,152 | 61,072 | 80,424 | 3,400 | 1,369,576 |
| MEL -0502 - PC | 16-Aug-19 | 0 | 5.41 | 172 | 18.85 | 20.88 | 32.66 | 249.38 | 0 | 87,608 | 1,676,872 | 93,008 | 197,368 | 2,400 | 2,057,256 |
| MEL -0503 - PC | 16-Aug-19 | 4 | 6.33 | 114 | 19.95 | 8.30 | 6.17 | 158.55 | 57,472 | 104,176 | 921,752 | 132,512 | 80,024 | 600 | 1,296,536 |
| MEL -0504 - PC | 16-Aug-19 | 1 | 21.45 | 164 | 14.61 | 13.52 | 11.88 | 226.00 | 1,200 | 109,760 | 1,352,392 | 48,104 | 117,344 | 1,800 | 1,630,600 |
| MEL -0505 - PC | 16-Aug-19 | 2 | 1.61 | 163 | 17.52 | 8.85 | 13.58 | 206.18 | 28,936 | 29,936 | 1,676,472 | 107,176 | 87,408 | 2,400 | 1,932,328 |
| ***Percent Density or Biomass*** | | ***0.59*** | ***4.04*** | ***72.96*** | ***7.92*** | ***5.82*** | ***8.67*** | | ***1.06*** | ***5.49*** | ***81.20*** | ***5.33*** | ***6.79*** | ***0.13*** | |

**Table E2-2. Major Taxa Biomass and Density from the Phytoplankton Study in Meliadine Lake in 2018**

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| ***2018*** | | | | | | | | | | | | | | | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL -0101 | 22-Aug-18 | 1 | 28.44 | 165 | 60.69 | 42.39 | 40.64 | 339.11 | 29,336 | 683,680 | 2,321,032 | 448,784 | 179,032 | 4,800 | 3,666,664 |
| MEL -0106 | 22-Aug-18 | 1 | 23.50 | 180 | 55.59 | 58.81 | 38.28 | 356.38 | 800 | 690,864 | 2,450,744 | 343,792 | 267,640 | 4,400 | 3,758,240 |
| MEL -0107 | 21-Aug-18 | 7.29 | 25.13 | 139 | 60.90 | 46.35 | 57.97 | 336.36 | 1,000 | 698,848 | 2,227,440 | 367,712 | 147,312 | 5,800 | 3,448,112 |
| MEL -0108 | 22-Aug-18 | 0.45 | 21.22 | 141 | 70.02 | 45.19 | 18.84 | 296.96 | 600 | 339,448 | 2,163,384 | 319,904 | 168,064 | 2,600 | 2,994,000 |
| MEL -0109 | 21-Aug-18 | 0.75 | 40.28 | 166 | 63.10 | 58.14 | 38.34 | 366.76 | 1,000 | 620,424 | 2,385,488 | 424,448 | 213,568 | 4,200 | 3,649,128 |
| ***Percent Density or Biomass*** | | ***0.62*** | ***8.17*** | ***46.66*** | ***18.30*** | ***14.80*** | ***11.45*** | | ***0.19*** | ***17.32*** | ***65.93*** | ***10.87*** | ***5.57*** | ***0.12*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL -0202 | 31-Aug-18 | 0 | 8.35 | 36 | 35.09 | 5.47 | 20.64 | 105.32 | 0 | 252,240 | 538,800 | 366,032 | 3,200 | 2,600 | 1,162,872 |
| MEL -0203 | 18-Aug-18 | 0 | 33.67 | 156 | 29.13 | 50.64 | 59.61 | 328.90 | 0 | 598,272 | 1,998,352 | 215,352 | 229,320 | 7,200 | 3,048,496 |
| MEL -0205 | 18-Aug-18 | 0 | 26.63 | 120 | 31.12 | 31.53 | 37.59 | 247.05 | 200 | 367,584 | 2,004,336 | 272,024 | 164,248 | 11,384 | 2,819,776 |
| MEL -0206 | 31-Aug-18 | 1.28 | 17.49 | 57 | 40.05 | 15.14 | 11.76 | 142.67 | 28,736 | 260,624 | 820,576 | 279,456 | 88,008 | 1,800 | 1,479,200 |
| MEL -0208 | 15-Aug-18 | 0.00 | 12.87 | 109 | 37.82 | 27.25 | 21.93 | 208.68 | 0 | 196,168 | 1,401,480 | 261,088 | 134,712 | 3,600 | 1,997,048 |
| ***Percent Density or Biomass*** | | ***0.14*** | ***9.59*** | ***46.23*** | ***16.77*** | ***12.59*** | ***14.67*** | | ***0.28*** | ***15.94*** | ***64.37*** | ***13.27*** | ***5.90*** | ***0.25*** | |
| **MEL-03** | | | | | | | | | | | | | | | |
| MEL -0301 | 20-Aug-18 | 0 | 28 | 193 | 17.99 | 32.91 | 33.22 | 305.55 | 0 | 195,368 | 2,746,488 | 153,080 | 184,800 | 3,400 | 3,283,136 |
| MEL -0302 | 26-Aug-18 | 0 | 16 | 144 | 17.16 | 44.37 | 31.63 | 254.10 | 200 | 239,272 | 1,933,696 | 139,912 | 251,656 | 4,000 | 2,568,736 |
| MEL -0303 | 20-Aug-18 | 0 | 9.58 | 187 | 17.90 | 31.75 | 54.74 | 300.70 | 0 | 138,696 | 3,313,424 | 118,760 | 191,384 | 5,600 | 3,767,864 |
| MEL -0304 | 26-Aug-18 | 1 | 13.59 | 173 | 15.17 | 59.99 | 6 | 268.45 | 28,736 | 159,648 | 2,150,416 | 73,856 | 359,416 | 1,600 | 2,773,672 |
| MEL -0305 | 26-Aug-18 | 0 | 22.33 | 158 | 21.19 | 35.45 | 14.65 | 251.63 | 200 | 175,616 | 2,364,536 | 129,128 | 205,952 | 2,600 | 2,878,032 |
| ***Percent Density or Biomass*** | | ***0.11*** | ***6.55*** | ***61.90*** | ***6.48*** | ***14.81*** | ***10.15*** | | ***0.19*** | ***5.95*** | ***81.91*** | ***4.03*** | ***7.81*** | ***0.11*** | |
| **MEL-04** | | | | | | | | | | | | | | | |
| MEL -0401 | 2-Sep-18 | 0 | 31.81 | 120 | 20.87 | 31.59 | 24.59 | 228.44 | 0 | 143,096 | 1,904,960 | 130,328 | 203,552 | 2,000 | 2,383,936 |
| MEL -0402 | 2-Sep-18 | 0 | 30.92 | 131 | 26.62 | 48.57 | 13.47 | 250.17 | 0 | 260,424 | 1,811,168 | 81,640 | 326,080 | 1,200 | 2,480,512 |
| MEL -0403 | 2-Sep-18 | 4.92 | 7.77 | 125 | 14.83 | 63.03 | 11.70 | 227.31 | 1,400 | 181,400 | 1,810,768 | 162,648 | 426,456 | 800 | 2,583,472 |
| MEL -0405 | 2-Sep-18 | 0 | 20.70 | 132 | 18.20 | 57.23 | 27.95 | 256.37 | 0 | 296,144 | 2,054,824 | 135,312 | 390,336 | 2,600 | 2,879,216 |
| ***Percent Density or Biomass*** | | ***0.51*** | ***9.48*** | ***52.74*** | ***8.37*** | ***20.83*** | ***8.07*** | | ***<0.1*** | ***8.53*** | ***73.42*** | ***4.94*** | ***13.04*** | ***<0.1*** | |
| **MEL-05** | | | | | | | | | | | | | | | |
| MEL -0501 | 1-Sep-18 | 0 | 16.69 | 131 | 16.26 | 26.68 | 19 | 209.34 | 0 | 145,280 | 2,400,056 | 108,376 | 174,016 | 1,200 | 2,828,928 |
| MEL -0502 | 30-Aug-18 | 0 | 11.11 | 70 | 35.87 | 15.77 | 22.58 | 155.23 | 0 | 118,744 | 1,078,800 | 206,768 | 75,240 | 1,200 | 1,480,752 |
| MEL -0503 | 29-Aug-18 | 0 | 18.52 | 85 | 21.97 | 29.43 | 7.91 | 162.34 | 0 | 176,216 | 1,056,248 | 229,704 | 182,200 | 800 | 1,645,168 |
| MEL -0504 | 30-Aug-18 | 1 | 24.85 | 68 | 24.85 | 13.63 | 8.48 | 140.19 | 800 | 232,088 | 1,070,816 | 167,448 | 74,040 | 600 | 1,545,792 |
| MEL -0505 | 29-Aug-18 | 2 | 9.14 | 72 | 25.40 | 16.18 | 6.24 | 131.71 | 15,168 | 159,848 | 1,020,128 | 232,504 | 88,608 | 400 | 1,516,656 |
| ***Percent Density or Biomass*** | | ***0.36*** | ***10.05*** | ***53.26*** | ***15.57*** | ***12.73*** | ***8.02*** | | ***0.18*** | ***9.23*** | ***73.48*** | ***10.48*** | ***6.59*** | ***<0.1*** | |

### Table E2-3. Major Taxa Biomass and Density from the Phytoplankton Study in Meliadine Lake in 2017

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| ***2017*** | | | | | | | | | | | | | | | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 16-Jul-17 | 1 | 11.55 | 439 | 26.31 | 23.25 | 99.58 | 600.49 | 28,936 | 72,840 | 4,195,272 | 283,824 | 165,648 | 63,936 | 4,810,456 |
| MEL - 0102 | 16-Jul-17 | 0 | 20.83 | 319 | 38.69 | 22.68 | 58.49 | 460.10 | 0 | 158,848 | 3,415,016 | 401,016 | 206,952 | 7,400 | 4,189,232 |
| MEL - 0103 | 16-Jul-17 | 0.00 | 10.96 | 369 | 32.31 | 22.94 | 51.52 | 486.43 | 0 | 80,624 | 3,560,896 | 293,224 | 220,720 | 23,368 | 4,178,832 |
| MEL - 0104 | 16-Jul-17 | 0.10 | 21.52 | 400 | 35.56 | 21.84 | 55.04 | 533.71 | 200 | 187,384 | 3,730,712 | 315,792 | 144,896 | 8,800 | 4,387,784 |
| MEL - 0105 | 16-Jul-17 | 0.54 | 16.00 | 359 | 32.37 | 14.26 | 57.23 | 479.11 | 600 | 144,080 | 3,662,856 | 352,080 | 119,344 | 7,200 | 4,286,160 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***3.16*** | ***73.66*** | ***6.46*** | ***4.10*** | ***12.57*** | | ***0.14*** | ***2.95*** | ***84.95*** | ***7.53*** | ***3.92*** | ***0.51*** | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 9-Aug-17 | 0 | 23.84 | 164 | 20.51 | 29.55 | 55.07 | 293.36 | 200 | 259,824 | 1,905,560 | 108,824 | 196,768 | 8,200 | 2,479,376 |
| MEL - 0102 | 9-Aug-17 | 1 | 22.39 | 171 | 8.67 | 36.56 | 19.23 | 258.69 | 1,400 | 210,936 | 2,027,688 | 55,536 | 239,272 | 25,552 | 2,560,384 |
| MEL - 0103 | 9-Aug-17 | 0 | 9.49 | 200 | 28.84 | 44.37 | 60.04 | 342.44 | 200 | 131,512 | 1,913,344 | 105,656 | 270,608 | 9,200 | 2,430,520 |
| MEL - 0104 | 9-Aug-17 | 0.11 | 9.72 | 195 | 9.21 | 52.56 | 82.34 | 349.33 | 200 | 138,096 | 2,108,912 | 85,256 | 348,832 | 19,984 | 2,701,280 |
| MEL - 0105 | 9-Aug-17 | 0.66 | 31.01 | 212 | 15.64 | 27.14 | 50.31 | 336.76 | 1,200 | 339,848 | 2,357,552 | 137,560 | 162,248 | 15,584 | 3,013,992 |
| ***Percent Density or Biomass*** | | ***0.11*** | ***6.10*** | ***59.62*** | ***5.24*** | ***12.03*** | ***16.89*** | | ***<0.1*** | ***8.19*** | ***78.21*** | ***3.74*** | ***9.24*** | ***0.60*** | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 4-Sep-17 | 0 | 8 | 103 | 46.24 | 23.15 | 16.63 | 198.00 | 0 | 130,712 | 1,315,672 | 237,824 | 173,016 | 8,784 | 1,866,208 |
| MEL - 0102 | 4-Sep-17 | 0 | 14 | 105 | 28.09 | 12.17 | 30.59 | 189.92 | 0 | 223,104 | 1,466,936 | 228,624 | 80,424 | 5,200 | 2,004,288 |
| MEL - 0103 | 4-Sep-17 | 0 | 7.83 | 76 | 34.91 | 11.85 | 38.80 | 169.17 | 200 | 151,664 | 1,279,552 | 197,520 | 86,608 | 5,400 | 1,720,944 |
| MEL - 0104 | 4-Sep-17 | 0 | 9.48 | 111 | 32.08 | 15.94 | 34 | 203.28 | 0 | 245,056 | 1,509,240 | 248,656 | 115,544 | 10,184 | 2,128,680 |
| MEL - 0105 | 4-Sep-17 | 0 | 21.43 | 64 | 28.65 | 7.46 | 35.87 | 157.57 | 0 | 332,664 | 798,024 | 183,936 | 44,704 | 11,784 | 1,371,112 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***6.59*** | ***50.03*** | ***18.52*** | ***7.69*** | ***17.03*** | | ***<0.1*** | ***11.91*** | ***70.06*** | ***12.06*** | ***5.50*** | ***0.45*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 23-Jul-17 | 0 | 11.33 | 196 | 8.34 | 18.25 | 27.38 | 261.51 | 0 | 66,656 | 1,821,352 | 150,680 | 196,368 | 5,400 | 2,240,456 |
| MEL - 0202 | 23-Jul-17 | 0 | 14.57 | 254 | 5.47 | 11.87 | 9.92 | 296.21 | 0 | 73,640 | 2,505,232 | 56,688 | 110,960 | 9,384 | 2,755,904 |
| MEL - 0203 | 23-Jul-17 | 5.42 | 3.30 | 333 | 7.56 | 14.73 | 41.16 | 405.09 | 21,552 | 137,496 | 3,015,696 | 71,656 | 160,448 | 8,000 | 3,414,848 |
| MEL - 0204 | 23-Jul-17 | 0 | 9.19 | 244 | 8.97 | 10.79 | 15.76 | 288.47 | 0 | 66,456 | 2,503,032 | 65,672 | 109,960 | 3,400 | 2,748,520 |
| MEL - 0205 | 23-Jul-17 | 0 | 12.80 | 222 | 13.28 | 9.35 | 15.03 | 272.33 | 0 | 81,624 | 2,237,224 | 125,544 | 81,024 | 2,400 | 2,527,816 |
| ***Percent Density or Biomass*** | | ***0.36*** | ***3.36*** | ***81.99*** | ***2.86*** | ***4.26*** | ***7.17*** | | ***0.16*** | ***3.11*** | ***88.27*** | ***3.44*** | ***4.81*** | ***0.21*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 11-Aug-17 | 0 | 14.83 | 121 | 19.40 | 32.52 | 21 | 208.99 | 200 | 274,992 | 1,465,736 | 156,664 | 197,568 | 16,568 | 2,111,728 |
| MEL - 0202 | 11-Aug-17 | 0 | 16.20 | 116 | 21.97 | 35.57 | 18.06 | 207.90 | 600 | 324,280 | 1,523,408 | 88,624 | 224,904 | 17,568 | 2,179,384 |
| MEL - 0203 | 11-Aug-17 | 11 | 24.49 | 127 | 9.69 | 33.91 | 13.30 | 219.31 | 28,736 | 389,536 | 1,466,536 | 27,352 | 217,920 | 2,400 | 2,132,480 |
| MEL - 0204 | 11-Aug-17 | 0 | 58.55 | 147 | 17.50 | 40.39 | 28.22 | 291.71 | 200 | 353,816 | 1,553,544 | 101,192 | 254,640 | 11,784 | 2,275,176 |
| MEL - 0205 | 11-Aug-17 | 0 | 13.65 | 101 | 7.99 | 36.51 | 21.91 | 180.73 | 0 | 153,064 | 1,394,496 | 61,872 | 219,520 | 5,200 | 1,834,152 |
| ***Percent Density or Biomass*** | | ***1.01*** | ***11.52*** | ***55.15*** | ***6.90*** | ***16.14*** | ***9.27*** | | ***0.28*** | ***14.20*** | ***70.29*** | ***4.14*** | ***10.58*** | ***0.51*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 5-Sep-17 | 0 | 9 | 72 | 27.12 | 8.78 | 17.38 | 133.82 | 200 | 80,624 | 776,672 | 129,776 | 51,688 | 3,600 | 1,042,560 |
| MEL - 0202 | 5-Sep-17 | 0 | 12 | 76 | 16.99 | 5.02 | 9.39 | 119.95 | 0 | 64,856 | 784,856 | 205,784 | 29,536 | 2,600 | 1,087,632 |
| MEL - 0203 | 5-Sep-17 | 0 | 11.96 | 87 | 25.50 | 9.56 | 22.27 | 156.49 | 200 | 81,824 | 922,952 | 134,760 | 52,288 | 18,368 | 1,210,392 |
| MEL - 0204 | 5-Sep-17 | 0.02 | 7.45 | 67 | 24.75 | 5.79 | 12.60 | 117.22 | 200 | 51,488 | 763,704 | 174,696 | 37,120 | 4,600 | 1,031,808 |
| MEL - 0205 | 5-Sep-17 | 0 | 14.85 | 91 | 24.08 | 11.19 | 15.32 | 156.57 | 0 | 152,464 | 979,624 | 125,424 | 66,256 | 3,400 | 1,327,168 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***8.05*** | ***57.46*** | ***17.31*** | ***5.90*** | ***11.25*** | | ***<0.1*** | ***7.57*** | ***74.18*** | ***13.52*** | ***4.16*** | ***0.57*** | |
| **MEL-03** | | | | | | | | | | | | | | | |

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| MEL - 0301 | 21-Jul-17 | 0 | 6 | 185 | 7.80 | 10.77 | 6.69 | 216.21 | 0 | 36,720 | 1,934,296 | 96,192 | 88,608 | 1,400 | 2,157,216 |
| MEL - 0302 | 21-Jul-17 | 0 | 5 | 158 | 9.92 | 15.62 | 20.66 | 209.56 | 0 | 50,888 | 1,783,632 | 95,008 | 152,464 | 3,800 | 2,085,792 |
| MEL - 0303 | 21-Jul-17 | 0 | 3.79 | 201 | 8.18 | 16.26 | 15.01 | 244.47 | 600 | 36,520 | 2,207,288 | 132,112 | 139,296 | 2,600 | 2,518,416 |
| MEL - 0304 | 21-Jul-17 | 0 | 5.18 | 184 | 4.65 | 8.00 | 22.23 | 223.59 | 0 | 52,088 | 2,307,664 | 67,656 | 60,072 | 11,184 | 2,498,664 |
| MEL - 0305 | 21-Jul-17 | 0 | 1.84 | 208 | 8.12 | 10.65 | 8.89 | 237.54 | 200 | 22,352 | 2,157,800 | 145,480 | 109,360 | 3,000 | 2,438,192 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***1.93*** | ***82.71*** | ***3.42*** | ***5.42*** | ***6.49*** | | ***<0.1*** | ***1.51*** | ***90.45*** | ***4.32*** | ***3.43*** | ***0.29*** | |
| **MEL-03** | | | | | | | | | | | | | | | |
| MEL - 0301 | 13-Aug-17 | 0 | 5 | 137 | 4.18 | 28.49 | 27.50 | 202.64 | 0 | 137,696 | 1,310,288 | 26,352 | 189,184 | 18,768 | 1,682,288 |
| MEL - 0302 | 13-Aug-17 | 0 | 9 | 120 | 6.47 | 36.24 | 30.31 | 202.45 | 0 | 131,312 | 1,396,296 | 54,088 | 252,640 | 4,600 | 1,838,936 |
| MEL - 0303 | 13-Aug-17 | 0 | 8.16 | 122 | 5.28 | 22.85 | 20.62 | 181.45 | 0 | 166,032 | 1,480,504 | 66,656 | 146,080 | 3,600 | 1,863,072 |
| MEL - 0304 | 13-Aug-17 | 0 | 5.25 | 151 | 7.26 | 19.66 | 12.03 | 194.98 | 200 | 102,176 | 1,684,056 | 54,688 | 124,128 | 10,984 | 1,976,232 |
| MEL - 0305 | 13-Aug-17 | 1 | 13.10 | 150 | 13.45 | 34.05 | 36.89 | 248.25 | 200 | 109,360 | 1,950,464 | 67,072 | 217,920 | 5,400 | 2,350,416 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***3.98*** | ***66.07*** | ***3.56*** | ***13.72*** | ***12.37*** | | ***<0.1*** | ***4.89*** | ***84.00*** | ***2.81*** | ***7.91*** | ***0.38*** | |
| **MEL-03** | | | | | | | | | | | | | | | |
| MEL - 0301 | 1-Sep-17 | 0 | 7 | 109 | 19.73 | 19.65 | 11.72 | 167.32 | 0 | 86,808 | 1,243,632 | 99,608 | 137,096 | 2,200 | 1,569,344 |
| MEL - 0302 | 1-Sep-17 | 0 | 3 | 72 | 10.82 | 5.63 | 4.05 | 95.30 | 0 | 36,120 | 970,240 | 70,456 | 80,024 | 1,000 | 1,157,840 |
| MEL - 0303 | 1-Sep-17 | 0 | 8.39 | 98 | 10.14 | 6.74 | 12.99 | 136.62 | 200 | 73,840 | 1,100,352 | 50,504 | 43,704 | 4,600 | 1,273,200 |
| MEL - 0304 | 1-Sep-17 | 0 | 8.85 | 104 | 11.59 | 5.28 | 20.46 | 150.15 | 0 | 95,192 | 814,192 | 84,824 | 29,736 | 3,200 | 1,027,144 |
| MEL - 0305 | 1-Sep-17 | 0 | 7.61 | 95 | 13.36 | 10.39 | 19.73 | 146.14 | 0 | 87,208 | 1,043,680 | 114,760 | 66,056 | 3,200 | 1,314,904 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***4.98*** | ***68.79*** | ***9.44*** | ***6.86*** | ***9.91*** | | ***<0.1*** | ***7.79*** | ***79.33*** | ***8.52*** | ***4.09*** | ***0.27*** | |
| **MEL-04** | | | | | | | | | | | | | | | |
| MEL - 0401 | 15-Aug-17 | 0 | 7 | 102 | 8.13 | 48.87 | 5.88 | 172.64 | 0 | 146,280 | 1,351,392 | 47,504 | 318,696 | 1,000 | 1,864,872 |
| MEL - 0402 | 15-Aug-17 | 19 | 8 | 119 | 11.36 | 37.34 | 6.39 | 201.87 | 57,472 | 131,112 | 1,523,408 | 53,888 | 231,688 | 1,000 | 1,998,568 |
| MEL - 0403 | 15-Aug-17 | 0 | 5.22 | 111 | 10.43 | 55.08 | 10.34 | 191.93 | 0 | 116,344 | 1,523,608 | 76,040 | 368,984 | 2,000 | 2,086,976 |
| MEL - 0404 | 15-Aug-17 | 39 | 10.48 | 130 | 10.22 | 32.06 | 12.06 | 233.31 | 114,944 | 231,688 | 1,667,888 | 69,456 | 210,136 | 7,784 | 2,301,896 |
| MEL - 0405 | 15-Aug-17 | 0 | 8.63 | 142 | 3.95 | 35.43 | 14.13 | 204.25 | 200 | 181,000 | 1,761,680 | 38,720 | 231,888 | 2,200 | 2,215,688 |
| ***Percent Density or Biomass*** | | ***5.80*** | ***3.97*** | ***60.19*** | ***4.39*** | ***20.79*** | ***4.86*** | | ***2.55*** | ***9.14*** | ***75.92*** | ***2.39*** | ***9.78*** | ***0.22*** | |
| **MEL-05** | | | | | | | | | | | | | | | |
| MEL - 0501 | 12-Aug-17 | 0 | 9 | 156 | 13.01 | 57.09 | 19.35 | 254.93 | 400 | 196,368 | 2,012,720 | 119,944 | 364,200 | 10,384 | 2,704,016 |
| MEL - 0502 | 12-Aug-17 | 0 | 14 | 156 | 14.78 | 28.16 | 13.11 | 225.79 | 0 | 319,096 | 1,776,048 | 126,128 | 183,600 | 2,200 | 2,407,072 |
| MEL - 0503 | 12-Aug-17 | 0 | 10.75 | 128 | 9.72 | 37.79 | 10.70 | 196.75 | 0 | 102,776 | 1,444,584 | 46,104 | 240,872 | 3,200 | 1,837,536 |
| MEL - 0504 | 12-Aug-17 | 0 | 8.23 | 124 | 10.31 | 35.04 | 19.01 | 196.91 | 0 | 159,448 | 1,660,304 | 48,904 | 225,904 | 9,984 | 2,104,544 |
| MEL - 0505 | 12-Aug-17 | 0 | 4.34 | 130 | 7.34 | 51.93 | 10.13 | 203.63 | 0 | 108,760 | 1,329,840 | 67,456 | 321,496 | 1,800 | 1,829,352 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***4.33*** | ***64.35*** | ***5.12*** | ***19.48*** | ***6.71*** | | ***<0.1*** | ***6.82*** | ***76.01*** | ***2.96*** | ***13.91*** | ***0.30*** | |

**Table E2-4. Major Taxa Biomass and Density from the Phytoplankton Study in Meliadine Lake in 2016**

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| | | | | | | | | | | | | | | | |
| ***2016*** | | | | | | | | | | | | | | | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 21-Jul-16 | 0 | 4.63 | 244 | 69.97 | 14.70 | 31.09 | 364.36 | 0 | 58,672 | 2,444,760 | 753,800 | 37,536 | 5,800 | 3,300,568 |
| MEL - 0102 | 21-Jul-16 | 0 | 18.53 | 388 | 72.89 | 15.43 | 55.96 | 550.95 | 0 | 187,584 | 3,718,944 | 848,592 | 98,792 | 8,400 | 4,862,312 |
| MEL - 0103 | 21-Jul-16 | 0.00 | 9.13 | 311 | 83.75 | 12.29 | 75.59 | 493.41 | 0 | 158,648 | 3,154,792 | 993,656 | 96,792 | 10,400 | 4,414,488 |
| MEL - 0104 | 22-Jul-16 | 0.00 | 8.55 | 337 | 100.86 | 18.12 | 46.50 | 510.88 | 0 | 79,624 | 3,354,544 | 965,952 | 59,688 | 5,800 | 4,465,608 |
| MEL - 0105 | 22-Jul-16 | 0.30 | 8.55 | 331 | 109.23 | 32.37 | 47.48 | 529.22 | 200 | 79,824 | 3,387,880 | 1,300,832 | 129,744 | 5,000 | 4,903,480 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***2.02*** | ***65.79*** | ***17.83*** | ***3.79*** | ***10.48*** | | ***<0.1*** | ***2.57*** | ***73.18*** | ***22.16*** | ***1.93*** | ***0.16*** | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 11-Aug-16 | 0 | 22.59 | 229 | 14.54 | 24.20 | 24.63 | 314.93 | 200 | 246,856 | 2,122,280 | 95,824 | 150,880 | 5,800 | 2,621,840 |
| MEL - 0102 | 11-Aug-16 | 13 | 17.91 | 231 | 12.61 | 24.96 | 28.55 | 328.08 | 114,944 | 245,856 | 2,746,688 | 140,112 | 163,048 | 11,384 | 3,422,032 |
| MEL - 0103 | 11-Aug-16 | 1 | 25.78 | 227 | 5.81 | 27.53 | 51.94 | 338.84 | 3,000 | 325,080 | 1,987,484 | 93,208 | 150,480 | 12,984 | 2,572,236 |
| MEL - 0104 | 11-Aug-16 | 0.20 | 23.71 | 301 | 27.68 | 35.79 | 57.89 | 446.25 | 400 | 239,472 | 2,452,344 | 136,344 | 201,568 | 15,184 | 3,045,312 |
| MEL - 0105 | 11-Aug-16 | 0.00 | 16.32 | 227 | 12.75 | 18.12 | 50.33 | 324.41 | 0 | 231,088 | 2,430,592 | 130,944 | 85,624 | 7,400 | 2,885,648 |
| ***Percent Density or Biomass*** | | ***0.80*** | ***6.07*** | ***69.32*** | ***4.19*** | ***7.45*** | ***12.17*** | | ***0.81*** | ***8.86*** | ***80.70*** | ***4.10*** | ***5.17*** | ***0.36*** | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 10-Sep-16 | 0 | 5 | 393 | 16.23 | 24.84 | 72.45 | 512.33 | 0 | 80,424 | 2,372,120 | 111,640 | 138,312 | 8,400 | 2,711,096 |
| MEL - 0102 | 10-Sep-16 | 0 | 8 | 405 | 15.86 | 33.69 | 40.27 | 502.25 | 0 | 97,792 | 2,458,128 | 161,712 | 173,432 | 5,400 | 2,896,464 |
| MEL - 0103 | 10-Sep-16 | 0 | 6.74 | 367 | 19.24 | 22.36 | 39.03 | 455.62 | 400 | 73,840 | 1,814,168 | 223,016 | 155,264 | 4,800 | 2,271,688 |
| MEL - 0104 | 10-Sep-16 | 1 | 11.26 | 389 | 18.68 | 30.81 | 71 | 520.69 | 200 | 195,768 | 2,221,656 | 224,784 | 159,464 | 23,568 | 2,825,440 |
| MEL - 0105 | 10-Sep-16 | 0 | 12.30 | 350 | 26.31 | 26.68 | 106.33 | 521.80 | 0 | 277,392 | 2,343,784 | 222,184 | 109,376 | 34,552 | 2,987,288 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***1.71*** | ***75.80*** | ***3.83*** | ***5.51*** | ***13.09*** | | ***<0.1*** | ***5.30*** | ***81.87*** | ***6.89*** | ***5.37*** | ***0.56*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 23-Jul-16 | 2.46 | 9.24 | 357 | 48.62 | 27.33 | 19.67 | 464.75 | 12,600 | 101,976 | 3,529,960 | 485,376 | 116,360 | 5,200 | 4,251,472 |
| MEL - 0202 | 23-Jul-16 | 0 | 1.41 | 49 | 10.78 | 4.034 | 1.26 | 66.45 | 0 | 32,736 | 668,112 | 58,688 | 72,040 | 400 | 831,976 |
| MEL - 0203 | 23-Jul-16 | 12.36 | 12.78 | 289 | 32.41 | 20.37 | 26.70 | 393.87 | 114,944 | 144,680 | 2,948,656 | 461,392 | 112,360 | 2,600 | 3,784,632 |
| MEL - 0204 | 23-Jul-16 | 1.26 | 8.66 | 347 | 47.93 | 23.12 | 24.68 | 452.83 | 7,184 | 73,840 | 3,064,000 | 364,416 | 92,808 | 4,400 | 3,606,648 |
| MEL - 0205 | 23-Jul-16 | 5 | 6.22 | 398 | 39.18 | 27.50 | 18.69 | 494.99 | 43,704 | 101,376 | 3,250,184 | 340,664 | 107,976 | 2,800 | 3,846,704 |
| ***Percent Density or Biomass*** | | ***1.15*** | ***2.05*** | ***76.93*** | ***9.55*** | ***5.47*** | ***4.86*** | | ***1.09*** | ***2.79*** | ***82.47*** | ***10.48*** | ***3.07*** | ***<0.1*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 11-Aug-16 | 0 | 16.05 | 102 | 30.74 | 28.90 | 14 | 192.00 | 0 | 238,472 | 1,530,792 | 81,456 | 172,232 | 9,584 | 2,032,536 |
| MEL - 0202 | 11-Aug-16 | 0 | 11.22 | 127 | 54.19 | 31.24 | 19.34 | 243.25 | 7,384 | 152,464 | 1,537,976 | 101,208 | 185,400 | 4,600 | 1,989,032 |
| MEL - 0203 | 11-Aug-16 | 1 | 11.26 | 173 | 21.86 | 31.54 | 65.97 | 304.27 | 14,968 | 174,016 | 1,855,672 | 41,136 | 181,816 | 18,800 | 2,286,408 |
| MEL - 0204 | 11-Aug-16 | 0 | 16.83 | 121 | 23.76 | 47.89 | 27.99 | 237.22 | 0 | 239,872 | 1,596,048 | 69,472 | 288,976 | 6,000 | 2,200,368 |
| MEL - 0205 | 11-Aug-16 | 0 | 12.56 | 171 | 29.07 | 42.26 | 29.98 | 284.62 | 0 | 187,784 | 1,847,688 | 125,344 | 235,904 | 18,368 | 2,415,088 |
| ***Percent Density or Biomass*** | | ***0.10*** | ***5.38*** | ***54.97*** | ***12.65*** | ***14.41*** | ***12.47*** | | ***0.20*** | ***9.09*** | ***76.61*** | ***3.83*** | ***9.74*** | ***0.53*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 11-Sep-16 | 3 | 6 | 182 | 36.15 | 27.39 | 41.10 | 295.47 | 400 | 58,472 | 1,753,312 | 92,472 | 134,512 | 6,200 | 2,045,368 |
| MEL - 0202 | 11-Sep-16 | 1 | 10 | 195 | 26.10 | 27.64 | 25.47 | 284.76 | 400 | 88,808 | 1,771,264 | 149,912 | 136,712 | 3,400 | 2,150,496 |
| MEL - 0203 | 11-Sep-16 | 5 | 8.74 | 197 | 28.78 | 21.50 | 45.53 | 306.18 | 129,312 | 86,808 | 1,714,992 | 141,360 | 112,760 | 7,400 | 2,192,632 |
| MEL - 0204 | 11-Sep-16 | 0.00 | 8.45 | 245 | 18.62 | 28.59 | 32.53 | 333.49 | 0 | 108,760 | 1,874,240 | 112,592 | 164,048 | 3,600 | 2,263,240 |
| MEL - 0205 | 11-Sep-16 | 0 | 5.48 | 177 | 22.18 | 28.63 | 34.17 | 267.66 | 0 | 65,656 | 1,685,056 | 54,920 | 170,432 | 4,600 | 1,980,664 |
| ***Percent Density or Biomass*** | | ***0.57*** | ***2.63*** | ***66.93*** | ***8.86*** | ***8.99*** | ***12.02*** | | ***1.22*** | ***3.84*** | ***82.76*** | ***5.18*** | ***6.76*** | ***0.24*** | |
| **MEL-03** | | | | | | | | | | | | | | | |

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| MEL - 0301 | 26-Jul-16 | 6 | 3 | 207 | 10.11 | 18.54 | 32.62 | 276.65 | 200 | 101,976 | 1,639,768 | 87,824 | 105,376 | 10,784 | 1,945,928 |
| MEL - 0302 | 26-Jul-16 | 1 | 11 | 211 | 33.95 | 17.80 | 27.18 | 302.07 | 14,368 | 296,144 | 1,740,544 | 102,408 | 118,544 | 3,200 | 2,275,208 |
| MEL - 0303 | 26-Jul-16 | 1 | 4.46 | 280 | 21.04 | 27.57 | 25.94 | 359.92 | 14,768 | 101,176 | 2,547,152 | 112,176 | 197,168 | 10,184 | 2,982,624 |
| MEL - 0304 | 26-Jul-16 | 0 | 4.66 | 282 | 10.53 | 16.17 | 24.43 | 337.87 | 0 | 158,248 | 2,263,576 | 99,992 | 96,792 | 4,000 | 2,622,608 |
| MEL - 0305 | 26-Jul-16 | 2 | 7.06 | 215 | 23.17 | 23.81 | 46.50 | 317.53 | 35,920 | 133,912 | 1,826,152 | 74,256 | 162,648 | 4,600 | 2,237,488 |
| ***Percent Density or Biomass*** | | ***0.61*** | ***1.91*** | ***74.93*** | ***6.20*** | ***6.52*** | ***9.83*** | | ***0.54*** | ***6.56*** | ***83.03*** | ***3.95*** | ***5.64*** | ***0.27*** | |
| **MEL-03** | | | | | | | | | | | | | | | |
| MEL - 0301 | 12-Aug-16 | 0 | 8 | 160 | 13.41 | 16.61 | 9.78 | 207.59 | 0 | 100,976 | 1,632,168 | 15,384 | 110,160 | 1,000 | 1,859,688 |
| MEL - 0302 | 12-Aug-16 | 0 | 11 | 166 | 15.85 | 16.37 | 9.25 | 218.18 | 7,184 | 191,184 | 1,575,696 | 86,024 | 103,776 | 2,000 | 1,965,864 |
| MEL - 0303 | 12-Aug-16 | 0 | 12.92 | 176 | 8.76 | 39.21 | 12.49 | 248.94 | 0 | 213,736 | 1,625,584 | 105,176 | 296,544 | 2,600 | 2,243,640 |
| MEL - 0304 | 12-Aug-16 | 0 | 14.41 | 163 | 5.89 | 24.87 | 27.75 | 236.49 | 7,184 | 303,128 | 1,525,008 | 53,288 | 191,184 | 4,600 | 2,084,392 |
| MEL - 0305 | 12-Aug-16 | 0 | 12.95 | 157 | 7.62 | 32.06 | 31.58 | 241.48 | 0 | 181,000 | 1,798,800 | 96,592 | 187,600 | 20,968 | 2,284,960 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***5.08*** | ***71.31*** | ***4.47*** | ***11.20*** | ***7.88*** | | ***0.14*** | ***9.48*** | ***78.15*** | ***3.41*** | ***8.52*** | ***0.30*** | |
| **MEL-03** | | | | | | | | | | | | | | | |
| MEL - 0301 | 12-Sep-16 | 0 | 11 | 183 | 36.71 | 30.55 | 24.55 | 286.68 | 0 | 137,696 | 1,699,424 | 328,496 | 217,920 | 16,568 | 2,400,104 |
| MEL - 0302 | 13-Sep-16 | 0 | 7 | 184 | 26.02 | 14.65 | 10.39 | 241.75 | 0 | 66,056 | 1,850,488 | 81,272 | 88,608 | 2,400 | 2,088,824 |
| MEL - 0303 | 13-Sep-16 | 0 | 6.32 | 131 | 14.98 | 16.28 | 12.07 | 180.37 | 0 | 123,528 | 1,403,680 | 68,672 | 109,960 | 1,800 | 1,707,640 |
| MEL - 0304 | 22-Sep-16 | 0 | 3.07 | 257 | 18.40 | 11.81 | 15.43 | 305.49 | 0 | 43,904 | 2,466,512 | 189,632 | 87,608 | 2,000 | 2,789,656 |
| MEL - 0306 | 22-Sep-16 | 0 | 1.82 | 155 | 21.56 | 21.76 | 17.61 | 217.31 | 0 | 22,352 | 1,618,400 | 144,928 | 139,296 | 3,200 | 1,928,176 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***2.37*** | ***73.86*** | ***9.55*** | ***7.72*** | ***6.50*** | | ***<0.1*** | ***3.61*** | ***82.81*** | ***7.45*** | ***5.89*** | ***0.24*** | |
| **MEL-04** | | | | | | | | | | | | | | | |
| MEL - 0401 | 14-Aug-16 | 1 | 9 | 101 | 6.46 | 28.44 | 13.57 | 159.23 | 14,568 | 216,920 | 949,488 | 32,336 | 181,200 | 2,400 | 1,396,912 |
| MEL - 0402 | 14-Aug-16 | 0 | 14 | 124 | 11.86 | 31.99 | 10.32 | 192.36 | 7,184 | 288,760 | 1,438,800 | 91,608 | 213,736 | 8,184 | 2,048,272 |
| MEL - 0403 | 14-Aug-16 | 0 | 4.61 | 27 | 9.40 | 1.26 | 0.00 | 42.47 | 0 | 188,143 | 634,952 | 96,053 | 24,923 | 0 | 944,070 |
| MEL - 0404 | 14-Aug-16 | 0 | 11.60 | 145 | 11.72 | 30.95 | 3.60 | 203.62 | 7,184 | 208,736 | 1,346,208 | 71,856 | 212,736 | 400 | 1,847,120 |
| MEL - 0405 | 14-Aug-16 | 1 | 7.72 | 117 | 19.11 | 27.69 | 8.30 | 180.71 | 21,552 | 253,640 | 1,366,360 | 62,072 | 203,352 | 7,984 | 1,914,960 |
| ***Percent Density or Biomass*** | | ***0.27*** | ***5.96*** | ***66.19*** | ***7.52*** | ***15.46*** | ***4.60*** | | ***0.62*** | ***14.18*** | ***70.37*** | ***4.34*** | ***10.26*** | ***0.23*** | |
| **MEL-05** | | | | | | | | | | | | | | | |
| MEL - 0501 | 16-Aug-16 | 0 | 12 | 195 | 25.00 | 82.16 | 37.87 | 351.98 | 0 | 153,864 | 2,158,000 | 100,992 | 498,928 | 5,800 | 2,917,584 |
| MEL - 0502 | 16-Aug-16 | 0 | 6 | 103 | 9.54 | 41.28 | 29.49 | 189.83 | 7,184 | 129,912 | 1,350,792 | 56,088 | 260,440 | 10,584 | 1,815,000 |
| MEL - 0503 | 16-Aug-16 | 2 | 7.08 | 137 | 6.82 | 35.83 | 3.35 | 192.09 | 35,920 | 165,932 | 1,495,672 | 48,304 | 248,856 | 1,800 | 1,996,484 |
| MEL - 0504 | 16-Aug-16 | 0 | 10.27 | 115 | 17.65 | 34.54 | 9.12 | 186.14 | 0 | 123,928 | 1,243,432 | 41,720 | 192,384 | 3,000 | 1,604,464 |
| MEL - 0505 | 16-Aug-16 | 1 | 20.42 | 118 | 14.53 | 44.42 | 15.33 | 214.20 | 21,552 | 266,608 | 1,165,608 | 62,072 | 281,992 | 3,200 | 1,801,032 |
| ***Percent Density or Biomass*** | | ***0.28*** | ***4.91*** | ***58.93*** | ***6.48*** | ***21.00*** | ***8.39*** | | ***0.64*** | ***8.29*** | ***73.15*** | ***3.05*** | ***14.63*** | ***0.24*** | |

**Table E2-5. Major Taxa Biomass and Density from the Phytoplankton Study in Meliadine Lake in 2013 and 2015**

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| ***2013*** | | | | | | | | | | | | | | | |
| **DP-01** | | | | | | | | | | | | | | | |
| DP01 -P -1S | 14-Aug-13 | 8 | 6.57 | 79 | 16.01 | 21.44 | 15.05 | 145.59 | 153,864 | 404,104 | 1,524,208 | 103,608 | 199,768 | 1,200 | 2,386,752 |
| DP01 -P -2S | 14-Aug-13 | 4 | 5.30 | 73 | 18.11 | 38.60 | 9.53 | 148.63 | 89,408 | 289,360 | 1,415,248 | 88,640 | 387,352 | 800 | 2,270,808 |
| DP01 -P -3S | 14-Aug-13 | 2.92 | 5.47 | 105 | 16.01 | 22.94 | 5.02 | 157.36 | 17,768 | 302,928 | 1,654,920 | 153,680 | 249,456 | 400 | 2,379,152 |
| DP01 -P -4S | 14-Aug-13 | 2.31 | 7.65 | 71 | 21.56 | 28.24 | 34.75 | 165.20 | 3,600 | 346,032 | 1,022,728 | 125,776 | 252,456 | 2,200 | 1,752,792 |
| DP01 -P -5S | 14-Aug-13 | 2.30 | 4.26 | 86 | 15.39 | 27.47 | 13.99 | 149.17 | 10,984 | 316,896 | 1,459,352 | 96,624 | 327,880 | 1,200 | 2,212,936 |
| ***Percent Density or Biomass*** | | ***2.57*** | ***3.82*** | ***53.91*** | ***11.37*** | ***18.11*** | ***10.23*** | | ***2.51*** | ***15.08*** | ***64.32*** | ***5.17*** | ***12.88*** | ***<0.1*** | |
| ***2015*** | | | | | | | | | | | | | | | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 19-Jul-15 | 0 | 1.69 | 480 | 35.95 | 20.93 | 95.64 | 634.05 | 0 | 36,120 | 4,336,168 | 455,272 | 101,792 | 7,000 | 4,936,352 |
| MEL - 0102 | 19-Jul-15 | 1 | 2.90 | 486 | 48.58 | 22.23 | 95.72 | 656.60 | 28,736 | 36,320 | 4,615,944 | 643,872 | 97,808 | 6,600 | 5,429,280 |
| MEL - 0103 | 19-Jul-15 | 1 | 17.43 | 503 | 60.32 | 17.59 | 63.14 | 663.09 | 28,936 | 61,072 | 4,599,776 | 702,512 | 92,608 | 5,400 | 5,490,304 |
| MEL - 0104 | 19-Jul-15 | 0.22 | 3.08 | 441 | 51.77 | 30.56 | 105.27 | 631.57 | 200 | 57,872 | 3,795,568 | 579,984 | 127,544 | 8,600 | 4,569,768 |
| MEL - 0105 | 18-Jul-15 | 0.00 | 0.75 | 411 | 39.02 | 18.92 | 77.79 | 550.50 | 0 | 21,752 | 3,586,632 | 431,536 | 81,640 | 6,800 | 4,128,760 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***0.82*** | ***74.02*** | ***7.51*** | ***3.52*** | ***13.95*** | | ***0.24*** | ***0.87*** | ***85.26*** | ***11.46*** | ***2.04*** | ***0.14*** | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 14-Aug-15 | 0 | 9 | 182 | 18.60 | 13.92 | 65.44 | 289.55 | 0 | 166,832 | 1,890,792 | 271,624 | 68,056 | 5,800 | 2,403,104 |
| MEL - 0102 | 14-Aug-15 | 2 | 32 | 239 | 30.97 | 19.62 | 27.41 | 352.29 | 28,736 | 331,264 | 2,425,608 | 345,480 | 86,424 | 5,600 | 3,223,312 |
| MEL - 0103 | 14-Aug-15 | 1 | 16.86 | 206 | 78.63 | 19.62 | 41.13 | 363.73 | 28,736 | 216,720 | 2,088,560 | 317,528 | 126,128 | 6,600 | 2,784,272 |
| MEL - 0104 | 14-Aug-15 | 0 | 34.21 | 241 | 22.63 | 18.44 | 34 | 350.04 | 0 | 287,960 | 2,337,200 | 175,864 | 85,824 | 5,000 | 2,891,848 |
| MEL - 0105 | 15-Aug-15 | 0 | 24.97 | 185 | 17.33 | 16.34 | 83.53 | 326.79 | 0 | 152,864 | 1,726,160 | 191,600 | 64,672 | 9,200 | 2,144,496 |
| ***Percent Density or Biomass*** | | ***0.16*** | ***6.96*** | ***62.61*** | ***10.00*** | ***5.23*** | ***14.95*** | | ***0.43*** | ***8.59*** | ***77.85*** | ***9.68*** | ***3.21*** | ***0.24*** | |
| **MEL-01** | | | | | | | | | | | | | | | |
| MEL - 0101 | 19-Sep-15 | 0 | 8.02 | 133 | 41.28 | 44.24 | 22.81 | 248.89 | 0 | 302,328 | 1,885,808 | 298,160 | 305,728 | 3,600 | 2,795,624 |
| MEL - 0102 | 19-Sep-15 | 0.47 | 8.37 | 156 | 43.00 | 35.89 | 39.28 | 284.81 | 200 | 181,800 | 2,065,408 | 281,344 | 194,184 | 3,200 | 2,726,336 |
| MEL - 0104 | 19-Sep-15 | 0 | 12.58 | 182 | 33.29 | 29.32 | 43.81 | 301.26 | 0 | 139,896 | 2,509,616 | 307,912 | 184,800 | 4,400 | 3,146,624 |
| MEL - 0105 | 19-Sep-15 | 0 | 8.56 | 194 | 35.70 | 45.10 | 59.26 | 343.25 | 400 | 111,960 | 2,236,824 | 301,216 | 272,208 | 12,384 | 2,934,992 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***3.19*** | ***56.45*** | ***13.01*** | ***13.12*** | ***14.02*** | | ***<0.1*** | ***3.81*** | ***76.21*** | ***10.26*** | ***9.27*** | ***0.42*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 21-Jul-15 | 0 | 8.49 | 426 | 55.82 | 17.73 | 76 | 584.82 | 400 | 58,272 | 3,540,544 | 557,232 | 59,488 | 12,184 | 4,228,120 |
| MEL - 0202 | 21-Jul-15 | 0 | 5.81 | 471 | 55.85 | 13.62 | 64.93 | 612.72 | 0 | 37,320 | 4,101,696 | 695,512 | 76,840 | 19,168 | 4,930,736 |
| MEL - 0203 | 21-Jul-15 | 0 | 11.10 | 534 | 54.59 | 18.28 | 56.42 | 674.54 | 200 | 37,720 | 4,031,456 | 708,712 | 78,640 | 6,200 | 4,862,928 |
| MEL - 0204 | 21-Jul-15 | 0 | 4.15 | 441 | 30.65 | 29.54 | 42.21 | 547.16 | 0 | 29,336 | 3,546,928 | 494,344 | 145,896 | 3,400 | 4,219,904 |
| MEL - 0205 | 21-Jul-15 | 0 | 3.24 | 512 | 39.52 | 21.40 | 34.98 | 611.43 | 0 | 57,672 | 4,225,424 | 517,928 | 81,640 | 3,200 | 4,885,864 |
| ***Percent Density or Biomass*** | | ***<0.1*** | ***1.08*** | ***78.66*** | ***7.80*** | ***3.32*** | ***9.07*** | | ***<0.1*** | ***0.95*** | ***84.08*** | ***12.86*** | ***1.91*** | ***0.19*** | |
| **MEL-02** | | | | | | | | | | | | | | | |
| MEL - 0201 | 16-Aug-15 | 0 | 19 | 117 | 14.92 | 16.53 | 33.08 | 200.71 | 0 | 155,264 | 1,236,048 | 125,944 | 76,840 | 9,784 | 1,603,880 |
| MEL - 0202 | 16-Aug-15 | 0 | 15 | 152 | 26.22 | 40.10 | 28.49 | 261.86 | 200 | 232,888 | 1,639,152 | 156,880 | 236,688 | 9,584 | 2,275,392 |
| MEL - 0203 | 16-Aug-15 | 0 | 18.16 | 150 | 18.38 | 42.49 | 22.60 | 251.24 | 0 | 202,552 | 1,638,952 | 194,600 | 220,336 | 5,400 | 2,261,840 |
| MEL - 0204 | 16-Aug-15 | 0.40 | 14.76 | 102 | 14.99 | 35.17 | 10.72 | 177.86 | 400 | 168,432 | 1,244,432 | 69,488 | 250,456 | 1,800 | 1,735,008 |
| MEL - 0205 | 17-Aug-15 | 2 | 22.01 | 111 | 27.82 | 30.27 | 14.93 | 207.74 | 1,600 | 221,720 | 1,308,488 | 217,568 | 184,400 | 2,600 | 1,936,376 |
| ***Percent Density or Biomass*** | | ***0.24*** | ***8.12*** | ***57.38*** | ***9.31*** | ***14.97*** | ***9.99*** | | ***<0.1*** | ***10.00*** | ***72.02*** | ***7.79*** | ***9.87*** | ***0.30*** | |
| **MEL-02** | | | | | | | | | | | | | | | |

| Area-Replicate | Date | Phytoplankton Biomass (mg/m3) | | | | | | | Phytoplankton Density (cells/L) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL | Cyanophyte | Chlorophyte | Chrysophyte | Diatom | Cryptophyte | Dinoflagellate | TOTAL |
| MEL - 0201 | 10-Sep-15 | 3 | 27 | 151 | 16.57 | 32.13 | 40.40 | 271.46 | 200 | 159,648 | 1,784,032 | 132,344 | 190,584 | 10,584 | 2,277,592 |
| MEL - 0202 | 10-Sep-15 | 1 | 18 | 163 | 19.56 | 18.68 | 13.89 | 233.56 | 7,384 | 137,296 | 1,742,728 | 98,024 | 118,544 | 8,984 | 2,112,960 |
| MEL - 0203 | 10-Sep-15 | 0 | 21.34 | 112 | 12.74 | 18.01 | 18.17 | 182.44 | 0 | 188,584 | 1,445,384 | 148,712 | 109,560 | 22,752 | 1,914,992 |
| MEL - 0204 | 10-Sep-15 | 0 | 20.29 | 134 | 19.37 | 19.21 | 15.27 | 207.93 | 0 | 152,864 | 1,496,872 | 159,696 | 111,360 | 16,168 | 1,936,960 |
| MEL - 0205 | 10-Sep-15 | 1 | 34.37 | 146 | 32.07 | 30.92 | 16.85 | 260.49 | 600 | 246,656 | 1,591,664 | 130,776 | 176,816 | 1,800 | 2,148,312 |
| ***Percent Density or Biomass*** | | ***0.39*** | ***10.45*** | ***61.03*** | ***8.68*** | ***10.29*** | ***9.05*** | | ***<0.1*** | ***9.78*** | ***75.60*** | ***7.11*** | ***7.05*** | ***0.44*** | |

# APPENDIX F
# CHLOROPHYLL-A DATA

# Appendix F1

# 2020 Chlorophyll-a (University of Alberta)

UNIVERSITY OF ALBERTA
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# Analytical Report

**Date Reported On:** November 18, 2020

**ATTN:** Dan Gorton

**Reported To:** Agnico Ealge

**Date Received:** August 28, 2019

**Project Name:** AEM Meliadine 2020
**Client Name:** Agnico Ealge
**Supervisor:** Dan Gorton
**Billing Address or Speed Code:**
Rankin Inlet, NU, X0C 0G0

**Other Information:** Not available.

**Comments:** Not available.

**Reviewed by:** [signature]

**Alvin Kwan, BSc.**
**Quality Assurance Officer**

**Approved by:** [signature]

**Mingsheng Ma, Ph. D**
**Laboratory Manager**



Biogeochemical Analytical Service Laboratory
2-255, Centennial Center for Interdisciplinary Science, University of Alberta, Edmonton, AB T6G 2E1
Tel: (780) 492-5497 Fax: (780) 248-5861 www.biology.ualberta.ca/BASL

UNIVERSITY OF ALBERTA
Biogeochemical Analytical Service Laboratory

# Algae Parameters

| UA-BASL Sample ID | Received Date | Site Info | Sampling Date | Analyzed Date | **Chlorophyll-a (µg/L)** |
|---|---|---|---|---|---|
| 232454 | 8/28/2020 | MEL-01-01-PC 1 | 08/15/2020 | 10/21/2020 | 1.62 |
| 232455 | 8/28/2020 | MEL-01-01-PC 2 | 08/15/2020 | 10/21/2020 | 1.63 |
| 232456 | 8/28/2020 | MEL-01-01-PC 3 | 08/15/2020 | 10/21/2020 | 2.18 |
| 232457 | 8/28/2020 | MEL-01-06-PC 1 | 08/15/2020 | 10/21/2020 | 1.86 |
| 232458 | 8/28/2020 | MEL-01-06-PC 2 | 08/15/2020 | 10/21/2020 | 1.73 |
| 232459 | 8/28/2020 | MEL-01-06-PC 3 | 08/15/2020 | 10/21/2020 | 1.97 |
| 232460 | 8/28/2020 | MEL-01-07-PC 1 | 08/15/2020 | 10/21/2020 | 1.82 |
| 232461 | 8/28/2020 | MEL-01-07-PC 2 | 08/15/2020 | 10/21/2020 | 1.81 |
| 232462 | 8/28/2020 | MEL-01-07-PC 3 | 08/15/2020 | 10/21/2020 | 2.04 |
| 232463 | 8/28/2020 | MEL-01-08-PC 1 | 08/15/2020 | 10/21/2020 | 2.43 |
| 232464 | 8/28/2020 | MEL-01-08-PC 2 | 08/15/2020 | 10/21/2020 | 2.17 |
| 232465 | 8/28/2020 | MEL-01-08-PC 3 | 08/15/2020 | 10/21/2020 | 2.12 |
| 232466 | 8/28/2020 | MEL-01-09-PC 1 | 08/15/2020 | 10/21/2020 | 2.14 |
| 232467 | 8/28/2020 | MEL-01-09-PC 2 | 08/15/2020 | 10/21/2020 | 2.03 |
| 232468 | 8/28/2020 | MEL-01-09-PC 3 | 08/15/2020 | 10/21/2020 | 2.03 |
| 232469 | 8/28/2020 | MEL-02-01-PC 1 | 08/18/2020 | 10/21/2020 | 0.87 |
| 232470 | 8/28/2020 | MEL-02-01-PC 2 | 08/18/2020 | 10/21/2020 | 0.98 |
| 232471 | 8/28/2020 | MEL-02-01-PC 3 | 08/18/2020 | 10/21/2020 | 0.92 |
| 232472 | 8/28/2020 | MEL-02-02-PC 1 | 08/18/2020 | 10/21/2020 | 0.82 |
| 232473 | 8/28/2020 | MEL-02-02-PC 2 | 08/18/2020 | 10/21/2020 | 0.80 |
| 232474 | 8/28/2020 | MEL-02-02-PC 3 | 08/18/2020 | 10/21/2020 | 0.75 |
| 232475 | 8/28/2020 | MEL-02-03-PC 1 | 08/18/2020 | 10/21/2020 | 0.84 |
| 232476 | 8/28/2020 | MEL-02-03-PC 2 | 08/18/2020 | 10/21/2020 | 0.97 |
| 232477 | 8/28/2020 | MEL-02-03-PC 3 | 08/18/2020 | 10/21/2020 | 0.87 |
| 232478 | 8/28/2020 | MEL-02-04-PC 1 | 08/18/2020 | 10/21/2020 | 0.77 |
| 232479 | 8/28/2020 | MEL-02-04-PC 2 | 08/18/2020 | 10/21/2020 | 0.84 |
| 232480 | 8/28/2020 | MEL-02-04-PC 3 | 08/18/2020 | 10/21/2020 | 0.77 |
| 232481 | 8/28/2020 | MEL-02-05-PC 1 | 08/18/2020 | 10/21/2020 | 1.08 |
| 232482 | 8/28/2020 | MEL-02-05-PC 2 | 08/18/2020 | 10/21/2020 | 1.06 |
| 232483 | 8/28/2020 | MEL-02-05-PC 3 | 08/18/2020 | 10/21/2020 | 0.99 |
| 232484 | 8/28/2020 | MEL-03-01-PC 1 | 08/19/2020 | 10/21/2020 | 0.62 |
| 232485 | 8/28/2020 | MEL-03-01-PC 2 | 08/19/2020 | 10/21/2020 | 0.61 |
| | | Reportable Detection Limit (µg/L) | | | 0.04 |

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| UA-BASL Sample ID | Received Date | Site Info | Sampling Date | Analyzed Date | **Chlorophyll-a (µg/L)** |
|---|---|---|---|---|---|
| 232486 | 8/28/2020 | MEL-03-01-PC 3 | 08/19/2020 | 10/21/2020 | 0.61 |
| 232487 | 8/28/2020 | MEL-03-02-PC 1 | 08/19/2020 | 10/21/2020 | 0.65 |
| 232488 | 8/28/2020 | MEL-03-02-PC 2 | 08/19/2020 | 10/21/2020 | 0.64 |
| 232489 | 8/28/2020 | MEL-03-02-PC 3 | 08/19/2020 | 10/21/2020 | 0.62 |
| 232490 | 8/28/2020 | MEL-03-03-PC 1 | 08/19/2020 | 10/21/2020 | 0.55 |
| 232491 | 8/28/2020 | MEL-03-03-PC 2 | 08/19/2020 | 10/21/2020 | 0.54 |
| 232492 | 8/28/2020 | MEL-03-03-PC 3 | 08/19/2020 | 10/21/2020 | 0.59 |
| 232493 | 8/28/2020 | MEL-03-04-PC 1 | 08/19/2020 | 10/21/2020 | 0.53 |
| 232494 | 8/28/2020 | MEL-03-04-PC 2 | 08/19/2020 | 10/21/2020 | 0.55 |
| 232495 | 8/28/2020 | MEL-03-04-PC 3 | 08/19/2020 | 10/21/2020 | 0.51 |
| 232496 | 8/28/2020 | MEL-03-05-PC 1 | 08/19/2020 | 10/21/2020 | 0.54 |
| 232497 | 8/28/2020 | MEL-03-05-PC 2 | 08/19/2020 | 10/21/2020 | 0.62 |
| 232498 | 8/28/2020 | MEL-03-05-PC 3 | 08/19/2020 | 10/21/2020 | 0.58 |
| 232499 | 8/28/2020 | MEL-04-01-PC 1 | 08/19/2020 | 10/21/2020 | 0.73 |
| 232500 | 8/28/2020 | MEL-04-01-PC 2 | 08/19/2020 | 10/21/2020 | 0.77 |
| 232501 | 8/28/2020 | MEL-04-01-PC 3 | 08/19/2020 | 10/21/2020 | 0.71 |
| 232502 | 8/28/2020 | MEL-04-02-PC 1 | 08/19/2020 | 10/21/2020 | 0.68 |
| 232503 | 8/28/2020 | MEL-04-02-PC 2 | 08/19/2020 | 10/21/2020 | 0.66 |
| 232504 | 8/28/2020 | MEL-04-02-PC 3 | 08/19/2020 | 10/21/2020 | 0.71 |
| 232505 | 8/28/2020 | MEL-04-03-PC 1 | 08/19/2020 | 10/21/2020 | 0.64 |
| 232506 | 8/28/2020 | MEL-04-03-PC 2 | 08/19/2020 | 10/21/2020 | 0.62 |
| 232507 | 8/28/2020 | MEL-04-03-PC 3 | 08/19/2020 | 10/21/2020 | 0.64 |
| 232508 | 8/28/2020 | MEL-04-04-PC 1 | 08/19/2020 | 10/21/2020 | 0.72 |
| 232509 | 8/28/2020 | MEL-04-04-PC 2 | 08/19/2020 | 10/21/2020 | 0.69 |
| 232510 | 8/28/2020 | MEL-04-04-PC 3 | 08/19/2020 | 10/21/2020 | 0.70 |
| 232511 | 8/28/2020 | MEL-04-05-PC 1 | 08/19/2020 | 10/21/2020 | 0.70 |
| 232512 | 8/28/2020 | MEL-04-05-PC 2 | 08/19/2020 | 10/21/2020 | 0.72 |
| 232513 | 8/28/2020 | MEL-04-05-PC 3 | 08/19/2020 | 10/21/2020 | 0.68 |
| 232514 | 8/28/2020 | MEL-05-01-PC 1 | 08/23/2019 | 10/21/2020 | 0.78 |
| 232515 | 8/28/2020 | MEL-05-01-PC 2 | 08/23/2019 | 10/21/2020 | 0.81 |
| 232516 | 8/28/2020 | MEL-05-01-PC 3 | 08/23/2019 | 10/21/2020 | 0.80 |
| | | Reportable Detection Limit (µg/L) | | | 0.04 |

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| UA-BASL Sample ID | Received Date | Site Info | Sampling Date | Analyzed Date | **Chlorophyll-a (µg/L)** |
|---|---|---|---|---|---|
| 232517 | 8/28/2020 | MEL-05-02-PC 1 | 08/23/2019 | 10/21/2020 | 0.67 |
| 232518 | 8/28/2020 | MEL-05-02-PC 2 | 08/23/2019 | 10/21/2020 | 0.68 |
| 232519 | 8/28/2020 | MEL-05-02-PC 3 | 08/23/2019 | 10/21/2020 | 0.63 |
| 232520 | 8/28/2020 | MEL-05-03-PC 1 | 08/23/2019 | 10/21/2020 | 0.60 |
| 232521 | 8/28/2020 | MEL-05-03-PC 2 | 08/23/2019 | 10/21/2020 | 0.57 |
| 232522 | 8/28/2020 | MEL-05-03-PC 3 | 08/23/2019 | 10/21/2020 | 1.09 |
| 232523 | 8/28/2020 | MEL-05-04-PC 1 | 08/23/2019 | 10/21/2020 | 0.53 |
| 232524 | 8/28/2020 | MEL-05-04-PC 2 | 08/23/2019 | 10/21/2020 | 0.56 |
| 232525 | 8/28/2020 | MEL-05-04-PC 3 | 08/23/2019 | 10/21/2020 | 0.77 |
| 232526 | 8/28/2020 | MEL-05-05-PC 1 | 08/23/2019 | 10/21/2020 | 0.61 |
| 232527 | 8/28/2020 | MEL-05-05-PC 2 | 08/23/2019 | 10/21/2020 | 0.60 |
| 232528 | 8/28/2020 | MEL-05-05-PC 3 | 08/23/2019 | 10/21/2020 | 0.53 |
| 232529 | 8/28/2020 | AUG-DUP-01-PC 1 | N/A | 10/21/2020 | 2.02 |
| 232530 | 8/28/2020 | AUG-DUP-01-PC 2 | N/A | 10/21/2020 | 2.01 |
| 232531 | 8/28/2020 | AUG-DUP-01-PC 3 | N/A | 10/21/2020 | 2.11 |
| 232532 | 8/28/2020 | AUG-DUP-02-PC 1 | N/A | 10/21/2020 | 0.89 |
| 232533 | 8/28/2020 | AUG-DUP-02-PC 2 | N/A | 10/21/2020 | 0.61 |
| 232534 | 8/28/2020 | AUG-DUP-02-PC 3 | N/A | 10/21/2020 | 0.76 |
| 232535 | 8/28/2020 | AUG-DUP-03-PC 1 | N/A | 10/21/2020 | 0.55 |
| 232536 | 8/28/2020 | AUG-DUP-03-PC 2 | N/A | 10/21/2020 | 0.62 |
| 232537 | 8/28/2020 | AUG-DUP-03-PC 3 | N/A | 10/21/2020 | 0.62 |
| 232538 | 8/28/2020 | MEL-BLANK-01 | 08/24/2020 | 10/21/2020 | 0.05 |
| 232539 | 8/28/2020 | MEL-BLANK-02 | 08/24/2020 | 10/21/2020 | 0.06 |
| 232540 | 8/28/2020 | MEL-BLANK-03 | 08/24/2020 | 10/21/2020 | 0.04 |
| | | Reportable Detection Limit (µg/L) | | | 0.04 |

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# Method of Analysis

| Laboratory Method | Reference Method | Instrument |
|---|---|---|
| Determination of Chlorophyll a in Water by Fluorometry | *Welschmeyer, N.A. 1994. Fluorometric Analysis of chlorophyll a in the presence of chlorophyll b and pheopigments. Limnol. Oceanogr., 39(8), 1994, 1985-1992. (Modified) | Shimadzu RF-1501 Spectrofluorophotometer |

***** REFERENCE METHOD MODIFIED.

# Appendix F2
# Meliadine Lake Chlorophyll-a Database (2013, 2015-2020)

Appendix F2. Meliadine Lake and Peninsula Lakes laboratory chlorophyll-a data, Meliadine Lake AEMP, August 2020.

| lake | area_rep | sample | station | year | Month | year_month | replicate | chl-a | MDL_flag | QA_sample | flag | flag_note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEL | MEL-01 | 1 | MEL-01-01 | 2020 | August | 2020-8 | 1 | 1.62 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2020 | August | 2020-8 | 2 | 1.63 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2020 | August | 2020-8 | 3 | 2.18 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2020 | August | 2020-8 | 1 | 1.86 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2020 | August | 2020-8 | 2 | 1.73 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2020 | August | 2020-8 | 3 | 1.97 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2020 | August | 2020-8 | 1 | 1.82 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2020 | August | 2020-8 | 2 | 1.81 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2020 | August | 2020-8 | 3 | 2.04 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2020 | August | 2020-8 | 1 | 2.43 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2020 | August | 2020-8 | 2 | 2.17 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2020 | August | 2020-8 | 3 | 2.12 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2020 | August | 2020-8 | 1 | 2.14 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2020 | August | 2020-8 | 2 | 2.03 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2020 | August | 2020-8 | 3 | 2.03 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2020 | August | 2020-8 | 1 | 0.87 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2020 | August | 2020-8 | 2 | 0.98 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2020 | August | 2020-8 | 3 | 0.92 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2020 | August | 2020-8 | 1 | 0.82 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2020 | August | 2020-8 | 2 | 0.8 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2020 | August | 2020-8 | 3 | 0.75 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2020 | August | 2020-8 | 1 | 0.84 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2020 | August | 2020-8 | 2 | 0.97 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2020 | August | 2020-8 | 3 | 0.87 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2020 | August | 2020-8 | 1 | 0.77 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2020 | August | 2020-8 | 2 | 0.84 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2020 | August | 2020-8 | 3 | 0.77 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2020 | August | 2020-8 | 1 | 1.08 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2020 | August | 2020-8 | 2 | 1.06 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2020 | August | 2020-8 | 3 | 0.99 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2020 | August | 2020-8 | 1 | 0.62 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2020 | August | 2020-8 | 2 | 0.61 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2020 | August | 2020-8 | 3 | 0.61 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2020 | August | 2020-8 | 1 | 0.65 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2020 | August | 2020-8 | 2 | 0.64 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2020 | August | 2020-8 | 3 | 0.62 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2020 | August | 2020-8 | 1 | 0.55 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2020 | August | 2020-8 | 2 | 0.54 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2020 | August | 2020-8 | 3 | 0.59 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2020 | August | 2020-8 | 1 | 0.53 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2020 | August | 2020-8 | 2 | 0.55 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2020 | August | 2020-8 | 3 | 0.51 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2020 | August | 2020-8 | 1 | 0.54 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2020 | August | 2020-8 | 2 | 0.62 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2020 | August | 2020-8 | 3 | 0.58 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2020 | August | 2020-8 | 1 | 0.73 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2020 | August | 2020-8 | 2 | 0.77 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2020 | August | 2020-8 | 3 | 0.71 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2020 | August | 2020-8 | 1 | 0.68 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2020 | August | 2020-8 | 2 | 0.66 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2020 | August | 2020-8 | 3 | 0.71 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2020 | August | 2020-8 | 1 | 0.64 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2020 | August | 2020-8 | 2 | 0.62 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2020 | August | 2020-8 | 3 | 0.64 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2020 | August | 2020-8 | 1 | 0.72 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2020 | August | 2020-8 | 2 | 0.69 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2020 | August | 2020-8 | 3 | 0.7 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2020 | August | 2020-8 | 1 | 0.7 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2020 | August | 2020-8 | 2 | 0.72 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2020 | August | 2020-8 | 3 | 0.68 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2020 | August | 2020-8 | 1 | 0.78 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2020 | August | 2020-8 | 2 | 0.81 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2020 | August | 2020-8 | 3 | 0.8 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2020 | August | 2020-8 | 1 | 0.67 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2020 | August | 2020-8 | 2 | 0.68 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2020 | August | 2020-8 | 3 | 0.63 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2020 | August | 2020-8 | 1 | 0.6 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2020 | August | 2020-8 | 2 | 0.57 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2020 | August | 2020-8 | 3 | 1.09 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2020 | August | 2020-8 | 1 | 0.53 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2020 | August | 2020-8 | 2 | 0.56 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2020 | August | 2020-8 | 3 | 0.77 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2020 | August | 2020-8 | 1 | 0.61 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2020 | August | 2020-8 | 2 | 0.6 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2020 | August | 2020-8 | 3 | 0.53 | | | | |
| MEL | MEL-01 | 1 | AUG-DUP-01 | 2020 | August | 2020-8 | 1 | 2.02 | | | | |
| MEL | MEL-01 | 1 | AUG-DUP-01 | 2020 | August | 2020-8 | 2 | 2.01 | | | | |
| MEL | MEL-01 | 1 | AUG-DUP-01 | 2020 | August | 2020-8 | 3 | 2.11 | | | | |
| MEL | MEL-02 | 2 | AUG-DUP-02 | 2020 | August | 2020-8 | 1 | 0.89 | | | | |
| MEL | MEL-02 | 2 | AUG-DUP-02 | 2020 | August | 2020-8 | 2 | 0.61 | | | | |
| MEL | MEL-02 | 2 | AUG-DUP-02 | 2020 | August | 2020-8 | 3 | 0.76 | | | | |
| MEL | MEL-03 | 3 | AUG-DUP-03 | 2020 | August | 2020-8 | 1 | 0.55 | | | | |
| MEL | MEL-03 | 3 | AUG-DUP-03 | 2020 | August | 2020-8 | 2 | 0.62 | | | | |
| MEL | MEL-03 | 3 | AUG-DUP-03 | 2020 | August | 2020-8 | 3 | 0.62 | | | | |
| BLANK | BLANK | 1 | MEL-BLANK-01 | 2020 | August | 2020-8 | 1 | 0.05 | | | | |
| BLANK | BLANK | 2 | MEL-BLANK-02 | 2020 | August | 2020-8 | 2 | 0.06 | | | | |
| BLANK | BLANK | 3 | MEL-BLANK-03 | 2020 | August | 2020-8 | 3 | 0.04 | MDL | | | |

Appendix F2. Meliadine Lake and Peninsula Lakes laboratory chlorophyll-a data, Meliadine Lake AEMP, August 2019.

| lake | area_rep | sample | station | year | Month | year_month | replicate | chl-a | MDL_flag | QA_sample | flag | flag_note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEL | MEL-01 | 1 | MEL-01-01 | 2019 | August | 2019-8 | 1 | 0.73 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2019 | August | 2019-8 | 2 | 0.9 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2019 | August | 2019-8 | 3 | 0.84 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2019 | August | 2019-8 | 1 | 0.58 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2019 | August | 2019-8 | 2 | 0.88 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2019 | August | 2019-8 | 3 | 0.8 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2019 | August | 2019-8 | 1 | 0.77 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2019 | August | 2019-8 | 2 | 0.84 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2019 | August | 2019-8 | 3 | 0.93 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2019 | August | 2019-8 | 1 | 0.87 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2019 | August | 2019-8 | 2 | 0.64 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2019 | August | 2019-8 | 3 | 0.65 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2019 | August | 2019-8 | 1 | 0.82 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2019 | August | 2019-8 | 2 | 0.91 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2019 | August | 2019-8 | 3 | 0.82 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2019 | August | 2019-8 | 1 | 0.19 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2019 | August | 2019-8 | 2 | 0.18 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2019 | August | 2019-8 | 3 | 0.17 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2019 | August | 2019-8 | 1 | 0.04 | MDL | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2019 | August | 2019-8 | 2 | 0.09 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2019 | August | 2019-8 | 3 | 0.17 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2019 | August | 2019-8 | 1 | 0.25 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2019 | August | 2019-8 | 2 | 0.26 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2019 | August | 2019-8 | 3 | 0.21 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2019 | August | 2019-8 | 1 | 0.19 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2019 | August | 2019-8 | 2 | 0.24 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2019 | August | 2019-8 | 3 | 0.23 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2019 | August | 2019-8 | 1 | 0.3 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2019 | August | 2019-8 | 2 | 0.2 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2019 | August | 2019-8 | 3 | 0.26 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2019 | August | 2019-8 | 1 | 0.08 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2019 | August | 2019-8 | 2 | 0.07 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2019 | August | 2019-8 | 3 | 0.01 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2019 | August | 2019-8 | 1 | 0.03 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2019 | August | 2019-8 | 2 | 0.12 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2019 | August | 2019-8 | 3 | 0.02 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2019 | August | 2019-8 | 1 | 0.02 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2019 | August | 2019-8 | 2 | 0.03 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2019 | August | 2019-8 | 3 | 0.03 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2019 | August | 2019-8 | 1 | 0.03 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2019 | August | 2019-8 | 2 | 0.04 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2019 | August | 2019-8 | 3 | 0.02 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2019 | August | 2019-8 | 1 | 0.05 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2019 | August | 2019-8 | 2 | 0.04 | MDL | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2019 | August | 2019-8 | 3 | 0.04 | MDL | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2019 | August | 2019-8 | 1 | 0.09 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2019 | August | 2019-8 | 2 | 0.18 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2019 | August | 2019-8 | 3 | 0.23 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2019 | August | 2019-8 | 1 | 0.1 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2019 | August | 2019-8 | 2 | 0.19 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2019 | August | 2019-8 | 3 | 0.15 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2019 | August | 2019-8 | 1 | 0.11 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2019 | August | 2019-8 | 2 | 0.12 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2019 | August | 2019-8 | 3 | 0.18 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2019 | August | 2019-8 | 1 | 0.2 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2019 | August | 2019-8 | 2 | 0.13 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2019 | August | 2019-8 | 3 | 0.11 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2019 | August | 2019-8 | 1 | 0.28 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2019 | August | 2019-8 | 2 | 0.13 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2019 | August | 2019-8 | 3 | 0.21 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2019 | August | 2019-8 | 1 | 0.18 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2019 | August | 2019-8 | 2 | 0.18 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2019 | August | 2019-8 | 3 | 0.23 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2019 | August | 2019-8 | 1 | 0.26 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2019 | August | 2019-8 | 2 | 0.36 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2019 | August | 2019-8 | 3 | 0.31 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2019 | August | 2019-8 | 1 | 0.04 | MDL | | Remove | Different filter type |
| MEL | MEL-05 | 3 | MEL-05-03 | 2019 | August | 2019-8 | 2 | 0.04 | MDL | | Remove | Different filter type |
| MEL | MEL-05 | 3 | MEL-05-03 | 2019 | August | 2019-8 | 3 | 0.04 | MDL | | Remove | Different filter type |
| MEL | MEL-05 | 4 | MEL-05-04 | 2019 | August | 2019-8 | 1 | 0.04 | | | Remove | Different filter type |
| MEL | MEL-05 | 4 | MEL-05-04 | 2019 | August | 2019-8 | 2 | 0.07 | | | Remove | Different filter type |
| MEL | MEL-05 | 4 | MEL-05-04 | 2019 | August | 2019-8 | 3 | 0.02 | | | Remove | Different filter type |
| MEL | MEL-05 | 5 | MEL-05-05 | 2019 | August | 2019-8 | 1 | 0.04 | MDL | | Remove | Different filter type |
| MEL | MEL-05 | 5 | MEL-05-05 | 2019 | August | 2019-8 | 2 | 0.04 | MDL | | Remove | Different filter type |
| MEL | MEL-05 | 5 | MEL-05-05 | 2019 | August | 2019-8 | 3 | 0.08 | | | Remove | Different filter type |
| B7 | B7 | 1 | B7-01 | 2019 | August | 2019-8 | 1 | 0.63 | | | | |
| B7 | B7 | 1 | B7-01 | 2019 | August | 2019-8 | 2 | 0.59 | | | | |
| B7 | B7 | 1 | B7-01 | 2019 | August | 2019-8 | 3 | 0.55 | | | | |
| B7 | B7 | 2 | B7-02 | 2019 | August | 2019-8 | 1 | 0.56 | | | | |
| B7 | B7 | 2 | B7-02 | 2019 | August | 2019-8 | 2 | 0.68 | | | | |
| B7 | B7 | 2 | B7-02 | 2019 | August | 2019-8 | 3 | 0.55 | | | | |
| B7 | B7 | 3 | B7-03 | 2019 | August | 2019-8 | 1 | 0.43 | | | | |
| B7 | B7 | 3 | B7-03 | 2019 | August | 2019-8 | 2 | 0.61 | | | | |
| B7 | B7 | 3 | B7-03 | 2019 | August | 2019-8 | 3 | 0.4 | | | | |
| A8 | A8 | 1 | A8-01 | 2019 | August | 2019-8 | 1 | 0.79 | | | | |
| A8 | A8 | 1 | A8-01 | 2019 | August | 2019-8 | 2 | 0.9 | | | | |
| A8 | A8 | 1 | A8-01 | 2019 | August | 2019-8 | 3 | 0.75 | | | | |
| A8 | A8 | 2 | A8-02 | 2019 | August | 2019-8 | 1 | 0.57 | | | | |
| A8 | A8 | 2 | A8-02 | 2019 | August | 2019-8 | 2 | 0.77 | | | | |
| A8 | A8 | 2 | A8-02 | 2019 | August | 2019-8 | 3 | 0.56 | | | | |
| A8 | A8 | 3 | A8-03 | 2019 | August | 2019-8 | 1 | 1.11 | | | | |
| A8 | A8 | 3 | A8-03 | 2019 | August | 2019-8 | 2 | 0.9 | | | | |
| A8 | A8 | 3 | A8-03 | 2019 | August | 2019-8 | 3 | 1.11 | | | | |
| D7 | D7 | 1 | D7-01 | 2019 | August | 2019-8 | 1 | 1.5 | | | | |
| D7 | D7 | 1 | D7-01 | 2019 | August | 2019-8 | 2 | 1.69 | | | | |
| D7 | D7 | 1 | D7-01 | 2019 | August | 2019-8 | 3 | 1.84 | | | | |
| D7 | D7 | 2 | D7-02 | 2019 | August | 2019-8 | 1 | 1.44 | | | | |
| D7 | D7 | 2 | D7-02 | 2019 | August | 2019-8 | 2 | 1.42 | | | | |
| D7 | D7 | 2 | D7-02 | 2019 | August | 2019-8 | 3 | 1.51 | | | | |
| D7 | D7 | 3 | D7-03 | 2019 | August | 2019-8 | 1 | 1.31 | | | | |
| D7 | D7 | 3 | D7-03 | 2019 | August | 2019-8 | 2 | 1.65 | | | | |
| D7 | D7 | 3 | D7-03 | 2019 | August | 2019-8 | 3 | 1.45 | | | | |
| D7 | D7 | 1 | AUG-DUP-01 | 2019 | August | 2019-8 | 1 | 1.77 | | DUP | | |
| D7 | D7 | 1 | AUG-DUP-01 | 2019 | August | 2019-8 | 2 | 3.1 | | DUP | | |
| D7 | D7 | 1 | AUG-DUP-01 | 2019 | August | 2019-8 | 3 | 1.51 | | DUP | | |
| A8 | A8 | 1 | AUG-DUP-02 | 2019 | August | 2019-8 | 1 | 0.7 | | DUP | | |
| A8 | A8 | 1 | AUG-DUP-02 | 2019 | August | 2019-8 | 2 | 0.62 | | DUP | | |
| A8 | A8 | 1 | AUG-DUP-02 | 2019 | August | 2019-8 | 3 | 0.64 | | DUP | | |
| MEL | MEL-03 | 2 | AUG-DUP-03 | 2019 | August | 2019-8 | 1 | 0.02 | | DUP | | |
| MEL | MEL-03 | 2 | AUG-DUP-03 | 2019 | August | 2019-8 | 2 | 0.06 | | DUP | | |
| MEL | MEL-03 | 2 | AUG-DUP-03 | 2019 | August | 2019-8 | 3 | 0.08 | | DUP | | |
| MEL | MEL-04 | 5 | AUG-DUP-04 | 2019 | August | 2019-8 | 1 | 0.14 | | DUP | | |
| MEL | MEL-04 | 5 | AUG-DUP-04 | 2019 | August | 2019-8 | 2 | 0.11 | | DUP | | |
| MEL | MEL-04 | 5 | AUG-DUP-04 | 2019 | August | 2019-8 | 3 | 0.18 | | DUP | | |
| BLANK | BLANK | 1 | MEL-BLANK-01 | 2019 | August | 2019-8 | 1 | 0.04 | MDL | BLANK | | |
| BLANK | BLANK | 2 | MEL-BLANK-02 | 2019 | August | 2019-8 | 2 | 0.04 | MDL | BLANK | | |
| BLANK | BLANK | 3 | MEL-BLANK-03 | 2019 | August | 2019-8 | 3 | 0.04 | MDL | BLANK | | |

Appendix F2. Meliadine Lake and Peninsula Lakes laboratory chlorophyll-a data, Meliadine Lake AEMP, August 2018.

| lake | area_rep | sample | station | year | Month | year_month | replicate | chl-a | MDL_flag | QA_sample | flag | flag_note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A8 | A8 | 1 | A8-01 | 2018 | August | 2018-8 | 1 | 1.22 | | | | |
| A8 | A8 | 1 | A8-01 | 2018 | August | 2018-8 | 2 | 1.14 | | | | |
| A8 | A8 | 1 | A8-01 | 2018 | August | 2018-8 | 3 | 1.25 | | | | |
| A8 | A8 | 2 | A8-02 | 2018 | August | 2018-8 | 1 | 1.06 | | | | |
| A8 | A8 | 2 | A8-02 | 2018 | August | 2018-8 | 2 | 1.01 | | | | |
| A8 | A8 | 2 | A8-02 | 2018 | August | 2018-8 | 3 | 1 | | | | |
| A8 | A8 | 3 | A8-03 | 2018 | August | 2018-8 | 1 | 1.09 | | | | |
| A8 | A8 | 3 | A8-03 | 2018 | August | 2018-8 | 2 | 1.35 | | | | |
| A8 | A8 | 3 | A8-03 | 2018 | August | 2018-8 | 3 | 1.26 | | | | |
| B7 | B7 | 1 | B7-01 | 2018 | August | 2018-8 | 1 | 1.32 | | | | |
| B7 | B7 | 1 | B7-01 | 2018 | August | 2018-8 | 2 | 1.59 | | | | |
| B7 | B7 | 1 | B7-01 | 2018 | August | 2018-8 | 3 | 1 | | | | |
| B7 | B7 | 2 | B7-02 | 2018 | August | 2018-8 | 1 | 1.87 | | | | |
| B7 | B7 | 2 | B7-02 | 2018 | August | 2018-8 | 2 | 1.94 | | | | |
| B7 | B7 | 2 | B7-02 | 2018 | August | 2018-8 | 3 | 1.84 | | | | |
| B7 | B7 | 3 | B7-03 | 2018 | August | 2018-8 | 1 | 1.62 | | | | |
| B7 | B7 | 3 | B7-03 | 2018 | August | 2018-8 | 2 | 1.58 | | | | |
| B7 | B7 | 3 | B7-03 | 2018 | August | 2018-8 | 3 | 2.26 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2018 | August | 2018-8 | 1 | 2.05 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2018 | August | 2018-8 | 2 | 1.86 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2018 | August | 2018-8 | 3 | 1.73 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2018 | August | 2018-8 | 1 | 1.82 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2018 | August | 2018-8 | 2 | 1.81 | | | | |
| MEL | MEL-01 | 6 | MEL-01-06 | 2018 | August | 2018-8 | 3 | 1.87 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2018 | August | 2018-8 | 1 | 1.97 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2018 | August | 2018-8 | 2 | 1.95 | | | | |
| MEL | MEL-01 | 7 | MEL-01-07 | 2018 | August | 2018-8 | 3 | 1.85 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2018 | August | 2018-8 | 1 | 2.09 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2018 | August | 2018-8 | 2 | 1.99 | | | | |
| MEL | MEL-01 | 8 | MEL-01-08 | 2018 | August | 2018-8 | 3 | 2.03 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2018 | August | 2018-8 | 1 | 1.94 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2018 | August | 2018-8 | 2 | 1.95 | | | | |
| MEL | MEL-01 | 9 | MEL-01-09 | 2018 | August | 2018-8 | 3 | 1.81 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2018 | August | 2018-8 | 1 | 0.7 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2018 | August | 2018-8 | 2 | 0.76 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2018 | August | 2018-8 | 3 | 0.78 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2018 | August | 2018-8 | 1 | 0.92 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2018 | August | 2018-8 | 2 | 1.05 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2018 | August | 2018-8 | 3 | 1.1 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2018 | August | 2018-8 | 1 | 0.8 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2018 | August | 2018-8 | 2 | 0.84 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2018 | August | 2018-8 | 3 | 0.82 | | | | |
| MEL | MEL-02 | 6 | MEL-02-06 | 2018 | August | 2018-8 | 1 | 0.72 | | | | |
| MEL | MEL-02 | 6 | MEL-02-06 | 2018 | August | 2018-8 | 2 | 0.71 | | | | |
| MEL | MEL-02 | 6 | MEL-02-06 | 2018 | August | 2018-8 | 3 | 1.17 | | | | |
| MEL | MEL-02 | 8 | MEL-02-08 | 2018 | August | 2018-8 | 1 | 0.9 | | | | |
| MEL | MEL-02 | 8 | MEL-02-08 | 2018 | August | 2018-8 | 2 | 0.96 | | | | |
| MEL | MEL-02 | 8 | MEL-02-08 | 2018 | August | 2018-8 | 3 | 0.99 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2018 | August | 2018-8 | 1 | 0.74 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2018 | August | 2018-8 | 2 | 0.69 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2018 | August | 2018-8 | 3 | 0.65 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2018 | August | 2018-8 | 1 | 0.55 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2018 | August | 2018-8 | 2 | 0.58 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2018 | August | 2018-8 | 3 | 0.59 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2018 | August | 2018-8 | 1 | 0.69 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2018 | August | 2018-8 | 2 | 0.69 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2018 | August | 2018-8 | 3 | 0.67 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2018 | August | 2018-8 | 1 | 0.61 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2018 | August | 2018-8 | 2 | 0.56 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2018 | August | 2018-8 | 3 | 0.6 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2018 | August | 2018-8 | 1 | 0.53 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2018 | August | 2018-8 | 2 | 0.48 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2018 | August | 2018-8 | 3 | 0.57 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2018 | August | 2018-8 | 1 | 0.64 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2018 | August | 2018-8 | 2 | 0.62 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2018 | August | 2018-8 | 3 | 0.64 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2018 | August | 2018-8 | 1 | 0.56 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2018 | August | 2018-8 | 2 | 0.55 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2018 | August | 2018-8 | 3 | 0.55 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2018 | August | 2018-8 | 1 | 0.55 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2018 | August | 2018-8 | 2 | 0.62 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2018 | August | 2018-8 | 1 | 0.56 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2018 | August | 2018-8 | 2 | 0.58 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2018 | August | 2018-8 | 3 | 0.56 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2018 | August | 2018-8 | 1 | 0.63 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2018 | August | 2018-8 | 2 | 0.62 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2018 | August | 2018-8 | 3 | 0.62 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2018 | August | 2018-8 | 1 | 0.57 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2018 | August | 2018-8 | 2 | 0.55 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2018 | August | 2018-8 | 3 | 0.61 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2018 | August | 2018-8 | 1 | 0.5 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2018 | August | 2018-8 | 2 | 0.47 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2018 | August | 2018-8 | 3 | 0.48 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2018 | August | 2018-8 | 1 | 0.63 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2018 | August | 2018-8 | 2 | 0.61 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2018 | August | 2018-8 | 3 | 0.6 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2018 | August | 2018-8 | 1 | 0.62 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2018 | August | 2018-8 | 2 | 0.6 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2018 | August | 2018-8 | 3 | 0.64 | | | | |

Appendix F2. Meliadine Lake and Peninsula Lakes laboratory chlorophyll-a data, Meliadine Lake AEMP, August 2017.

| lake | area_rep | sample | station | year | Month | year_month | replicate | chl-a | MDL_flag | QA_sample | flag | flag_note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A8 | A8 | 1 | A8-01 | 2017 | August | 2017-8 | 1 | 0.92 | | | | |
| A8 | A8 | 1 | A8-01 | 2017 | August | 2017-8 | 2 | 0.92 | | | | |
| A8 | A8 | 1 | A8-01 | 2017 | August | 2017-8 | 3 | 0.95 | | | | |
| A8 | A8 | 2 | A8-02 | 2017 | August | 2017-8 | 1 | 3.11 | | | | |
| A8 | A8 | 2 | A8-02 | 2017 | August | 2017-8 | 2 | 0.96 | | | | |
| A8 | A8 | 2 | A8-02 | 2017 | August | 2017-8 | 3 | 0.89 | | | | |
| A8 | A8 | 3 | A8-03 | 2017 | August | 2017-8 | 1 | 1.46 | | | | |
| A8 | A8 | 3 | A8-03 | 2017 | August | 2017-8 | 2 | 1.44 | | | | |
| A8 | A8 | 3 | A8-03 | 2017 | August | 2017-8 | 3 | 0.32 | | | | |
| B7 | B7 | 1 | B7-01 | 2017 | August | 2017-8 | 1 | 1.03 | | | | |
| B7 | B7 | 1 | B7-01 | 2017 | August | 2017-8 | 2 | 1.18 | | | | |
| B7 | B7 | 1 | B7-01 | 2017 | August | 2017-8 | 3 | 1.16 | | | | |
| B7 | B7 | 2 | B7-02 | 2017 | August | 2017-8 | 1 | 1.15 | | | | |
| B7 | B7 | 2 | B7-02 | 2017 | August | 2017-8 | 2 | 1.27 | | | | |
| B7 | B7 | 2 | B7-02 | 2017 | August | 2017-8 | 3 | 1.38 | | | | |
| B7 | B7 | 3 | B7-03 | 2017 | August | 2017-8 | 1 | 1.4 | | | | |
| B7 | B7 | 3 | B7-03 | 2017 | August | 2017-8 | 2 | 1.56 | | | | |
| B7 | B7 | 3 | B7-03 | 2017 | August | 2017-8 | 3 | 1.47 | | | | |
| D7 | D7 | 1 | D7-01 | 2017 | August | 2017-8 | 1 | 2.47 | | | | |
| D7 | D7 | 1 | D7-01 | 2017 | August | 2017-8 | 2 | 2.32 | | | | |
| D7 | D7 | 1 | D7-01 | 2017 | August | 2017-8 | 3 | 1.94 | | | | |
| D7 | D7 | 2 | D7-02 | 2017 | August | 2017-8 | 1 | 2.16 | | | | |
| D7 | D7 | 2 | D7-02 | 2017 | August | 2017-8 | 2 | 2.29 | | | | |
| D7 | D7 | 2 | D7-02 | 2017 | August | 2017-8 | 3 | 2.18 | | | | |
| D7 | D7 | 3 | D7-03 | 2017 | August | 2017-8 | 1 | 2.26 | | | | |
| D7 | D7 | 3 | D7-03 | 2017 | August | 2017-8 | 2 | 2.25 | | | | |
| D7 | D7 | 3 | D7-03 | 2017 | August | 2017-8 | 3 | 2.39 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2017 | August | 2017-8 | 1 | 1.44 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2017 | August | 2017-8 | 2 | 1.7 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2017 | August | 2017-8 | 3 | 1.56 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2017 | August | 2017-8 | 1 | 1.47 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2017 | August | 2017-8 | 2 | 1.42 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2017 | August | 2017-8 | 3 | 1.52 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2017 | August | 2017-8 | 1 | 1.34 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2017 | August | 2017-8 | 2 | 1.27 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2017 | August | 2017-8 | 3 | 1.39 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2017 | August | 2017-8 | 1 | 1.55 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2017 | August | 2017-8 | 2 | 1.67 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2017 | August | 2017-8 | 3 | 1.59 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2017 | August | 2017-8 | 1 | 1.45 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2017 | August | 2017-8 | 2 | 1.4 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2017 | August | 2017-8 | 3 | 1.48 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2017 | August | 2017-8 | 1 | 0.66 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2017 | August | 2017-8 | 2 | 0.66 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2017 | August | 2017-8 | 3 | 0.65 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2017 | August | 2017-8 | 1 | 0.59 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2017 | August | 2017-8 | 2 | 0.65 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2017 | August | 2017-8 | 3 | 0.58 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2017 | August | 2017-8 | 1 | 0.6 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2017 | August | 2017-8 | 2 | 0.52 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2017 | August | 2017-8 | 3 | 0.51 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2017 | August | 2017-8 | 1 | 0.59 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2017 | August | 2017-8 | 2 | 0.63 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2017 | August | 2017-8 | 3 | 0.62 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2017 | August | 2017-8 | 1 | 0.72 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2017 | August | 2017-8 | 2 | 0.64 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2017 | August | 2017-8 | 3 | 0.46 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2017 | August | 2017-8 | 1 | 0.6 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2017 | August | 2017-8 | 2 | 0.64 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2017 | August | 2017-8 | 3 | 0.64 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2017 | August | 2017-8 | 1 | 0.62 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2017 | August | 2017-8 | 2 | 0.69 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2017 | August | 2017-8 | 3 | 0.61 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2017 | August | 2017-8 | 1 | 0.43 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2017 | August | 2017-8 | 2 | 0.51 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2017 | August | 2017-8 | 3 | 0.53 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2017 | August | 2017-8 | 1 | 0.51 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2017 | August | 2017-8 | 2 | 0.57 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2017 | August | 2017-8 | 3 | 0.57 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2017 | August | 2017-8 | 1 | 0.58 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2017 | August | 2017-8 | 2 | 0.51 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2017 | August | 2017-8 | 3 | 0.58 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2017 | August | 2017-8 | 1 | 0.52 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2017 | August | 2017-8 | 2 | 0.66 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2017 | August | 2017-8 | 3 | 0.49 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2017 | August | 2017-8 | 1 | 0.52 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2017 | August | 2017-8 | 2 | 0.54 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2017 | August | 2017-8 | 3 | 0.54 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2017 | August | 2017-8 | 1 | 0.71 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2017 | August | 2017-8 | 2 | 0.63 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2017 | August | 2017-8 | 3 | 0.71 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2017 | August | 2017-8 | 1 | 0.66 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2017 | August | 2017-8 | 2 | 0.61 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2017 | August | 2017-8 | 3 | 0.62 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2017 | August | 2017-8 | 1 | 0.67 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2017 | August | 2017-8 | 2 | 0.64 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2017 | August | 2017-8 | 3 | 0.68 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2017 | August | 2017-8 | 1 | 0.62 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2017 | August | 2017-8 | 2 | 0.63 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2017 | August | 2017-8 | 3 | 0.6 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2017 | August | 2017-8 | 1 | 0.58 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2017 | August | 2017-8 | 2 | 0.49 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2017 | August | 2017-8 | 3 | 0.6 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2017 | August | 2017-8 | 1 | 0.68 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2017 | August | 2017-8 | 2 | 0.6 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2017 | August | 2017-8 | 3 | 0.59 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2017 | August | 2017-8 | 1 | 0.56 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2017 | August | 2017-8 | 2 | 0.54 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2017 | August | 2017-8 | 3 | 0.55 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2017 | August | 2017-8 | 1 | 0.56 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2017 | August | 2017-8 | 2 | 0.55 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2017 | August | 2017-8 | 3 | 0.56 | | | | |

Appendix F2. Meliadine Lake and Peninsula Lakes laboratory chlorophyll-a data, Meliadine Lake AEMP, August 2016.

| lake | area_rep | sample | station | year | Month | year_month | replicate | chl-a | MDL_flag | QA_sample | flag | flag_note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A8 | A8 | 1 | A8-01 | 2016 | August | 2016-8 | 1 | 1.857 | | | | |
| A8 | A8 | 1 | A8-01 | 2016 | August | 2016-8 | 2 | 1.923 | | | | |
| A8 | A8 | 1 | A8-01 | 2016 | August | 2016-8 | 3 | 2.101 | | | | |
| A8 | A8 | 2 | A8-02 | 2016 | August | 2016-8 | 1 | 2.112 | | | | |
| A8 | A8 | 2 | A8-02 | 2016 | August | 2016-8 | 2 | 2.185 | | | | |
| A8 | A8 | 2 | A8-02 | 2016 | August | 2016-8 | 3 | 2.302 | | | | |
| A8 | A8 | 4 | A8-04 | 2016 | August | 2016-8 | 1 | 2.2 | | | | |
| A8 | A8 | 4 | A8-04 | 2016 | August | 2016-8 | 2 | 1.961 | | | | |
| A8 | A8 | 4 | A8-04 | 2016 | August | 2016-8 | 3 | 2.072 | | | | |
| B7 | B7 | 1 | B7-01 | 2016 | August | 2016-8 | 1 | 2.984 | | | | |
| B7 | B7 | 1 | B7-01 | 2016 | August | 2016-8 | 2 | 2.762 | | | | |
| B7 | B7 | 1 | B7-01 | 2016 | August | 2016-8 | 3 | 2.731 | | | | |
| B7 | B7 | 2 | B7-02 | 2016 | August | 2016-8 | 1 | 3.236 | | | | |
| B7 | B7 | 2 | B7-02 | 2016 | August | 2016-8 | 2 | 2.987 | | | | |
| B7 | B7 | 2 | B7-02 | 2016 | August | 2016-8 | 3 | 3.408 | | | | |
| B7 | B7 | 3 | B7-03 | 2016 | August | 2016-8 | 1 | 3.039 | | | | |
| B7 | B7 | 3 | B7-03 | 2016 | August | 2016-8 | 2 | 3.388 | | | | |
| B7 | B7 | 3 | B7-03 | 2016 | August | 2016-8 | 3 | 3.373 | | | | |
| D7 | D7 | 1 | D7-01 | 2016 | August | 2016-8 | 1 | 3.804 | | | | |
| D7 | D7 | 1 | D7-01 | 2016 | August | 2016-8 | 2 | 3.474 | | | | |
| D7 | D7 | 1 | D7-01 | 2016 | August | 2016-8 | 3 | 3.542 | | | | |
| D7 | D7 | 2 | D7-02 | 2016 | August | 2016-8 | 1 | 3.866 | | | | |
| D7 | D7 | 2 | D7-02 | 2016 | August | 2016-8 | 2 | 3.906 | | | | |
| D7 | D7 | 2 | D7-02 | 2016 | August | 2016-8 | 3 | 3.433 | | | | |
| D7 | D7 | 3 | D7-03 | 2016 | August | 2016-8 | 1 | 4.197 | | | | |
| D7 | D7 | 3 | D7-03 | 2016 | August | 2016-8 | 2 | 4.209 | | | | |
| D7 | D7 | 3 | D7-03 | 2016 | August | 2016-8 | 3 | 3.723 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2016 | August | 2016-8 | 1 | 2.269 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2016 | August | 2016-8 | 2 | 1.653 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2016 | August | 2016-8 | 3 | 1.912 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2016 | August | 2016-8 | 1 | 2.044 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2016 | August | 2016-8 | 2 | 2.063 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2016 | August | 2016-8 | 3 | 2.134 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2016 | August | 2016-8 | 1 | 1.65 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2016 | August | 2016-8 | 2 | 1.895 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2016 | August | 2016-8 | 3 | 2.259 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2016 | August | 2016-8 | 1 | 1.851 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2016 | August | 2016-8 | 2 | 1.781 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2016 | August | 2016-8 | 3 | 1.809 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2016 | August | 2016-8 | 1 | 1.334 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2016 | August | 2016-8 | 2 | 1.932 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2016 | August | 2016-8 | 3 | 1.597 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2016 | August | 2016-8 | 1 | 1.263 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2016 | August | 2016-8 | 2 | 0.337 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2016 | August | 2016-8 | 3 | 1.086 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2016 | August | 2016-8 | 1 | 0.91 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2016 | August | 2016-8 | 2 | 1.208 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2016 | August | 2016-8 | 3 | 1 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2016 | August | 2016-8 | 1 | 1.197 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2016 | August | 2016-8 | 2 | 1.372 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2016 | August | 2016-8 | 3 | 1.206 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2016 | August | 2016-8 | 1 | 1.271 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2016 | August | 2016-8 | 2 | 1.325 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2016 | August | 2016-8 | 3 | 1.184 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2016 | August | 2016-8 | 1 | 1.322 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2016 | August | 2016-8 | 2 | 1.249 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2016 | August | 2016-8 | 3 | 1.289 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2016 | August | 2016-8 | 1 | 0.763 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2016 | August | 2016-8 | 2 | 0.693 | | | | |
| MEL | MEL-03 | 1 | MEL-03-01 | 2016 | August | 2016-8 | 3 | 0.748 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2016 | August | 2016-8 | 1 | 0.46 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2016 | August | 2016-8 | 2 | 0.659 | | | | |
| MEL | MEL-03 | 2 | MEL-03-02 | 2016 | August | 2016-8 | 3 | 0.744 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2016 | August | 2016-8 | 1 | 0.65 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2016 | August | 2016-8 | 2 | 0.757 | | | | |
| MEL | MEL-03 | 3 | MEL-03-03 | 2016 | August | 2016-8 | 3 | 0.708 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2016 | August | 2016-8 | 1 | 0.701 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2016 | August | 2016-8 | 2 | 0.822 | | | | |
| MEL | MEL-03 | 4 | MEL-03-04 | 2016 | August | 2016-8 | 3 | 0.574 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2016 | August | 2016-8 | 1 | 0.824 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2016 | August | 2016-8 | 2 | 0.879 | | | | |
| MEL | MEL-03 | 5 | MEL-03-05 | 2016 | August | 2016-8 | 3 | 0.965 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2016 | August | 2016-8 | 1 | 0.78 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2016 | August | 2016-8 | 2 | 0.826 | | | | |
| MEL | MEL-04 | 1 | MEL-04-01 | 2016 | August | 2016-8 | 3 | 0.818 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2016 | August | 2016-8 | 1 | 0.866 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2016 | August | 2016-8 | 2 | 0.901 | | | | |
| MEL | MEL-04 | 2 | MEL-04-02 | 2016 | August | 2016-8 | 3 | 0.863 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2016 | August | 2016-8 | 1 | 0.891 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2016 | August | 2016-8 | 2 | 0.965 | | | | |
| MEL | MEL-04 | 3 | MEL-04-03 | 2016 | August | 2016-8 | 3 | 0.946 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2016 | August | 2016-8 | 1 | 1.083 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2016 | August | 2016-8 | 2 | 1 | | | | |
| MEL | MEL-04 | 4 | MEL-04-04 | 2016 | August | 2016-8 | 3 | 0.943 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2016 | August | 2016-8 | 1 | 1.092 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2016 | August | 2016-8 | 2 | 1.008 | | | | |
| MEL | MEL-04 | 5 | MEL-04-05 | 2016 | August | 2016-8 | 3 | 0.915 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2016 | August | 2016-8 | 1 | 1.401 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2016 | August | 2016-8 | 2 | 1.206 | | | | |
| MEL | MEL-05 | 1 | MEL-05-01 | 2016 | August | 2016-8 | 3 | 1.178 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2016 | August | 2016-8 | 1 | 1.235 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2016 | August | 2016-8 | 2 | 1.296 | | | | |
| MEL | MEL-05 | 2 | MEL-05-02 | 2016 | August | 2016-8 | 3 | 1.112 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2016 | August | 2016-8 | 1 | 1.02 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2016 | August | 2016-8 | 2 | 1.079 | | | | |
| MEL | MEL-05 | 3 | MEL-05-03 | 2016 | August | 2016-8 | 3 | 1.048 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2016 | August | 2016-8 | 1 | 1.044 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2016 | August | 2016-8 | 2 | 0.9 | | | | |
| MEL | MEL-05 | 4 | MEL-05-04 | 2016 | August | 2016-8 | 3 | 0.974 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2016 | August | 2016-8 | 1 | 1.134 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2016 | August | 2016-8 | 2 | 0.984 | | | | |
| MEL | MEL-05 | 5 | MEL-05-05 | 2016 | August | 2016-8 | 3 | 0.868 | | | | |

Appendix F2. Meliadine Lake and Peninsula Lakes laboratory chlorophyll-a data, Meliadine Lake AEMP, August 2015.

| lake | area_rep | sample | station | year | Month | year_month | replicate | chl-a | MDL_flag | QA_sample | flag | flag_note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A8 | A8 | 1 | A8-01 | 2015 | August | 2015-8 | 1 | 2.019 | | | | |
| A8 | A8 | 1 | A8-01 | 2015 | August | 2015-8 | 2 | 1.874 | | | | |
| A8 | A8 | 1 | A8-01 | 2015 | August | 2015-8 | 3 | 1.98 | | | | |
| A8 | A8 | 2 | A8-02 | 2015 | August | 2015-8 | 1 | 1.722 | | | | |
| A8 | A8 | 2 | A8-02 | 2015 | August | 2015-8 | 2 | 1.502 | | | | |
| A8 | A8 | 2 | A8-02 | 2015 | August | 2015-8 | 3 | 1.937 | | | | |
| A8 | A8 | 3 | A8-03 | 2015 | August | 2015-8 | 1 | 2.267 | | | | |
| A8 | A8 | 3 | A8-03 | 2015 | August | 2015-8 | 2 | 2.287 | | | | |
| A8 | A8 | 3 | A8-03 | 2015 | August | 2015-8 | 3 | 2.437 | | | | |
| B7 | B7 | 1 | B7-01 | 2015 | August | 2015-8 | 1 | 1.436 | | | | |
| B7 | B7 | 1 | B7-01 | 2015 | August | 2015-8 | 2 | 1.238 | | | | |
| B7 | B7 | 1 | B7-01 | 2015 | August | 2015-8 | 3 | 1.59 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2015 | August | 2015-8 | 1 | 0.737 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2015 | August | 2015-8 | 2 | 0.866 | | | | |
| MEL | MEL-01 | 1 | MEL-01-01 | 2015 | August | 2015-8 | 3 | 0.702 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2015 | August | 2015-8 | 1 | 0.954 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2015 | August | 2015-8 | 2 | 0.862 | | | | |
| MEL | MEL-01 | 2 | MEL-01-02 | 2015 | August | 2015-8 | 3 | 0.84 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2015 | August | 2015-8 | 1 | 0.889 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2015 | August | 2015-8 | 2 | 0.751 | | | | |
| MEL | MEL-01 | 3 | MEL-01-03 | 2015 | August | 2015-8 | 3 | | MDL | | Remove | No MDL value reported |
| MEL | MEL-01 | 4 | MEL-01-04 | 2015 | August | 2015-8 | 1 | 0.877 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2015 | August | 2015-8 | 2 | 0.899 | | | | |
| MEL | MEL-01 | 4 | MEL-01-04 | 2015 | August | 2015-8 | 3 | 0.973 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2015 | August | 2015-8 | 1 | 0.927 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2015 | August | 2015-8 | 2 | 0.861 | | | | |
| MEL | MEL-01 | 5 | MEL-01-05 | 2015 | August | 2015-8 | 3 | 0.883 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2015 | August | 2015-8 | 1 | 0.392 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2015 | August | 2015-8 | 2 | 0.412 | | | | |
| MEL | MEL-02 | 1 | MEL-02-01 | 2015 | August | 2015-8 | 3 | 0.32 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2015 | August | 2015-8 | 1 | 0.349 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2015 | August | 2015-8 | 2 | 0.349 | | | | |
| MEL | MEL-02 | 2 | MEL-02-02 | 2015 | August | 2015-8 | 3 | 0.381 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2015 | August | 2015-8 | 1 | 0.533 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2015 | August | 2015-8 | 2 | 0.327 | | | | |
| MEL | MEL-02 | 3 | MEL-02-03 | 2015 | August | 2015-8 | 3 | 0.547 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2015 | August | 2015-8 | 1 | 0.42 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2015 | August | 2015-8 | 2 | 0.573 | | | | |
| MEL | MEL-02 | 4 | MEL-02-04 | 2015 | August | 2015-8 | 3 | 0.409 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2015 | August | 2015-8 | 1 | 0.544 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2015 | August | 2015-8 | 2 | 0.569 | | | | |
| MEL | MEL-02 | 5 | MEL-02-05 | 2015 | August | 2015-8 | 3 | 0.551 | | | | |

# APPENDIX G
# 2020 SNOW PACK SURVEY AND CHEMISTRY DATA

Table G-1. Chemistry Results from Snowpack Sample Collected in February and April, 2020

| Parameter | Units | February Lowest Detection Limit | February | | | | | April Lowest Detection limits | | | | | April | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SNOCOR4 | SNOCOR5 | SNOCOR6 | SNOCOR7 | SNOCOR BOUNDARY | SNOCOR4 | SNOCOR5 | SNOCOR6 | SNOCOR7 | SNOCOR BOUNDARY | SNOCOR4 | SNOCOR5 | SNOCOR6 | SNOCOR7 | SNOCOR BOUNDARY |
| **Conventional Parameters** | | | | | | | | | | | | | | | | | |
| Conductivity (lab) | uS/cm | 1 | 41 | 5.5 | 6.3 | 13 | 18 | 1 | 1 | 1 | 1 | 1 | 350 | 11 | 17 | 78 | 19 |
| Hardness | mg/L | 0.5 | 15.2 | 2.11 | 2.11 | 2.28 | 5.87 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 388 | 2.34 | 4.97 | 38.5 | 10.1 |
| pH (lab) | pH units | 0.1 | 7.99 | 6.21 | 5.88 | 6.34 | 6.74 | - | - | - | - | - | 9.33 | 6.16 | 6.69 | 8.66 | 6.97 |
| Total Dissolved Solids | mg/L | 13 | 35 | < 10 | < 10 | < 10 | 25 | 10 | 10 | 10 | 10 | 10 | 275 | 45 | 40 | 105 | 30 |
| Total Suspended Solids | mg/L | 1 | 390 | 10 | 11 | 9 | 44 | 5 | 1 | 1 | 2 | 1 | 3800 | 16 | 30 | 280 | 44 |
| Turbidity (lab) | NTU | 0.1 | 63 | 0.6 | 0.7 | 2.1 | 3.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 120 | 1.1 | 4.3 | 53 | 4.5 |
| **Major Ions** | | | | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | mg/L | 1 | 10 | < 1.0 | < 1.0 | 1.2 | 3.2 | 1 | 1 | 1 | 1 | 1 | 21 | 1.1 | 3.3 | 13 | 5.1 |
| Alkalinity, Carbonate | mg/L | 1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 1 | 1 | 1 | 1 | 1 | 4.2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Alkalinity, Total | mg/L | 1 | 11 | < 1.0 | < 1.0 | 1.2 | 3.2 | 1 | 1 | 1 | 1 | 1 | 26 | 1.1 | 3.3 | 14 | 5.1 |
| Calcium (D) | mg/L | 0.01 | - | - | - | - | - | 0.1 | 0.05 | 0.05 | 0.05 | 0.05 | 26.5 | 0.368 | 1.24 | 5.43 | 1.7 |
| Calcium (T) | mg/L | 0.01 | 3.6 | 0.364 | 0.362 | 0.592 | 1.25 | 5 | 0.25 | 0.05 | 0.25 | 0.25 | 119 | 0.68 | 1.57 | 10.6 | 2.99 |
| Chloride (D) | mg/L | 0.1 | 3.1 | < 1.0 | < 1.0 | 1.6 | 1.7 | 1 | 1 | 1 | 1 | 1 | 37 | < 1.0 | 1.6 | 10 | < 1.0 |
| Magnesium (D) | mg/L | 0.004 | - | - | - | - | - | 0.1 | 0.05 | 0.05 | 0.05 | 0.05 | 0.38 | 0.102 | 0.133 | 0.576 | 0.122 |
| Magnesium (T) | mg/L | 0.004 | 0.274 | 0.06 | 0.058 | 0.144 | 0.196 | 5 | 0.25 | 0.05 | 0.25 | 0.25 | 22.4 | <0.25 | 0.257 | 2.95 | 0.63 |
| Potassium (D) | mg/L | 0.02 | - | - | - | - | - | 0.1 | 0.05 | 0.05 | 0.05 | 0.05 | 3.75 | 0.346 | 0.121 | 0.707 | 0.108 |
| Potassium (T) | mg/L | 0.02 | 0.247 | 0.061 | < 0.050 | 0.064 | 0.147 | 5 | 0.25 | 0.05 | 0.25 | 0.25 | 9.7 | 0.36 | 0.185 | 1.83 | 0.28 |
| Sodium (D) | mg/L | 0.02 | - | - | - | - | - | 0.1 | 0.05 | 0.05 | 0.05 | 0.05 | 29 | 0.58 | 1.02 | 5.3 | 0.658 |
| Sodium (T) | mg/L | 0.02 | 1.51 | 0.241 | 0.274 | 1.01 | 1.01 | 5 | 0.25 | 0.05 | 0.25 | 0.25 | 29.5 | 0.57 | 1.03 | 5.34 | 0.67 |
| Sulphate (D) | mg/L | 0.3 | 1.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 1 | 1 | 1 | 1 | 1 | 59 | <1.0 | 1.1 | 3.5 | 1.1 |
| **Nutrients** | | | | | | | | | | | | | | | | | |
| Total Phosphorus | ug/L | 0.001 | - | - | - | - | - | 100 | 5 | - | 5 | 5 | 1880 | 409 | - | 193 | 49.1 |
| **Organic/Inorganic Carbon** | | | | | | | | | | | | | | | | | |
| Dissolved Organic Carbon | mg/L | 0.5 | 0.83 | 0.57 | < 0.50 | 0.59 | 0.89 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 5.6 | 2.9 | 3 | 74 | 0.52 |
| Total Organic Carbon | mg/L | 0.5 | 0.92 | 0.64 | 0.55 | 0.79 | 1.1 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 6.1 | 3.3 | 3.1 | 74 | 0.92 |
| **Total Metals** | | | | | | | | | | | | | | | | | |
| Aluminum (T) | ug/L | 3 | 2020 | 302 | 231 | 141 | 548 | 60 | 3 | 0.5 | 3 | 3 | 31500 | 112 | 234 | 5060 | 989 |
| Antimony (T) | ug/L | 0.5 | <0.50 | 0.66 | <0.50 | <0.50 | <0.50 | 0.4 | 0.02 | 0.02 | 0.02 | 0.02 | 3.1 | 0.119 | 0.082 | 0.648 | 0.13 |
| Arsenic (T) | ug/L | 0.1 | 194 | 2.83 | 5.01 | 2.12 | 27.3 | 0.4 | 0.02 | 0.02 | 0.02 | 0.02 | 12900 | 3.1 | 59.7 | 735 | 120 |
| Barium (T) | ug/L | 1 | 19 | 5.7 | 3.9 | 4.9 | 5.8 | 1 | 0.05 | 0.02 | 0.05 | 0.05 | 375 | 3.89 | 3.79 | 47.5 | 8.68 |
| Beryllium (T) | ug/L | 0.1 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | 0.2 | 0.01 | 0.01 | 0.01 | 0.01 | 0.81 | <0.010 | <0.010 | 0.104 | 0.019 |
| Bismuth (T) | ug/L | 1 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 0.2 | 0.01 | - | 0.01 | 0.01 | 2.81 | <0.010 | - | 0.38 | 0.045 |
| Boron (T) | ug/L | 50 | <50 | <50 | <50 | <50 | <50 | 200 | 10 | 10 | 10 | 10 | <200 | <10 | <10 | <10 | <10 |
| Cadmium (T) | ug/L | 0.01 | 0.076 | 0.202 | 0.229 | 0.099 | 0.501 | 0.1 | 0.005 | 0.005 | 0.005 | 0.005 | 0.99 | 0.0444 | 0.0351 | 0.293 | 0.0376 |
| Calcium (T) | ug/L | 50 | 4370 | 598 | 601 | 661 | 1690 | 5000 | 250 | 10 | 250 | 250 | 119000 | 680 | 1570 | 10600 | 2990 |
| Chromium (T) | ug/L | 1 | 4.2 | <1.0 | <1.0 | <1.0 | 1 | 2 | 0.1 | 0.1 | 0.1 | 0.1 | 61.3 | 0.55 | 0.6 | 10.4 | 1.55 |
| Cobalt (T) | ug/L | 0.2 | 1.04 | <0.20 | <0.20 | <0.20 | <0.20 | 0.2 | 0.01 | 0.005 | 0.01 | 0.01 | 21.1 | 0.11 | 0.128 | 2.55 | 0.306 |

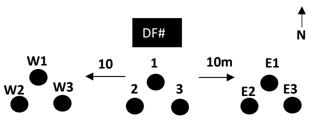
| Parameter | Units | February Lowest Detection Limit | February | | | | | April Lowest Detection limits | | | | | April | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SNOCOR4 | SNOCOR5 | SNOCOR6 | SNOCOR7 | SNOCOR BOUNDARY | SNOCOR4 | SNOCOR5 | SNOCOR6 | SNOCOR7 | SNOCOR BOUNDARY | SNOCOR4 | SNOCOR5 | SNOCOR6 | SNOCOR7 | SNOCOR BOUNDARY |
| Copper (T) | ug/L | 0.5 | 8.7 | 5.45 | 1.45 | 6.05 | 9.34 | 2 | 0.1 | 0.05 | 0.1 | 0.1 | 294 | 2.91 | 3.61 | 31.3 | 8.82 |
| Iron (T) | ug/L | 10 | 3840 | 364 | 504 | 80 | 1150 | 100 | 5 | 1 | 5 | 5 | 142000 | 173 | 819 | 14000 | 3320 |
| Lead (T) | ug/L | 0.2 | 25.5 | 1.94 | 2.59 | 3.2 | 9.61 | 0.4 | 0.02 | 0.005 | 0.02 | 0.02 | 2520 | 1.75 | 10.3 | 142 | 24.2 |
| Lithium (T) | ug/L | 2 | 2 | *<2.0* | *<2.0* | *<2.0* | *<2.0* | 10 | 0.5 | 0.5 | 0.5 | 0.5 | 28 | *<0.50* | *<0.50* | 5.72 | 0.87 |
| Magnesium (T) | ug/L | 50 | 1040 | 150 | 148 | 153 | 402 | 5000 | 250 | 10 | 250 | 250 | 22400 | *<250* | 257 | 2950 | 630 |
| Manganese (T) | ug/L | 1 | 35.4 | 6 | 16.3 | 3 | 14.2 | 2 | 0.1 | 0.05 | 0.1 | 0.1 | 1490 | 14.4 | 11.9 | 116 | 31.8 |
| Molybdenum (T) | ug/L | 1 | *<1.0* | *<1.0* | *<1.0* | *<1.0* | *<1.0* | 1 | 0.05 | 0.05 | 0.05 | 0.05 | 11.1 | 0.069 | 0.109 | 1.02 | 0.131 |
| Nickel (T) | ug/L | 1 | 3.4 | *<1.0* | *<1.0* | *<1.0* | *<1.0* | 2 | 0.1 | 0.02 | 0.1 | 0.1 | 56.5 | 0.64 | 0.423 | 8.56 | 1.33 |
| Potassium (T) | ug/L | 50 | 698 | 103 | 123 | 77 | 223 | 5000 | 250 | 10 | 250 | 250 | 9700 | 360 | 185 | 1830 | 280 |
| Selenium (T) | ug/L | 0.1 | *<0.10* | *<0.10* | *<0.10* | *<0.10* | *<0.10* | 0.8 | 0.04 | 0.04 | 0.04 | 0.04 | 1.08 | *<0.040* | *<0.040* | 0.14 | *<0.040* |
| Silicon (T) | ug/L | 100 | 2710 | 236 | 239 | *<100* | 482 | 1000 | 50 | - | 50 | 50 | 35300 | 118 | - | 6550 | 1000 |
| Silver (T) | ug/L | 0.02 | *<0.020* | *<0.020* | 0.027 | *<0.020* | *<0.020* | 0.2 | 0.01 | 0.005 | 0.01 | 0.01 | 0.37 | *<0.010* | 0.0068 | 0.115 | 0.017 |
| Sodium (T) | ug/L | 50 | 1730 | 270 | 608 | 936 | 1040 | 5000 | 250 | 10 | 250 | 250 | 29500 | 570 | 1030 | 5340 | 670 |
| Strontium (T) | ug/L | 1 | 24.7 | 2.2 | 3.1 | 3 | 8.8 | 1 | 0.05 | 0.05 | 0.05 | 0.05 | 552 | 2.89 | 8.83 | 59.1 | 15.3 |
| Sulfur (T) | ug/L | 3000 | *<3000* | *<3000* | *<3000* | *<3000* | *<3000* | 12000 | 600 | - | 600 | 600 | 25700 | *<600* | - | 1530 | *<600* |
| Thallium (T) | ug/L | 0.01 | 0.02 | *<0.010* | *<0.010* | *<0.010* | *<0.010* | 0.04 | 0.002 | 0.002 | 0.002 | 0.002 | 0.23 | *<0.0020* | 0.0033 | 0.042 | 0.0093 |
| Tin (T) | ug/L | 5 | *<5.0* | *<5.0* | *<5.0* | *<5.0* | *<5.0* | 4 | 0.2 | 0.2 | 0.2 | 0.2 | *<4.0* | *<0.20* | *<0.20* | 0.35 | *<0.20* |
| Titanium (T) | ug/L | 5 | 73.4 | 6.3 | *<5.0* | *<5.0* | 9.5 | 40 | 2 | 0.5 | 2 | 2 | 622 | 2.3 | 8.45 | 124 | 22.8 |
| Uranium (T) | ug/L | 0.1 | 0.11 | *<0.10* | *<0.10* | *<0.10* | *<0.10* | 0.1 | 0.005 | 0.002 | 0.005 | 0.005 | 1.2 | *<0.0050* | 0.0119 | 0.208 | 0.0246 |
| Vanadium (T) | ug/L | 5 | *<5.0* | *<5.0* | *<5.0* | *<5.0* | *<5.0* | 4 | 0.2 | 0.2 | 0.2 | 0.2 | 41.9 | 0.23 | 0.4 | 7.33 | 1.1 |
| Zinc (T) | ug/L | 5 | 11.4 | 11.4 | 6.2 | 8.5 | 12.7 | 20 | 1 | 0.1 | 1 | 1 | 213 | 12.6 | 5.45 | 67.5 | 11.9 |
| Zirconium (T) | ug/L | 0.1 | 0.95 | *<0.10* | *<0.10* | *<0.10* | 0.12 | 2 | 0.1 | - | 0.1 | 0.1 | 3.6 | *<0.10* | - | 3.29 | 0.15 |

**Date:** 24/02/2020

**Snow Corer Radius = 4.1 cm**

**SNOCOR 5**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 11 | SWE | 91 | 4806 | 1670 | 35% | 31.6227 |
| 2 | 22 | SWE | | | | | |
| 3 | 21 | SWE | | | | | |
| E1 | 21 | SWE | | | | | |
| E2 | 16 | SPD | | | | | |
| E3 | 20 | SPD | | | | | |
| W1 | 18 | SPD | | | | | |
| W2 | 23 | SPD | | | | | |
| W3 | 21 | SPD | | | | | |




**SNOCOR 4**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 40 | SWE | 89 | 2038 | 1505 | 74% | 65.71418 |
| 2 | 49 | SWE | | | | | |
| 3 | 58 | SPD | | | | | |
| E1 | 55 | SPD | | | | | |
| E2 | 61 | SPD | | | | | |
| E3 | 54 | SPD | | | | | |
| W1 | 55 | SPD | | | | | |
| W2 | 54 | SPD | | | | | |
| W3 | 58 | SPD | | | | | |

**SNOCOR 6**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 5 | SWE | 76 | 1741 | 1692 | 97% | 73.87933 |
| 2 | 5 | SWE | | | | | |
| 3 | 3 | SWE | | | | | |
| E1 | 7 | SWE | | | | | |
| E2 | 12 | SWE | | | | | |
| E3 | 11 | SWE | | | | | |
| W1 | 13 | SWE | | | | | |
| W2 | 12 | SWE | | | | | |
| W3 | 8 | SWE | | | | | |
| W4 | 15 | SWE | | | | | |

**SNOCOR 7**

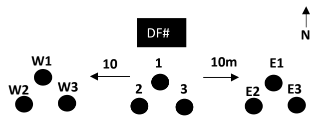
| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 55 | SWE | 103 | 2359 | 1610 | 68% | 70.29889 |
| 2 | 48 | SWE | | | | | |
| 3 | 45 | SPD | | | | | |
| E1 | 45 | SPD | | | | | |
| E2 | 44 | SPD | | | | | |
| E3 | 41 | SPD | | | | | |
| W1 | 44 | SPD | | | | | |
| W2 | 47 | SPD | | | | | |
| W3 | 39 | SPD | | | | | |

**SNOCOR Boundary**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 17 | SWE | 174 | 3985 | 1355 | 34% | 59.16459 |
| 2 | 17 | SWE | | | | | |
| 3 | 18 | SWE | | | | | |
| E1 | 21 | SWE | | | | | |
| E2 | 23 | SPD | | | | | |
| E3 | 23 | SPD | | | | | |
| W1 | 22 | SPD | | | | | |
| W2 | 14 | SPD | | | | | |
| W3 | 19 | SPD | | | | | |

**Date:** 20/04/2020

**Snow Corer Radius = 4.1 cm**




**SNOCOR 5**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 7 | SWE | 49 | 2588 | 2380 | 92% | 45.06707 |
| 2 | 13 | SWE | | | | | |
| 3 | 5 | SWE | | | | | |
| E1 | 5 | SWE | | | | | |
| E2 | 6 | SWE | | | | | |
| E3 | 8 | SWE | | | | | |
| W1 | 2 | SWE | | | | | |
| W2 | 3 | SWE | | | | | |
| W3 | 8 | SPD | | | | | |

**SNOCOR 4**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE | |
|---|---|---|---|---|---|---|---|---|
| 1 | 55 | SWE | 113 | 5968 | 3360 | 56% | 63.62411 | Comment |
| 2 | 58 | SWE | | | | | | |
| 3 | 58 | SPD | | | | | | |
| E1 | 55 | SPD | | | | | | |
| E2 | 64 | SPD | | | | | | |
| E3 | 63 | SPD | | | | | | |
| W1 | 65 | SPD | | | | | | |
| W2 | 71 | SPD | | | | | | |
| W3 | 73 | SPD | | | | | | |

**SNOCOR 6**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 6 | SWE | 45 | 2376 | 680 | 29% | 12.87631 |
| 2 | 9 | SWE | | | | | |
| 3 | 10 | SWE | | | | | |
| E1 | 6 | SWE | | | | | |
| E2 | 6 | SWE | | | | | |
| E3 | 8 | SWE | | | | | |
| W1 | 10 | SPD | | | | | |
| W2 | 7 | SPD | | | | | |
| W3 | 10 | SPD | | | | | |

**SNOCOR 7**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 16 | SWE | 63 | 3327 | 1330 | 40% | 25.18454 |
| 2 | 11 | SWE | | | | | |
| 3 | 13 | SWE | | | | | |
| E1 | 9 | SWE | | | | | |
| E2 | 14 | SWE | | | | | |
| E3 | 7 | SPD | | | | | |
| W1 | 14 | SPD | | | | | |
| W2 | 14 | SPD | | | | | |
| W3 | 14 | SPD | | | | | |

**SNOCOR Boundary**

| Sample | Depth (cm) | SPD/SWE | Total Depth (cm) | Snow Volume (cm3) | Total Mass (g or ml) | Snow Density | SWE |
|---|---|---|---|---|---|---|---|
| 1 | 15 | SWE | 52 | 2746 | 970 | 35% | 18.36767 |
| 2 | 15 | SWE | | | | | |
| 3 | 22 | SWE | | | | | |
| E1 | 9 | SPD | | | | | |
| E2 | 16 | SPD | | | | | |
| E3 | 30 | SPD | | | | | |
| W1 | 18 | SPD | | | | | |
| W2 | 8 | SPD | | | | | |
| W3 | 5 | SPD | | | | | |

**Snow Density Survey - On Site**

Sampler: JAB/GL Date: 30/04/2020

| Location | Core | Depth (cm) | Mass (g) | Density (g/cm3) | Lat | Long |
|---|---|---|---|---|---|---|
| SNODENS PILE 1 | 1 | 70 | 4460 | 0.303 | 539075 | 6990167 |
| | 2 | 57 | 4250 | 0.323 | 539075 | 6990167 |
| | 3 | 74 | 4550 | 0.303 | 539075 | 6990167 |
| SNODENS PILE 2 | 1 | 71 | 4660 | 0.336 | 539685 | 6990142 |
| | 2 | 65 | 4490 | 0.332 | 539676 | 6990136 |
| | 3 | 90 | 5280 | 0.356 | 539665 | 6990136 |
| SNODENS PAD 1 | 1 | 60 | 4270 | 0.312 | 540326 | 6988695 |
| | 2 | 65 | 4190 | 0.271 | 540339 | 6988704 |
| | 3 | 88 | 4730 | 0.282 | 540353 | 6988719 |
| SNODENS PAD 2 | 1 | 25 | 3450 | 0.313 | 541771 | 6988859 |
| | 2 | 15 | 3240 | 0.336 | 541760 | 6988876 |
| | 3 | 28 | 3660 | 0.379 | 541767 | 6988889 |
| SNODENS NAT 1 | 1 | | | | | |
| | 2 | | | | | |
| | 3 | | | | | |
| SNODENS NAT 2 | 1 | | | | | |
| | 2 | | | | | |
| | 3 | | | | | |

| Location | Average Density (g/cm3) |
|---|---|
| **Snow Pile** | 0.325687336 |
| **Snow Pad** | 0.315340895 |
| **Natural Ground** | #DIV/0! |

| Comments |
|---|
| Behind main camp, TSF densiy was too high (nearly ice) |
| 10m east |
| 10m east |
| CP1 snow dump |
| 10m west |
| 10m west |
| CP5, lots of ice from H19. density likely higher |
| |
| |
| Explo Camp pads |
| |
| |
| |
| |
| |
| |
| |
| |

**Snow Density Survey - On Site**

Sampler: JB/GL     Date: 2020-04-30

| Location | Core | Depth (cm) | Mass (g) Kg | Density (g/cm3) | Lat | Long | Comments |
|---|---|---|---|---|---|---|---|
| SNODENS PILE 1 | 1 | 70 | 4.46 | | 539075 | 6990167 | Behind main camp |
| | 2 | 57 | 4.25 | | " | " | 10 m west |
| | 3 | 74 | 4.55 | | " | " | 10 m East (GPS too low resolution) |
| SNODENS PILE 2 | 1 | 71 | 4.66 | | 0539685 | 6990142 | CP1 Snow Dump |
| | 2 | 65 | 4.49 | | 539676 | 6990136 | |
| | 3 | 90 | 5.28 | | 539665 | 6990136 | |
| SNODENS PAD 1 | 1 | 60 | 4.27 | | 540321 | 6988665 | CP5 |
| | 2 | 65 | 4.19 | | 540339 | 6988704 | CP5 Dam N (Hit ice?) |
| | 3 | ~~88~~ (88) | 4.73 | | 540353 | 6988794 | CP5 (Hit ice?) |
| SNODENS PAD 2 | 1 | 25 | 3.45 | | 541771 | 6968859 | Explo Camp |
| | 2 | 15 | 3.24 | | 541760 | 6955876 | |
| | 3 | 28 | 3.66 | | 541767 | 6988559 | |
| SNODENS NAT 1 | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| SNODENS NAT 2 | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |

| Location | Average Density (g/cm3) |
|---|---|
| Snow Pile | #DIV/0! |
| Snow Pad | #DIV/0! |
| Natural Ground | #DIV/0! |

TSF high density, could not core through.

CP5 - Lots of ice from H2O.. will need > Avg than core shows

Also not much packing