Appendix G-1

AEMP/EEM report

NUQSANA GOLDER
ENGINEERING AND ENVIRONMENTAL INC.

REPORT

Cycle 1 Environmental Effects Monitoring Report and 2018 Aquatic Effects Monitoring Program Annual Report

Agnico Eagle Mines Limited – Meliadine Gold Mine

Submitted to:

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Meliadine Project
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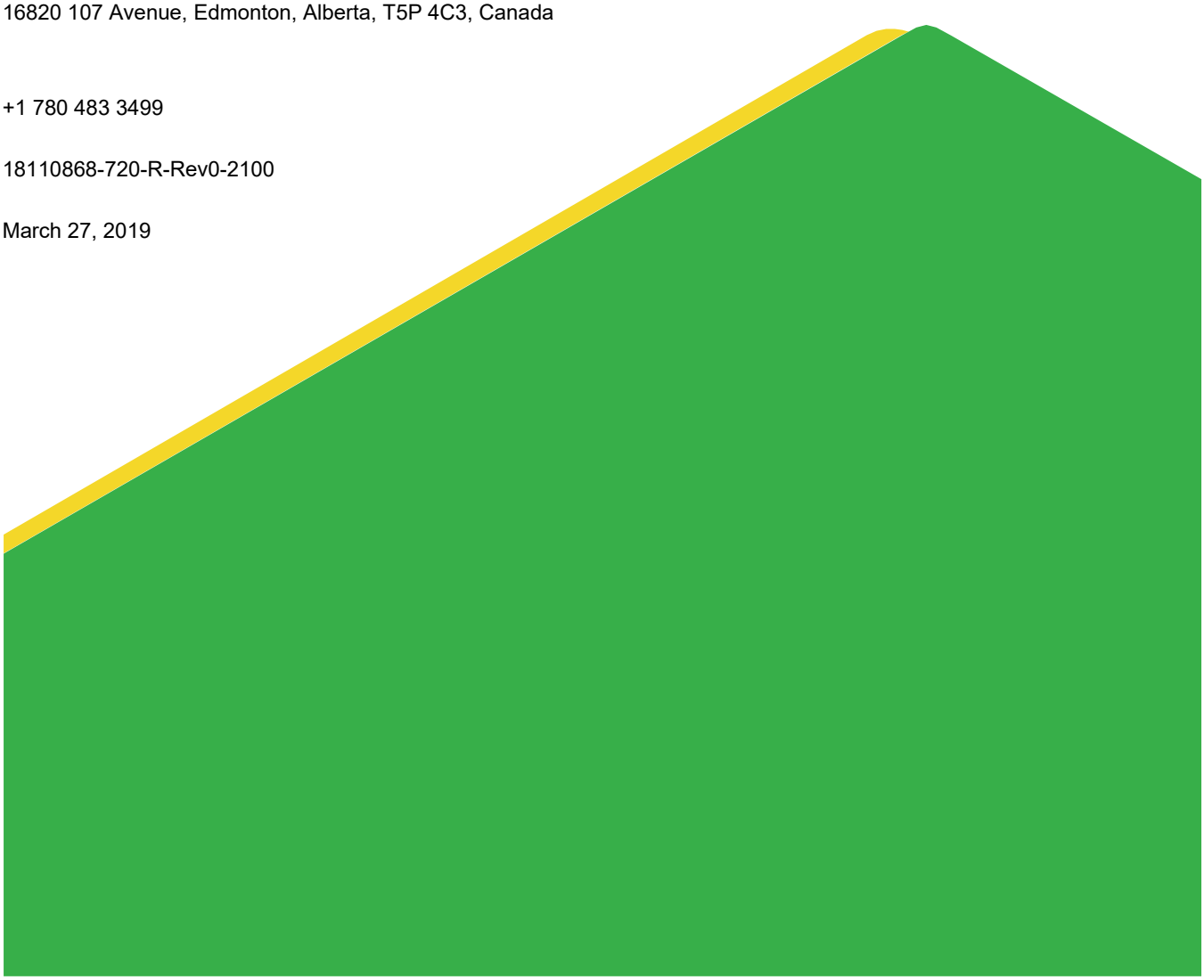
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Plain Language Summary

Overview

The Meliadine Gold Mine (Mine) is located in the Kivalliq District of Nunavut near the western shore of Hudson Bay, in Northern Canada, approximately 25 km north of Rankin Inlet. Pre-construction activities were completed at the Mine between January 2015 and June 2017, and construction activities were initiated in July 2017. Dewatering of Lake H17 occurred in August to October 2016 to create Collection Pond 1 (CP1), with dewatering effluent discharged into the narrows between the east and west/south basins of Meliadine Lake. The first mine effluent discharge through the permanent diffuser (CP1 diffuser) into the east basin of Meliadine Lake occurred from June to September 2018.

Upon the discharge of dewatering effluent to Meliadine Lake, the Mine became subject to the Metal and Diamond Mining Effluent Regulations (MDMER). Under the MDMER, the Mine is required to conduct Environmental Effects Monitoring (EEM) studies, the results of which are used by Environment and Climate Change Canada (ECCC) to assess the effectiveness of the effluent regulations by evaluating effects on fish, fish habitat, and use of fisheries resources by humans.

The original objective of the Cycle 1 EEM study was to assess the effect of the dewatering discharge from Lake H17 on the benthic invertebrate community and fish population health in Meliadine Lake. In their comments on the EEM study design, the ECCC recommended that the EEM Near-field exposure area be relocated to better capture the effects of effluent release from the new permanent CP1 diffuser, which became operational in 2018. Therefore, the EEM Near-field area was relocated and is now aligned with the AEMP Near-field area. A plume delineation study was also conducted during the discharge period to describe effluent mixing in the Near-field area. The biological monitoring studies in 2018 included a benthic invertebrate community survey and a small-bodied fish health survey, with supporting water and sediment quality data collection.

The Aquatic Effects Monitoring Program (AEMP) is a requirement of the Type A Water Licence (2AM-MEL-1631, Part I, Item 3). The AEMP is intended to function as an integrated monitoring program, which considers pathways to potential effects of the Mine on the aquatic environment, including changes in surface water quality, sediment quality, lower trophic communities, fish habitat, and fish health due to release of mine water, physical alteration of watersheds, and air emissions during construction, operations, and closure. The AEMP was also designed to incorporate EEM requirements of the MDMER throughout the life of the Mine, with supplemental components included to fulfill the additional conditions and requirements of the Water Licence. Beginning in 2018, the Cycle 1 EEM biological monitoring program was conducted concurrently with the AEMP.

There are two distinct programs in the AEMP for the Meliadine Mine: the Meliadine Lake study and the Peninsula Lakes study. The Meliadine Lake study was designed around the key aspects of the EEM program, with the study design for the benthic invertebrate community survey and the fish population health survey based on the EEM requirements. The core components of the Meliadine Lake study are water quality, sediment quality, benthic invertebrate community, and fish health and fish tissue chemistry. A targeted plankton study was also included to investigate the potential for plankton as a useful monitoring tool to support interpretation of potential Mine effects on the aquatic environment. Whereas the Cycle 1 EEM study included two sampling areas in Meliadine Lake: Near-field area and Reference Area 1, the AEMP includes two exposure areas (Near-field and Mid-field areas) and up to three reference areas (Reference Areas 1, 2, and 3). The Peninsula Lakes study was

designed to detect potential indirect effects from deposition of aerial emissions or alteration of watersheds. Water quality is the core component of the Peninsula Lakes study, with the intent to add biological studies if the water quality results suggest Mine-related changes have occurred.

Data and results presented in this report were collected as per the approved AEMP and Cycle 1 EEM study designs for the Mine. This report documents data collected in 2018, with a detailed evaluation of all data collected from 2015 to 2018, and was designed to address the reporting requirements for both the EEM and the AEMP. This is the first combined AEMP/EEM interpretive report for the Mine, and the first evaluation of effects since the CP1 diffuser became operational.

This report also presents normal ranges for water and sediment quality parameters, benthic invertebrate community variables and phytoplankton variables including chlorophyll *a*. The normal range is intended to estimate the range of natural spatial and temporal variability, and the more reference data incorporated into the calculation, the more accurate the estimate becomes. The normal ranges provided in this report are considered provisional due to the limited sample sizes used in the calculations for some components. These normal ranges may be re-defined in future reports to allow for the inclusion of additional monitoring data from the reference areas.

Mine Development Updates

The mine plan proposes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine.

Water management activities that occurred in 2018 included transporting treated sewage effluent to CP1 (starting in November 2017), and initiation of mine effluent discharge through the CP1 diffuser to Meliadine Lake in June 2018. Water quality monitoring associated with the final discharge point MEL-14 and the receiving environment monitoring station above the CP1 diffuser (i.e., MEL-13) was conducted during the discharge period. The new freshwater intake was installed in winter 2018.

Water Quality

In 2018, water quality sampling was conducted in Meliadine Lake once during the ice cover season (March) and twice in the open water season (July and August) from up to 25 stations across five sampling areas. Beginning in the open-water season, four new stations were added in the Near-field area and four historical stations were discontinued. New stations in the Near-field area were selected based on the location of the CP1 diffuser, which was installed and became operational in 2018. Water quality monitoring was scheduled for four times in 2018, but the September water quality program was cancelled due to unsafe conditions that prevented safe access to sampling stations. Three peninsula lakes (i.e., Lakes A8, B7, and D7) were sampled during the open-water season (July and August), at three stations per lake. This report provides a summary of the water quality monitoring programs completed in 2018 at Meliadine Lake and at the Peninsula Lakes, analysis of data collected between 2015 and 2018, and an interpretation of the results per the requirements of the AEMP and EEM.

In general, water quality in Meliadine Lake in 2018 was characterized as consistent in temperature through the water column, well oxygenated, neutral to alkaline, clear water, low specific conductivity, soft water, oligotrophic (very low in nutrients), and very low in metals. This characterization was similar to previous AEMP monitoring years (i.e., 2015 to 2017) and baseline (pre-2015). Water quality data were analyzed to determine if there were differences between the two exposure areas (i.e., Near-field and Mid-field), and the pooled reference areas of Meliadine Lake. Differences in water quality were observed in the Near-field area compared to the Mid-field and

reference areas for the open water season for several conventional parameters (e.g., specific conductivity, hardness, TDS, and turbidity), major ions, nutrients (total Kjeldahl nitrogen), organic carbon and several total metals. Similar patterns among areas were observed during ice-covered conditions. Similar spatial patterns were observed in previous AEMP monitoring years (e.g., 2016 and 2018); however, for specific conductivity, hardness and major ions the relative difference in concentrations of chloride, magnesium, and sodium among areas appears to have increased in 2018, relative to 2016 and 2017.

The analysis of the 2018 water quality results included a visual comparison of 2018 and 2017 construction phase data to pre-construction phase data (i.e., 2015 and 2016) in the Near-field area, alongside an evaluation of trends in the Mid-field and reference areas. Increasing trends in the Near-field area over time and relative to trends over time in the reference areas, were observed for specific conductivity, hardness, TDS, major ions, TOC, DOC, total metals (i.e., aluminum, barium, lithium, and strontium). Concentrations of these parameters also fell outside of the normal range for the Near field area. Normal ranges were calculated using data collected during baseline conditions (i.e., 1995 to 2013) and from reference areas (2015 to 2018). The normal range was also exceeded for several of these parameters in the Mid-field area. The observed changes in water quality suggest a Mine-related effect on water quality in the Near-field and Mid-field areas. However, the effect is within the range of conditions predicted by the Final Environmental Impact Statement (FEIS) for the Mine, and all parameters were well below Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life.

Water quality in the Peninsula Lakes in 2018 was similar to water quality from previous AEMP monitoring years (i.e., 2015 to 2017). In these lakes, water quality is characterized as having consistent water temperature through the water column, being well oxygenated with neutral to alkaline pH, and oligotrophic to mesotrophic in trophic status (of low to moderate level of productivity). Concentrations of water quality parameters in Peninsula Lakes remained below CWQGs for all parameters. Water quality in the Peninsula Lakes was outside of the normal range for a number of total metals; however, water quality was generally consistent with FEIS predictions.

A visual analysis to evaluate potential changes in water quality over time was conducted for the Peninsula Lakes, with the purpose of comparing 2018 construction phase data to pre-construction phase data (i.e., 2016 to 2017). Increasing trends in each consecutive year were observed for reactive silica (Lake A8), dissolved phosphorus (Lake B7 and D7), total aluminum (Lake A8 and B7), arsenic (Lake A8), and molybdenum (Lake D7), relative to previous AEMP monitoring years. A step-increase in concentrations in 2018 (relative to previous AEMP monitoring years) was observed for total manganese (Lake A8 and D7), total boron, lithium, and strontium (Lake B7), and total vanadium (Lake B7 and D7). However, given the limited dataset, there is uncertainty associated with trend detection, and potential sources of the temporal trends are not identified in this report.

Sediment Quality

Sediment quality sampling was conducted in Meliadine Lake concurrently with benthic invertebrate sampling. Concentrations of arsenic, chromium, and copper exceeded the Canadian Sediment Quality Guidelines (SQG) in 2018, as also observed under baseline conditions. These guidelines include two categories: Interim Sediment Quality Guidelines (ISQG) and Probable Effect Levels (PEL). ISQG represent the concentrations below which adverse effects on benthic organism are expected to occur rarely, and PEL represents the concentrations above which adverse effects are probable. Comparisons to SQGs are used to assess the potential for adverse effects to aquatic biota, but do not indicate that actual effects may occur, because these guidelines apply Canada-wide and do not necessarily account for site-specific factors, such as the natural geology of the study area. Thus, guideline exceedances can be indicative of naturally elevated concentrations due to site-specific factors, and are not necessarily mine-related.

Specifically, arsenic concentrations in the Near-field area exceeded the ISQG and concentrations at four of the five stations also exceeded the PEL. For chromium and copper, sediments at all five Near-field stations were above the ISQGs but were below their respective PELs. In the Mid-field area, arsenic and copper concentrations exceeded ISQG at the five stations sampled in 2018 but did not exceed PEL. Chromium concentrations were also above the ISQG but below the PEL at four of the five stations sampled in the Mid-field Area. In Reference Area 1, only one out of five samples exceeded the ISQG for arsenic and chromium, whereas for copper concentrations at three of the five stations were above the ISQG. In Reference Area 3, ISQGs were exceeded at four of the five stations sampled for arsenic and three of the five stations for copper. Other than the above exceptions, concentrations of metals and metalloids at exposure and reference stations sampled in 2018 were below sediment quality guidelines.

As observed in previous years, the reference area sediments had significantly more sand and the Near-field area sediments had significantly more silt. As proportion of fine sediment in a sample can influence the total concentration of metals, the sediment chemistry data were normalized to the percent of fines before evaluation of statistical comparisons of areas of Meliadine Lake, and calculation of normal ranges for Meliadine Lake. Percentages of silt and sand did not differ significantly between the Mid-field and pooled reference areas.

Normalized arsenic concentrations were higher in the Near-field area compared to the pooled reference areas. Both Near-field and Mid-field areas had higher concentrations of normalized cadmium relative to the pooled reference areas. The Mid-field area had significantly higher total organic carbon relative to the other areas and had greater normalized concentrations of chromium and copper relative to the Near-field and pooled reference area concentrations.

Differences between exposure and reference areas were mainly associated with natural variability, which was also observed in 2015 and 2016, prior to the Mine effluent discharge. For metals above sediment quality guidelines in the Near-field area, concentrations in 2018 were lower than those reported under baseline conditions in 2015 and 2016.

Benthic Invertebrate Community

Benthic invertebrates are small animals with no backbones that live within sediments, or on the sediment surface, for all or part of their life cycles, and are an integral part of Arctic ecosystem food webs. In August 2018, benthic invertebrate community sampling was conducted in Meliadine Lake in the two exposure areas (Near-field and Mid-field), and two reference areas (Reference Area 1 and 3). Reference Area 2 was not sampled due to logistical and weather limitations. This report summarizes benthic invertebrate community data obtained in 2018, analyses the 2018 data and compares to data collected in 2015 and 2016, and interprets the results as per the requirements of the AEMP and EEM programs.

Because the Near-field and reference areas were found to have different substrates in previous sampling programs, a Sediment Reconnaissance Survey was conducted in July 2018 to further investigate suitable and comparable stations for future benthic invertebrate and sediment sampling. New stations were selected to maintain alignment with water quality, and to avoid excessive sampling effort in retrieving acceptable grab samples. Four new Near-field stations and two new Mid-field stations were selected for the 2018 sediment sampling program.

Meliadine Lake benthic invertebrate communities were reflective of typical subarctic communities and were characterized by low densities and low to moderate family-level richness. Communities were dominated by the midge family Chironomidae, with fingernail clams (Pisidiidae) subdominant. Snails (Gastropoda) were observed

in the Near-field area at higher proportions than in other areas, and amphipods were only present outside of the Near-field area, which likely reflects differences in habitat between the Near-field area and other sampling areas, as a result of taxon-specific habitat preferences.

To assess the potential impacts from the Mine effluent discharge for the Cycle 1 EEM study, EEM benthic invertebrate community comparisons were conducted at the family level to detect differences between the Near-field area and Reference Area 1. No statistically significant differences were identified between the Near field area and Reference Area 1 for the EEM effect endpoints and supporting endpoints evaluated in the EEM study.

The 2018 AEMP data analysis compared data collected from the two exposure areas to two reference areas through statistical and visual comparisons, to evaluate potential changes in benthic invertebrate communities due to changes in water and sediment quality. Comparisons were made at the lowest taxonomic level. A significant difference was found between sampling areas for total invertebrate density but not for total richness. Density was found to be significantly lower in the Near-field area compared to the pooled reference areas. No significant differences in density were detected between the Mid-field area and the pooled reference areas, or between the two reference areas. Total richness values were similar among the Near-field area, Mid-field area, and Reference Area 1; richness was higher in Reference Area 3. Total density was lower in the Near-field area compared to Reference Area 1, but both areas had similar family level richness. Comparisons between the Near-field area and Reference Area 1 showed higher diversity, evenness, and dissimilarity in the Near-field area. Differences in these endpoints between the two sampling areas likely reflect pre-discharge differences in habitat, particularly differences in sediment substrate composition. Sediments sampled from the Near-field area had a higher proportion of fines (i.e., silt + clay) and less sand compared to the Mid-field and Reference areas. Thus, spatial differences in particle size distribution between the Near-field area and other sampling areas have the potential to confound the ability of the AEMP and EEM study comparisons made to evaluate whether benthic invertebrate communities were impacted by the Mine effluent discharge in 2018.

Overall, the 2018 AEMP results indicate that benthic community has not been measurably affected by potential Mine-related changes in water and sediment quality in Meliadine Lake. Benthic invertebrate variables in the Near-field area were within their respective normal ranges. Statistical comparisons among areas did identify some significant differences between Near-field and reference areas, but these appeared to reflect pre-discharge differences in sediment composition among areas.

Fish Population Health

The 2018 fish health survey was performed to meet EEM requirements and evaluated the potential differences in indicators of fish health (e.g., energy storage, energy usage, and survival) between the exposure area of Meliadine Lake (i.e., the Near-field area) and one reference area (i.e., Reference Area 1), resulting from the development and operations of the Mine. It was not intended to meet the specific requirements of the Mine's AEMP fish health or fish tissue components, because it did not include a second reference area, a large-bodied sentinel species (i.e., Lake Trout [*Salvelinus namaycush*) or a fish tissue chemistry component (as neither mercury or selenium concentrations in the mine effluent triggered a fish tissue study under the MDMER). Fish health and tissue chemistry sampling for the AEMP is currently scheduled for 2021.

Threespine Stickleback (*Gasterosteus aculeatus*) from the Near-field area were generally larger than those collected from Reference Area 1. Female Threespine Stickleback sampled from the Near-field area had greater condition than individuals sampled from Reference Area 1, which means that female fish from the Near-field area had higher body weight while adjusting for length of the fish. This finding suggests fish from the Near-field area

had increased energy storage; however, the magnitude of difference (i.e., 6%) was below the CES of 10%. A similar response was not observed in supporting energy storage endpoints (i.e., relative liver weight and relative egg weight). Statistical power was low for age and gonad weight comparisons, as age was not a strong predictor of fish size. Threespine Stickleback were encountered at multiple reproductive stages during sampling, which resulted in greater variability within the dataset.

The majority of Threespine Stickleback captured were infected by a tapeworm that competes with the host for available resources and decreases the energy allocated to storage and spawning. This represents a complicating factor that needs to be considered in the design and interpretation of future fish health and fish tissue monitoring programs.

Plankton

Plankton are small organisms that live suspended in the water column. Phytoplankton are small, free-floating algae and zooplankton are small, sometimes microscopic, animals (crustaceans) that eat algae.

Plankton monitoring was conducted as a targeted study in Meliadine Lake to characterize baseline conditions for the plankton community and to evaluate the usefulness of plankton as a potential long-term monitoring tool. Prior to the 2018 sampling program, the plankton study included sampling and analysis of depth-integrated nutrients, chlorophyll *a*, phytoplankton, and zooplankton over three years in Meliadine Lake (2015, 2016, and 2017) and two years in the Peninsula Lakes (2015 and 2016). Nutrients included total nitrogen (TN), total phosphorus (TP), nitrate, nitrite, ammonia, and orthophosphate. “Depth-integrated” means that nutrients were analyzied in a water sample that included water collected throughout the water column where plankton live.

Based on the data collected in 2017, it was determined that the phytoplankton dataset (i.e., chlorophyll *a*, and phytoplankton abundance, biomass, and composition of major taxonomic groups, along with supporting nutrient data collection) should be carried forward to future years for Meliadine Lake to further evaluate its usefulness as a monitoring tool. As a result, phytoplankton sampling during the summer season was carried forward for 2018 to evaluate potential changes in key monitoring endpoints (abundance, biomass, community composition) and to provide an indication of potential changes to trophic status in the lake. This report provides a summary of plankton data collected during the summer 2018 phytoplankton sampling program in Meliadine Lake, with a comparison against data collected during summer sampling events during the pre-construction and construction phases of the Mine (2015 through 2017). Phytoplankton sampling stations for 2018 were aligned with water quality stations, including those adopted in 2018.

Concentrations of most depth integrated nutrients were generally low in 2018 and consistent with concentrations observed in previous years (i.e., 2015 to 2017). The mean concentration of TN in the Near-field area was slightly higher than in previous years. Concentrations of TP in 2018 were generally above detection limits but were low and consistent with TP concentrations observed previously. Concentrations of nitrate, nitrite, ammonia, and orthophosphate were below detection limits in the majority of samples collected in 2018, consistent with previous years. Chlorophyll *a* concentrations in Meliadine Lake followed a similar spatial trend in 2018 as observed in previous years, with higher concentrations in the Near-field area than in the Mid-field and reference areas. Chlorophyll *a* concentrations had a significant, weak to moderately strong linear relationship with phytoplankton biomass. Given this relationship, the current results suggest chlorophyll *a* is a useful indicator of phytoplankton biomass in Meliadine Lake.

Higher phytoplankton abundance and biomass were observed in the Near-field area compared to other areas. Abundance, but not biomass, was higher in the Near-field area in 2018 than in previous years. Spatial trends were consistent with previous years; however, higher variability was observed among years in the reference areas with the inclusion of the 2018 data, which interfered with the evaluation of spatial trends in the phytoplankton community.

Based on the August phytoplankton dataset collected from Meliadine Lake since 2015, late-summer phytoplankton monitoring is considered a useful monitoring tool for Meliadine Lake to detect potential effects resulting from nutrient enrichment.

Conclusions

Results of the harmonized 2018 Cycle 1 EEM/AEMP study indicate that the Mine discharge to Meliadine Lake through the permanent diffuser (CP1 diffuser) has resulted in measurable effects on water quality and phytoplankton community, but no effects attributable to the Mine discharge were apparent on sediment quality, benthic invertebrates and small-bodied fish. The type of effect observed on water quality consisted of increased concentrations of TDS, major ions, nutrients, organic carbon and several total metals in the Near-field area compared to the reference areas. Concentrations of these parameters fell outside of the normal range, but remained well below Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life. The observed effects were within the range of conditions predicted by the FEIS for the Mine. A mild enrichment effect was detected on phytoplankton in the Near-field area, as well as a spatial trend of decreasing primary productivity with increasing distance form the Mine discharge. No Mine-related effects were detected in the peninsula lakes.

Comparison of the 2018 water quality and benthic invertebrate results to Low Action Levels resulted in no Action Levels being triggered for toxicological impairment or nutrient enrichment.

Study Limitations

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- John Papak on though Sarliaq for a week or two during the EEM
- Other Inuit workers through Golder Nuqsana

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ABBREVIATIONS AND ACRONYMS

Term	Definition
#	number
<	less than
>	greater than
=	equal
≤	less than or equal to
+	plus
±	plus or minus
×	multiply or by
$\bar{x}$	mean
Σ	sum
%SE	percent standard error of the mean
%v/v	percent volume by volume
α	alpha
AEMP	Aquatic Effects Monitoring Program
AENV	Alberta Environment
Agnico Eagle	Agnico Eagle Mines Limited
ALS	ALS Environmental Laboratory
ANCOVA	analysis of covariance
ANOVA	analysis of variance
β	beta
BCI	Bray-Curtis Index
BURB	Burbot (*Lota lota*)
BP	backpack electrofishing
BTEX	benzene, toluene, ethylbenzene, and xylene
C	concentration
CA	cortical alveolar
$CaCO_3$	calcium carbonate
CALA	Canadian Association for Laboratory Accreditation Inc.
CCME	Canadian Council of Ministers of the Environment
CDWQG	Canadian Drinking Water Quality Guidelines
CES	critical effect size
Chl	chlorophyll *a*
cont'd	continued
CPUE	catch-per-unit-effort
CW	carcass weight
CWQG-PAL	Canadian Water Quality Guidelines for the Protection of Aquatic Life
BIC	benthic Invertebrate Community
DF	dilution factor
DIN	depth-integrated nutrient

Term	Definition
DL	detection limit
DO	dissolved oxygen
DOC	dissolved organic carbon
dup	duplicate
CDWQG	Canadian Drinking Water Quality Guidelines
ECCC	Environment and Climate Change Canada
EEM	Environmental Effects Monitoring
e.g.	example
EWTP	Effluent Water Treatment Plant
EXP	Exposure Area
Feb	February
FEIS	Final Environmental Impact Statement
FEQG	Federal Environmental Quality Guideline
GE	germinal epithelium
Golder	Golder Associates Ltd.
GPS	global positioning system
GSI	gonadosomatic index
GVBD	germinal vesicle breakdown
GVM	germinal vesicle migration
ID	identifier
i.e.	that is
IQ	Inuit Qaujimajatuqangit
KIA	Kivalliq Inuit Association
K-S	Kolmogorov-Smirnov test
K-W	Kruskal Wallis test
IC25	inhibition concentration at 25%
INAC	Indigenous and Northern Affairs Canada
ISQG	Interim Sediment Quality Guideline
LC50	median lethal concentration
Log_{10}	logarithm base 10
LSI	liversomatic index
Ltd.	Limited
LTL	lowest taxonomic level
Max	maximum
MBq	megabecquerel
MDMER	Metal and Diamond Mining Effluent Regulations
MF	Mid-field
Min	minimum
Mine	Meliadine Gold Mine
ML	monthly load
MSE	mean squared error

Term	Definition
MT	minnow trap
Mann-Whitney	Mann-Whitney U Statistical Test
n	number / sample Size
N	North
NA	not applicable
NAD 83	North American Datum of 1983
Nd	not detected
NE	northeast
NF	Near-field
nMDS	Non-metric multidimensional scaling
NNST	Ninespine Stickleback (*Pungitius pungitius*)
No.	number
NS	not significant
NW	northwest
NWB	Nunavut Water Board
OM	oocyte maturation
OW	open-water
P	plankton sample
Pi	the proportion of the i^{th} taxon
P-value	probability value
P_{50}	50% probability
P	probability
PI	prediction interval
PI(λ)	80% prediction interval on Box-Cox transformed data
PEL	probable effect level
PG	primary growth
Percentile	2.5th and 97.5th percentiles
POF	postovulatory follicle complex
PVC	polyvinyl chloride
Q2	second quarter
Q4	fourth quarter
QA	quality assurance
QC	quality control
QA/QC	quality assurance and quality control
r	correlation coefficient
R	R statistic
R^2	coefficient of determination
RA	Reference Area
RA1	Reference Area 1
RA2	Reference Area 2
RA3	Reference Area 3

Term	Definition
Rank	rank transformed data
RDL	reported detection limits
REF	Reference Area
REP	replicate
RO	reverse osmosis
RPD	relative percent difference
S	south
Sc1	primary spermatocyte
Sc2	secondary spermatocyte
SD	standard deviation
SE	southeast
	standard error of the mean
SEI	Simpson's Evenness Index
Sg1	primary spermatogonia
Sg2	secondary spermatogonia
SiO_2	silicon dioxide
SLSC	Slimy Sculpin (*Cottus cognatus*)
SQ	sediment quality
SR	studentized residuals
SRSi	soluble reactive silica
SSD	statistically significant difference
SSW	south-southwest
SSWQO	Site-Specific Water Quality Objective
St	spermatid
STP	sewage treatment plant
SW	southwest
Sz	spermatozoa
TAP	Technical Advisory Panel
TDP	total dissolved phosphorus
TDS	total dissolved solids
TGD	Technical Guidance Document
THST	Threespine Stickleback (*Gasterosteus aculeatus*)
TKN	total Kjeldahl nitrogen
TN	total nitrogen
TOC	total organic carbon
TP	total phosphorus
TSI	Trophic State Index
TSS	total suspended solids
T-test	Two-sample t-test
Tukey's	Tukey's Honestly Significant Difference Test
TW	total weight

Term	Definition
UI	under ice
UTM	Universal Transverse Mercator
V	volume
Vtg1	primary vitellogenic
Vtg2	secondary vitellogenic
Vtg3	tertiary vitellogenic
W	west
WAD	weak acid dissociable
WL	Water Licence
WNW	west-northwest
WSW	west-southwest
YOY	young-of-the-year

UNITS OF MEASURE

Unit	Definition
Bq/L	becquerel per litre
°C	degrees Celsius
cells/L	number of cells per litre
cm	centimetre
cm^2	square centimetre
g	gram
ha	hectare
h/hr	hour
kg	kilogram
km	kilometre
km^2	square kilometres
m	metre
m^2	square metres
m^3	cubic meters
mg	milligram
mg $CaCO_3$/L	milligrams calcium carbonate per litre
mg/kg dw	milligram per kilogram dry weight
mg/kg ww	milligrams per kilogram wet weight
mg/L	milligrams per litre
mg-N/L	miligrams nitrogen per litre
mg-P/L	miligrams phosphorus per litre
mg/m^3	milligrams per cubic metre
mg-N/L	milligrams of nitrogen per litre
mg-P/L	milligrams of phosphorus per litre
mL	millilitre
mm	millimetre
m/s	metres per second
Mt	million tonnes
‘	minutes
org/L	organism per litre
org/m^2	organisms per square metre
org/m^3	organisms per cubic metre
%	percent
µg/g	microgram per gram

Unit	Definition
µg/g dw	microgram per gram dry weight
µg/g dw%Fines	microgram per grams dry weight normalized to percent-fines
µg/L	microgram per litre
µm	micrometre
µS/cm	microSiemens per centimetre
NTU	nephelometric turbidity units
s	seconds
“	
tpd	tonnes per day
y/yr	years

1.0 INTRODUCTION

The Meliadine Gold Mine (Mine) is located in the Kivalliq District of Nunavut near the western shore of Hudson Bay in Northern Canada (Figure 1.1-1) and is owned by Agnico Eagle Mines Limited (Agnico Eagle). The Mine is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4). The nearest community is Rankin Inlet (coordinates: 62°48'35''N; 092°05'58''W), which is approximately 25 km south of the Mine (coordinates: 63°01'03''N, 92°12'03''W).

The Mine is required to conduct aquatic monitoring under both federal and provincial legislation. This report documents the aquatic receiving environment monitoring activities as required by the Metal and Diamond Mining Effluent Regulations (MDMER; Government of Canada 2018) and the Type A Water Licence (2AM-MEL1631) (NWB 2016). These activities include the Environmental Effects Monitoring (EEM) program under the MDMER, and the Aquatic Effects Monitoring Program (AEMP) under the Water Licence. In 2018, the Cycle 1 EEM biological monitoring was conducted concurrently with the AEMP.

1.1 Background

1.1.1 EEM

The MDMER permits the deposit of mine effluent under certain conditions: 1) the effluent pH must be within a defined range, 2) the concentrations of deleterious substances must not exceed authorized limits as defined in the MDMER, and 3) the effluent must not be acutely lethal to rainbow trout. Mines that are subject to the MDMER are required to conduct EEM studies, the results of which are used by Environment and Climate Change Canada (ECCC) to assess the effectiveness of the effluent regulations by evaluating effects on fish, fish habitat, and use of fisheries resources by humans.

Effluent was discharged to Meliadine Lake from August to October 2016 during the dewatering of Lake H17, which triggered the Mine to be subject to the MDMER due to the volume of dewatering effluent discharged (i.e., more than 50 m^3/day). This discharge occurred through the discharge point MEL-D-1 into Meliadine Lake. The dewatering infrastructure was dismantled in October 2016 and a new diffuser was constructed in 2017 at a different location on Meliadine Lake, which will function as the permanent discharge structure for effluent discharge from the Mine. As per the MDMER, the first EEM study design was submitted to ECCC in August 2017, with the intention of conducting the required biological monitoring studies in August 2018 (Golder 2017a). Biological study components included benthic invertebrate community (BIC) survey and fish population survey, with supporting water and sediment quality.

1.1.2 AEMP

The AEMP is an annual requirement of the Type A Water Licence (2AM-MEL-1631; NWB 2016) and has been designed to function as an integrated monitoring program, which considers pathways to potential effects of the Mine on the aquatic environment (Golder 2016a). The AEMP was developed through consultation with communities, stakeholders, and regulatory authorities, and includes incorporation of Inuit Qaujimajatuqangit (IQ), plus scientific knowledge of aquatic ecosystems. The AEMP design incorporates EEM requirements of the MDMER throughout the life of the Mine, with supplemental components included to fulfill the additional conditions and requirements of the Water Licence (NWB 2016). The AEMP considers changes in surface water quality, sediment quality, lower trophic communities, fish habitat, and fish health due to release of Mine water, physical alteration of watersheds, and air emissions during construction, operations, and closure. The AEMP was also designed to provide an early warning system, whereby the results of aquatic monitoring are used to reduce or

prevent adverse environmental effects through a Response Framework and evaluation of the monitoring program at regular intervals.

As per the AEMP Design Plan, water quality monitoring in Meliadine Lake and the Peninsula lakes is an annual program, and monitoring of sediment quality, BIC, and fish health and fish tissue has been moved to the EEM schedule, because pre-operations data have been collected. The 2018 study components included water quality in Meliadine Lake and selected peninsula lakes (i.e., Lakes A8, B7, and D7), and sediment quality and BIC in Meliadine Lake. A special study on plankton was also conducted in Meliadine Lake to continue evaluating the usefulness of plankton as a monitoring tool for the AEMP.

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7040000 7020000 7000000 6980000 6960000

N

Diana River

Peter Lake

Meliadine Lake

Meliadine Lake

Parallel Lake

Mine Location

Meliadine River

Little Meliadine Lake (LML)

Char River

Thompson

Dry Cove

Atulik

Rankin Inlet

Rankin Inlet

Rankin Inlet

Hudson Bay

LEGEND

- DIRECTION OF FLOW AT WATERSHED OUTLET
- ALL-WEATHER ACCESS ROAD (AWAR)
- ROAD - NEW
- ROAD - EXISTING
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- TERRITORIAL PARK
- WATERCOURSE
- WATERBODY



0 8 16

1:400,000 KILOMETRES

REFERENCE(S)
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

LOCATION OF THE MELIADINE GOLD MINE

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	JN
PREPARED	MH
REVIEWED	RS
APPROVED	RS

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1.2 Objectives

The focus of this report is to evaluate the effects of the Mine on the aquatic receiving environment in Meliadine Lake under the current Water Licence 2AM-MEL-1631 (NWB 2016).

1.2.1 EEM

The original objective of the Cycle 1 EEM study was to assess the effect of the dewatering discharge form Lake H17 on the BIC and fish population health in Meliadine Lake. As such, the Cycle 1 EEM Study Design proposed that the exposure area for the EEM be located within the vicinity of MEL-D-1 (Golder 2017a). In their comments on the study design, ECCC recommended that the exposure area be relocated to assess the effects of the mine effluent discharge from the permanent discharge point (MEL-14) instead of the dewatering discharge (ECCC 2018). This recommendation considered that dewatering discharge from MEL-D-1 would have occurred two years before the 2018 biological monitoring study and that the effluent discharged from MEL-14 starting in 2018 would be a more concentrated effluent with a higher potential for adverse effects on the receiving environment. Therefore, the EEM Near-field exposure area was relocated to better capture the effects of effluent release from MEL-14 and is aligned with the AEMP Near-field area.

The Cycle 1 EEM study design was reviewed by the Technical Advisory Panel (TAP), which consisted of representatives from ECCC, Nunavut Water Board (NWB), and Indigenous and Northern Affairs Canada (INAC). Other recommendations and requirements identified by the TAP following their review of the Cycle 1 EEM study design (ECCC 2018) were addressed and incorporated into the Cycle 1 EEM Study and into this first interpretative report.

This report presents the results of the Cycle 1 EEM study, which consisted of the following components:

- effluent and water quality monitoring
- effluent sublethal toxicity testing
- a BIC survey
- a lethal small-bodied fish survey

In addition to describing the methods and results of each of the EEM study components, this report provides an interpretation of those results with regards to potentially Mine-related effects. The study design (Golder 2017a) and the implementation of the field survey and data analysis followed, where appropriate, the guidance and recommendations provided in the Metal Mining EEM Technical Guidance Document (TGD; Environment Canada 2012).

1.2.2 AEMP

The overall objective of the AEMP is to assess potential Mine-related effects on the aquatic ecosystem and to meet regulatory requirements outlined in the Type A Water Licence (2AM-MEL1631; NWB 2016) while also meeting commitments made during the environmental permitting process (see Table 1-1 in the AEMP Design Plan [Golder 2016a]). In addition, the AEMP was designed to meet the MDMER requirements.

The specific objectives of the AEMP for the Mine are as follows:

- to determine the short- and long-term effects of the Mine on the aquatic receiving environment;

- to evaluate the accuracy of predictions made in the Final Environmental Impact Statement (FEIS; Golder 2014a), including the final significance statements regarding impact to the aquatic ecosystem;
- to assess the efficacy of planned mitigation incorporated into the Project design; and
- to collect data required to identify the need for potential additional mitigation of Project effects within a management response framework.

The specific objectives of this report were to document 2018 data collection and detailed analyses for the core components of the AEMP that were sampled in 2018 (i.e., water quality, sediment quality, and BIC), and to present the findings of the special study on plankton community monitoring. This report also includes a comparison of previous data collected during the construction phase of the Mine (2015 through 2017). Recommendations and requirements identified by ECCC, INAC, and Kivalliq Inuit Association (KIA) following their review of the 2017 AEMP Annual Report were addressed and incorporated into the the 2018 AEMP study and this report.

1.3 Structure of Report

This report presents the results of both the Cycle 1 EEM and the 2018 annual AEMP. This combined EEM/AEMP report also includes an updated summary of data collected in 2015 to 2017 for water quality. The document is organized as follows:

- Executive Summary
- Acknowledgements
- Introduction (Section 1)
- Site Characterization (Section 2)
- Summary of Previous Biological Monitoring Studies (Section 3)
- Study Design Overview (Section 4)
- Supporting Environmental Data (Section 5)
- Water Quality – Meliadine Lake (Section 6)
- Water Quality – Peninsula Lakes (Section 7)
- Sediment Quality (Section 8)
- Benthic Invertebrate Community (Section 9)
- Fish Health (Section 10)
- Plankton Targeted Study (Section 11)
- Overall Summary and Conclusions (Section 12)

1.4 Concordance Table

The report was designed to clearly address the reporting requirements of both the EEM and the AEMP. To failitate the review process, a concordance table is provided to cross-reference EEM requirements and AEMP commitments with the appropriate report section number (Table 1.4-1).

Table 1.4-1: Concordance Table of EEM Requirements or AEMP Commitments

Item No.	EEM Requirement or AEMP Commitment	2018 EEM/AEMP Combined Report Section No.
EEM Requirement[(a)]		
12(1)(a)	a description of any deviation from the study design that occurred while the biological monitoring studies were being conducted and any impact that the deviation had on the studies;	Study Design Overview, Section 4.1, Table 4.1-1 Water Quality, Section 6.2.1 Sediment Quality, Section 8.2.1 Benthic Invertebrate Community, Section 9.2.1 Fish Health, Section 10.2
12(1)(b)	the latitude and longitude of sampling areas and a description of the sampling areas sufficient to identify the location of the sampling areas;	Site Characterization, Section 2.5, Table 2.5-1 Water Quality, Section 6.2.2.1, Table 6.2-1 Sediment Quality, Section 8.2.2.1, Table 8.2-1 Benthic Invertebrate Community, Section 9.2.1, Table 9.2-1 Fish Health, Appendix 10A
12(1)(c)	the dates and times when samples were collected;	Water Quality, Table 6.2-1, Appendix 6D Sediment Quality, Table 8.2-1, Appendix 8B Benthic Invertebrate Community, Table 9-1 Fish Health, Appendix 10A
12(1)(d)	the sample sizes;	Water Quality, Section 6.4.2.1, Table 6.4-3 and Table 6.4-5 Sediment Quality, Section 8.4.2.1, Table 8.4-5 Benthic Invertebrate Community, Section 9.2.2 Fish Health, Sections 10.4.2 and 10.4.3
12(1)(e)	the mean, median, standard deviation, standard error and minimum and maximum values in the sampling areas	Water Quality, Section 6.4.2.1, Table 6.4-3 and Table 6.4-5 Sediment Quality, Table 8.4-5 Benthic Invertebrate Community, Appendix 9D Fish Health, Table 10.4-3 and 10.4-6
12(1)(e)(i)	in the case of the study respecting fish population, effect indicators of growth, reproduction, condition and survival that include, if practicable, the length, total body weight and age of the fish, the weight of its liver or hepatopancreas and, if the fish are sexually mature, the egg weight, fecundity and gonad weight of the fish	Fish Health, Table 10.4-3 and 10.4-6

Table 1.4-1: Concordance Table of EEM Requirements or AEMP Commitments

Item No.	EEM Requirement or AEMP Commitment	2018 EEM/AEMP Combined Report Section No.
12(1)(e)(ii)	in the case of the study respecting the benthic invertebrate community, effect indicators of the total benthic invertebrate density, evenness index, taxa richness and, if the study is conducted in an area where it is possible to sample sediment, total organic carbon content of sediment and particle size distribution of sediment	Benthic Invertebrate Community, Appendix 9D
12(1)(e)(iii)	in the case of the study respecting fish tissue mercury, the effect indicator of the concentration of total mercury (wet weight) in the fish tissue	Not applicable. See Study Design Overview, Section 4.1
12(1)(e)(iv)	in the case of the study respecting fish tissue selenium, the concentration — in the muscle or whole body and, if practicable, in the ovaries or eggs — of total selenium (dry weight) reported in µg/g and the percentage of the moisture content of the sample	Not applicable. See Study Design Overview, Section 4.1
12(1)(f)	in the case of the study respecting the benthic invertebrate community, a calculation of the similarity index effect indicator	Benthic Invertebrate Community, Table 9-5 and Appendix 9D
12(1)(g)	an identification of the sex of the fish sampled and of the presence of any lesions, tumours, parasites or other abnormalities and, in the case of the study respecting fish tissue selenium, the type of fish tissue studied and the scientific rationale for the selection of that tissue	Fish Health, Appendix 10B, Table 10B-3 and Table 10B-5
12(1)(h)	a determination as to whether there is a statistically significant difference between the sampling areas for the calculations under subparagraphs (e)(i) to (iii) and paragraph (f) taking into consideration the information identified under paragraph (g), with the statistical comparison made separately and independently for each effect indicator	Benthic Invertebrate Community, Table 9-6 Fish Health, Section 10.4, Table 10.4-4 and Table 10.4-7
12(1)(i)	a statistical analysis of the results of the calculations under subparagraphs (e)(i) to (iii) and paragraph (g) that indicates the probability of correctly detecting an effect of a pre-defined size and the degree of confidence that can be placed in the calculations	Benthic Invertebrate Community, Table 9-5 Fish Health, Section 10.4, Table 10.4-4 and Table 10.4-7
12(1)(j)	for an effect indicator referred to in paragraph (e) with an assigned critical effect size, a comparison of the magnitude of the effect — calculated in accordance with subsection (2) or (3), as the case may be — to its critical effect size	Benthic Invertebrate Community, Table 9-5 Fish Health, Section 10.4, Table 10.4-4 and Table 10.4-7

Table 1.4-1: Concordance Table of EEM Requirements or AEMP Commitments

Item No.	EEM Requirement or AEMP Commitment	2018 EEM/AEMP Combined Report Section No.
12(1)(k)	any supporting data, including raw data, for the information provided under paragraphs (e) to (j)	Benthic Invertebrate Community, Section 9.4.1, Section 9.4.2.1, and Appendix 9D Fish Health, Appendix 10A, Appendix 10B
12(1)(l)	a description of any quality assurance or quality control measures that were implemented and the data related to the implementation of those measures	Water Quality, Section 6.3, Appendix 6A Sediment Quality, Section 8.3, Appendix 8A Benthic Invertebrate Community, Section 9.3 and Appendix 9C Fish Health, Section 10.3 and Appendix 10B
12(1)(m)	based on the information referred to in paragraphs (e) to (k), the identification of	-
12(1)(m)(i)	any effect on the fish population	Fish Health, Section 10.5, Table 10.5-1 and Table 10.5-2
12(1)(m)(ii)	any effect on the benthic invertebrate community	Benthic Invertebrate Community, Section 9.4.2.1, Section 9.5.1 and Appendix 9D
12(1)(m)(iii)	any effect on fish tissue from mercury	Not applicable. See Study Design Overview, Section 4.1
12(1)(n)	for an effect indicator with an assigned critical effect size, a statement as to whether the absolute value of the magnitude of the effect is equal to or greater than the absolute value of its critical effect size	Benthic Invertebrate Community, not applicable, Table 9-5 Fish Health, not applicable, Section 10.5
12(1)(o)	a summary of the results of effluent characterization, sublethal toxicity testing and water quality monitoring reported under paragraph 8(e) beginning on the day on which the mine becomes subject to section 7 of these Regulations	Overall Summary and Conclusions, Section 12.1
12(1)(p)	the conclusions of the biological monitoring studies, and a description of how those conclusions will impact the study design for subsequent biological monitoring studies, taking into account	Overall Summary and Conclusions, Section 12.1
12(1)(p)(i)	the results of any studies referred to in paragraph 10(f)	Summary of Previous Biological Monitoring Studies, Section 3.0
12(1)(p)(ii)	the presence of anthropogenic, natural or other factors that are not related to the effluent under study and that may reasonably be expected to contribute to any observed effect	Site Characterization, Section 2.6
12(1)(p)(iii)	the results of the statistical analysis conducted under paragraphs (h) and (i)	Benthic Invertebrate Community, Table 9-5 and Table 9-6 Fish Health, Section 10.4, Table 10.4-4 and Table 10.4-7

Table 1.4-1: Concordance Table of EEM Requirements or AEMP Commitments

Item No.	EEM Requirement or AEMP Commitment	2018 EEM/AEMP Combined Report Section No.
12(1)(p)(iv)	the data referred to in paragraph (l)	Water Quality, Appendix 6A Sediment Quality, Appendix 8A Benthic Invertebrate Community, Appendix 9C Fish Health, Appendix 10B
12(1)(q)	the month in which the next biological monitoring studies will start, if any biological monitoring studies are required	Overall Summary and Conclusions, Section 12.3.1
12(1)(r)	the date when the next interpretative report is required to be submitted or would be required to be submitted but for the application of subsection 16(3)	Overall Summary and Conclusions, Section 12.3.1
12(2)	For the purpose of the study respecting fish population, the magnitude of the effect for an effect indicator is to be calculated using the following formula: (A – B)/B × 100 where A is (a) for the purpose of the age indicator, the mean value for the indicator in the exposure area, and (b) for the purpose of the indicators other than age, the adjusted mean value — obtained using the analysis of covariance (ANCOVA) statistical test method — for the indicator in the exposure area; and B is (a) for the purpose of the age indicator, the mean value for the indicator in the reference area, and (b) for the purpose of the indicators other than age, the adjusted mean value — obtained using the analysis of covariance (ANCOVA) statistical test method — for the indicator in the reference area.	Fish Health, Section 10.2.6

Table 1.4-1: Concordance Table of EEM Requirements or AEMP Commitments

Item No.	EEM Requirement or AEMP Commitment	2018 EEM/AEMP Combined Report Section No.
12(3)	For the purposes of the study respecting the benthic invertebrate community, the magnitude of the effect for an effect indicator is to be calculated using the following formula: (A – B)/C where A is the mean value for the indicator in the exposure area; B is the mean value for the indicator in the reference area; and C is the standard deviation for the indicator in the reference area.	Benthic Invertebrate Community, Section 9.2.4.5.2 and Table 9-5
AEMP Commitment[(b)]		
KIA 18 and 26	For the 2018 AEMP Annual Report, baseline and pre-construction statistics will be recalculated for the Near-field area, open-water conditions, using data from 2015 and 2016 only; statistics for the other areas will not be recalculated as all data used represent baseline conditions.	Water Quality, Appendix 6H
KIA 19	For the 2018 AEMP Annual Report, data from 1997, 1998, and 2008 will be reviewed and it will be determined if they should be included in the calculation of Normal Ranges of open-water and under-ice conditions in Meliadine Lake.	Water Quality, Appendix 6B
KIA 24	Action levels and the response framework will be provided in the 2018 AEMP Annual Report, based on the results of the 2017 AEMP Annual Report as the program moves from pre-construction to construction.	AEMP Action Level Assessment, Section 12.2
KIA 27	In 2018, updates will be made to the AEMP Design Plan with refined Action Levels (using baseline and pre-construction data) and a response framework. Data collected in 2018, the first full year of the Construction Phase, will be compared to these Action Levels, and the ecological relevance of each triggered parameter, if appropriate, will be discussed.	AEMP Action Level Assessment, Section 12.2
KIA 29	In the event that nutrient enrichment triggering a low Action Level is detected in 2018, and is attributed to effluent discharge from the diffuser, a response plan will be prepared during the appropriate time frame following the 2018 Annual Report.	AEMP Action Level Assessment, Section 12.2

Table 1.4-1: Concordance Table of EEM Requirements or AEMP Commitments

Item No.	EEM Requirement or AEMP Commitment	2018 EEM/AEMP Combined Report Section No.
INAC	INAC recommends that the annual report include a summary and discussion of the relevant AEMP results. Agnico Eagle committed to including a summary of the 2018 AEMP Annual Report findings within the annual report.	Executive Summary
ECCC 6	ECCC recommends that the Proponent identify reference areas with similar substrate to the Near-field exposure area. Agnico Eagle committed to providing the results of the 2018 sediment reconnaissance survey and the adjusted sediment sampling locations in the 2018 AEMP Annual Report.	Sediment Quality, Section 8.2.1 Benthic Invertebrate Community, Appendix 9A and Section 9.2.1
ECCC 7	Magnitude and direction of statistically significant differences between exposure and reference areas will be included in future reports when statistical results are presented.	Water Quality, Section 6.4.2.1.2, Table 6.4-3 and 6.4-4 Sediment Quality, Section 8.4.2.2, Table 8.4-6 Benthic Invertebrate Community, Table 9-5
ECCC 8	Normal Ranges will be recalculated and presented in the 2018 AEMP Annual Report. Inclusion of pre-2017 data from the Near-field exposure area in the calculation of the Normal Ranges will be evaluated and data will be excluded if determined to be different from reference area data.	Water Quality, Section 6.4.3 Sediment Quality, Section 8.4.4 Benthic Invertebrate Community, Section 9.2.4.4
ECCC 11	Further analysis of the water chemistry data for the pre-construction and construction phases will be completed for the 2018 AEMP Annual Report, and differences between areas and between mine phases will be identified, if any, and addressed in the 2018 report.	Water Quality, Section 6.4.5
ECCC 13	The magnitude of the difference in grain-size adjusted metal concentrations in sediment will be clarified in the 2018 AEMP Annual Report.	Sediment Quality, Section 8.4.2.2, Table 8.4-6
ECCC 14	The 2018 AEMP Annual Report will clarify what sediment data are included and excluded from the statistical analysis.	Sediment Quality, Section 8.4.2.2 and Appendix 8F
ECCC 17	ECCC recommends that the Proponent consider multivariate methods to assess the Bray-Curtis Index. NMDS multivariate analysis was used in the 2017 AEMP Annual Report and has been widely used in northern mining programs but following review of the 2018 benthic and supporting data, other methods, where appropriate, could be considered.	Benthic Invertebrate Community, Section 9.2.4.5.4
ECCC 19	Subsampling precision in the benthic invertebrate community samples will be evaluated in the 2018 AEMP Annual Report.	Benthic Invertebrate Community, Section 9.2.3 and Appendix 9B

Table 1.4-1: Concordance Table of EEM Requirements or AEMP Commitments

Item No.	EEM Requirement or AEMP Commitment	2018 EEM/AEMP Combined Report Section No.
ECCC 22	To support wholistic interpretations of fish tissue chemistry, a review of supporting data will be completed in future reports.	Not applicable – fish tissue chemistry was not collected this year
ECCC 24	The results for the plume delineation study will be incorporated into the discussion for the 2018 AEMP Annual Report.	Site Characterization, Section 2.5.3

a) Requirements for the first interpretative report as per the MDMER Schedule 5, Section 12.

b) Commitments made in response to comments made by reviewers on the 2017 AEMP Annual Report. References to the original comment are provided in the first column.

AEMP = Aquatic Effects Monitoring Program; EEM = Environmental Effects Monitoring; MDMER = Metal and Diamond Mining Effluent Regulations; No. = number.

1.5 References

Environment Canada. 2012. Metal Mining Technical Guidance for Environmental Effects Monitoring. National EEM Office, Ottawa, ON, Canada.

Environment and Climate Change Canada (ECCC). 2018. Metal Mining Effluent Regulations – Evaluation of 1st Environmental Effects Monitoring Study Design, Meliadine Gold Mine, NU. April 2018.

Golder 2014a. Final Environmental Impact Statement, Meliadine Gold Project. Nunavut. April 2017.

Golder. 2016b. Meliadine Gold Project, Nunavut. Aquatic Effects Monitoring Program (AEMP) Design Plan 6513-REP-03 Version 1. Prepared for Agnico Eagle Mines Limited, Rouyn Noranda, Quebec.

Golder 2017a. EEM Cycle 1 Study Design: Meliadine Gold Mine. Prepared for Agnico Eagle Mines Limited., Meliadine Division, Rankin Inlet, Nunavut. Document Number Doc635-1781142. August 2017.

Government of Canada. 2018. Metal and Diamond Mining Effluent Regulations. SOR/2002-222; current to 12 December 2018

NWB. 2016. Type A Water Licence No: 2AM-MEL1631. April 2016.

2.0 SITE CHARACTERIZATION

2.1 Environmental Setting

The Mine is located in the Kivalliq Region of Nunavut, near the western shore of Hudson Bay, Canada. Continuous permafrost underlies the ground surface and the terrain is gently rolling with a mean elevation of 65 m above sea level. Drumlins (i.e., glacial till) and eskers (i.e., gravel and sand) are among the dominant land forms within the region. The climate is characterized by long, cold winters and short, cool summers. Total annual precipitation is less than (<) 30 cm and strong winds are prevalent due to the openness of the landscape.

Given that low lying areas are poorly drained, the landscape is characterized by a series of interconnected shallow ponds and lakes. Local watersheds include Meliadine Lake and the Chickenhead and Control sub-watersheds that drain to Meliadine Lake, Meliadine River, and several smaller watersheds. Aquatic habitats support a variety of fish species, including Arctic char (*Salvelinus alpinus*), Arctic grayling (*Thymallus arcticus*), Burbot (*Lota lota*), Cisco (*Coregonus clupeaformis*), Lake trout (*Salvelinus namaycush*), Ninespine stickleback (*Pungitius pungitius*), Round whitefish (*Prosopium cylindraceum*), Slimy Sculpin (*Cottus cognatus*), and Threespine stickleback (*Gasterosteus aculeatus*). Dominant benthic invertebrates previously documented in Meliadine Lake include insects (mostly midges [Chironomidae]), mollusks (fingernail clams [Pisidiidae]), aquatic worms (Oligochaeta), and amphipods (shrimp-like crustaceans) (Golder 2013b).

The region supports some of Canada's largest caribou (*Rangifer tarandus groenlandicus*) herds during the calving season and summer, including the Qamanirjuaq Caribou Herd, which is an important food source for the Inuit. Carnivores such as gray wolf (*Canis lupis*) and polar bear (*Ursus maritimus*) are also found in the region, as are nesting and breeding migratory birds. Protected areas of the Kivalliq region include Arvia'juaq and Qikiqtaarjuk National Historic Site of Canada, East Bay Migratory Bird Sanctuary, Fall Caribou Crossing National Historic Site of Canada, Harry Gibbons Migratory Bird Sanctuary, Iqalugaarjuup Nunanga Territorial Park, Inuujarvik Territorial Park, McConnell River Migratory Bird Sanctuary, and part of the Thelon Wildlife Sanctuary.

Over 80% of the human population in the Kivalliq Region is Inuit. The area is sparsely populated, and the local economy is dependent on subsistence hunting, trapping, and fishing. Other activities in the area include mineral exploration, mining, construction, tourism, and government services.

2.1.1 Meliadine Lake

Meliadine Lake has a water surface area of approximately 107 km^2, a maximum length of 31 km. The lake features a highly convoluted shoreline and has 243 islands (Golder 2014a). Unlike most lakes, Meliadine Lake has two outflows that drain into Hudson Bay through two separate river systems (Figure 1.1-1). It has a drainage area of 560 km^2 upstream of its two outflows. The majority of drainage occurs via the Meliadine River, which originates at the southwest end of the lake. The Meliadine River flows for a total stream distance of 39 km through a series of waterbodies, until it reaches Little Meliadine Lake and then continues to flow to Hudson Bay. The second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diana River system (a stream distance of 70 km). At its mouth, the Diana River has a drainage area of 1,460 km^2.

Meliadine Lake has a long shoreline perimeter of 465 km (Golder 2014a). Meliadine Lake consists of three sub-basins: east, south, and west (Figure 2.5-1). The east basin of Meliadine Lake is 2,212 ha and contributes approximately 21% to the entire area of the 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.

This constriction may result in isolation of the east basin from the rest of the lake during winter, which may limit movement of fish (Golder 2014a). The west basin, which contains proposed Reference Areas 1 and 2, represents approximately 68% of the lake area and connects the east and south basins. The south basin of Meliadine Lake is 1,135 ha and contributes approximately 11% to the entire lake area (Golder 2014a). The southeast end of the south basin is generally shallow (less than 4 m deep), and the northwest sections feature more extensive areas of water deeper than 8 m.

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. Owing to the long shoreline perimeter and the shallow nature of the basins, the littoral zones (i.e., areas less than 6 m in depth) contribute approximately 66% and 72% of the east and south basins, respectively (Golder 2014a).

Substrate in Meliadine Lake is characterized by coarse materials, consisting of a boulder/cobble mix along the shallow areas close to shore. Transition areas, consisting of fine organic materials interspersed among cobble are common throughout most of the lake. Substrates within the deep sections of the lake are composed primarily of fine particulate organic material and silt (Golder 2014a).

2.1.2 Peninsula Lakes

Several small watersheds drain to Meliadine Lake from the peninsula between the south and east basins of Meliadine Lake. These peninsula watersheds comprise an extensive network of lakes, ponds, and interconnecting streams. The lakes within the peninsula are generally small (<90 ha in area) and shallow (between 2 and 5 m in maximum depth). They do not freeze to the bottom. They are connected to each other (and to Meliadine Lake) through short stream sections; however, they can often be isolated by limited flow during the summer/fall and frozen stream conditions during the winter.

Three peninsula lakes were selected for water quality monitoring as part of the AEMP: Lake A8, Lake B7, and Lake D7. These are headwater lakes in three different peninsula watersheds and are located close to the Mine footprint. Two of the lakes (Lakes B7 and D7) were previously fished by the Inuit during the winter (pers. comm. Wesley from Rankin Inlet Hunters and Trappers Organization). Some morphological characteristics of these peninsula lakes are provided in Table 2.1-1.

Table 2.1-1: Morphological Characteristics of AEMP Peninsula Lakes

Lake	Surface Area (ha)	Volume ($m^3 \times 10^3$)	Depth (m)		Total Shoreline Length (km)
			Mean	Maximum	
A8	89.7	1,419.3	1.6	4.2	7.5
B7	58.1	852.5	1.5	5.1	5.5[(a)]
D7	72.5	1,183.4	2.8	5.2	5.2

Source: Golder. 2009. Aquatic Baseline Synthesis Report.

(a) Includes shoreline length around two islands.

2.2 Mine Description and Summary of Activities from 2018

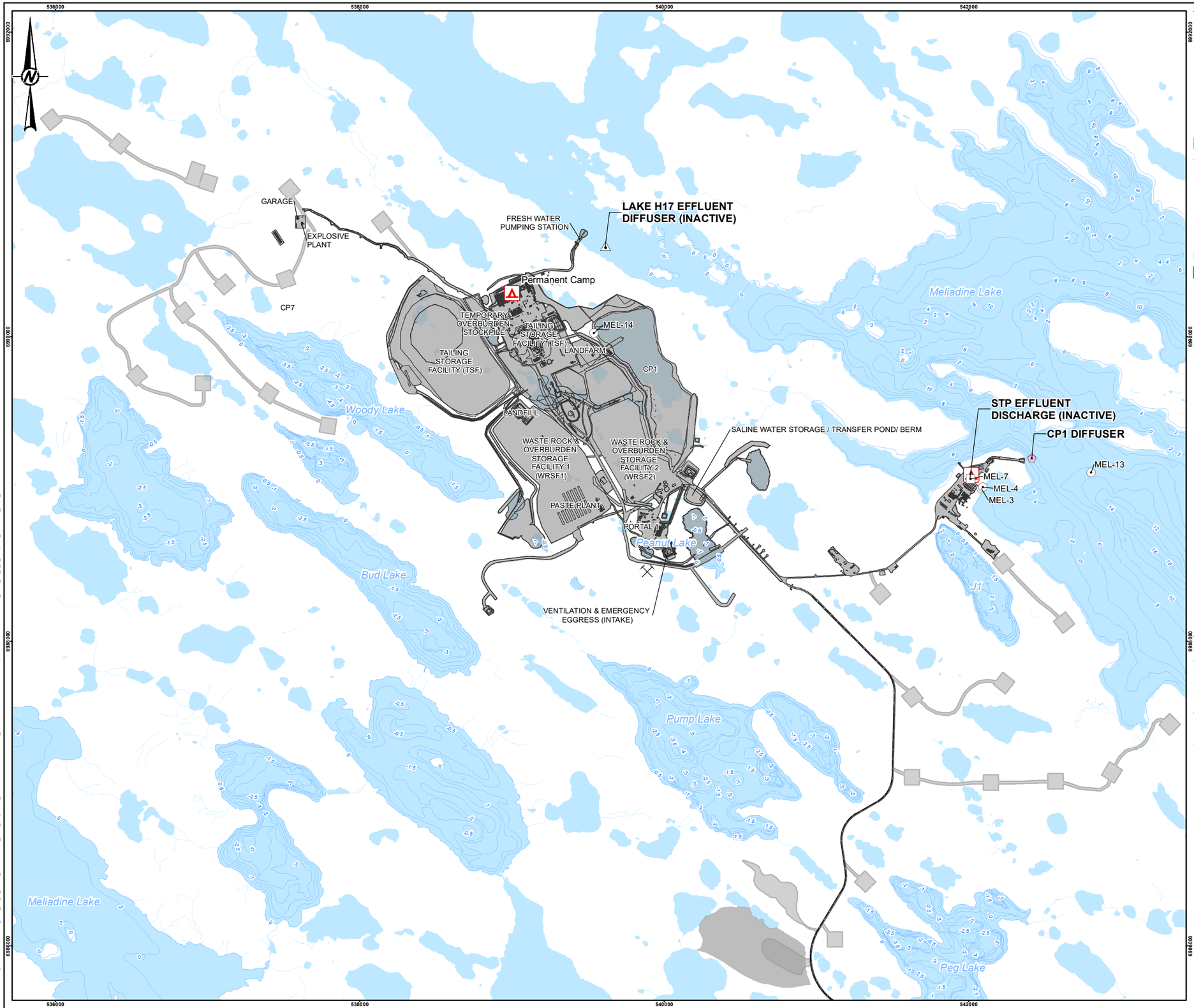
The Mine plan proposes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine (Figure 2.2-1). The Mine is expected to produce approximately 14.9 million tonnes (Mt) of ore. The produced ore will be milled over approximately eight years of Mine life at a rate of 3,000 tonnes per day (tpd) in Year 1 to Year 3 and 5,000 tpd in Year 4 to Year 8. Of the total 14.9 Mt of tailings produced, about 10.9 Mt of tailings will be placed in the tailings storage facility as dry stack tailings, while the remaining 4.0 Mt will be backfilled to the underground mine as cemented paste backfill. Approximately 31.4 Mt of waste rock will be mined from the open pits and underground mine operations. Approximately 7.1 Mt of overburden will be produced.

The four development phases of Tiriganiaq gold deposit include three and a half years of construction (Q4 Year-5 to Q2 Year-1), eight and a half years mine operation (Q2 Year 1 to Year 8), three years closure (Year 9 to Year 11), and post-closure (Year 11 forward; Agnico Eagle 2015; Table 2.2-1). Pre-construction activities were completed at the Mine between January 2015 and June 2017, and construction activities were initiated in July 2017 (Table 2.2-1).

Table 2.2-1: Timelines of Mine Phases

Mine Phase	Planned Timelines	Total Time (years)
Pre-construction	Beginning of Q1 2015 to end of Q3 2017	2.5
Construction	Beginning of Q3 2017 to end of Q4 2020	3.5
Operation	Q2 2019 to Q4 2027	8.5
Closure	Q4 2027 to Q4 2030	3.0
Post-Closure	Q4 2030 - Forward	-

Notes: Q = calendar quarter where Q1 = January, February, March; Q2 = April, May, June; Q3 = July, August, September; and Q4 = October, November, December.



LEGEND

- LAKE H17 EFFLUENT DIFFUSER (INACTIVE)
- STP EFFLUENT DISCHARGE (INACTIVE)
- CP1 DIFFUSER
- WATER QUALITY STATION
- CAMP
- PROPOSED MINE SITE
- MINE FOOTPRINT
- PROJECT INFRASTRUCTURE
- ALL-WEATHER ACCESS ROAD (AWAR)
- ROAD - NEW
- ROAD - EXISTING
- RANKIN INLET
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK



0 500 1,000

1:25,000 METRES

NOTE(S)

1. TSF, WRSF1, WRSF2, CP1 ARE THE MAXIMUM EXTENT UNDER THE APPROVED MINE PLAN AND DO NOT REPRESENT SIZE IN 2018.
2. BORROW PIT B1A IS EXCLUDED AND IS NOT ILLUSTRATED IN THE CURRENT FOOTPRINT.
3.. THE PROPOSED MINE PLAN INCLUDES TIRIGANIAQ PIT 1, TIRIGANIAQ PIT 2, AND WASTE ROCK STORAGE FACILITY 3 (WRSF3) AND ASSOCIATED INFRASTRUCTURE; THESE ITEMS HAVE NOT BEEN CONSTRUCTED YET (AS OF THE END OF 2018) AND THEREFORE WERE NOT INCLUDED ON THIS MAP

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE LIMITED.
2. DATUM: NAD83 PROJECTION: UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

FOOTPRINT OF MELIADINE GOLD MINE

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-27
DESIGNED	KB
PREPARED	MH
REVIEWED	CD
APPROVED	CD

PROJECT NO.	CONTROL	REV.	FIGURE
18110868	2100	A	2.2-1

© THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

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PATH: Y:\burnaby\CAD-GIS\Client\Agnico_Eagle_Mines_Ltd\Meliadine_Gold_Project\99_PROJECTS\18110.868\02_PRODUCTION\2100\MXD\Report\AEMP2018\18110868_2100_02_2_1_Footprint_Meliadine_Gold_Mine.mxd PRINTED ON: 2019-03-27 AT: 12:42:43 PM

Water management activities that occurred in 2018 included transporting treated sewage effluent to CP1 (starting in November 2017), and initiation of mine effluent discharge through the CP1 diffuser to Meliadine Lake in June 2018. Water quality monitoring associated with the final discharge point MEL-14 and the receiving environment station above the CP1 diffuser (i.e., MEL-13) was conducted during the discharge period (Figure 2.2-1). Water from landfarm A was treated with an oil/water separator; oil was disposed of as hazardous material and water was sent to CP1. While landfarm B contains material, no additional material was added in 2018. Water from landfarm B was also treated with an oil/water separator; oil was disposed of as hazardous material and water was sent to P1. The design report for the freshwater intake was submitted on June 8, 2018 and approved on July 5, 2018 (Tetra Tech 2017). In-water works associated with the freshwater intake causeway did not occur during the open water season of 2018; all work for the water intake occurred on ice.

Water quality monitoring outside of the EEM program and the AEMP occurs at Meliadine Lake as part of the requirements under MDMER and the WL. The MDMER requires monthly effluent discharge volume and loadings, weekly effluent monitoring of deleterious substances and pH, monthly acute lethality testing of effluent, expanded effluent characterization concurrently with the biannual sublethal toxicity testing, and quarterly surface water quality monitoring in an exposure and reference area. The data are provided in an annual MDMER report to ECCC by 31 March of each year. The monitoring stations are described in Table 2.2-1. The WL requires water quality monitoring at several locations related to dewatering discharge, freshwater intake, water treatment plant discharge, seepage, and receiving environment monitoring (Table 2.2-1). The data are provided in an annual report to the NWB by 31 March of each year. Note that this EEM/AEMP report focuses on monitoring conducted at the EEM and AEMP exposure and reference areas; see Section 2.5 for a description of these areas.

Table 2.2-2: Overview of 2018 Monitoring Stations at Meliadine Gold Mine

Monitoring Station	Description	Reporting Requirement
MEL-14	Effluent from the water treatment plant (post-treatment = water prior to discharge to the receiving environment)	MDMER and WL
MEL-13	Surface water quality monitoring location in the exposure area in Meliadine Lake	MDMER and WL
MEL-03-01	Surface water quality monitoring location in the reference area	MDMER
MEL-1	Raw water supply intake at Meliadine Lake for the exploration camp (only intake volume is monitored)	WL
MEL-2	Raw water supply intake at Pump, A8, or other Lakes (only intake volume is monitored)	WL
MEL-7	Treated sewage effluent from exploration camp	WL
MEL-11	Water intake from Meliadine Lake	WL
MEL-12	Influent from water treatment plant (pre-treatment = water coming from CP1)	WL
MEL-15	Lake E2 located west of the Mine site	WL
MEL-16	Lake G2 located northwest of the Mine site	WL
MEL-17	Lake H1 located east of the Mine site	WL
MEL-18	Lake B5 located southwest of the Mine site	WL
MEL-19	CP2, which is a pond that collects natural catchment drainage from the outer berm slopes of the landfarm and industrial pad. No sample collected in 2018 because no water accumulated in this pond in 2018.	WL
MEL-20	Lake B28, which will become CP3 once construction is completed. CP-3 will collect drainage from dry stacked tailings located west of the Mine site.	WL

Table 2.2-2: Overview of 2018 Monitoring Stations at Meliadine Gold Mine

Monitoring Station	Description	Reporting Requirement
MEL-21	Lake B8, which will become CP4 once construction is completed. CP-4 will collect drainage from the WRSF1 located west of the Mine site.	WL
MEL-22	CP5, which was previously Lake A54 and is now a collection pond consisting of drainage from WRSF1 and WRSF2. Located south of the Mine site.	WL
MEL-23	Lake H19, which will become CP6 once construction is completed. CP-4 will collect drainage from the WRSF3 located east of the Mine site.	WL
MEL-24	Seepage from the landfill between the landfill and Pond H3, as well as drainage from other nearby areas.	WL
MEL-25	Secondary containment area at the Itivia Site Fuel Storage and Containment Facility.	WL

WRSF = Waste Rock Storage Facility.

2.3 Interactions with the Aquatic Environment

The Project will interact with the aquatic environment throughout all phases of Mine development through the following pathways:

- the release of treated effluent;
- the release of air emissions (i.e., acidifying emissions, dust, and associated metals);
- the alteration of natural watersheds;
- potential accidental seepage and spills; and
- Influence from underground workings.

Project components specific to the Peninsula Lakes that may affect the aquatic environment include the altering watersheds through dewatering operations, diverting natural drainage paths, constructing new drainage channels, and changing the water balance.

2.4 Treated Mine Effluent

Mine effluent discharge to the receiving environment of Meliadine Lake is permitted under Type A Water Licence 2AM-MEL1631 (NWB 2016). Mine effluent consists of treated effluent from CP1. CP1 receives water from surface runoff from the project footprint and from another surface water runoff collection pond, CP5. Water from CP5 is highly saline and is treated to reduce dissolved solids by reverse osmosis (RO) membrane treatment prior to transferring to CP1. Prior to discharge into Meliadine Lake, water from CP1 is treated at the Effluent Water Treatment Plant (EWTP) with ActiFlow treatment. Treated effluent is discharged to Meliadine Lake through a permanent diffuser (CP1 diffuser; Figure 2.2-1) located in the AEMP Near-field area. MEL-14 is the final point of control for the treated effluent and is the effluent compliance point (Figure 2.2-1). MEL-13 is the receiving environment monitoring station that is located directly above the diffuser (Figure 2.2-1).

2.4.1 Discharge Volume

Effluent was discharged daily from the EWTP into Meliadine Lake from June to September 2018 (Table 2.4-1). A total volume of 642,521 m^3 was discharged into Meliadine Lake through MEL-14 during the 75-day discharge period (June 21 to September 3) (Appendix 2A).

Table 2.4-1: Monthly Discharge Volume into Meliadine Lake from MEL-14 in 2018

Month	Total Volume (m^3)
June	134,272
July	352,551
August	153,066
September	2,632
Total	**642,521**

2.4.2 Effluent Quality

Samples for effluent chemistry and toxicity were collected at the last point of control (i.e., MEL-14). Water quality was also collected in the receiving environment directly above the CP1 diffuser (i.e., at MEL-13 within the mixing zone). Additional details on monitoring at MEL-14 and MEL-13 are described in the Water Management Plan (Agnico Eagle 2016).

2.4.2.1 Chemistry

Discharge limits must be achieved to maintain compliance with the Type A Water Licence (2AM-MEL1631; NWB 2016) and the MDMER (Government of Canada 2018).

As per Part F, Item 3 of the Water Licence (NWB 2016), the discharge of effluent from the final discharge point at monitoring program station MEL-14 shall be directed to Meliadine Lake through the Meliadine Lake outfall diffuser (i.e., CP1 diffuser) and shall not exceed the effluent quality limits as presented in Table 2.4-2. Discharge chemistry is to be monitored prior to discharge and weekly during discharge and discharge volume is monitored weekly (Schedule I, Table 2 of the Water Licence; NWB 2016).

Table 2.4-2: Effluent Quality Limits for the Discharge of Effluent from MEL-14, as per the Water Licence (NWB 2016)

Parameter	Unit	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
pH	-	6.0 to 9.5[(a)]	6.0 to 9.5[(a)]
Total Dissolved Solids (measured)	mg/L	1,400	1,400
Total Suspended Solids	mg/L	15[(a)]	30[(a)]
Total Phosphorus	mg/L	2.0	4.0
Total Aluminum	mg/L	2	3
Total Arsenic	mg/L	0.3	0.6
Total Cyanide	mg/L	0.5	1.0
Total Copper	mg/L	0.2	0.4
Total Ammonium	mg/L	14	18
Total Nickel	mg/L	0.5[(a)]	1.0[(a)]

Table 2.4-2: Effluent Quality Limits for the Discharge of Effluent from MEL-14, as per the Water Licence (NWB 2016)

Parameter	Unit	Maximum Average Concentration	Maximum Concentration of Any Grab Sample
Total Lead	mg/L	0.2[(a)]	0.4
Total Zinc	mg/L	0.4	0.8
Total Petroleum Hydrocarbons	mg/L	5	5

a) Adopted from Metal and Diamond Mining Effluent Regulations (Government of Canada 2018).

As per the MDMER (Government of Canada 2018), the Mine is permitted to discharge an effluent containing any deleterious substance if the concentration of deleterious substance in the effluent does not exceed the maximum authorized concentrations that are set out in columns 2, 3 and 4 (Table 2.4-3). Effluent chemistry is monitored weekly for these deleterious substances.

Table 2.4-3: Authorized Limits of Deleterious Substances as per the MDMER Schedule 4 (Government of Canada 2018)

Item	Column 1	Column 2	Column 3	Column 4
	Deleterious Substance	Maximum Authorized Monthly Mean Concentration	Maximum Authorized Concentration in a Composite Sample	Maximum Authorized Concentration in a Grab Sample
1	Arsenic	0.50 mg/L	0.75 mg/L	1.00 mg/L
2	Copper	0.30 mg/L	0.45 mg/L	0.60 mg/L
3	Cyanide	1.00 mg/L	1.50 mg/L	2.00 mg/L
4	Lead	0.20 mg/L	0.30 mg/L	0.40 mg/L
5	Nickel	0.50 mg/L	0.75 mg/L	1.00 mg/L
6	Zinc	0.50 mg/L	0.75 mg/L	1.00 mg/L
7	TSS	15.00 mg/L	22.50 mg/L	30.0 mg/L
8	Radium 226	0.37 Bq/L	0.74 Bq/L	1.11 Bq/L

TSS = total suspended solids; mg/L = milligrams per litre; Bq/L = becquerel per litre.

In addition to the above effluent monitoring, mines are required under the MDMER to analyze additional parameters in effluent as part of the effluent characterization (as per Schedule 5, Section 4). This effluent characterization is required quarterly, and samples must be collected at least one month apart.

Effluent quality for samples collected from MEL-14 in 2018 are presented in Table 2.4-4 and Appendix 2B. Effluent chemistry met the MDMER effluent limits (Table 2.4-4). Total dissolved solids (TDS) concentrations exceeded the Water Licence effluent limits in one sample collected in July 2018 (1,430 mg/L) and total aluminum concentration exceeded the effluent limit in one sample collected in August (4.39 mg/L) (Appendix 2B). While TDS concentrations were generally elevated in the effluent samples throughout the sampling period, the high total aluminum value in the 23 July sample was anomalous in comparison to results in other samples. Total aluminum concentrations in effluent were generally variable, with a large range of measured values (i.e., 5.0 to 1,320 mg/L; Appendix 2B). Concentration of TSS in the 23 July was slightly elevated at 21 mg/L, but not enough to explain the much higher total aluminum concentration (Appendix 2B). Dissolved aluminum concentration in this sample (i.e., 0.099 mg/L) was within the range of other values (i.e., 0.0043 to 0.22 mg/L; Appendix 2B).
Elevated aluminum concentration was also observed in the corresponding receiving environment sample,

despite relatively low TSS of 1.0 mg/L (see Appendix 2C). Overall, the total aluminum exceedance appears anomalous and should be interpreted with caution.

Water quality for samples collected from MEL-13 (i.e., receiving water directly above the diffuser) are presented in Table 2.4-5 and Appendix 2C. This station provides additional information about water quality within the mixing zone. Total aluminum, total copper, and total iron concentrations exceeded the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQG-PAL; CCME 1999) in one sample collected in July 2018 (Appendix 2C). Aesthetic objectives for drinking water quality were exceeded for water temperature, iron, and manganese in this sample. All other concentrations were less than the CWQG-PAL, CDWQG (Health Canada 2017), and Site-Specific Water Quality Objectives (SSWQO; Golder 2013b).

Table 2.4-4: Summary of Effluent Quality Discharged from MEL-14, 2018

Parameter	Unit	MDMER	WL	Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limits	
											MDMER	WL
Field Measured												
pH	-	-	6.0 to 9.5	7.5	7.5	7	8.1	0.35	0	10	-	-
Specific conductivity	µS/cm	-	-	1,646	1,702	1,420	2,210	246	0	11	-	-
Water temperature	°C	-	-	12	12	4.8	19	4.2	0	11	-	-
Conventional Parameters												
pH	-	-	-	7.3	7.2	6.8	7.6	0.23	0	11	-	-
Specific conductivity	µS/cm	-	-	1800	1855	1500	2400	305	0	11	-	-
Hardness, as $CaCO_3$	mg/L	-	-	462	423	59	565	133	0	11	-	-
Total alkalinity, as $CaCO_3$	mg/L	-	-	34	32	<0.1	51	14	1	11	-	-
Total dissolved solids	mg/L	-	1,400	1,144	1,136	870	1,430	173	0	11	-	9
Total suspended solids	mg/L	30	30	9	9.2	<1.0	21	5.3	1	11	-	-
Total organic carbon	mg/L	-	-	8.4	8	<0.5	13	3.4	1	11	-	-
Dissolved organic carbon	mg/L	-	-	7.3	6.6	<0.5	11	2.7	1	11	-	-
Turbidity	NTU	-	-	0.7	0.81	<0.1	2.5	0.7	1	11	-	-
Major Ions												
Bicarbonate, as $CaCO_3$	mg/L	-	-	34	33	6	51	13	0	11	-	-
Calcium	mg/L	-	-	144	131	17	173	41	0	11	-	-
Carbonate, as $CaCO_3$	mg/L	-	-	<1.0	-	<1.0	<1.0	-	11	11	-	-
Chloride	mg/L	-	-	440	482	300	660	117	0	11	-	-
Magnesium	mg/L	-	-	25	23	4	32	7	0	11	-	-
Potassium	mg/L	-	-	14	14	10	17	2.2	0	11	-	-
Reactive silica, as SiO_2	mg/L	-	-	0.45	0.57	0.07	1.3	0.45	0	11	-	-
Sodium	mg/L	-	-	136	142	94	236	42	0	11	-	-
Sulphate	mg/L	-	-	51	46	7	60	14	0	11	-	-

Table 2.4-4: Summary of Effluent Quality Discharged from MEL-14, 2018

Parameter	Unit	MDMER	WL	Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limits	
											MDMER	WL
Nutrients												
Nitrate	mg-N/L	-	-	5	5.5	3	15	3.4	0	11	-	-
Nitrite	mg-N/L	-	-	0.19	0.21	0.09	0.36	0.09	0	11	-	-
Nitrate + nitrite	mg-N/L	-	-	5.2	5.7	3.1	16	3.4	0	11	-	-
Total ammonia	mg-N/L	-	18	0.9	1.6	0.1	4.1	1.3	0	11	-	-
Total Kjeldahl nitrogen	mg-N/L	-	-	1.4	2	0.9	3.6	1	0	11	-	-
Total nitrogen (calculated)	mg-N/L	-	-	7.3	7.7	4	19	4.1	0	11	-	-
Total phosphorus	mg-P/L	-	4.0	0.032	0.038	<0.020	0.099	0.03	2	11	-	-
Orthophosphate	mg-P/L	-	-	<0.01	-	<0.01	0.07	-	10	11	-	-
General Organics												
Total oil and grease	mg/L	-	-	1	-	<0.5	1.8	-	4	8	-	-
Total Metals												
Aluminum	mg/L	-	3	0.811	1.104	0.005	4.39	1.171	0	11	-	9
Antimony	mg/L	-	-	<0.0005	-	<0.0005	<5	-	11	11	-	-
Arsenic	mg/L	1	0.6	0.0019	0.0017	0.0003	0.003	0.0007	0	11	-	-
Barium	mg/L	-	-	0.1	0.1067	0.0043	0.16	0.0415	0	11	-	-
Beryllium	mg/L	-	-	<0.0001	-	<0.0001	<0.0001	-	11	11	-	-
Bismuth	mg/L	-	-	<0.0010	<0.0010	-	-	-	1	1	-	-
Boron	mg/L	-	-	0.154	0.2119	0.094	0.77	0.1964	0	11	-	-
Cadmium	mg/L	-	-	<0.0001	-	<0.0001	<0.0001	-	6	11	-	-
Chromium	mg/L	-	-	<0.0010	-	<0.0010	<0.0010	-	11	11	-	-
Cobalt	mg/L	-	-	0.0007	0.0007	-	-	-	0	1	-	-
Copper	mg/L	0.6	0.4	0.0013	0.0019	<0.0005	0.0085	0.0023	1	11	-	-
Iron	mg/L	-	-	0.118	0.1534	<0.0100	0.374	0.1099	1	11	-	-
Lead	mg/L	0.4	0.4	<0.0002	-	<0.0002	0.0003	-	8	11	-	-
Lithium	mg/L	-	-	0.118	0.127	0.0917	0.159	0.021	0	11	-	-

Table 2.4-4: Summary of Effluent Quality Discharged from MEL-14, 2018

Parameter	Unit	MDMER	WL	Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limits	
											MDMER	WL
Total Metals (cont'd)												
Manganese	mg/L	-	-	0.237	0.2125	0.0024	0.406	0.1425	0	11	-	-
Mercury	mg/L	-	-	<0.0001	-	<0.0001	<0.0001	-	10	11	-	-
Molybdenum	mg/L	-	-	<0.0010	-	<0.0010	0.0022	-	6	11	-	-
Nickel	mg/L	1	1	0.0025	0.0025	<0.0010	0.0034	0.0008	1	11	-	-
Selenium	mg/L	-	-	<0.0001	-	<0.0001	<0.0001	-	11	11	-	-
Silicon	mg/L	-	-	0.65	0.65	-	-	-	0	1	-	-
Silver	mg/L	-	-	<0.0001	-	<0.0001	<0.0001	-	11	11	-	-
Strontium	mg/L	-	-	2.47	2.6819	0.401	4.06	1.0114	0	11	-	-
Thallium	mg/L	-	-	<0.0001	-	<0.0001	<0.0001	-	3	11	-	-
Tin	mg/L	-	-	<0.0050	-	<0.0050	<0.0050	-	11	11	-	-
Titanium	mg/L	-	-	<0.0050	-	<0.0050	<0.0050	-	11	11	-	-
Uranium	mg/L	-	-	0.0001	0.0002	0.0001	0.0006	0.0002	0	11	-	-
Vanadium	mg/L	-	-	<0.0050	-	<0.0050	<0.0050	-	11	11	-	-
Zinc	mg/L	0.8	1	0.0054	-	<0.0050	0.0086	-	5	11	-	-
Zirconium	mg/L	-	-	<0.0001	<0.0001	-	-	-	1	1	-	-
Dissolved Metals												
Aluminum	mg/L	-	-	0.0561	0.0648	0.0043	0.22	0.061	0	11	-	-
Antimony	mg/L	-	-	<0.0005	-	<0.0005	<0.0250	-	11	11	-	-
Arsenic	mg/L	-	-	0.0016	0.0016	0.0003	<0.0050	0.0007	1	11	-	-
Barium	mg/L	-	-	0.114	0.1052	0.0044	0.15	0.0392	0	11	-	-
Beryllium	mg/L	-	-	<0.0001	-	<0.0001	<0.0050	-	11	11	-	-
Bismuth	mg/L	-	-	<0.0010	<0.0010	-	-	-	1	1	-	-
Boron	mg/L	-	-	0.146	0.3131	0.101	<2.5000	0.3583	1	11	-	-
Cadmium	mg/L	-	-	<0.0001	-	<0.0001	<0.0005	-	6	11	-	-
Chromium	mg/L	-	-	<0.0010	-	<0.0010	<0.0500	-	11	11	-	-

Table 2.4-4: Summary of Effluent Quality Discharged from MEL-14, 2018

Parameter	Unit	MDMER	WL	Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limits	
											MDMER	WL
Dissolved Metals (cont'd)												
Cobalt	mg/L	-	-	0.0006	0.0006	-	-	-	0	1	-	-
Copper	mg/L	-	-	0.001	0.0013	0.0002	<0.0100	0.0013	1	11	-	-
Iron	mg/L	-	-	0.0324	-	<0.0050	<0.2500	-	3	11	-	-
Lead	mg/L	-	-	<0.0002	-	<0.0002	<0.0100	-	11	11	-	-
Lithium	mg/L	-	-	0.135	0.1345	0.104	0.163	0.0181	0	11	-	-
Manganese	mg/L	-	-	0.209	0.1807	0.0025	0.382	0.1448	0	11	-	-
Molybdenum	mg/L	-	-	<0.0001	-	<0.0001	<0.0001	-	10	11	-	-
Nickel	mg/L	-	-	0.0011	-	<0.0010	<0.0500	-	6	11	-	-
Selenium	mg/L	-	-	0.0023	0.0043	<0.0010	<0.0500	0.0069	2	11	-	-
Silicon	mg/L	-	-	<0.0001	-	<0.0001	<0.0050	-	11	11	-	-
Silver	mg/L	-	-	0.59	0.59	-	-	-	0	1	-	-
Strontium	mg/L	-	-	<0.0001	-	<0.0001	<0.0010	-	11	11	-	-
Thallium	mg/L	-	-	2.6	2.6247	0.422	4.1	0.8983	0	11	-	-
Tin	mg/L	-	-	<0.0001	-	<0.0001	<0.0005	-	3	11	-	-
Titanium	mg/L	-	-	<0.0050	-	<0.0050	<0.2500	-	11	11	-	-
Uranium	mg/L	-	-	<0.0050	-	<0.0050	<0.2500	-	11	11	-	-
Vanadium	mg/L	-	-	<0.0001	-	<0.0001	<0.0050	-	8	11	-	-
Zinc	mg/L	-	-	<0.0050	-	<0.0050	<0.2500	-	11	11	-	-
Zirconium	mg/L	-	-	<0.0050	-	<0.0050	<0.2500	-	7	11	-	-

Table 2.4-4: Summary of Effluent Quality Discharged from MEL-14, 2018

Parameter	Unit	MDMER	WL	Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limits	
											MDMER	WL
Volatile Organics												
Benzene	mg/L	-	-	<0.0002	-	<0.0002	<0.0002	-	10	10	-	-
Ethylbenzene	mg/L	-	-	<0.0002	-	<0.0002	<0.0002	-	10	10	-	-
Toluene	mg/L	-	-	<0.0002	-	<0.0002	0.0003	-	9	10	-	-
Xylenes	mg/L	-	-	<0.0004	-	<0.0004	<0.0004	-	10	10	-	-
m, p-Xylenes	mg/L	-	-	<0.0004	-	<0.0004	<0.0004	-	10	10	-	-
o-Xylene	mg/L	-	-	<0.0002	-	<0.0002	<0.0002	-	10	10	-	-
F1 (C6-C10)	mg/L	-	-	<0.0250	-	<0.0250	<0.0250	-	10	10	-	-
Hydrocarbons												
F2 (C11-C16)	mg/L	-	-	<0.1000	-	<0.1000	<0.1000	-	11	11	-	-
F3 (C17-C34)	mg/L	-	-	<0.2000	-	<0.2000	<0.2000	-	11	11	-	-
F4 (C35-C50)	mg/L	-	-	<0.2000	-	<0.2000	<0.2000	-	11	11	-	-
Radionuclides												
Radium-226	Bq/L	-	-	<0.005	-	<0.005	0.008	-	9	11	-	-
Other												
Cyanide	mg/L	2.0	1.0	<0.005	-	<0.005	<0.005	-	11	11	-	-

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; Bq/L = becquerels per litre; + = plus; °C = degrees Celsius; NTU = nephelometric turbidity unit; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; BTEX = benzene, toluene, ethylbenzene, and xylene; min = minimum; max = maximum; SD = standard deviation; nd = not detected; <= less than ; % = percent; MDMER = Metal and Diamond Mining Effluent Regulations; WL = Water Licence; - = parameter below MDMER or WL effluent limits, or no effluent limit or no data.

Table 2.4-5: Summary of Water Quality Data from MEL-13, 2018

Parameter	Unit	Guidelines and Objectives					Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q								A	C	D	S	Q
Field Measured																		
pH	-	-	6.5 to 9.0	-	7.0 to 11	-	8	7.8	7.2	8.2	0.48	0	4	-	-	-	-	-
Specific conductivity	µS/cm	-	-	-	-	-	83	83	80	85	2.6	0	4	-	-	-	-	-
Water temperature	°C	-	-	-	15	-	10	12	10	16	2.7	0	4	-	-	-	25	-
Conventional Parameters																		
pH	-	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.3	7	7.4	0.17	0	4	-	-	-	-	-
Specific conductivity	µS/cm	-	-	-	-	-	88	88	84	91	2.9	0	4	-	-	-	-	-
Hardness, as CaCO3	mg/L	-	-	-	-	-	25	25	24	25	0.7	0	3	-	-	-	-	-
Total alkalinity, as CaCO3	mg/L	-	-	-	-	-	16	16	15	17	0.82	0	4	-	-	-	-	-
Total dissolved solids	mg/L	-	-	-	500	-	88	148	15	400	172	0	4	-	-	-	-	-
Total suspended solids	mg/L	-	-	-	-	-	1	1	1	1	0	0	4	-	-	-	-	-
Total organic carbon	mg/L	-	-	-	-	-	3	3	2.9	3.1	0.082	0	4	-	-	-	-	-
Dissolved organic carbon	mg/L	-	-	-	-	-	2.9	2.9	2.8	3	0.082	0	4	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	0.3	0.28	0.2	0.3	0.05	0	4	-	-	-	-	-
Major Ions																		
Bicarbonate, as CaCO3	mg/L	-	-	-	-	-	16	16	15	17	0.82	0	4	-	-	-	-	-
Calcium	mg/L	-	-	-	-	-	7.5	7.5	7	7.8	0.35	0	4	-	-	-	-	-
Carbonate, as CaCO3	mg/L	-	-	-	-	-	<1.0	-	<1.0	<1.0	-	4	4	-	-	-	-	-
Chloride	mg/L	640	120	-	250	-	13	13	13	13	0	0	4	-	-	-	-	-
Magnesium	mg/L	-	-	-	-	-	1.3	1.3	1.3	1.4	0.053	0	4	-	-	-	-	-
Potassium	mg/L	-	-	-	-	-	0.93	0.94	0.9	0.99	0.038	0	4	-	-	-	-	-
Reactive silica, as SiO2	mg/L	-	-	-	-	-	0.29	0.3	0.27	0.33	0.031	0	3	-	-	-	-	-
Sodium	mg/L	-	-	-	200	-	5.4	5.4	5.2	5.7	0.19	0	4	-	-	-	-	-
Sulphate	mg/L	-	-	-	500	-	4.4	4.3	3.7	4.8	0.46	0	4	-	-	-	-	-

Table 2.4-5: Summary of Water Quality Data from MEL-13, 2018

Parameter	Unit	Guidelines and Objectives					Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q								A	C	D	S	Q
Nutrients																		
Nitrate	mg-N/L	124	2.9	10	-	-	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Total ammonia	mg-N/L	-	0.56	-	-	-	<0.05	-	<0.05	0.19	-	3	4	-	-	-	-	-
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.13	0.15	<0.1	0.27	0.092	1	4	-	-	-	-	-
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.13	0.15	<0.1	0.27	0.092	1	4	-	-	-	-	-
Total phosphorus	mg-P/L	-	-	-	-	-	<0.02	-	<0.02	<0.02	-	4	4	-	-	-	-	-
Orthophosphate	mg-P/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
General Organics																		
Total oil and grease	mg/L	-	-	-	-	-	0.6	-	<0.5	0.6	-	1	2	-	-	-	-	-
Total Metals																		
Aluminum	mg/L	-	0.1	-	-	-	0.0108	1.667	0.0083	6.64	3.315	0	4	-	25	-	-	-
Antimony	mg/L	-	-	0.006	-	-	<0.0005	-	<0.0005	<0.0005	-	4	4	-	-	-	-	-
Arsenic	mg/L	-	0.005	0.01	-	0.025	0.0004	0.001	0.0004	0.0028	0.0012	0	4	-	-	-	-	-
Barium	mg/L	-	-	1	-	-	0.0081	0.0375	0.0077	0.126	0.059	0	4	-	-	-	-	-
Beryllium	mg/L	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Boron	mg/L	29	1.5	5	-	-	<0.0500	-	<0.0500	0.156	-	3	4	-	-	-	-	-
Cadmium	mg/L	0.00049	0.000048	0.005	-	-	<0.0001	-	<0.0001	<0.0001	-	3	4	-	-	-	-	-
Chromium	mg/L	-	0.001	0.05	-	-	<0.0010	-	<0.0010	<0.0010	-	4	4	-	-	-	-	-
Copper	mg/L	-	0.002	-	1	-	0.0008	0.0013	0.0008	0.0028	0.001	0	4	-	25	-	-	-
Iron	mg/L	-	0.3	-	0.3	1.06	0.0265	0.1193	0.019	0.405	0.1905	0	4	-	25	-	25	-
Lead	mg/L	-	0.001	0.01	-	-	<0.0002	-	<0.0002	0.0002	-	3	4	-	-	-	-	-
Lithium	mg/L	-	-	-	-	-	<0.0020	-	<0.0020	0.145	-	3	4	-	-	-	-	-
Manganese	mg/L	-	-	-	0.05	-	0.0047	0.071	0.0044	0.271	0.1332	0	4	-	-	-	25	-
Mercury	mg/L	-	0.000026	0.001	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-

Table 2.4-5: Summary of Water Quality Data from MEL-13, 2018

Parameter	Unit	Guidelines and Objectives					Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q								A	C	D	S	Q
Total Metals (cont'd)																		
Molybdenum	mg/L	-	0.073	-	-	-	<0.0010	-	<0.0010	0.0013	-	3	4	-	-	-	-	-
Nickel	mg/L	-	0.025	-	-	-	<0.0010	-	<0.0010	0.0033	-	3	4	-	-	-	-	-
Selenium	mg/L	-	0.001	0.05	-	-	<0.0001	-	<0.0001	0.0001	-	3	4	-	-	-	-	-
Silver	mg/L	-	0.00025	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Strontium	mg/L	-	-	-	-	-	0.0491	0.9866	0.0482	3.8	1.8756	0	4	-	-	-	-	-
Thallium	mg/L	-	0.0008	-	-	-	<0.0001	-	<0.0001	<0.0001	-	3	4	-	-	-	-	-
Tin	mg/L	-	-	-	-	-	<0.0050	-	<0.0050	<0.0050	-	4	4	-	-	-	-	-
Titanium	mg/L	-	-	-	-	-	<0.0050	-	<0.0050	<0.0050	-	4	4	-	-	-	-	-
Uranium	mg/L	0.033	0.015	0.02	-	-	<0.0001	-	<0.0001	0.001	-	3	4	-	-	-	-	-
Vanadium	mg/L	-	-	-	-	-	<0.0050	-	<0.0050	<0.0050	-	4	4	-	-	-	-	-
Zinc	mg/L	-	-	-	5	-	<0.0050	-	<0.0050	0.0107	-	3	4	-	-	-	-	-
Dissolved Metals																		
Aluminum	mg/L	-	-	-	-	-	0.0069	0.0079	0.0054	0.0123	0.0031	0	4	-	-	-	-	-
Antimony	mg/L	-	-	-	-	-	<0.0005	-	<0.0005	<0.0005	-	4	4	-	-	-	-	-
Arsenic	mg/L	-	-	-	-	-	0.0004	0.0004	0.0003	0.0004	<0.0001	0	4	-	-	-	-	-
Barium	mg/L	-	-	-	-	-	0.0076	0.0076	0.0075	0.0078	0.0001	0	4	-	-	-	-	-
Beryllium	mg/L	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Boron	mg/L	-	-	-	-	-	<0.0500	-	<0.0500	<0.0500	-	4	4	-	-	-	-	-
Cadmium	mg/L	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Chromium	mg/L	-	-	-	-	-	<0.0010	-	<0.0010	<0.0010	-	4	4	-	-	-	-	-
Copper	mg/L	-	-	-	-	-	0.0007	0.0007	0.0006	0.0008	0.0001	0	4	-	-	-	-	-
Iron	mg/L	-	-	-	-	-	0.0083	0.0083	0.0054	0.0113	0.0025	0	4	-	-	-	-	-
Lead	mg/L	-	-	-	-	-	<0.0002	-	<0.0002	<0.0002	-	4	4	-	-	-	-	-
Lithium	mg/L	-	-	-	-	-	<0.0020	-	<0.0020	<0.0020	-	4	4	-	-	-	-	-
Manganese	mg/L	-	-	-	-	-	<0.0010	-	<0.0010	0.0012	-	3	4	-	-	-	-	-

Table 2.4-5: Summary of Water Quality Data from MEL-13, 2018

Parameter	Unit	Guidelines and Objectives					Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q								A	C	D	S	Q
Dissolved Metals (cont'd)																		
Mercury	mg/L	-	-	-	-	-	<0.00001	-	<0.00001	<0.00001	-	4	4	-	-	-	-	-
Molybdenum	mg/L	-	-	-	-	-	<0.0010	-	<0.0010	<0.0010	-	4	4	-	-	-	-	-
Nickel	mg/L	-	-	-	-	-	<0.0010	-	<0.0010	<0.0010	-	4	4	-	-	-	-	-
Selenium	mg/L	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Silver	mg/L	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Strontium	mg/L	-	-	-	-	-	0.0491	0.0491	0.0471	0.0512	0.0017	0	4	-	-	-	-	-
Thallium	mg/L	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Tin	mg/L	-	-	-	-	-	<0.0050	-	<0.0050	<0.0050	-	4	4	-	-	-	-	-
Titanium	mg/L	-	-	-	-	-	<0.0050	-	<0.0050	<0.0050	-	4	4	-	-	-	-	-
Uranium	mg/L	-	-	-	-	-	<0.0001	-	<0.0001	<0.0001	-	4	4	-	-	-	-	-
Vanadium	mg/L	-	-	-	-	-	<0.0050	-	<0.0050	<0.0050	-	4	4	-	-	-	-	-
Zinc	mg/L	0.031	0.0044	-	-	-	<0.0050	-	<0.0050	<0.0050	-	4	4	-	-	-	-	-
Volatile Organics																		
Benzene	mg/L	-	0.37	0.005	-	-	<0.0002	-	<0.0002	<0.0002	-	4	4	-	-	-	-	-
Ethylbenzene	mg/L	-	0.09	0.14	0.0016	-	<0.0002	-	<0.0002	<0.0002	-	4	4	-	-	-	-	-
Toluene	mg/L	-	0.002	0.06	0.024	-	<0.0002	-	<0.0002	<0.0002	-	4	4	-	-	-	-	-
Xylenes	mg/L	-	-	0.09	0.02	-	<0.0004	-	<0.0004	<0.0004	-	4	4	-	-	-	-	-
m, p-Xylenes	mg/L	-	-	-	-	-	<0.0004	-	<0.0004	<0.0004	-	4	4	-	-	-	-	-
o-Xylene	mg/L	-	-	-	-	-	<0.0002	-	<0.0002	<0.0002	-	4	4	-	-	-	-	-
F1 (C6-C10) – BTEX	mg/L	-	-	-	-	-	<0.0250	-	<0.0250	<0.0250	-	4	4	-	-	-	-	-
F1 (C6-C10)	mg/L	-	-	-	-	-	<0.0250	-	<0.0250	<0.0250	-	4	4	-	-	-	-	-
Hydrocarbons																		
F2 (C11-C16)	mg/L	-	-	-	-	-	<0.1000	-	<0.1000	<0.1000	-	4	4	-	-	-	-	-
F3 (C17-C34)	mg/L	-	-	-	-	-	<0.2000	-	<0.2000	<0.2000	-	4	4	-	-	-	-	-
F4 (C35-C50)	mg/L	-	-	-	-	-	<0.2000	-	<0.2000	<0.2000	-	4	4	-	-	-	-	-

Table 2.4-5: Summary of Water Quality Data from MEL-13, 2018

Parameter	Unit	Guidelines and Objectives					Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q								A	C	D	S	Q
Radionuclides																		
Radium-226	Bq/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	4	4	-	-	-	-	-
Other																		
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.005	-	<0.005	<0.005	-	4	4	-	-	-	-	-
Cyanide (free)	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	4	4	-	-	-	-	-

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; Bq/L = becquerels per litre; + = plus; °C = degrees Celsius; NTU = nephelometric turbidity unit; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; BTEX = benzene, toluene, ethylbenzene, and xylene; Min = minimum; Max = maximum; SD = standard deviation; nd = not detected; <= less than ; % = percent; MDMER = Metal and Diamond Mining Effluent Regulations; - = parameter below water quality guideline or objective, or no guideline/objective or no data.

2.4.2.2 Acute and Sublethal Toxicity

As per Schedule I Table 2 of the Water Licence (NWB 2016), acute lethality testing of mine effluent is required prior to discharge and monthly thereafter. Effluent must not be acutely lethal to Rainbow Trout (Part F, Section 4). Monthly acute lethality testing is also required under the MDMER, with the same prohibition of discharge of acutely lethal effluent.

Sublethal toxicity testing is required as part of EEM. Tests are conducted twice per year on aliquots of the same effluent sample submitted for effluent characterization.

Methods

Acute lethality testing was performed using the following test protocols:

- Environment Canada (2000a): Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout (EPS 1/RM/13)
- Environment Canada (2000b): Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to *Daphnia magna* (EPS 1/RM/14)

An acutely lethal effluent is defined as an effluent at 100% concentration that kills more than 50% of the rainbow trout exposed during a 96-hour period (Government of Canada 2018). Testing with *Daphnia* was performed to provide additional information of acute toxicity. The effluent samples were submitted to Eurofins Environmental Testing, Saint-Augustin-de-Desmaures, Quebec, for acute lethality testing.

Sublethal toxicity testing was performed using the following test protocols:

- Environment Canada (2011): Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnows (EPS 1/RM/22)
- Environment Canada (2007a): Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia* (EPS 1/RM/21)
- Environment Canada (2007b): Biological Test Method: Test for Measuring the Inhibition of Growth Using the Freshwater Macrophyte, *Lemna minor* (EPS 1/RM/37)
- Environment Canada (2007c): Biological Test Method: Growth Inhibition Test Using a Freshwater Alga (EPS 1/RM25)

The effluent samples were submitted to AquaTox Testing & Consulting Inc., Puslinch, Ontario, for sublethal toxicity testing.

Results

Monthly mine effluent samples collected from MEL-14 from June to September 2018 were not acutely toxic to Rainbow Trout or *Daphnia magna* (Table 2.4-6; Appendix 2D).

Three mine effluent samples collected from MEL-14 in August and September 2018 did not adversely affect Fathead Minnow (*Pimephales promelas*) survival and growth, or green algae (*Pseudokirchneriella subcapitata*) growth. Stimulation of growth was observed in the green algae tests. Sublethal effects were observed on growth of common duckweed (*Lemna minor*) in two of the three samples, and on reproduction of the water flea (*Ceriodaphnia dubia*) in one sample (Table 2.4-7). Sublethal toxicity test reports are provided in Appendix 2E.

Table 2.4-6: Summary of Acute Lethality Data for MEL-14, 2018

Date	Acute Toxicity to Rainbow Trout		Acute Toxicity to *Daphnia magna*	
	% Mortality in 100% Effluent	LC50 (%v/v)	% Mortality in 100% Effluent	LC50 (%v/v)
24-Jun-2018	10	>100	0	>100
1-Jul-2018	0	>100	0	>100
5-Aug-2018	0	>100	0	>100
3-Sep-2018	0	>100	0	>100

LC50 = median lethal concentration; %v/v = percent volume by volume; > = greater than.

Table 2.4-7: Summary of Sublethal Toxicity Data for MEL-14, 2018

Species	Endpoint	Test Results (%v/v)		
		07-Aug-2018	13-Aug-2018	03-Sep-2019
Pimephales promelas	LC50	>100	>100	>100
	IC25 (Growth)	>100	>100	>100
Ceriodaphnia dubia	LC50	>100	-[(a)]	>100
	IC25 (Reproduction)	>100	-[(a)]	90.1 (23.3 to 96.3)
Lemna minor	IC25 (Weight)	>97.0	42.0 (26.5 to 63.2)	>97
	IC25 (Frond Yield)	72.3 (36.4 to 86.5)	38.2 (26.6 to 52.1)	>97
Pseudokirchneriella subcapitata	IC25 (Growth)	>90.91	>90.91	>90.91

Note: The 95% confidence limits, if available, are presented in parentheses. Due to the addition of nutrient spikes, the maximum effluent concentration that can be tested using *Lemna minor* and *Pseudokirchneriella subcapitata* is 97%v/v and 90.91%v/v, respectively.

(a) Test failed laboratory control validity criteria.

LC50 = median lethal concentration; IC25 = inhibition concentration at 25%; %v/v = percent volume by volume; > = greater than.

2.4.2.3 Loadings

As per Part 2, Division 2, Section 20 of the MDMER (Government of Canada 2018), the Mine shall record the loading of deleterious substances (in kg or megabecquerel [MBq]) that are contained in the effluent deposited from each final discharge point (i.e., MEL-14) for each month during which there was a deposit and during which a sample is collected. Monthly loadings are calculated using Equation 1:

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

Where ML is the loading for a month 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 each final discharge point (i.e., MEL-14) in m^3. The monthly loadings of effluent quality parameters are shown in Table 2.4-8. Loadings of each effluent quality parameter discharged from MEL-14 in July were generally higher than those reported in August and September due to a higher effluent volume (352,551 m^3) released into Meliadine Lake. Daily discharge volumes and concentrations of effluent quality parameters are presented in Appendices 2A and 2B, respectively.

Table 2.4-8: Monthly Loadings of Effluent Quality Parameters Discharged from MEL-14, 2018

Parameter	July[a]		August[b]		September[c]	
	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)
Conventional Parameters						
Hardness, as $CaCO_3$	433	152,655	402	61,464	510	1,342
Total alkalinity, as $CaCO_3$	38	133,26	26	3,907	15	39
Total dissolved solids	1,046	368,768	1176	180,006	1360	3,580
Total suspended solids	10.6	3,737.0	7.5	1,148	14.0	36.8
Total organic carbon	8.2	2,883.9	7.5	1,148	9.1	24.0
Dissolved organic carbon	6.2	2,171.7	6.9	1,060	7.0	18.4
Major Ions						
Bicarbonate, as $CaCO_3$	38	13,256	27	4,140	15	39
Calcium	135	47,453	123	18,873	156	411
Carbonate, as $CaCO_3$	1.0	352.6	1.0	153.1	1.0	2.6
Chloride	432	152,302	545	83,421	660	1,737
Magnesium	24	8,285	23	3,465	29	77
Potassium	12	4,386	15	2,273	17	46
Reactive silica, as SiO_2	0.24	86.09	0.73	111.7	1.20	3.16
Sodium	118	41,460	172	26,366	189	497
Sulphate	48	17,063	44	6,666	53	139
Nutrients						
Nitrate	4.8	1,691.5	6.3	961	5.7	15.1
Nitrite	0.18	64.31	0.23	35.36	0.33	0.87
Nitrate + nitrite	5.0	1,755.7	6.5	997.2	6.1	16.0
Total ammonia	1.4	505.2	1.5	232.7	0.9	2.4
Total Kjeldahl nitrogen	2.1	740.4	1.8	274.8	1.3	3.4
Total nitrogen (calculated)	7.1	2,496.1	8.3	1,272	7.4	19.4
Total phosphorus	0.045	15.794	0.025	3.75	0.023	0.061

Table 2.4-8: Monthly Loadings of Effluent Quality Parameters Discharged from MEL-14, 2018

Parameter	July[a]		August[b]		September[c]	
	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)
Nutrients (cont'd)						
Orthophosphate	0.01	3.53	0.01	1.53	0.01	0.03
General Organics						
Total oil and grease	1.0	359.6	0.7	112.2	-	-
Total Metals						
Aluminum	1.6338	575.9978	0.6310	96.6	1.3200	3.47
Antimony	0.0005	0.1763	1.2504	191.4	0.0005	0.0013
Arsenic	0.0014	0.5070	0.0019	0.29	0.0024	0.0062
Barium	0.1006	35.4666	0.1053	16.1	0.1500	0.3948
Beryllium	0.0001	0.0353	0.0001	0.015	0.0001	0.0003
Bismuth	-	-	-	-	0.0010	0.0026
Boron	0.1202	42.3766	0.3263	49.9	0.3250	0.8554
Cadmium	0.0001	0.0353	0.0001	0.015	0.0001	0.0003
Chromium	0.0010	0.3526	0.0010	0.15	0.0010	0.0026
Cobalt	-	-	-	-	0.0007	0.0017
Copper	0.0014	0.4999	0.0028	0.43	0.0006	0.0016
Iron	0.1364	48.0880	0.1208	18.48	0.1530	0.4027
Lead	0.0002	0.0797	0.0002	0.031	0.0002	0.0005
Lithium	0.1111	39.1825	0.1435	22.0	0.1570	0.4132
Manganese	0.1437	50.6686	0.2566	39.3	0.2530	0.6659
Mercury	0.0001	0.0353	0.0001	0.015	0.0001	0.0003
Molybdenum	0.0011	0.3808	0.0017	0.260	0.0014	0.0037
Nickel	0.0024	0.8461	0.0026	0.390	0.0027	0.0071
Selenium	0.0001	0.0353	0.0001	0.015	0.0001	0.0003
Silicon	-	-	-	-	0.6500	1.7108
Silver	0.0001	0.0353	0.0001	0.015	0.0001	0.0003
Strontium	2.4020	846.8275	2.7553	421.7	4.0600	10.6859
Thallium	0.0001	0.0353	0.0001	0.015	0.0001	0.0003
Tin	0.0050	1.7628	0.0050	0.765	0.0050	0.0132
Titanium	0.0050	1.7628	0.0050	0.765	0.0050	0.0132
Uranium	0.0003	0.0888	0.0001	0.020	0.0001	0.0003
Vanadium	0.0050	1.7628	0.0050	0.765	0.0050	0.0132
Zinc	0.0059	2.0801	0.0063	0.964	0.0050	0.0132
Zirconium	-	-	-	-	0.0001	0.0003
Dissolved Metals						
Aluminum	0.0683	24.0792	0.0843	12.90	0.0233	0.0613
Antimony	0.0005	0.1763	0.0005	0.077	0.0005	0.0013
Arsenic	0.0013	0.4618	0.0025	0.387	0.0020	0.0053
Barium	0.1035	36.4890	0.1024	15.67	0.1410	0.3711
Beryllium	0.0001	0.0353	0.0013	0.203	0.0001	0.0003

Table 2.4-8: Monthly Loadings of Effluent Quality Parameters Discharged from MEL-14, 2018

Parameter	July[a]		August[b]		September[c]	
	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)
Dissolved Metals (cont'd)						
Bismuth	-	-	-	-	0.0010	0.0026
Boron	0.1294	45.6201	0.9060	138.7	0.3170	0.8343
Cadmium	0.0001	0.0353	0.0002	0.031	0.0001	0.0003
Chromium	0.0010	0.3526	0.0133	2.028	0.0010	0.0026
Cobalt	-	-	-	-	0.0006	0.0015
Copper	0.0010	0.3681	0.0029	0.441	0.0005	0.0013
Iron	0.0250	8.8067	0.0827	12.65	0.0414	0.1090
Lead	0.0002	0.0705	0.0027	0.406	0.0002	0.0005
Lithium	0.1274	44.9150	0.1453	22.23	0.1580	0.4159
Manganese	0.1004	35.3891	0.2351	35.99	0.2090	0.5501
Mercury	0.0001	0.0353	0.0001	0.015	0.0001	0.0003
Molybdenum	0.0011	0.3878	0.0137	2.10	0.0013	0.0034
Nickel	0.0022	0.7827	0.0142	2.177	0.0023	0.0061
Selenium	0.0001	0.0353	0.0013	0.203	0.0001	0.0003
Silicon	-	-	-	-	0.5900	1.5529
Silver	0.0001	0.0353	0.0003	0.050	0.0001	0.0003
Strontium	2.5460	897.5948	2.6205	401.1	3.3100	8.7119
Thallium	0.0001	0.0353	0.0002	0.031	0.0001	0.0003
Tin	0.0050	1.7628	0.0663	10.14	0.0050	0.0132
Titanium	0.0050	1.7628	0.0663	10.14	0.0050	0.0132
Uranium	0.0001	0.0353	0.0013	0.203	0.0001	0.0003
Vanadium	0.0050	1.7628	0.0663	10.14	0.0050	0.0132
Zinc	0.0054	1.8967	0.0668	10.22	0.0050	0.0132
Zirconium	-	-	-	-	0.0001	0.0003
Volatile Organics						
Benzene	0.0002	0.0705	0.0002	0.031	0.0002	0.0005
Ethylbenzene	0.0002	0.0705	0.0002	0.031	0.0002	0.0005
Toluene	0.0002	0.0790	0.0002	0.031	0.0002	0.0005
Xylenes	0.0004	0.1410	0.0004	0.061	0.0004	0.0011
m,p-Xylenes	0.0004	0.1410	0.0004	0.061	0.0004	0.0011
o-Xylene	0.0002	0.0705	0.0002	0.031	0.0002	0.0005
F1 (C6-C10) – BTEX	0.0250	8.8138	0.0250	3.827	0.0250	0.0658
F1 (C6-C10)	0.0250	35.2551	0.0250	3.827	0.0250	0.0658

Table 2.4-8: Monthly Loadings of Effluent Quality Parameters Discharged from MEL-14, 2018

Parameter	July[a]		August[b]		September[c]	
	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)	Concentration (mg/L)	Monthly Load (kg)
Hydrocarbons						
F2 (C10-C16)	0.1000	70.5102	0.1000	15.31	0.1000	0.2632
F3 (C17-C34)	0.2000	8.8138	0.2000	30.61	0.2000	0.5264
F4 (C35-C50)	0.2000	70.5102	0.2000	30.61	0.2000	0.5264
Other						
Cyanide	0.005	2.128	0.005	0.765	0.005	0.013

a) Total discharge volume in July was 352,551 m^3.

b) Total discharge volume in August was 153,066 m^3.

c) Total discharge volume in September was 2,632 m^3.

mg/L = milligrams per litre; + = plus; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; BTEX = benzene, toluene, ethylbenzene, and xylene; m^3 = cubic metres; kg = kilogram; - = no data.

2.4.3 Delineation of the Mine Effluent Mixing Zone

A plume delineation study was conducted in July and August 2018. This report section provides a summary of the results. Details of the sampling design are available in Golder (2018c). The plume delineation study was based on previous experience at mines in Northern Canada (Golder 2013a, 2015). Coordinates of the plume delineation study sampling stations are shown in Table 2.4-9.

2.4.3.1 Background Information

Turbulent mixing caused by the diffusers results in an initial effluent plume adjacent to the diffusers. The term “plume” in this section refers to the mixture of treated effluent and lake water that is chemically distinguishable from the surrounding ambient lake water.

A submerged diffuser was installed in Meliadine Lake in August 2017 to disperse the water discharged from CP1. The diffuser is 30 m long, 400 mm diameter, nearly north-south oriented, and connected to the pipelines through a T-connection. Ten 51 mm ports are evenly spaced at every 3 m along the diffuser (Tetra Tech 2017). The as-built diffuser differed from the project design (see Tetra Tech 2017) in terms of its horizontal position and depth of diffuser system at T-connection (42 m horizontal shift and a 3.2 m shallower depth). Therefore, the performance of the diffuser system was reassessed by Tetra Tech in 2018. Despite the deviations from the original design, the predicted minimum dilution of 23:1 was achieved at the edge of the mixing zone, and water quality criteria were met (Tetra Tech 2018).

Based on previous experience in low conductivity subarctic lakes, conductivity was considered an appropriate tracer to delineate the effluent plume in Meliadine Lake, because effluent conductivity (i.e., specific conductivity, temperature-corrected to 25°C) is higher than the conductivity of natural lake water.

CP1 receives water from surface runoff from the project footprint and from another surface water runoff collection pond, CP5. Water from CP5 is highly saline and was treated for TDS by RO membrane treatment prior to transferring to CP1. Specific conductivity in CP1 ranged from 1,100 to 2,500 µS/cm in 2017 and 2018 (Appendix 2F) and in EWTP (MEL-14) results ranged from 1,600 to 2,100 µS/cm (Appendix 2B).

Table 2.4-9: Coordinates of Plume Delineation Study Sampling Stations

Sample ID	Date	UTM Coordinates (NAD 83, Zone 15V)	
		Easting	Northing
50-01	10 August	54280	6989212
50-03	10 August	542793	6989086
100-01	10 August	542808	6989262
100-02	23 July	542876	6989227
100-03	10 August	542897	6989141
100-04	10 August	542861	6989059
100-05	10 August	542788	6989036
100-06	10 August	542720	6989070
100-07	19 July	54269	6989157
100-08	10 August	542729	6989233
175-01	10 August	542814	6989337
175-03	10 August	542782	6988961
250-01	10 August	543047	6989128
250-03	10 August	542776	6988886
250-05	10 August	542549	6989170
250-06	10 August	542623	6989340

2.4.3.2 Methods

The sampling design selected for the plume delineation in Meliadine Lake is a modified radial grid design that allows measurement of plume dispersion in all directions. According to the MVLWB/GNWT Guidelines for Effluent Mixing Zones (GNWT 2017), the regulated mixing zone is defined as an area where concentrations of some substances may not comply with Site-Specific Water Quality Objectives for the receiving environment. For lakes in the Mackenzie Valley, regulated mixing zones should have a maximum of 100 m radius from the discharge point (GNWT 2017). As per the MDMER (Government of Canada 2018) a description of the manner in which the effluent mixes within the exposure area at 100 m and 250 m from each final discharge point is required for site characterization. Taking this information as starting points, a modified radial grid containing 16 sampling stations was designed (Figure 2.4-1); from these, two stations were sampled in 19 and 23 July 2018 by Golder staff as per the July AEMP field work and fourteen were sampled on 10 August 2018 by Agnico Eagle's staff. Coordinates and dates of all sampling stations visited are given in Table 2.4-9. Although provided in Appendix 2G, the July data were not incorporated in this report because differences in pH (average pH of 7.6 and 8.5) between the July and August data were observed, possibly as a result of different environmental conditions during collection time. The July data were not considered to be reasonably similar enough to the August data to allow inclusion in the final dataset for the plume delineation.

As described by Golder (2018a), the plume delineation was based on vertical profiles of specific conductivity in the Near-field area of Meliadine Lake. Vertical profiles of the lake water column were measured using water quality meters (Eureka Manta II) equipped with a 20 m long cable. The water quality meters were calibrated before going out in the field, and the water quality probe was placed in lake water for at least one minute to allow readings to stabilize. The results obtained during the field work were stable and in the expected range of results.

At each sampling station, profile measurements were taken from surface (i.e., 0.3 m) and at 1-m intervals, starting from 1 m below surface to 1 m above the bottom. Temperature, specific conductivity, dissolved oxygen (DO) concentration, oxygen saturation, and pH were recorded on field data sheets and later transcribed to an Excel spreadsheet by a Golder or Agnico Eagle staff.

Data were plotted using R v. 3.4.2 environment (R Core Team 2018). All data obtained are presented as vertical profile plots, but because of the high number of sampling stations (fourteen), they were grouped based on their distance to the diffuser (50, 100, 175 and 250 m). The locations of these stations are provided in Figure 2.4-1. This approach aimed to simplify the legends and improve readability while retaining the information on distance. Water quality results obtained under the AEMP were used for comparisons with pre-discharge conditions.

The dilution factor provides a result of the mixing characteristics of the discharge; a higher value typically indicates a larger degree of dilution of the discharge in the lake water. Following a conservative approach, the dilution factors were calculated according to the Equation 2.

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

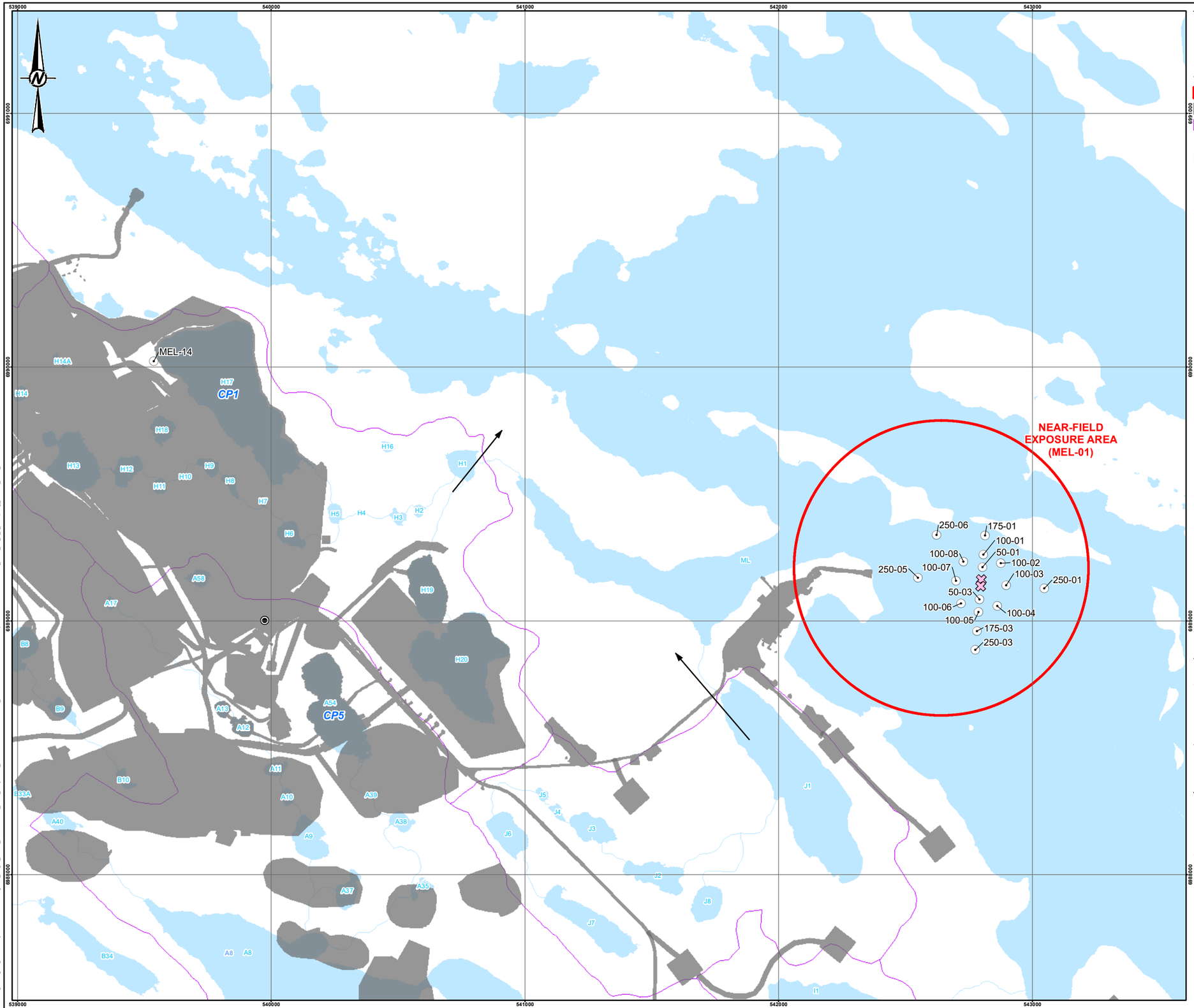
Where DF is the dilution factor, $[C_{eff}]$ is the average specific conductivity in the treated effluent (MEL-14) in August 2018, $[MC_{dif}]$ is the maximum specific conductivity at a given plume delineation sampling station, and $[C_{amb}]$ is the average specific conductivity in the Near-field area characterizing pre-discharge conditions during the open water season.

The most recent results for specific conductivity in the treated effluent (MEL-14) were collected on 5 August and 13 August (1,900 and 2,100 µS/cm respectively; Appendix 2B). As the stations for plume delineation measurements were visited on 10 August, the effluent chemistry for these two dates were averaged for use in the dilution factor calculations. The maximum specific conductivity of each sampling location was used to yield the minimum dilution factor possible.

Water quality data collected as part of the AEMP during the open water season were used to characterize pre-discharge conditions in the Near-field area. Discharge from MEL-14 started in June 2018; therefore, data collected before this date can be used to characterize pre-discharge conditions (i.e., July 2015 to July 2017, Golder 2016b; 2017a). Specific conductivity in the Meliadine Lake Near-field area ranged from 49 to 99 µS/cm between 2015 and 2017 (Golder 2016b; 2017a; 2018a). However, average values were slightly higher in 2017 (i.e., 81.3 µS/cm) than in 2015/2016 (i.e., 69.3 µS/cm) (see Figure 2.4-8). The apparent increase in specific conductivity may be due to the discharge of treated sewage effluent into a channel that eventually flows into the bay with the Near-field area.

As stated in the response to comments on the 2017 AEMP Annual Report (Golder 2018a), water quality data collected from July 2017 to present is considered part of the “construction” phase, and data collected prior to July 2017 are considered “pre-construction.” Given the observed slight increase in specific conductivity between the two periods, two different scenarios were calculated based on different estimates of average specific conductivity in the Near-field area:

- Scenario A: near-field average specific conductivity for 2015 to 2016; and
- Scenario B: near-field average specific conductivity for 2017.



LEGEND

- SAMPLING LOCATION
- DIFFUSER
- DIRECTION OF FLOW AT WATERSHED OUTLET
- MELIADINE AEMP
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- WATERCOURSE
- WATERBODY



0 300 600

1:15,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

SAMPLING STATIONS IN MELIADINE LAKE NEAR-FIELD EXPOSURE AREA FOR THE PLUME DELINEATION STUDY

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	JN
PREPARED	MH
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
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2.4.3.3 Results and Discussion

2.4.3.3.1 Physicochemical Profiles

The compiled dataset of vertical profiles measured in July and August 2018 is presented in Table 1 of Appendix 2G. Vertical profile plots are displayed below in Figure 2.4-2 through Figure 2.4-6. Temperature, pH and DO were nearly homogeneous among sampling stations within the same sampling event and within the water column.

Temperature in the August profiles were between 12.5 and 13.2°C, with temperature decreasing with depth (Figure 2.4-2).

In August, DO concentrations were between 9.8 and 10.0 mg/L and oxygen saturation in the water ranged from 92 to 95%. The water column was well oxygenated with small differences between surface and bottom concentrations (Figure 2.4-3 and Figure 2.4-4).

Results for pH obtained in August ranged from 8.4 to 8.6, with very little vertical variation and low variability across sampling stations (Figure 2.4-5).

Specific conductivity results were more variable, ranging from 86 to 106 µS/cm in the profiles taken in August. The variation occurred both horizontally and vertically (Figure 2.4-6). Being the only parameter in which a spatial pattern in variability was observed, corroborates the choice of specific conductivity as the effluent tracer and illustrates the dilution of effluent in the water column at various distances from the diffuser.

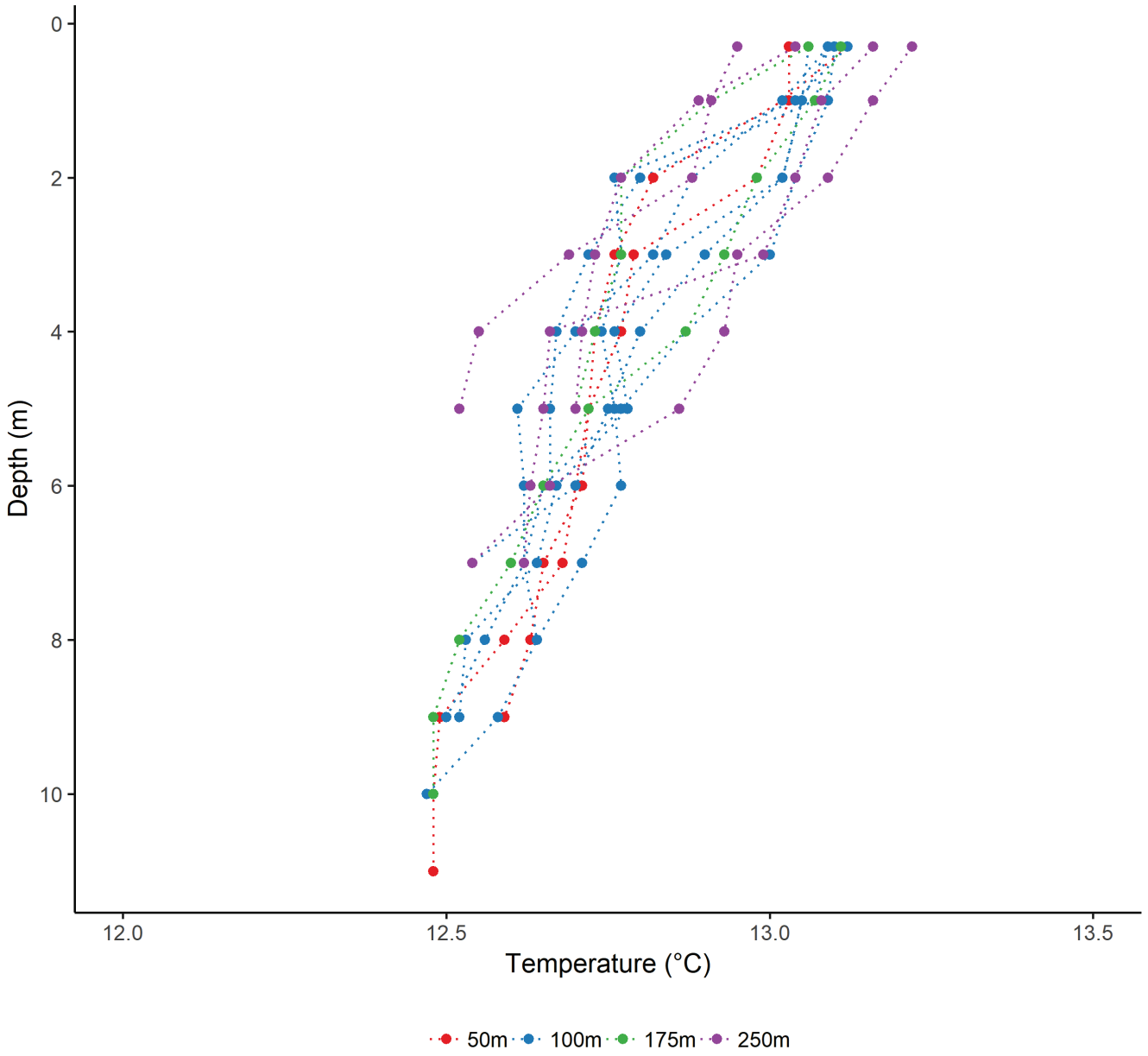


Figure 2.4-2: Vertical Profiles of Temperature in the Near-Field Exposure Area at Meliadine Lake During the Plume Delineation Study, August 2018

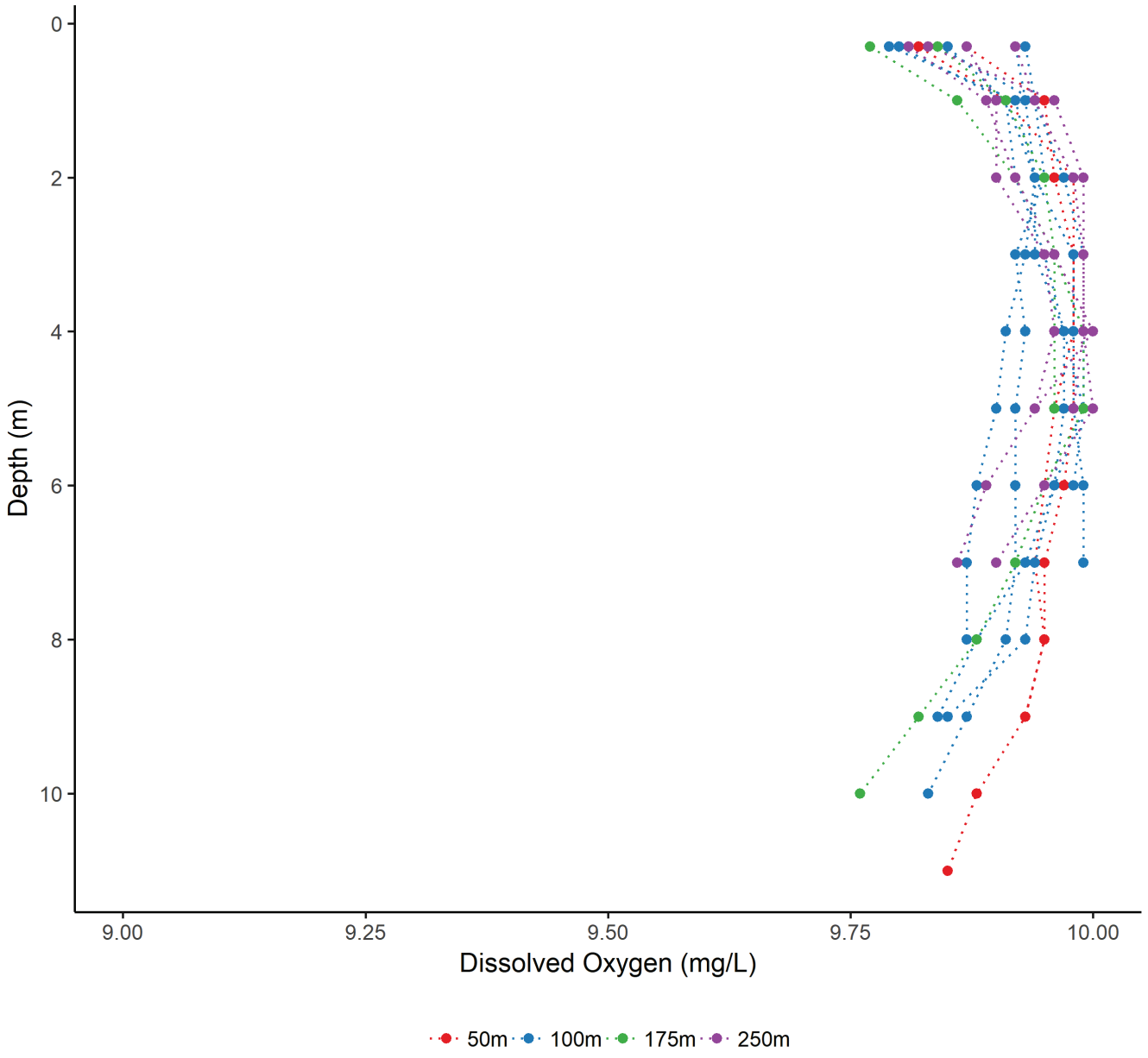


Figure 2.4-3: Vertical Profiles of Dissolved Oxygen in the Near-Field Exposure Area at Meliadine Lake During the Plume Delineation Study, August 2018

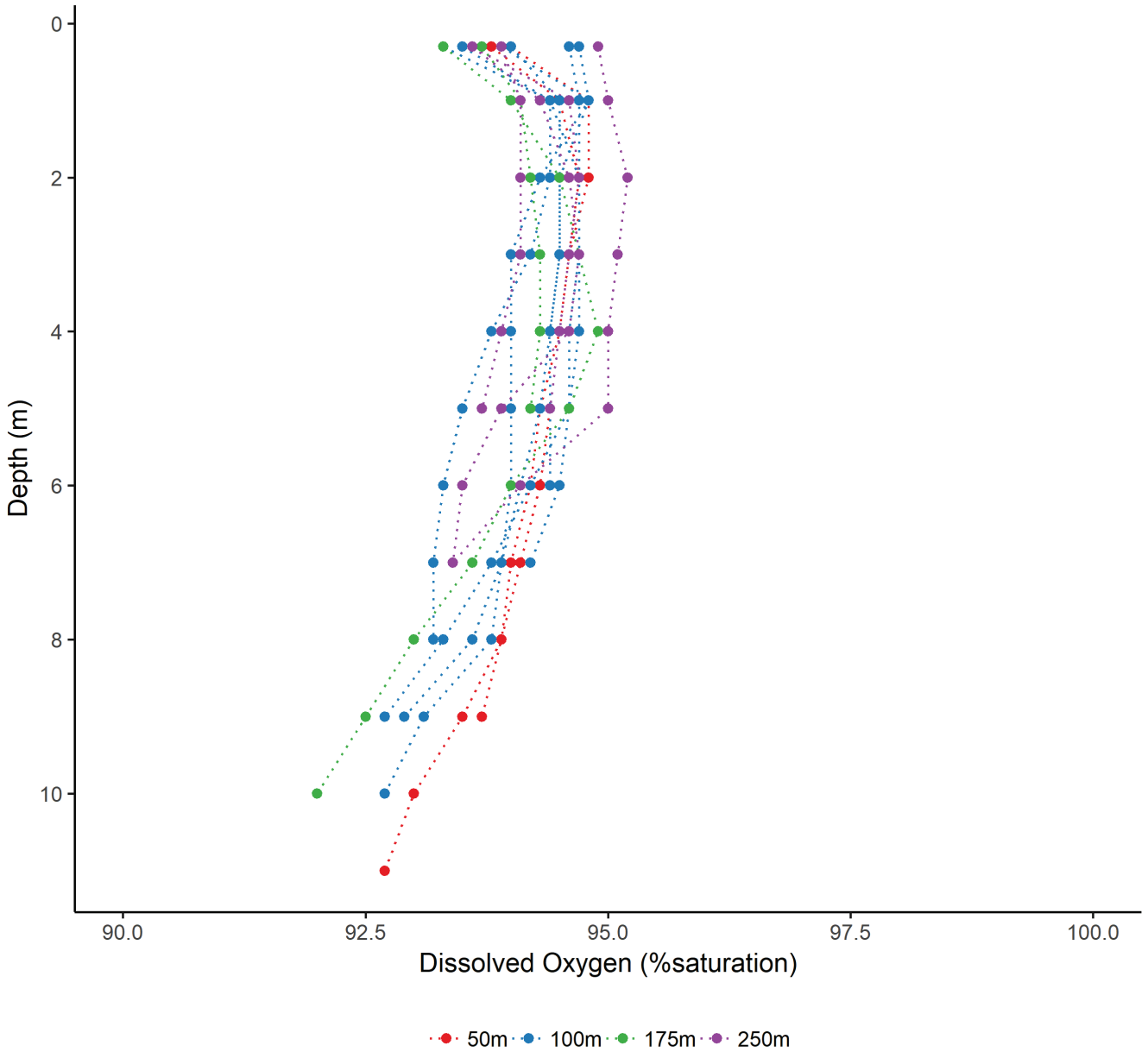


Figure 2.4-4: Vertical Profiles for Dissolved Oxygen (Percent Saturation) in the Near-Field Exposure Area at Meliadine Lake During the Plume Delineation Study, August 2018

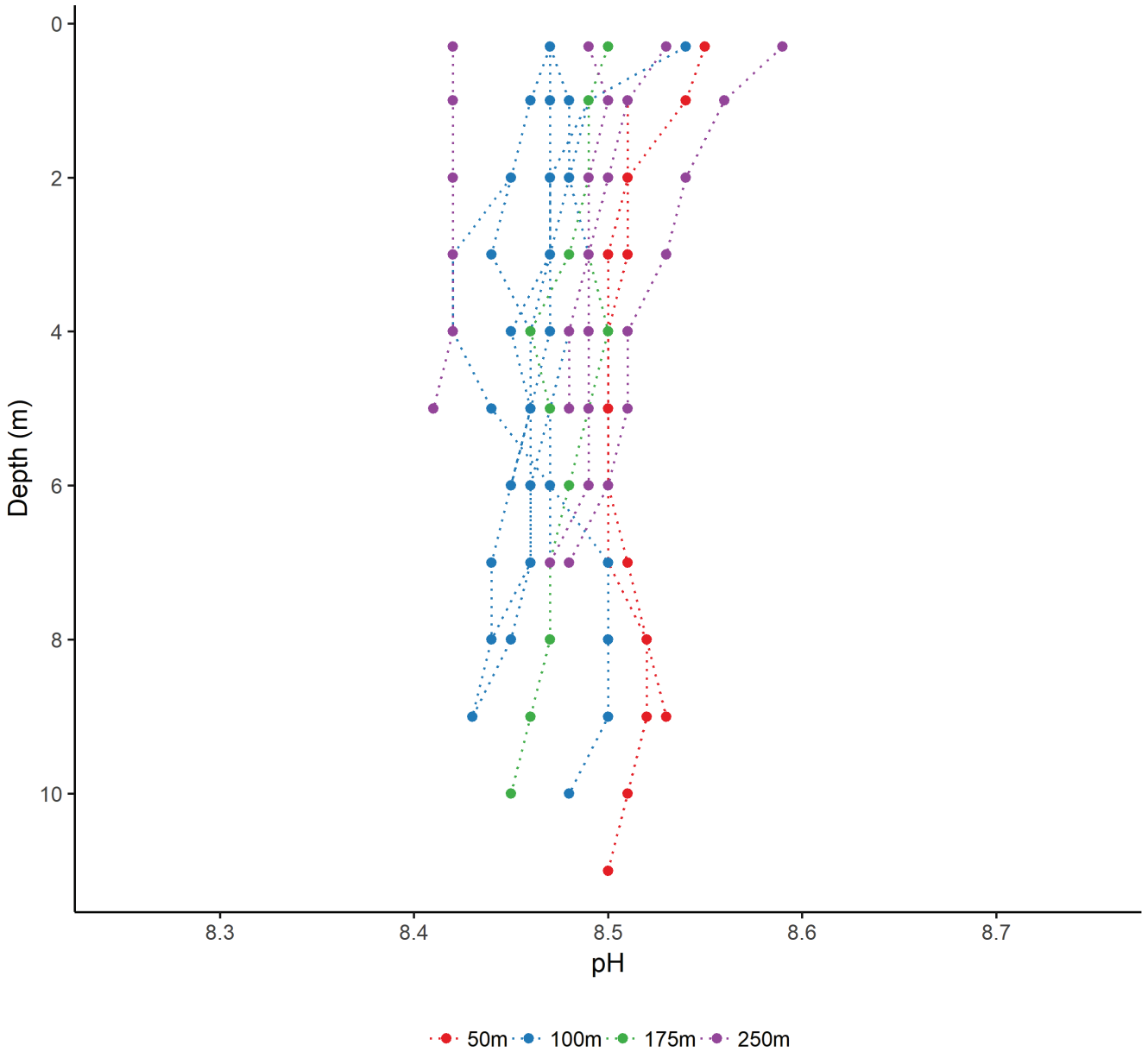


Figure 2.4-5: Vertical Profiles of pH in the Near-Field Exposure Area at Meliadine Lake During the Plume Delineation Study, August 2018

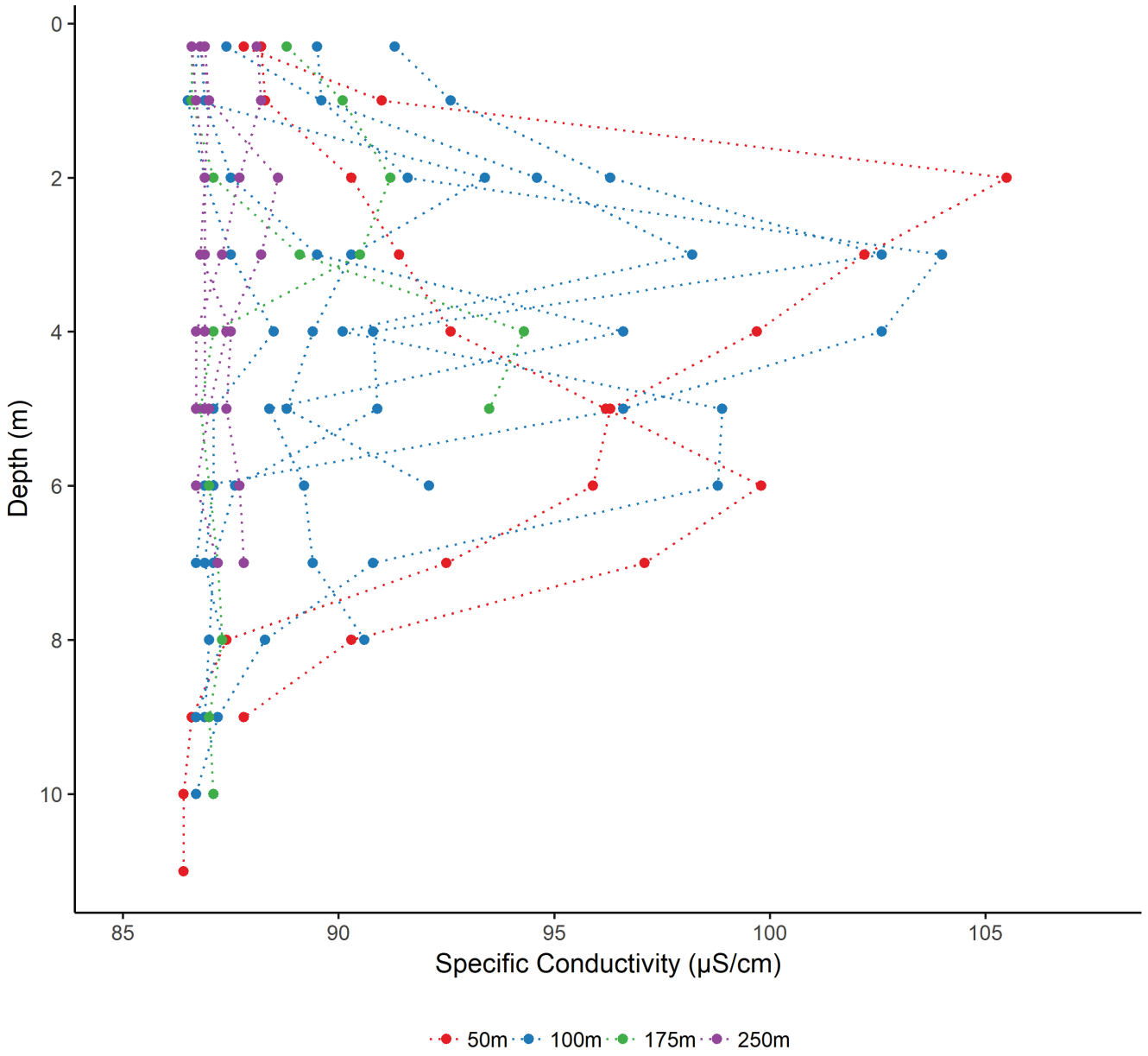


Figure 2.4-6: Vertical Profiles of Specific Conductivity in the Near-Field Exposure Area at Meliadine Lake During the Plume Delineation Study, August 2018

2.4.3.3.2 Plume Characterization

In terms of depth, the increases in specific conductivity were observed roughly between 3 and 7 m. Maximum specific conductivity was 106 µS/cm, observed at station 50-03 at a depth of 3 m, followed by station 100-03 at a depth of 4 m. The results for specific conductivity at stations 50-03 and 100-03 at surface and close to the bottom were restricted to a limited range (85 to 90 µS/cm), which is the same specific conductivity range observed for the measurements taken at all depths up to 250 m away from the diffuser. The presence of plume at mid-depth indicates that the receiving water and the effluent have similar densities and/or intense mixing.

Stations where the plume was more noticeable were to the south-west of the diffuser, which indicates a preferential direction of plume advection during the time the field work was completed (Figure 2.4-7). Changes in wind speed and direction are key factors determining the plume dispersion direction.

By analyzing the results of the specific conductivity measurements taken on previous open-water AEMP field campaigns (July 2015 to July 2018, Golder 2016b; 2017a; 2018a), the plume was discernible by the greater variability observed in July 2018. Whereas in previous sampling events, little or no variation among stations was observed, more variation among and within stations was observed in 2018 (Figure 2.4-8). Even in 2017 prior to effluent discharge, water column conductivity was nearly homogeneous. Comparison of these results to the plume delineation results from Figure 2.4-6 clearly shows how effluent discharge affected specific conductivity in the water column of the Near-field area in 2018. Nevertheless, the effect was limited to the stations closer to the diffuser. Evidence of the plume was noticeable at most sampling stations located 100 m away from the diffuser, while 250 m away from the diffuser the plume was no longer evident.

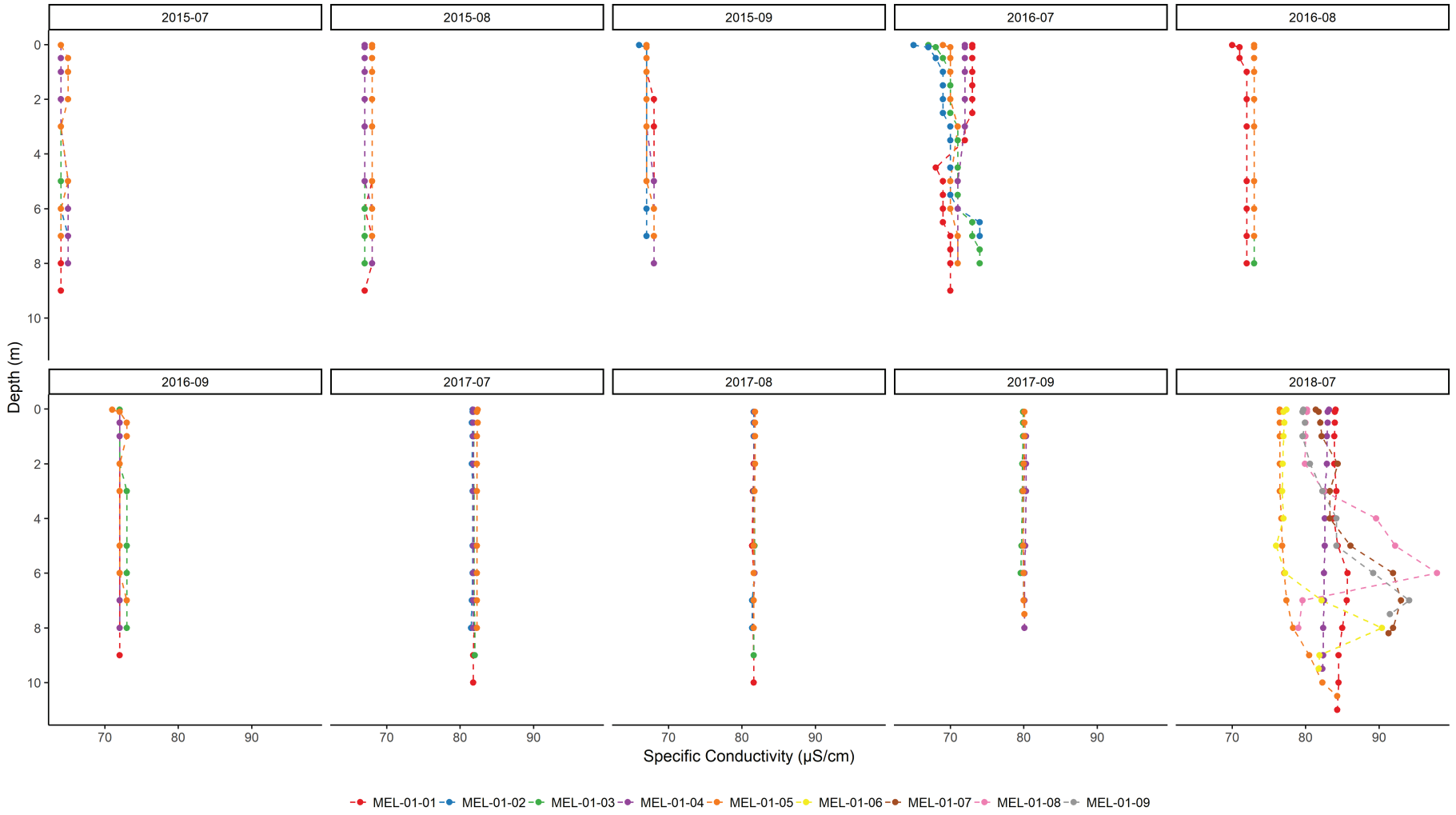
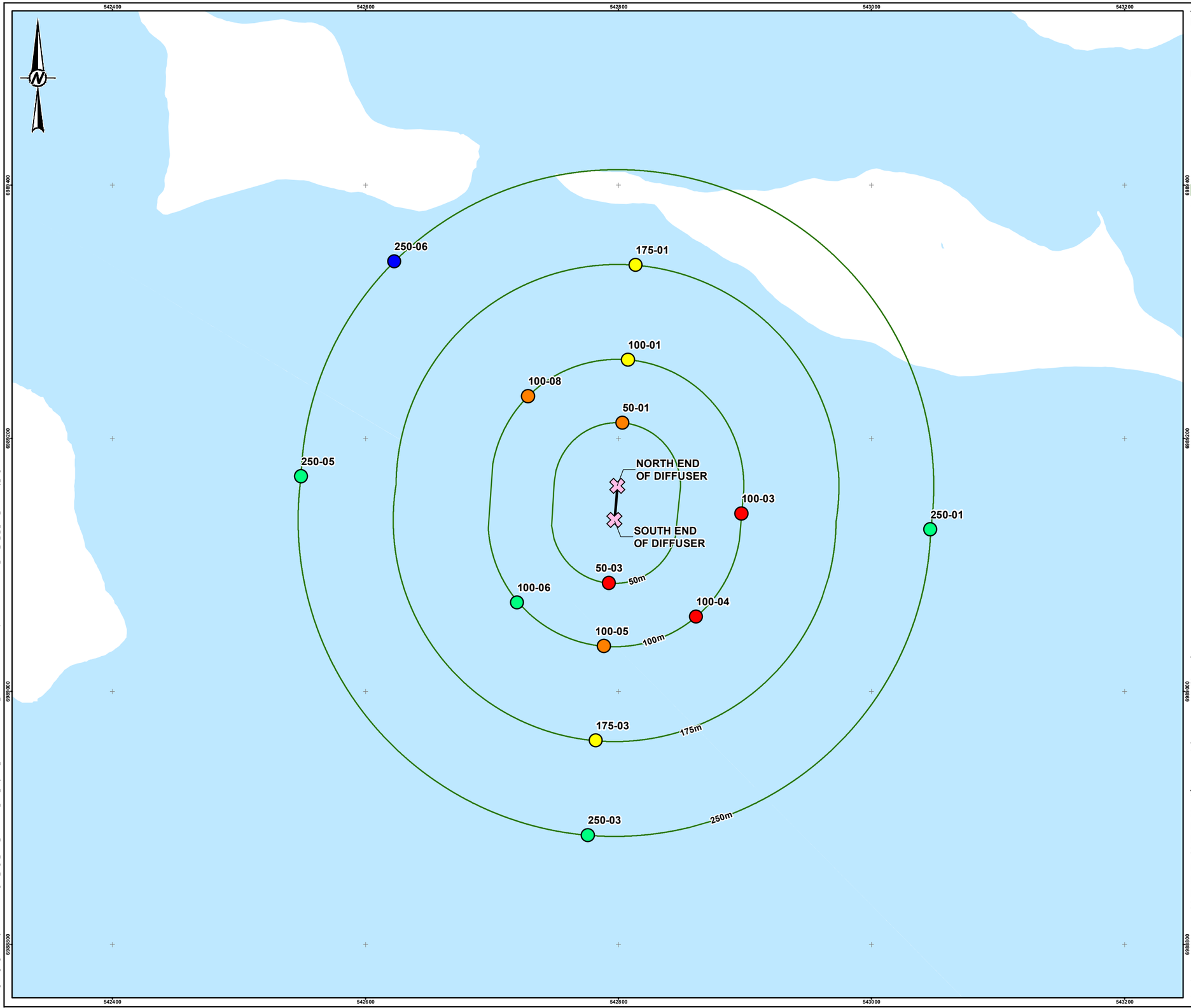


Figure 2.4-7: Maximum Specific Conductivity Under the Plume Delineation Study in the Meliadine Lake Near-Field Exposure Area in August 2018



LEGEND

DIFFUSER

Maximum Specific Conductivity (uS/cm)

- 85.70 - 86.90
- 86.91 - 88.60
- 88.61 - 94.30
- 94.31 - 99.80
- 99.81 - 105.50

FINAL DISCHARGE BUFFER

AS-BUILT DIFFUSER



0 60 120

1:3,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

MAXIMUM SPECIFIC CONDUCTIVITY UNDER THE PLUME DELINEATION STUDY AT MELIADINE LAKE NEAR-FIELD EXPOSURE AREA IN AUGUST 2018

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	ER
PREPARED	MH/CC
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
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2.4.3.3.3 Dilution Factors

The diffuser was designed to maximize initial mixing of the effluent discharged to Meliadine Lake. The dilution factor provides an assessment of the mixing characteristics, where larger values are indicative of more efficient mixing. The results for the different scenarios of dilution factor calculations are given below in Table 2.4-10.

Table 2.4-10: Dilution Factors in the Near-Field Exposure Area at Meliadine Lake

Sampling Station	Maximum Specific Conductivity in 2018 (µS/cm)	Dilution Factor – Scenario A	Dilution Factor – Scenario B
50-01	99.8	63	104
50-03	105.5	53	79
100-01	93.4	80	159
100-03	104.0	56	85
100-04	102.6	58	90
100-05	98.9	65	109
100-06	88.5	101	266
100-08	96.6	71	125
175-01	94.3	77	148
175-03	91.2	88	194
250-01	88.2	102	278
250-03	88.6	100	263
250-05	87.8	104	295
250-06	86.9	110	343

DF = dilution factor.

Under Scenario A (average specific conductivity for 2015 and 2016), which is the more conservative approach, a minimum dilution factor of 53 was obtained. This scenario used the average specific conductivity 2,000 µS/cm for effluent in August 2018 and 69.3 µS/cm for lake water conductivity between 2015 and 2016. Larger dilution factors were obtained under Scenario B, which used the average specific conductivity for lake water in the Near-field area as observed in 2017.

As a general rule, the dilution factor tended to increase as distance to the diffuser increased, even though there were a few exceptions (e.g., station 100-03 and 100-04). For the sampling stations 250 m away from the diffuser the minimum dilution factor was 100 while at 100 m from the diffuser the lowest dilution factor was 56 at 100-03 (Scenario A). This result was nearly two times higher than the lowest results obtained at 50 m. The calculated dilution factors suggest efficient mixing of the effluent in the Near-field area within 50 m from the diffuser.

2.4.3.4 Conclusions

Plume delineation was successful in that the effluent plume could be measured and characterized in the Near-field area in Meliadine Lake. Evidence of an effluent plume was observed between 50 and 100 m from the diffusers, with slight preference for south-west orientation. Vertical influence of the effluent mixing was restricted to 3 to 7 m depths. Based on the specific conductivity results, the effluent was rapidly diluted in the surrounding water, with a minimum dilution factor of 53 at 50 m from the diffuser. The results indicate that maximum effluent concentration observed at 250 m away from the diffuser was 1%, and less than 2% at 100 m.

2.5 Description of the Exposure and Reference Areas

The exposure area is defined as “all fish habitat and waters frequented by fish that are exposed to effluent,” and the reference area is defined as “water frequented by fish that is not exposed to effluent and that has fish habitat that, as far as practical, is most similar to that of the exposure area (Schedule 5, Section 1; Government of Canada 2018).”

The exposure and reference areas are both located within Meliadine Lake. Within-lake reference areas were selected for the following reasons:

- The quantity of effluent to be released is small (maximum annual water volume of 729,000 cubic metres during operations; Agnico Eagle 2016) relative to the volume of Meliadine Lake (east and south basins estimated at 98,851,000 cubic metres and 48,429,000 cubic metres, respectively).
- Concentrations at the edge of the mixing zone (100 m from the diffuser) were predicted to be at or less than CWQG-PAL and CDWQG (FEIS, Volume 7; Golder 2014a).
- The effluent discharge point is approximately 20 km from the outlet in the northwest basin (secondary outlet) and 48 km from the outlet in the southwest basin (main outlet).
- The target small-bodied fish species for the Fish Population study is Threespine Stickleback (*Gasterosteus aculeatus*), based on presence and abundance in the areas studied in Meliadine Lake (Golder 2014). This species is not found in any other regional lake studied to date (Golder 2016a), and individual fish home-range sizes in the exposure area do not overlap with the proposed reference areas.
- No alternative nearby reference lakes with a similar large size and fish assemblage, and accessibility that meets health and safety needs, have been identified (Golder 2014a).

Information on the geology, hydrology, and limnology of Meliadine Lake is provided in Section 2.1. Information on water and sediment quality, and characteristics of BIC and fish populations are provided in Section 3.0.

The Near-field area and at least one Reference area are consistent between the Cycle 1 EEM study and the AEMP. An additional Mid-field exposure area and two additional Reference areas are included in the AEMP. Further description of the exposure and reference areas for each program are provided below.

2.5.1 EEM

2.5.1.1 Exposure Area

The TGD recommends that exposure area sampling be carried out in an area closest to the effluent discharge that ideally supports habitat for both BIC and fish populations, and where effects may be found (Environment Canada 2012). The Near-field area for the Cycle 1 EEM study is located in the vicinity of the CP1 diffuser (Figure 2.6-1). As stated on Section 1.2.1, the Near-field area was relocated to match that of the AEMP (i.e., MEL-01). The coordinates for the Near-field area are provided in Table 2.5-1.

2.5.1.2 Reference Area

The TGD recommends that "where feasible, the reference area should be located in the same waterbody as the effluent discharge, upstream of or beyond any influence from the discharge (Environment Canada 2012)."

The reference area for the Cycle 1 EEM study were located within the northeast bay of Meliadine Lake's West basin (Reference Area 1; MEL-03) (Figure 2.6-1). It is located outside the zone of influence of the mine effluent discharge. The coordinates for the Reference Area 1 (MEL-03) are provided in Table 2.5-1.

2.5.2 AEMP

2.5.2.1 Meliadine Lake

The AEMP study area for the Mine was selected based on the spatial extent of effects predicted in the FEIS (Agnico Eagle 2014c), concerns raised through the FEIS process about potential far downstream effects, and requirements under the federal MDMER requirements (Government of Canada 2018). Reviewers of the FEIS were concerned about potential far-field changes in Meliadine Lake and potential changes as far downstream as Peter Lake. To verify the prediction from the FEIS, address concerns about extent of potential changes, and meet EEM requirements, Meliadine Lake will be monitored in the Near-field area (MEL-01), a Mid-field area (MEL-02), and three downstream reference areas (Figure 2.5-1 and Table 2.5-1). Two reference areas will be located near the two lake outlets (Reference Area 4 [MEL-04] and Reference Area 5 [MEL-05]). One reference area is located within the northeast bay of the lake's west basin (Reference Area 1 [MEL-01]). The reasons for selecting reference areas within Meliadine Lake rather than separate reference lakes are provided above.

2.5.2.2 Peninsula Lakes

Monitoring of Peninsula Lakes is intended to assess indirect effects from the Mine, such as alteration of natural watersheds and potential effects from dust deposition. Headwater lakes (Lake A8, Lake B7, Lake D7) in three peninsula watersheds were selected (Table 2.5-1). The selected peninsula lakes include two lakes close to the proposed mine footprint that were previously fished by the Inuit (Lakes B7 and D7) during winter (Golder 2016a).

Table 2.5-1: Exposure and Reference Areas in Meliadine Lake, 2018

Waterbody	Area	Monitoring Program	UTM Coordinates (NAD 83, Zone 15V)		Geographic Coordinates	
			Easting (m)	Northing (m)	Latitude	Longitude
Meliadine Lake	Near-field Exposure (MEL-01)	EEM and AEMP	542657	6989124	92° 9'25.24"W	63° 1'45.14"N
	Mid-field Exposure (MEL-02)	AEMP	537611	6992659	92°15'21.25"W	63° 3'41.38"N
	Reference Area 1 (MEL-03)	EEM and AEMP	533498	6998574	92°20'9.85"W	63° 6'53.96"N
	Reference Area 2 (MEL-04)	AEMP	525713	7001178	92°29'23.84"W	63° 8'20.39"N
	Reference Area 3 (MEL-05)	AEMP	530644	6990942	92°23'38.52"W	63° 2'48.27"N
Peninsula Lakes	Lake A8	AEMP	540211	6987204	92°12'20.853"W	63°0' 44.151"N
	Lake B7	AEMP	538195	6989436	92°14'42.320"W	63°1'57.047"N
	Lake D7	AEMP	536567	6988868	92°16'38.599"W	63°1'39.300"N

Note: Coordinates are approximate.

UTM = Universal Transverse Mercator; NAD = North American Datum; m = metre; ° = degree; ‘ = minute; “ = second; W = West; N = North.

525000
530000
535000
540000
545000
7000000
6995000
6990000

REFERENCE AREA 2 (MEL-04)

REFERENCE AREA 1 (MEL-03)

REFERENCE AREA 3 (MEL-05)

MID-FIELD EXPOSURE AREA (MEL-02)

NEAR-FIELD EXPOSURE AREA (MEL-01)

LAKE H17 EFFLUENT DIFFUSER (INACTIVE)

STP EFFLUENT DISCHARGE (INACTIVE)

CP1 DIFFUSER

Meliadine Lake

Meliadine Lake

Control Lake

E2 E9 E3 F4 F3 F7 D12 D24 E4 D1 D23 D3 D35 D36 B4 D3 B7 B7 B8 B5 B17 B4 B36 B59 B46 B46 B2 P2 O2 C5 A6 A6 H17 M1 H20 J1

LEGEND

- LAKE H17 EFFLUENT DIFFUSER (INACTIVE)
- STP EFFLUENT DISCHARGE (INACTIVE)
- CP1 DIFFUSER
- DIRECTION OF FLOW AT WATERSHED OUTLET
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- WATERCOURSE
- WATERBODY



0 1.5 3

1:75,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

STUDY AREAS FOR MELIADINE GOLD MINE ENVIRONMENTAL EFFECTS MONITORING AND AQUATIC EFFECTS MONITORING PROGRAM

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	JN
PREPARED	MH
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
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2.6 Additional Considerations – Potential Confounding Factors

Under Schedule 5, Section 12 of the MDMER, the first interpretative report is required to describe "the presence of anthropogenic, natural or other factors that are not related to the effluent under study and that may reasonably be expected to contribute to any observed effect" (Government of Canada 2018). Due to the remote location of the Mine, there are limited anthropogenic influences other than the Mine (e.g., public recreational areas, infrastructure, or industrial developments) that could contribute to effects in the study area beyond those associated with the Mine itself (e.g., dust and associated local aerial deposition). The following sub-sections outline potential Mine-related factors other than mine effluent discharge and dust deposition that may confound the determination of effects of the mine effluent on the receiving environment in Meliadine Lake or the Peninsula Lakes.

2.6.1 Greywater

Under Water Licence 2BB-MEL0709 (NWB 2007), exploration camp greywater was discharged to a wetland, which then discharged into Meliadine Lake from 2007 to 2010. Water chemistry was monitored at station MEL-03 in the wetland (UTM 542083E, 6989004N) and at station MEL-04 in Meliadine Lake (UTM 542092E, 6989012N) (Figure 2.2-1).

Greywater samples collected in July and October 2007 showed elevated total phosphorus concentration (3.1 to 3.2 mg/L), which was attributed to the use of phosphate-containing detergents in the kitchen and dry wash activities (Comaplex 2007). Total phosphorus was not detected (detection limit = 0.02 mg/L) in the MEL-04 samples. Total phosphorus was also elevated in 2008 greywater samples, with concentrations of 4.2 mg/L (June 30) and 2.9 mg/L (August 19) (Comaplex 2008a). Total phosphorus was detected at the detection limit of 0.02 mg/L in the concurrent MEL-04 samples. No additional MEL-03 samples were collected in October 2008; one sample was collected at MEL-04 (total phosphorus was not detected at 0.02 mg/L) (Comaplex 2008b).

Greywater volume was not reported in the 2007 and 2008 annual reports. However, water intake related to camp use was reported for part of October and for November 2007; daily average use was 3.8 m^3 in October and 4.3 m^3 in November (Comaplex 2007). Total volume used for camp use from October 2007 to December 2008 was estimated to be 2,007 m^3 (Comaplex 2008b).

2.6.2 Sewage

Under Water Licence 2BB-MEL0914 (NWB 2009), a BIODISK wastewater treatment system (sewage treatment plant; STP) was approved for use at the exploration camp to treat sewage. The camp was typically open from the beginning of April to the end of November. Prior to this, sewage (i.e., human waste) was bagged and incinerated or transported off site to a suitable disposal facility.

In 2009, the BIODISK system and associated wash car (with flush toilets) was in the process of being commissioned or was put into use. The two BIODISK system in operation could handle 125 workers. Treated sewage discharge was monitored at MEL-07 (in the STP) starting in July 2010. There is no mention of a monitoring station in Meliadine Lake associated with MEL-07 (STP) discharge. At some point, greywater was diverted to the STP for treatment instead of discharging through the wetland. At the end of October 2010, the camp entered care and maintenance with two people remaining on site to maintain the microbes in the BIODISK system over the winter. Prior to this, the camp was presumed to be closed over the winter.

Issues with the STP were observed in 2012, and a consultant was hired to help with recurring fecal coliform exceedances. TP concentration in the MEL-07 final effluent discharge from the BIODISK treatment system was as high as 24.7 mg/L in some samples in May 2012, with TKN as high as 116 mg/L. Effluent discharge volume was not reported, nor was camp use intake volumes. In June 2012, camp use intake was 20.6 m^3, and intake declined to ~10 m^3 in November. A report to the inspector with regards to the STP in November 2013 stated "During the quarter, number of people on site decreased from 78 to 45 persons. The flow at STP decreased from 17 to 10 m^3 at the end of the quarter". From 2015 to 2016, additional ultraviolet treatment was added, and the STP was further upgraded to accommodate an increased number of workers at the exploration camp. In April 2016, camp population was between 115 to 137 people, and was as high as 220 people in October 2017. Over the past few years, TP concentration in the STP effluent was relatively consistent around 11 to 16 mg/L.

Starting in November 2017, exploration camp STP effluent was trucked to the main camp STP for treatment due to recurring issues with fecal coliforms. All treated sewage discharge was diverted to CP1, and therefore further treatment occurred through the wastewater treatment plant prior to discharge through the Meliadine Lake main diffuser (MEL-14). Discharge through the main diffuser into Meliadine Lake did not occur until June 2018.

The estimated annual loadings of nutrients directly or indirectly discharged from MEL-07 from the exploration camp STP indirectly into Meliadine Lake in 2013, 2015, 2016, 2017, and 2018 is shown in Table 2.6-1. Physicochemical characteristics and monthly loadings of sewage discharged from MEL-07 in previous years are provided in Appendix 2B. Total phosphorus loadings were similar in 2013 (52.4 kg) and 2015 (52.9 kg), then doubled in 2016 (100.7 kg) and maintained a similar amount in 2017 (96 kg), before declining in 2018 (22.9 kg). Note that no STP was discharged directly to Meliadine Lake in 2018, so the loadings for 2018 represent those discharged to CP1 and not to Meliadine Lake.

The higher TP loadings in STP discharge aligns with 2016 observations of the BIC showing a nutrient enrichment response pattern that was not present in 2015. Loadings of nitrogen compounds (i.e., nitrate, nitrite, total Kjeldahl nitrogen, and total nitrogen) showed a similar pattern, but nitrogen loadings did not decline in 2018, which could be attributed to mine activities (i.e., increase in use of nitrogenous compounds for blasting, and the resulting nitrogen loading to CP1).

Table 2.6-1: Annual Loadings of Nutrients Directly or Indirectly Discharged from MEL-07 into the Near-field Area, 2013, 2015 to 2018

Year	Project Phase	Type of Effluent Discharge	Nitrate (kg)	Nitrite (kg)	TKN (kg)	TN (kg)	TP (kg)
2013	Baseline	Sewage/grey water	58.7	5.4	86.7	150.8	52.4
2015	Baseline	Sewage/grey water	48.3	10.3	127.6	186.1	52.9
2016	Construction	Sewage/grey water	155.2	14.0	211.2	380.4	100.7
2017	Construction	Sewage/grey water	171.2	17.6	221.0	409.8	96.0
2018[a]	Construction	Mine effluent[b]	3,018	114	1,172	4,304	22.9

a) Discharge occurred from July through to September.

b) Mine effluent under the MDMER (Government of Canada 2018) and Type A Water Licence (NWB 2016).

kg = kilogram; TN = total nitrogen; TP = total phosphorus; TKN = total Kjeldahl nitrogen; MDMER = Metal and Diamond Mining Effluent Regulations.

2.6.3 Spills

One spill and two effluent limit exceedances were reported in 2018.

On February 2, 2018, during an inspection of the exploration camp retention tanks, it was noticed by a member of the Site Services team that water was flowing into Meliadine Lake near the discharge area of the STP. The environment department and site services supervisor were notified immediately, and an inspection was conducted to determine the source of the water. It was discovered that a valve at the base of one of the retention tanks had been left open, resulting in the draining of the contents of all four tanks, which are connected in series. Discharge from the STP had been suspended since November 2017 due to exceedances. Additional information regarding the spill can be found in Appendices 2P and 2Q.

A sample of treated water from MEL-14 (final effluent sampling port prior to discharge to Meliadine Lake) was collected on July 23, 2018. Upon review of the laboratory analysis results, the total aluminum concentration was found to be 4.39 mg/L, which exceeded the permitted discharge limit of 2 mg/L. As per the obligations under the NWB License 2AM-MEL1631, Part F, item 3 pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act, samples were collected for laboratory analysis to assess the total metal concentrations and other water quality parameters during final effluent discharge at MEL-14. The laboratory results were received on August 8, 2018; however, the exceeded criteria for total aluminum concentration was not observed at the initial time of the data review and data input. During the quarterly reporting for MDMER-EEM (RIIS) on October 1, 2018, the exceedance was observed and reported immediately. Further details regarding the exceedance are provided in Appendices 2R and 2S.

A sample of treated water from MEL-14 was collected on August 19, 2018. Upon review of the laboratory analysis results, the TDS concentration was found to be 1,430 mg/L which exceeded the permitted discharge limit of 1,400 mg/L. Further details regarding the exceedances are provided in Appendices 2T and 2U.

2.7 List of Appendices

- Appendix 2A: Daily Discharge Volume from MEL-14 into Meliadine Lake, 2018
- Appendix 2B: Effluent Quality Data for MEL 14, 2018
- Appendix 2C: Water Quality Data for MEL-13, 2018
- Appendix 2D: Acute Lethality Toxicology Laboratory Reports
- Appendix 2E: Sublethal Toxicity Toxicology Laboratory Reports
- Appendix 2F: Effluent Quality Data at CP1, 2017
- Appendix 2G: Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018
- Appendix 2H: Spill Reports, 2018
- Appendix 2I: Summary of Treated Sewage Discharge Quality from MEL-07, 2016 to 2018
- Appendix 2J: Monthly Loadings of Select Sewage Quality Parameters Discharged from MEL-07, 2013 and 2015 to 2018

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Tetra Tech 2018. Effluent Discharge Modelling for the As-Built Diffuser at the Meliadine Gold Project, Nunavut. Prepared for Agnico Eagle Mines Limited. May 2018.

3.0 SUMMARY OF PREVIOUS BIOLOGICAL MONITORING STUDIES

This report section provides a summary of the results from the 2017 AEMP Annual Report for water quality, sediment quality, BIC, fish health and fish tissue, and plankton biological monitoring studies conducted at Meliadine Lake and/or the Peninsula Lakes. Baseline sampling programs carried out in 2015 and 2016 reflect conditions prior to discharge of the Type A Water Licence (NWB 2016) effluent to the Near-field area of Meliadine Lake. Additional details can be found in the final 2017 AEMP Annual Report (Golder 2018c).

3.1 Water Quality

3.1.1 Meliadine Lake

Water quality data were collected from Meliadine Lake in 2015 (Near-field and Mid-field areas, during the open-water season), 2016 (Near-field and Mid-field areas during open-water and under-ice; reference areas during open-water), and 2017 (Near-field and Mid-field areas during open-water and under-ice; reference areas during open-water). Based on the analyses conducted as part of the 2017 AEMP Annual Report (Golder 2018c), there were differences in water quality of the Near-field area for open-water conditions in 2017 as compared to 2015 and 2016. Under-ice water quality of the Near-field area in 2016 and 2017 was similar (under-ice data were not collected in 2015). Open-water season water quality of the Mid-field and reference areas in 2015, 2016, and 2017 was similar.

Water quality in Meliadine Lake characterized during ice-covered and open-water conditions lacked stratification within the water column and was generally well-oxygenated. Concentration of TDS, hardness, alkalinity, specific conductivity, nutrients, and metals were low and none of the relevant CWQG-PAL, CDWQG, or SSWQO developed for the Mine were exceeded. Specific conductivity, major cations, chloride, sulphate, and some metals (e.g., total arsenic, barium, cobalt, copper, nickel, silicon, and strontium) concentrations were slightly higher in the exposure areas than the reference areas; the Near-field area tended to have slightly higher concentrations compared to the Mid-field area. In addition, specific conductivity, hardness, chloride, major cations, ammonia, and some metals (e.g., barium, boron, copper, strontium) had slightly higher concentrations during ice-covered conditions compared to open-water conditions.

3.1.2 Peninsula Lakes

In general, water quality in the Peninsula Lakes was similar in 2017 compared to 2015 and 2016, and thus all data were considered to be representative of baseline (Golder 2018c). The Peninsula Lakes were well-oxygenated, with pH values indicative of slightly basic conditions, low sensitivity to acid deposition, and low to moderate ionic strength. Parameter concentrations in the Peninsula Lakes were low and none of the relevant guidelines or site-specific objectives were exceeded. Specific conductivity, hardness, and concentrations of TDS (including chloride and sulphate) and some metals (including arsenic, barium, and strontium) in Lake A8 were slightly higher than in the other two Peninsula Lakes. Concentrations of phosphorus, major ions (i.e., bicarbonate and fluoride), and several metals including boron, lithium, molybdenum, selenium, uranium, and vanadium were slightly higher in Lake D7 compared to Lake A8 and Lake B7. Specific conductivity, hardness, alkalinity, TDS, major ions, and some metals including arsenic, barium, lithium, and strontium were generally slightly higher in the Peninsula Lakes compared to Meliadine Lake.

3.2 Sediment Quality

In 2015 and 2016, a total of 35 sediment quality samples from Meliadine Lake, five samples from Lake A8, four samples from Lake B7, and three samples from Lake D7 were collected and analyzed for particle size, total organic carbon, nutrients, and metals. These data form a baseline dataset for comparisons to future monitoring of sediment quality trends during the life of the Mine.

Under baseline conditions, concentrations of arsenic, chromium, and copper exceed guideline values. Arsenic concentrations in Meliadine Lake were generally highest in the Near-field area (MEL-01). Due to the strong relationship between fine sediment content and metal concentrations in Melidine Lake sediments, data were normalized to fine sediment content prior to running statistical tests. Even after normalization, some sediment quality parameters (arsenic, iron, mercury, strontium, and sulphur) were higher in the Near-field area compared to the reference areas. The Mid-field area had similar particle size distribution to the reference areas, but concentrations of some parameters (arsenic, chromium, cobalt, lead, manganese, molybdenum, nickel, uranium, and zinc) were higher in the Mid-field area than in reference areas.

Sediment samples from the Peninsula Lakes were also relatively sandy, with concentrations of arsenic, chromium and copper that exceeded SQGs. The lowest concentrations of these three parameters were observed in Lake B7.

3.3 Benthic Invertebrate Community

Benthic invertebrate communities sampled in Meliadine Lake exposure and reference areas during 2015 and 2016 baseline sampling programs were representative of subarctic systems (Golder 2018c). Benthic invertebrate communities were characterized by low total density and low to moderate richness. Simpson's Diversity Index and evenness values suggested that baseline benthic invertebrate communities sampled at most stations in the reference and exposure areas had moderate to high diversity with few taxa that were overly dominant. Benthic communities were dominated by midges (family Chironomidae), with the tribe Chironomini being the most dominant chironomid group in all areas sampled within Meliadine Lake. Spatial and temporal differences in community structure among Near-field and Mid-field exposure areas and the reference areas were observed during evaluation of the 2015 and 2016 data. In particular, the BIC of the Near-field area was found to differ from communities in the three reference areas in 2016. These differences may have been attributed to potential differences in the physical habitat sampled (i.e., due to substrate type variation), or possibly, mild nutrient enrichment in the Near-field area from the exploration camp STP discharge. Overall, the BIC of the Near-field area was most similar to the community in Reference Area 1.

3.4 Fish Health and Fish Tissue

Baseline fish health and tissue chemistry data were collected in 2015 for Threespine Stickleback (*Gasterosteus aculeatus*) and Lake Trout (*Salvelinus namaycush*) from the Near-field area of Meliadine Lake (Golder 2016a). Threespine Stickleback were subsequently sampled from two reference areas (Reference Areas 1 and 2) in 2017 to complete the fish health and tissue chemistry baseline dataset (Golder 2018c). Threespine Stickleback were captured in sufficient numbers from the Near-field area and reference areas of Meliadine Lake to meet sampling requirements for the fish health and tissue chemistry components of the AEMP. Threespine Stickleback were abundant throughout shallow areas (i.e., less than 3 m) of Meliadine Lake, and susceptible to capture using minnow traps and backpack electrofishing. The majority of Threespine Stickleback captured in Meliadine Lake (i.e., 76% of fish sampled) were infected by the tapeworm *Schistocephalus solidus* that competes with the host for available resources. In general, Threespine Stickleback were similar between the Near-field and reference areas;

however, differences were observed in population structure and tissue chemistry parameters. Threespine Stickleback sampled from the Near-field area were generally larger and exhibited lower metal concentrations in carcass tissue relative to fish sampled from the reference areas.

3.5 Plankton

Plankton monitoring was conducted as a targeted study during the open-water seasons of 2015, 2016, and 2017 (Golder 2018c). Samples of phytoplankton, zooplankton, chlorophyll *a*, and nutrients were collected in five areas of Meliadine Lake (i.e., Near-field and Mid-field areas, and three reference areas). Trophic status calculations indicated conditions in Meliadine Lake were oligotrophic in all areas and years. Higher chlorophyll *a* concentrations and phytoplankton biomass, and unique phytoplankton community structure (based on multivariate analysis) in the Near-field area was suspected indicate the potential effects of nutrient enrichment originating from the exploration camp STP effluent outfall. Although total phosphorus (TP) concentrations were not unusually elevated in the Near-field area, they were highest in this area in September during each year of monitoring. Zooplankton biomass was primarily dominated by cladocerans and rotifers in all areas of Meliadine Lake. This targeted study provided useful information to characterize plankton communities in Meliadine Lake and to inform selection of monitoring tools for incorporation into the AEMP.

3.6 References

Golder. 2018c. Aquatic Effects Monitoring Program – 2017 Annual Report. Prepared for Agnico Eagle Mines Limited, Meliadine Division, Rouyn-Noranda, WC. Document Number 1787610_671_RPT_Rev0. March 2018.

4.0 STUDY DESIGN OVERVIEW

The AEMP was designed to harmonize with the EEM requirements of the MDMER throughout the life of the Mine. The Cycle 1 EEM study design (Golder 2017a) and AEMP Design Plan (Golder 2016a) are summarized below.

4.1 EEM

An overview of the Cycle 1 EEM study design is provided in Table 4.1-1. The biological monitoring studies in 2018 included a BIC survey and a small-bodied fish health survey with Threespine Stickleback (*Gasterosteus aculeatus*), with supporting water and sediment quality data collection. A fish tissue survey was not conducted because concentrations of mercury and selenium in effluent did not meet the criteria for initiating a survey as per Schedule 5, Section 9c and 9d of the MDMER. A plume delineation study was conducted during the discharge period to describe effluent mixing in the Near-field area. Effluent quality samples (chemistry and toxicity) were collected by Agnico Eagle as per MDMER requirements (Government of Canada 2018).

Component-specific deviations from the Cycle 1 EEM study design are summarized in Table 4.1-1; additional details and descriptions of how the deviations affected the results interpretations are provided in the corresponding report sections. A key deviation was the change in the Near-field area location. In the Cycle 1 EEM study design (Golder 2017), the exposure area was proposed to be near MEL-D-1. In their comments on the EEM study design, ECCC recommended that the exposure area be relocated to assess the effects of the permanent discharge point (MEL-14), which was implemented during the Cycle 1 EEM study.

Table 4.1-1: Summary of Cycle 1 EEM Study Design

Component	Description	Measurement Endpoints	Target Sample Sizes	Deviations from Study Design	Report Section with Detailed Methods/ Results
Effluent Quality (Chemistry and Toxicity)	Description of effluent quality since the Mine became subject to the MDMER	■ Chemistry: ▪ Deleterious substances as per Schedule 4 of the MDMER ▪ Effluent Characterization as per Schedule 5 of the MDMER ■ Toxicity: ▪ Acute Lethality to Rainbow Trout and *Daphnia magna* ▪ Sublethal toxicity to Fathead Minnows, *Ceriodaphnia dubia, Lemna minor, Pseudokirchneriella subcapitata*	Weekly and quarterly monitoring as per MDMER	Not applicable	Section 2.4.2
Effluent Plume Delineation	Distribution of the effluent plume and percent effluent concentration in the Near-field exposure area	Concentration of effluent at 100 m and 250 m from final discharge point	not applicable	None	Section 2.4.3
Benthic Invertebrate Community	Structure and composition of the benthic invertebrate assemblage	Total invertebrate density, total taxonomic richness, Simpson's diversity index, Simpson's evenness index (SEI), Bray Curtis Index (BCI)	Five stations in each of exposure and reference area	■ Change in Near-field area ■ Petite Ponar grab was used instead of an Ekman grab ■ Change in station where discrete samples were collected for within-station variability assessment	Section 9.0

Table 4.1-1: Summary of Cycle 1 EEM Study Design

Component	Description	Measurement Endpoints	Target Sample Sizes	Deviations from Study Design	Report Section with Detailed Methods/ Results
Fish Population	Lethal and non-lethal fish health survey of Threespine Stickleback	■ Size at age, relative gonad size, condition, relative liver size, age, length-frequency distribution, young-of-the-year abundance ■ Additional supporting endpoints including sex, maturity, life stage, egg weight, fecundity, internal and external abnormalities	■ Lethal survey: 20 males, 20 females, and 20 juveniles from each exposure and reference area ■ Non-lethal survey: an additional 100 fish from each exposure and reference area	■ Change in Near-field area ■ Ages were assigned based on otoliths instead of length-frequency distributions (TAP request) ■ No YOY were captured	Section 10.0
Supporting Data - Water Quality	Physical and chemical characteristics of surface waters	■ Field-measured vertical profiles (dissolved oxygen, pH, water temperature, specific conductivity) ■ Laboratory-measured chemistry (conventional parameters, total metals, radium-226, cyanide)	At least two stations in each of exposure and reference area	None	Section 6.0
Supporting Data - Sediment Quality	Physical and chemical characteristics of bottom sediments	Total organic carbon, particle size, total metals	Five stations in each exposure and reference area	None	Section 8.0

MDMER = Metal and Diamond Mining Effluent Regulations; SDI = Simpson's diversty index; SEI = Simpson's evenness index; BCI = Bray-Curtis Index.

4.2 AEMP

The AEMP consists of two distinct programs: the Meliadine Lake study and the Peninsula Lakes study, with the study design based on Project design, IQ, consultation, and regulatory requirements (Golder 2016a). Based on IQ and community consultation, the importance of clean water and the health of fish and birds were emphasized by the Elders and other people in the communities who rely on these resources for traditional use. Elders have expressed concerns regarding potential Project-related adverse effects on drinkability of water and fish populations in waterbodies of the Meliadine watershed. Key questions were developed for each monitoring component in both studies to focus the study design and to analyze the results in the annual monitoring reports.

The Meliadine Lake study was designed around the key aspects of EEM requirements (e.g., number of stations per area, sample sizes, measurement endpoints and supporting variables), as Meliadine Lake will receive direct effluent discharge. The core components of the Meliadine Lake study are water quality, sediment quality, benthic invertebrate communities, and fish health. A targeted plankton study is also included to investigate the potential for plankton monitoring. For the Meliadine Lake study, up to three within-lake reference areas are included in the study design. Within-lake reference areas were chosen because a different small-bodied fish assemblage was found in Meliadine Lake compared to other lakes in the region, and effects on water quality are expected to be localized; this allows use of reference areas at some distance downstream from the diffuser.

The Peninsula Lakes study was designed to detect potential indirect effects of the Mine (e.g., aerial deposition and physical alteration of watersheds). The core component of the Peninsula Lakes study is water quality. Water quality is monitored on a regular basis, with biological or other studies (i.e., targeted studies) added if the water quality results suggest Mine-related changes have occurred.

Key questions for the Meliadine AEMP are proposed for each core component to focus the study methods, data analyses, and interpretation. The key questions for each study, by component, are provided in Table 4.2-1.

Table 4.2-1: Key Questions Addressed by the Aquatic Effects Monitoring Program

Study	Component	Key Questions
Meliadine Lake	Water Quality	■ Are concentrations of key parameters in effluent less than Water Licence limits? ■ Are concentrations of key parameters in Meliadine Lake consistent with FEIS predictions and less than AEMP Action Levels? ■ Are concentrations in the exposure area increasing over time relative to the reference areas?
	Sediment Quality	■ Are concentrations of sediment quality parameters in Meliadine Lake less than benchmarks? ■ Are concentrations in the exposure area increasing over time relative to the reference areas?
	Benthic Invertebrate Community	■ Is the benthic invertebrate community affected by potential Mine-related changes in water and sediment quality in Meliadine Lake?
	Fish Health	■ Is fish health affected by changes in water and sediment quality in Meliadine Lake?
	Fish Tissue Chemistry	■ Are tissue metal concentrations in fish from Meliadine Lake increasing due to mining activities? ■ Are tissue metal concentrations in fish from Meliadine Lake increasing relative to reference areas or baseline?

Table 4.2-1: Key Questions Addressed by the Aquatic Effects Monitoring Program

Study	Component	Key Questions
Peninsula Lakes	Water Quality	■ Are concentrations of key parameters in the Peninsula Lakes consistent with FEIS predictions and less than AEMP Action Levels? ■ Are concentrations of key parameters in the Peninsula Lakes increasing over time relative to baseline or reference conditions?

An overview of the AEMP study design is provided in Table 4.2-2. In Meliadine Lake, the field programs in 2018 included water quality sampling in Near-field and Mid-field areas during the ice-cover season and in all areas during the open-water season, and sediment quality sampling and benthic invertebreate community surveys in both exposure areas and two reference areas during the open-water season. Additional studies included effluent plume characterization, and a plankton survey as part of the plankton targeted study. Water quality sampling during the open-water season was also conducted in the Peninsula Lakes.

Table 4.2-2: Summary of Aquatic Effects Monitoring Program Study Design

Area	Component	# Stations per Area	# Samples per Station	Parameters	Sample Type	Sampling Frequency	Sampled in 2018?	Report Section with Detailed Methods
Meliadine Lake Exposure Area (Near-field and Mid-field)[a]	Water Quality	5	1	major ions, nutrients, metals	composite; from specific depth	once during under-ice; monthly during open-water discharge period	Yes	Section 6.0
		5	1	chlorophyll *a*	composite; from specific depth or depth-integrated	monthly during open-water discharge period	Yes	Section 11.0
	Benthic Invertebrates	5	5	benthic invertebrate taxonomy	composite from 5 grabs	once in late open-water discharge period	Yes	Section 9.0
	Sediment Quality	5	5	particle size, total organic carbon, nutrients, metals	composite grab	once in late open-water discharge period	Yes	Section 8.0
	Plankton[b]	5	1	phytoplankton taxonomy	composite; depth-integrated	monthly during open-water discharge period	Yes	Section 11.0
		5	1	zooplankton taxonomy	composite; vertical tow of water column	monthly during open-water discharge period	No	not applicable
	Fish Health[c]	n/a	60[d]	lengths, weights, sex, fecundity, age, external and internal health	individual fish	once per year	No	not applicable
	Fish Tissue Chemistry[c]	n/a	40[d]	metals	carcass (adults only), muscle, liver, kidney	once per year	No	not applicable

Table 4.2-2: Summary of Aquatic Effects Monitoring Program Study Design

Area	Component	# Stations per Area	# Samples per Station	Parameters	Sample Type	Sampling Frequency	Sampled in 2018?	Report Section with Detailed Methods
Meliadine Lake Reference Area 1 (northeast bay)	Water Quality	5	1	major ions, nutrients, metals	composite; from specific depth	monthly during open-water discharge period	Yes	Section 6.0
		5	1	chlorophyll *a*	composite; from specific depth or depth-integrated	monthly during open-water discharge period	Yes	Section 11.0
	Benthic Invertebrates	5	5	benthic invertebrate taxonomy	composite from 5 grabs	once in late open-water discharge period		Section 9.0
	Sediment Quality	5	5	particle size, total organic carbon, nutrients, metals	composite grab	once in late open-water discharge period	Yes	Section 8.0
	Plankton[(c)]	5	1	phytoplankton taxonomy	composite; depth-integrated	monthly during open-water discharge period	Yes	Section 11.0
		5	1	zooplankton taxonomy	composite; vertical tow of water column	monthly during open-water discharge period	No	not applicable
	Fish Health[(c,e)]	n/a	60[(d)]	lengths, weights, sex, fecundity, age, external and internal health	individual fish	once per year	No	not applicable
	Fish Chemistry[(c,e)]	n/a	40[(d)]	metals	carcass (adults only)	once per year	No	not applicable

Table 4.2-2: Summary of Aquatic Effects Monitoring Program Study Design

Area	Component	# Stations per Area	# Samples per Station	Parameters	Sample Type	Sampling Frequency	Sampled in 2018?	Report Section with Detailed Methods
Meliadine Lake Reference Area 2 (northwest bay)	Water Quality	5	1	major ions, nutrients, metals	composite; from specific depth	monthly during open-water discharge period	Yes	Section 6.0
		5	1	chlorophyll *a*	composite; from specific depth or depth-integrated	monthly during open-water discharge period	Yes	Section 11.0
	Benthic Invertebrates	5	5	benthic invertebrate taxonomy	composite from 5 grabs	as required[(f)]		Section 9.0
	Sediment Quality	5	5	particle size, total organic carbon, nutrients, metals	composite grab	as required[(f)]	No	not applicable
	Plankton[(b)]	5	1	phytoplankton taxonomy	composite; depth-integrated	as required[(f)]	Yes	Section 11.0
		5	1	zooplankton taxonomy	composite; vertical tow of water column	as required[(f)]	No	not applicable
	Fish Health[(c,e)]	n/a	60[(d)]	lengths, weights, sex, fecundity, age, external and internal health	individual fish	once per year	No	not applicable
	Fish Chemistry[(c,e)]	n/a	40[(d)]	metals	carcass (adults only)	once per year	No	not applicable

Table 4.2-2: Summary of Aquatic Effects Monitoring Program Study Design

Area	Component	# Stations per Area	# Samples per Station	Parameters	Sample Type	Sampling Frequency	Sampled in 2018?	Report Section with Detailed Methods
Meliadine Lake Reference Area 3 (southwest bay)	Water Quality	5	1	major ions, nutrients, metals	composite; from specific depth	monthly during open-water discharge period	Yes	Section 6.0
		5	1	chlorophyll *a*	composite; from specific depth or depth-integrated	monthly during open-water discharge period	Yes	Section 11.0
	Benthic Invertebrates	5	5	benthic invertebrate taxonomy	composite from 5 grabs	as required		Section 9.0
	Sediment Quality	5	5	particle size, total organic carbon, nutrients, metals	composite grab	as required	Yes	Section 8.0
	Plankton[(b)]	5	1	phytoplankton taxonomy	composite; depth-integrated	as required	Yes	Section 11.0
		5	1	zooplankton taxonomy	composite; vertical tow of water column	as required	No	not applicable
Peninsula Lakes: Lake B7 Lake A8 Lake D7	Water Quality	3	1	major ions, nutrients, metals	composite; from specific depth	twice during open-water season	Yes	Section 7.0

Notes:

(a) Only the Near-field area, and Reference Areas 1 and 2 are planned for sampling fish health and fish tissue chemistry.

(b) Plankton monitoring is not a core component of the AEMP but was planned as a targeted study to evaluate the usefulness of plankton monitoring for future monitoring.

(c) Fish health and tissue chemistry sampling for the AEMP is currently scheduled for 2021.

(d) Sample size is for Threespine Stickleback; Lake Trout sample sizes will be determined prior to next AEMP Fish Health/Tissue Chemistry program.

(e) Lake Trout will not be collected from the Reference Areas.

(f) Reference Area 2 was sampled to provide additional baseline data; further sampling will depend on triggering by water quality results from the Mid-field area or Reference Area 1.

"Metals" include non-metals (e.g. selenium) and metalloids (e.g., arsenic).

4.3 References

Golder. 2016b. Meliadine Gold Project, Nunavut Aquatic Effects Monitoring Program (AEMP) Design Plan 6513-REP-03 Version 1. Prepared for Agnico Eagle Mines Limited, Rouyn Noranda, Quebec.

Golder 2017a. EEM Cycle 1 Study Design: Meliadine Gold Mine. Prepared for Agnico Eagle Mines Limited, Meliadine Division, Rankin Inlet, Nunavut. Document Number Doc635-1781142. August 2017.

5.0 SUPPORTING ENVIRONMENTAL DATA

Supporting environmental data provided by Agnico Eagle included monthly air temperature, wind speed, and precipitation (Table 5-1).

Table 5-1: Monthly Air Temperature, Wind Speed, and Precipitation in 2018

Month	Average Temperature	Maximum Temperature	Minimum Temperature	Average Wind Speed	Maximum Wind Speed	Total Precipitation	Daily Average Precipitation	Maximum Precipitation
Unit	°C	°C	°C	m/s	m/s	mm	mm	mm
January	-28.8	-14.6	-37.0	17.4	68.0	7.9	0.25	3.0
February	-35.2	-16.9	-46.8	15.3	58.7	10.6	0.38	3.8
March	-21.6	-4.2	-36.4	17.6	67.7	13.2	0.43	4.6
April	-17.3	1.8	-33.7	20.1	72.0	8.8	0.29	2.8
May	-9.4	1.7	-23.2	22.7	73.6	38	1.23	8.6
June	3.6	17.1	-8.4	16.6	62.4	28.4	0.95	20
July	13.0	27.5	-0.1	15.6	66.9	15.8	0.51	6
August	9.7	20.7	2.0	23.3	88.7	52.8	1.70	16
September	2.2	13.4	-5.8	18.2	70.3	19	0.63	5.4
October	-6.9	2.9	-27.1	17.5	66.5	24.6	0.79	6.8
November	-21.8	-1.0	-37.9	16.8	54.8	19.6	0.65	9.2
December	-24.6	-7.2	-38.4	15.4	61.0	8.6	0.28	2.2

°C = degrees Celsius; m/s = metres per second; mm = millimetre.

6.0 WATER QUALITY – MELIADINE LAKE

In support of the AEMP and Water Licence (2AM-MEL1631) requirements of the Mine, water quality monitoring was completed from 2015 to 2018 in Meliadine Lake (Figure 6.1-1) and Peninsula Lakes (Section 7.0). Beginning in 2018, water quality monitoring was completed at address EEM requirements of the MDMER (Schedule 5, Section 7).

This report section provides a summary of the water quality monitoring programs completed in 2018 at Meliadine Lake, analysis of data collected between 2015 and 2018, and an interpretation of the results per the requirements of the AEMP and EEM. Data analyses presented in this report are based on the AEMP Design Plan (Golder 2016a), and response to comments from ECCC, INAC and KIA during review of the 2017 AEMP Annual Report (Golder 2018a).

6.1 Objectives

The specific objective of monitoring under the AEMP is to characterize water quality conditions in Meliadine Lake so that water quality trends and adaptive management strategies can be identified, as required, during the life of the Mine. The primary objectives of the water quality component of the AEMP, as defined in the AEMP Design Plan (Golder 2016a) are as follows:

- characterize and interpret water quality within Meliadine Lake for the purpose of identifying Mine-related effects and meeting Part 2, Section 7 of the MDMER requirements (Government of Canada 2018)
- verify FEIS predictions (Agnico Eagle 2014), and update them if applicable based on monitoring results
- assess the efficacy of mitigation strategies proposed in the AEMP Design Plan (Golder 2016a) and the Environmental Management and Protection Plan to minimize the water quality effects of the Mine
- recommend appropriate changes to the water quality component of the AEMP for future years
- provide data to inform adaptive management intended to reduce or eliminate Mine-related effects to water quality in Meliadine Lake

As per the EEM (Environment Canada 2012), water quality monitoring was conducted to:

- monitor for changes in environmental conditions in the receiving environment
- provide an indication of temporal or seasonal trends
- evaluate supporting environmental variables to help interpret results from biological monitoring

To meet the primary objectives of the water quality component, analysis and interpretation of water quality data in 2018 were focused on answering two key questions, as defined in the AEMP Design Plan (Golder 2016a):

1) Are concentrations of key parameters in Meliadine Lake consistent with FEIS predictions and less than AEMP Action Levels?

2) Are concentrations in the exposure area increasing over time relative to the reference areas?

The field survey and data analysis methods used to answer the key questions are described in Section 6.2. A summary of quality assurance and quality control (QA/QC) assessment on the 2018 data is provided in Section 6.3. Results and discussion are presented in Section 6.4, where results to meet AEMP requirements are discussed first, followed by results to meet EEM requirements. A summary of the water quality results and conclusions is provided for both the AEMP and EEM in Section 6.5.

6.2 Methods

6.2.1 Sampling Design

The 2018 water quality program was designed to align with the AEMP Design Plan (Golder 2016a) and Cycle 1 EEM Study Design (Golder 2017). The program consisted of one sampling program during ice-covered conditions and two sampling programs during open-water conditions (Table 6.2-1). As a result of a number of site-related factors and field-related occurrences, a few adjustments were made to each program. These included the following:

- Water quality monitoring was not conducted at the former exposure area MEL-D-2 as per the Cycle 1 EEM Study Design (Golder 2017a). In response to ECCC comments on the Cycle 1 EEM Study Design, the EEM exposure study area was relocated to the current AEMP Near-field area to better capture the effects of effluent released from the permanent effluent discharge location (i.e., MEL-14) (Golder 2018d).
- Beginning during the open-water program, four new stations were added in the Near-field area and four historical stations were discontinued (Table 6.2-1). New stations in the Near-field area were selected based on the location of the diffuser, which was installed in 2018. Station locations were redefined based on the as-built location of the diffuser and the results observed during the plume delineation study (Section 2.4.3), with the objective of capturing the water quality within the vicinity of the edge of the mixing zone. Specifically, MEL-01-01 was retained because it had the most historical data, relative to other Near-field stations. The locations of sampling stations MEL-01-06 and 01-07 were selected to meet sampling requirements for stations near the diffuser (i.e., within 100 m) as per ECCC comments on the Cycle 1 EEM Study Design (Golder 2018d). Additional stations MEL-01-08 and 01-09 were selected because they were closer to the mid-basin and away from rocky outcrops that occur closer to shore.
- During the August open-water program, water quality samples were not collected at Mid-field area stations MEL-02-01 or 02-04. Instead, samples were collected at MEL-02-06 and 02-08, which were sediment sample locations. Stations MEL-02-06 and 02-08 are also located within the defined Mid-field exposure area and therefore, this deviation is not expected have affected classification of water quality within this zone.
- Field DO measurements collected at all stations during the ice-cover season and field pH measurements collected at stations MEL-01-01, 01-06, 01-07, 01-08, 01-09, 02-03, 02-05, 03-01, 03-02, 03-03, 03-04, 03-05, 05-03, and 05-05 during the August program were deemed unreliable during the data quality review (i.e., data were anomalous, being well outside the range of previously measured data within exposure and reference areas; Appendix 6A), and were subsequently invalidated. These data were excluded from the analysis. For invalidated pH field data, laboratory pH was used as a surrogate measurement to characterize open-water water quality and in water quality guideline calculation at individual stations. However, as laboratory pH was measured outside the holding time requirement, it is acknowledged that these laboratory pH data have corresponding uncertainty.
- The sampling frequency in 2018 deviated from the frequency requirements of four programs per calendar year as specified under the AEMP Design Plan and MDMER (Section[2][a]) because only three water quality programs were completed (Golder 2016a; Government of Canada 2018). In 2018, water quality monitoring was scheduled for four times per calendar year, but the September water quality program was cancelled due to unsafe boating conditions (i.e., high winds) that prevented safe access to sampling stations.

- Radium-226 was erroneously omitted from the chain-of-custody form for the Travel Blank (T-18-07-01) collected on 23 July 2018 during the July open-water program.

QA/QC procedures described in Section 6.3 and Appendix 6A were followed during the 2018 water quality monitoring program.

6.2.2 Field Methods

6.2.2.1 Sample Location and Sampling Frequency

As per the AEMP Design Plan, five stations in each of the proposed Near-field and Mid-field areas, and Reference Areas 1, 2, and 3 of Meliadine Lake, at a target water depth of 8 to 10 m, were included in the water quality program (Figure 6.2-1). EEM stations included the Near-field area as the EEM exposure area and Reference Area 1 as the EEM reference area. Near-field and Mid-field stations were sampled once during ice-covered conditions and twice during open-water conditions, whereas Reference Area 1 was sampled during each open-water program and Reference Areas 2 and 3 were sampled once during the open-water season (in August). The location and timing of sample collection in 2018 are summarized in Table 6.2-1.

525000
530000
535000
540000
7000000
6995000
6990000
6985000

REFERENCE AREA 2 (MEL-04)
MEL-04-02
MEL-04-03
MEL-04-05
MEL-04-04
MEL-04-01

Meliadine Lake

REFERENCE AREA 1 (MEL-03)
MEL-03-02
MEL-03-03
MEL-03-04
MEL-03-01
MEL-03-05

MID-FIELD EXPOSURE AREA (MEL-02)
MEL-02-01
MEL-02-06
MEL-02-05
MEL-02-04
MEL-02-02
MEL-02-03
MEL-02-08

MEL-05-03
MEL-05-04
MEL-05-01
MEL-05-05
MEL-05-02
REFERENCE AREA 3 (MEL-05)

MEL-01-02
MEL-01-07
MEL-01-05
MEL-01-04
NEAR-FIELD EXPOSURE AREA (MEL-01)
MEL-01-08
MEL-01-06
MEL-01-09
MEL-01-03
MEL-01-01

LEGEND

- WATER QUALITY STATION
- DIRECTION OF FLOW AT WATERSHED OUTLET
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- BATHYMETRIC CONTOUR (0.5 AND 2 m INTERVAL)
- WATERCOURSE
- WATERBODY



0 1.5 3
1:70,000 KILOMETRES

REFERENCE(S)
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT
AGNICO EAGLE MINES LIMITED
AGNICO EAGLE

PROJECT
CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE
MELIADINE LAKE WATER QUALTY STATIONS SAMPLED IN 2018

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	JL
PREPARED	MH
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
18110868	2100	0	6.2-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
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PATH: Y:\burnaby\CAD-GIS\Client\Agnico_Eagle_Mines_Ltd\Meliadine_Gold_Project\99_PROJECTS\18110868\2_PRODUCTION\2100\MXD\Report\AEMP2018\18110868_2100_06_2_1_WQ_Stations_2018_Meliadine.mxd PRINTED ON: 2019-03-01 AT: 3:39:41 PM

Table 6.2-1: Water Quality Sampling Stations and Sampling Effort Summary for Meliadine Lake in 2018

Area	Station ID	UTM Coordinates (NAD 83, Zone 15V)		Geographic Coordinates		Average Total Depth[a] (m)	Average Secchi Depth[b] (m)	Ice-Cover	Open-Water	
								2 to 6 Mar	19 to 25 Jul	15 Aug to 2 Sept
		Easting	Northing	Latitude	Longitude			Winter[c]	Late Spring[c]	Summer[c]
Near-field Area	MEL-01-01	542690	6989132	92° 9' 22.811"W	63° 1' 45.420"N	9.8	5.8	✓	✓	✓
	MEL-01-02	542665	6989282	92° 9' 24.449"W	63° 1' 50.276"N	8.5	-	✓ (QC)	D	-
	MEL-01-03	542638	6988979	92° 9' 26.653"W	63° 1' 40.499"N	9.0	-	✓	D	-
	MEL-01-04	543145	6989086	92° 8' 50.488"W	63° 1' 43.740"N	8.8	-	✓	F	-
	MEL-01-05	542140	6989358	92° 10' 1.727"W	63° 1' 52.953"N	7.4	-	✓	F	-
	MEL-01-06	542952	6988993	92° 9' 4.304"W	63° 1' 40.818"N	8.4	6.6	-	✓ N	✓[e]
	MEL-01-07	542873	6989218	92° 9' 9.712"W	63° 1' 48.120"N	8.1	6.2	-	✓ N (QC)	✓
	MEL-01-08	543044	6989067	92° 8' 57.690"W	63° 1' 43.169"N	7.8	6.7	-	✓ N	✓
	MEL-01-09	542555	6989188	92° 9' 32.362"W	63° 1' 47.286"N	7.4	6.3	-	✓ N (QC)	✓ (QC)
Mid-field Area	MEL-02-01	537491	6992999	92° 15' 29.480"W	63° 3' 52.425"N	7.6	6.1	✓	✓	-[d]
	MEL-02-02	537093	6992642	92° 15' 58.118"W	63° 3' 41.039"N	8.3	6.5	✓ (QC)	✓	✓
	MEL-02-03	537497	6992332	92° 15' 29.601"W	63° 3' 30.874"N	8.8	6.9	✓	✓	✓
	MEL-02-04	537961	6992341	92° 14' 56.553"W	63° 3' 30.990"N	8.3	6.0	✓	✓	-[d]
	MEL-02-05	537831	6992692	92° 15' 5.519"W	63° 3' 42.379"N	9.1	7.0	✓	✓	✓[f]
	MEL-02-06	536922	6992853	92° 16' 10.125"W	63° 3' 47.919"N	7.3	-	-	-	✓ E
	MEL-02-08	538342	6991952	92°14'29.749"W	63°3'18.278"N	8.0	6.7	-	-	✓ E
Reference Area 1	MEL-03-01	533321	6998540	92°20'22.432"W	63°6'52.915"N	6.8	-	-	✓	✓ (QC)
	MEL-03-02	533253	6998664	92°20'27.192"W	63°6'56.944"N	8.5	7.1	-	✓	✓
	MEL-03-03	532954	6998860	92°20'48.384"W	63°7'3.375"N	9.9	6.6	-	✓	✓
	MEL-03-04	533629	6998660	92°20'0.368"W	63°6'56.690"N	7.8	7.1	-	✓	✓
	MEL-03-05	533997	6998265	92°19'34.406"W	63°6'43.804"N	7.6	6.8	-	-[d]	✓

Table 6.2-1: Water Quality Sampling Stations and Sampling Effort Summary for Meliadine Lake in 2018

Area	Station ID	UTM Coordinates (NAD 83, Zone 15V)		Geographic Coordinates		Average Total Depth[a] (m)	Average Secchi Depth[b] (m)	Ice-Cover	Open-Water	
								2 to 6 Mar	19 to 25 Jul	15 Aug to 2 Sept
		Easting	Northing	Latitude	Longitude			Winter[c]	Late Spring[c]	Summer[c]
Reference Area 2	MEL-04-01	525634	7000884	92°29'29.572"W	63°8'10.907"N	7.4	-	-	-	✓
	MEL-04-02	526151	7001525	92°28' 2.287"W	63°8'31.483"N	9.9	7.5	-	-	✓
	MEL-04-03	525343	7001363	92°29'50.083"W	63°8'26.457"N	8.4	7.5	-	-	✓
	MEL-04-04	525401	7001085	92°29'46.096"W	63°8'17.460"N	-	-	-	-	-[d]
	MEL-04-05	525727	7001134	92°29'22.790"W	63°8'18.960"N	7.6	-	-	-	✓
Reference Area 3	MEL-05-01	530922	6990859	92°23'18.811"W	63°2'45.520"N	9.0	8.5	-	F	✓
	MEL-05-02	530675	6990883	92° 23' 36.377"W	63° 2' 46.371"N	9.3	7.5	-	F	✓
	MEL-05-03	530737	6991365	92°23'31.639"W	63°3'1.925"N	8.5	7.5	-	F	✓
	MEL-05-04	530573	6991231	92°23'43.404"W	63°2'57.645"N	9.5	7.5	-	F	✓
	MEL-05-05	530241	6991156	92°24'7.088"W	63°2'55.322"N	8.5	7.5	-	F	✓

Notes: Samples were analyzed for the required parameters listed in Table 6.2-2, except where noted otherwise. Samples were collected during daylight hours. EEM study areas included the Near-field area and Reference Area 1.

✓ = Sample collected.

A = Station could not be accessed due to weather, no sample collected.

D = Station was discontinued for the 2018 water quality program.

N = New station added for the 2018 water quality program.

E = Water quality samples were collected at the same location as sediment samples resulting in collection of water quality samples at two unplanned locations.

F = Field data were measured but no water chemistry sample was collected.

(a) The total depths recorded during each sampling program were averaged for individual stations, when stations were sampled on more than one occasion.

(b) The average Secchi depth (a measure of water clarity) was calculated based on Secchi depths recorded during each of the open-water (i.e., late spring and summer) sampling programs.

(c) Blank samples (i.e., travel and equipment) were collected.

(d) Sample collection at these locations was missed due to time constraints and/or technical error.

(e) Station MEL-01-06 was sampled approximately 230 m south of the planned location at UTM coordinates of 542907 E, 6988767 N.

(f) Station MEL-02-05 was sampled approximately 140 m north of the planned location at UTM coordinates of 537845 E, 6992831 N.

QC = duplicate quality control samples were collected; - = the site was not included in the sampling plan for a particular field program or was discontinued from the program.

ID = identifier; UTM = Universal Transverse Mercator; NAD = North American Datum.

6.2.2.2 Collection of Supporting Field Measurements

At each sampling station, water depth and physicochemical measurements were collected. Total depth of the water column was measured either by using a sounding line or a boat-mounted sonar unit; during the ice-cover program a sounding line was used to measure total depth. Prior to collecting surface water samples, field measurements of the following four parameters were recorded using a Eureka Manta II multiprobe:

- water temperature (degrees Celsius [°C])
- pH
- DO (in mg/L and percent [%])
- specific conductivity (in microSiemens per centimetre [µS/cm])

In situ physicochemical measurements were 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 lake bed. During open-water conditions, Secchi depth was measured using a Secchi disk at each station. Secchi disk data were used to provide a coarse estimate of the euphotic zone depth for the purposes of the depth-integrated nutrient sample collection to support the plankton special study (Section 11.0). During ice-covered conditions, ice thickness was measured.

6.2.2.3 Water Sample Collection

Surface water samples were collected as grab samples in accordance with Golder's technical procedures, the Standard Operating Procedures for Water Quality Sampling prepared by Golder, and specific laboratory instructions. Discrete water samples were collected at each sampling station from mid-depth (approximately 4 m) using a Kemmerer sampler. Water for filling ultra-low metals and ultra-low mercury sample bottles were collected with a Teflon Kemmerer sampler, whereas the remaining bottles were filled with water from the polyvinyl chloride (PVC) Kemmerer sampler. At each station, the Kemmerer was triple-rinsed with surface water representative of the station, and then lowered to the required depth (i.e., mid-depth in the water column), triggered by the messenger to collect a sample, returned to the surface, and used to fill the lab-supplied sample bottles. This procedure was repeated until all sample bottles for the station were filled. For the ice-cover program, a pump with tubing extended to the required samples depth was used to collect the samples because the Kemmerer could not be lowered and/or retrieved through the ice.

6.2.3 Laboratory Analysis

Water quality samples collected during the 2018 Meliadine Lake study, with the exception of the radium-226, were analyzed by ALS Environmental Laboratory (ALS; Edmonton and Winnipeg locations). Analysis of radium-226 was subcontracted by ALS Edmonton to ALS in Fort Collins, Colorado, USA. ALS is an analytical laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Specific ALS analytical methods and reported detection limits (RDL) for the required analyses are provided in Appendix 6A.

Water sample bottles were provided by ALS (Section 6.2.2.3). Water samples were processed (i.e., filtered and/or preserved as required, and refrigerated) at site according to the instructions provided by the laboratory. Water samples requiring filtration were filtered through a 0.45 micrometre (µm) Millipore filter in a Nalgene filter tower using a vacuum pump before being preserved with laboratory-provided preservative based on the required analysis. Water samples were kept refrigerated before shipping; ice packs were added to the coolers to keep the samples as cool as possible during transport. Samples were shipped to ALS as soon as possible after sample collection and processing.

Water quality samples were analyzed for the following suite of parameters:

- routine parameters: pH, specific conductivity, hardness, total alkalinity, total dissolved solids [TDS], total suspended solids [TSS], and turbidity
- major ions: bicarbonate, carbonate, chloride, fluoride, sulphate, calcium, magnesium, potassium, sodium, and silica
- nutrients and organics: nitrate, nitrite, total ammonia, total Kjeldahl nitrogen [TKN], total phosphorus [TP], total dissolved phosphorus [TDP], orthophosphate, total organic carbon [TOC], and dissolved organic carbon [DOC]
- total and dissolved metals, metalloids, and non-metals[1]: aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, and zinc
- cyanide (i.e., weak acid dissociable, total, and free)
- radium-226 collected during open-water programs only at the Near-field area and Reference Area 1

The samples were analyzed using laboratory test methods with analytical detection limits (DLs) less than the Canadian Council of Ministers of the Environment (CCME) CWQG-PAL (CCME 1999), and Health Canada CDWQGs (Health Canada 2017). Specific ALS analytical methods and RDL for the required analyses are provided in Appendix 6A.

6.2.4 Data Analysis

Comparisons of key parameters to FEIS predictions, water quality guidelines and normal ranges are provided in this section. Descriptive statistics were calculated and presented for the 2018 dataset by area at the Near-field, Mid-field and reference areas (pooled). Descriptive statistics included the sample size, mean, median, minimum, maximum, and standard deviation. Field data (physicochemical) profiles were compared graphically within each lake area (by showing results for each station) and by season (ice-cover and open-water) to qualitatively evaluate seasonal and vertical patterns. Water temperature, DO concentration and percent saturation, pH, and specific conductivity, were plotted against measured depth. The field measured physicochemical parameters and general water chemistry in each area are discussed for ice-cover and open-water conditions in Section 6.4.2.A quantitativetemporal analysis was conducted for the Near-field area data and discussed in Sections 6.2.4.3.3 and 6.2.4.3.4.

6.2.4.1 Summary Statistics and Comparison to Water Quality Guidelines

Water quality guidelines for the protection of aquatic life are numerical limits or narrative statements based on the most current, scientifically defensible toxicological data available for the parameter of interest, and are designed to be protective of all forms of aquatic life including the most sensitive life stage of the most sensitive species. An exceedance of a guideline does not necessarily imply the likelihood of an adverse environmental effect. Exceedances of guidelines at reference areas indicate naturally elevated concentrations relative to other sites and suggest that resident aquatic biota have adapted to these concentrations. Similarly, water quality results can

[1] Metals, metalloids (e.g., arsenic), and non-metals (e.g., selenium) are referred to as “metals” in this document.

be compared to drinking water guidelines to evaluate if water is safe for consumption by humans or if there is potential risk to human and wildlife health.

Descriptive statistics were calculated from the chemistry data collected from the Near-field, Mid-field and pooled reference areas sampled in 2018. Specifically, mean, median, minimum, maximum values were calculated and compared to acute and chronic CWQG-PAL (CCME 1999) and drinking water quality guidelines and aesthetic objectives (Health Canada 2017). Water quality results from Meliadine Lake stations were also compared to the SSWQO developed for the Mine (Golder 2013). For the mean and standard deviation calculation results below the DL were replace with half DL, when more than 50% of the results were below DL the standard deviation was not calculated.

These guidelines and objectives are summarized in Table 6.2-2; these guidelines, in addition to baseline data, form a starting point for the future monitoring benchmarks.

Table 6.2-2: Water Quality Guidelines and Objectives

Parameter[a]	Unit	CCME Aquatic Life [b]		Health Canada Drinking Water Guideline[c]	Health Canada Aesthetic Objective[c]	Site-specific Water Quality Objective[d]
		Acute	Chronic			
Field Parameters						
pH	unitless	-	6.5 to 9.0	7.0 to 10.5	-	-
Temperature	ºC	-	-	-	15	-
Dissolved Oxygen	mg/L	-	6.5[e]	-	-	-
Conventional Parameters						
pH	unitless		6.5 to 9.0	-	7.0 to 10.5	-
Total dissolved solids	mg/L	-	-	-	500	-
Major Ions						
Chloride	mg/L	640	120	-	250	-
Fluoride	mg/L	-	0.12	1.5	-	2.8
Sodium	mg/L	-	-	-	200	-
Sulphate	mg/L	-	-	-	500	-
Nutrients						
Total ammonia	mg-N/L	-	2.68[f]	-	-	-
Nitrate	mg-N/L	124	2.9	10	-	-
Nitrite	mg-N/L	-	0.06	1	-	-
Total Metals[g]						
Aluminum	µg/L	-	5 to 100[h]	-	-	-
Antimony	µg/L	-	-	6	-	-
Arsenic	µg/L	-	5	10	-	25
Barium	µg/L	-	-	1,000	-	-
Boron	µg/L	29,000	1,500	5,000	-	-
Cadmium	µg/L	0.46[i]	0.05[i]	5	-	-
Chromium	µg/L	-	1	50	-	-
Copper	µg/L	-	2[i]	-	1,000	-
Iron	µg/L	-	300	-	300	1,060

Table 6.2-2: Water Quality Guidelines and Objectives

Parameter[a]	Unit	CCME Aquatic Life [b]		Health Canada Drinking Water Guideline[c]	Health Canada Aesthetic Objective[c]	Site-specific Water Quality Objective[d]
		Acute	Chronic			
Total Metals[g] (cont'd)						
Lead	µg/L	-	1[i]	10	-	-
Manganese	µg/L	-	-	-	50	-
Mercury	µg/L	-	0.026	1	-	-
Molybdenum	µg/L	-	73	-	-	-
Nickel	µg/L	-	25[i]	-	-	-
Selenium	µg/L	-	1	50	-	-
Silver	µg/L	-	0.25	-	-	-
Thallium	µg/L	-	0.8	-	-	-
Uranium	µg/L	33	15	20	-	-
Zinc	µg/L	-	-	-	5,000	-
Dissolved Metals[g]						
Zinc	µg/L	11[j]	2[k]	-	-	-
Other						
Cyanide	mg/L	-	0.005	0.2	-	-

(a) Only parameters with water quality guidelines or an SSWQO are included in this table.

(b) CCME 1999.

(c) Health Canada 2017.

(d) SSWQO developed for the Meliadine Gold Mine (Golder 2013). SSWQOs supersede generic guidelines for review of monitoring and determination of effects.

(e) Lowest acceptable for cold water biota (CCME 1999).

(f) The guideline shown corresponds to a temperature of 10°C and pH of 7.5. For individual samples, the guidelines were calculated based on the specific temperature and pH measured from the sample (CCME 2010).

(g) The list of elements reported for metals analysis includes metalloids such as arsenic and non-metals such as selenium, which are collectively referred to as "total metals" or "dissolved metals" in this table.

(h) The guideline is pH dependent. The 5 µg/L guideline correspond to a pH<6.5 and 100 µg/L corresponds to a pH≥6.5. Guidelines were applied to individual sample based on specific pH measurement taken from the sample.

(i) The guideline is hardness dependent (value shown corresponds to a median hardness of 22.5 mg/L as $CaCO_3$). For individual samples, the guideline was calculated based on the specific hardness measurement taken from the sample.

(j) The acute dissolved zinc guideline is hardness and DOC-dependent. The guideline value shown is the minimum acute guideline calculated using the minimum validated hardness of 13.8 mg/L (as $CaCO_3$) and DOC of 0.3 mg/L. For individual samples, the guideline was calculated based on the specific hardness and DOC measurement taken from the sample. Hardness and DOC values falling outside of the validated range (i.e., hardness 13.8 to 250.5 mg/L as $CaCO_3$ and DOC 0.3 to 17.3 mg/L) were constrained to within the validated range as per CCME guidance (CCME 2018).

(k) The chronic dissolved zinc guideline is hardness, DOC and pH-dependent. The guideline value shown is the minimum chronic guideline calculated using the minimum validated hardness of 23.4 mg/L (as $CaCO_3$) and DOC of 0.3 mg/L and the maximum pH of 8.13; zinc toxicity increases with increasing pH. For individual samples, the guideline was calculated based on the specific hardness, DOC and pH measurement taken from the sample. Hardness, DOC and pH values falling outside of the validated range (i.e., pH 6.5 to 8.13, hardness 23.4 to 399 mg/L and DOC 0.3 to 22.9 mg/L) were constrained to within the validated range as per CCME guidance (CCME 2018).

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; - = no guideline; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; - = not available.

6.2.4.2 Normal Ranges

The methods for estimating normal ranges for the water quality component of the AEMP follow the methods of Barrett et al. (2015) and are consistent with the approach used for calculating normal ranges for other AEMP components (i.e., sediment, benthos, and plankton). When the baseline data were normally distributed, the normal range was estimated as the 80% prediction interval (PI) of the dataset. Normality was assessed using the Shapiro-Wilk test, using $\alpha = 0.05$ to indicate a significant departure from normality. When the baseline data were not normally distributed, but normality could be achieved after Box-Cox transformation (Box and Cox 1964), the normal range was calculated on the Box-Cox transformed data and the upper and lower bound of the normal ranges were back-transformed. If neither the untransformed data or Box-Cox transformed datasets were normally distributed, the normal range boundaries were defined as the 10th and 90th percentile of the baseline data. In cases where the percentile method was used, a dataset of 1,000 samples was randomly generated from the normal range dataset and the 10th and 90th percentile were calculated from this distribution of 1,000 samples to estimate the normal range. In cases where the lower bound was below the analytical DL, the lower bound was set at the DL.

Prior to calculating the normal range, statistical outliers were identified using studentized residual, which provide a measure of the difference between observed and expected values (i.e., residuals), normalized to the variance of the dataset. Data points with studentized residuals (SR) greater than |3.5| (i.e., more than 3.5 standard deviations from the sample mean), were omitted from analysis. All values at the DL were set to half the DL for the purposes of calculating the normal range.

The provisional normal range concentrations were calculated for Meliadine Lake open-water conditions from pooled reference area (MEL-03, MEL-04, and MEL-05) data collected during the AEMP Monitoring Program between 2016 and 2018 and baseline data collected in Meliadine Lake between 1995 and 2013 (Agnico Eagle 2014). Near-field and Mid-field data collected between 2015 and 2017 were not included in the normal range calculation. Near-field and Mid-field data were screened, and it was determined that they were not suitable for inclusion in the normal range calculation. For ice-covered conditions, provisional normal range concentrations were not calculated because adequate reference and baseline data were not available for the calculation. Additional detail on data screening as part of the normal range calculation is provided in Appendix 6B.

The normal ranges provided in this report are considered provisional during initial monitoring under the AEMP due to the limited sample sizes used in the calculations. The normal range is intended to estimate the range of natural spatial and temporal variability, and the more reference data incorporated into the calculation, the more accurate the estimate becomes. These normal ranges may be re-defined in future reports to allow for the inclusion of additional monitoring data from the reference areas. Normal ranges were not calculated for water quality constituents that were represented by other constituents (e.g., turbidity was not included because it is represented by TSS), or for dissolved metals.

Each calculated normal range was evaluated for representativeness. For example, some parameters had variable RDLs, or parameters with low detection frequency could have calculated normal range upper bound values that were less than the RDL, whereas actual concentrations could be anywhere between zero and the RDL. Therefore, the calculated normal ranges for parameters with non-detect concentrations in the dataset were revised according to the following criteria:

- If all values were less than the RDL, then the lower bound of the normal range was set to zero and the upper bound was set to the RDL value.
- If the lower bound of the normal range was less than the RDL, then it was set to zero.

- If the upper bound of the normal range was less than the RDL, then it was set to the DL value.
- If the dataset included a mix of RDLs and all the values were non-detect, then the normal range was set to zero (lower bound) and the most common used RDL (upper bound).
- If the dataset included a mix of RDLs, and the upper bound of the normal range was between the lowest and highest RDL, then the upper bound of the normal range was set to the highest RDL.
- If the dataset included a mix of RDLs, and the RDLs varied by more than an order of magnitude, then the data with the higher RDL was removed from analysis and the normal range was re-calculated.

The normal ranges are presented in Section 6.4.3.

6.2.4.3 Statistical Analysis

6.2.4.3.1 Overview

Concentrations of water quality parameters in Meliadine Lake were analyzed spatially for 2018 to determine if concentrations in the exposure areas (i.e., Near-field and Mid-field) differed from reference areas (Section 6.2.4.3.2). A qualitative temporal analysis was also conducted to determine if water quality in the Near-field area has changed over the period of the AEMP water quality monitoring program (Section 6.2.4.3.4). A qualitative analysis was also conducted with 2018 Near-field data to determine if there was spatial variability among Near-field stations (Section 6.2.4.3.3).

As part of EEM requirements, water quality in the exposure areas was compared to the references areas to determine if concentrations differed by greater than a factor of two (Section 6.2.4.3.2.2).

6.2.4.3.2 Exposure versus Reference Area Comparison

6.2.4.3.2.1 AEMP Approach

Spatial patterns in 2018 were qualitatively and statistically examined to determine if water quality differed among Near-field and Mid-field exposure areas, and reference areas. Dissolved metals were excluded from spatial analysis because they followed similar trends to total metals. Box plots of water chemistry parameters from Near-field, Mid-field exposure and pooled reference areas for 2018 were visually evaluated for spatial patterns. Additionally, a statistical analysis was conducted to determine if there were significant differences in the concentration of key parameters between exposure and reference areas.

Prior to completing statistical analyses, values below the RDL were substituted with one-half of the RDL. Parameters with greater than 50% of data below RDL were not included in the analysis. Statistical outliers were evaluated using SRs from the analysis of variance (ANOVA) model. A magnitude of |3.5| for the SR was used to identify observations that may be unusual. When an outlier was detected, the validity of the data point was examined. If the outlier was determined to be the result of a data entry error, it was corrected. If the outlier was not the result of data entry errors and could not be resolved otherwise, the analysis was completed with and without the outlier included.

Statistical analysis was conducted separately on ice-cover and open-water datasets. To compare the water quality parameters among areas at Meliadine Lake, an ANOVA test was completed in SYSTAT Version 13.1 (Systat Inc. 2009), followed by post-hoc pairwise comparisons (Tukey's tests; Zar 1999) if the ANOVA test result was significant. Prior to analysis, the water quality data were checked for statistical assumptions (i.e., normality, and homoscedasticity; Zar 1999). If data did not meet the statistical assumptions, the equivalent non-parametric

test (e.g., Kruskal-Wallis [K-W test] with post-hoc Conover-Inman tests; Systat Inc. 2009) were completed. Data were considered significantly different at α (alpha) of 0.1.

Open-water post-hoc statistical comparisons were conducted for Near-field versus Mid-field, Near-field versus pooled reference areas and Mid-field versus pooled reference areas. Open-water data were collected in July and August and pooled for the purposes of the statistical analysis. Ice-cover data statistical comparisons were conducted between Near-field and Mid-field areas.

When significant differences in water quality parameters were observed between sampling areas, the magnitude of difference among the areas (i.e., Near-field, Mid-field and pooled reference) was calculated by expressing the difference as a percentage of the reference mean or median. The area farthest away from the Mine was set as the denominator in the calculation of magnitude of difference. For example, to calculate the magnitude of difference between Near-field and pooled reference areas for a parameter the equation was as follows:

Magnitude: $$Magnitude = \frac{\bar{x}_{NF} - \bar{x}_{Reference\ Areas}}{\bar{x}_{Reference\ Areas}}$$

where $\bar{x}$ is the median or mean (dependent on the statistical analysis). If the statistical comparison between sampling areas was conducted using the K-W test, the data were not considered to be normally distributed and the magnitude was calculated using medians. As the K-W test is a non-parametric method for testing whether samples originate from the same distribution (i.e., it is not a comparison of sample medians), there were instances where the overall K-W test was significant, but no differences in medians were observed.

When spatial patterns were detected (i.e., as significant statistical test results), concentrations of parameters that increased with distance from the Near-field area were categorized as being positive patterns, while parameters with declining concentration with increasing distance were categorized as negative patterns.

6.2.4.3.2.2 EEM Approach

As per the EEM TGD (Environment Canada 2012), a spatial comparison between exposure (Near-field) and Reference Area 1 (EEM reference area) was conducted to identify parameters that differed by more than a factor of two between the two areas. Comparisons were made using the median.

6.2.4.3.3 Spatial Patterns in the Near-field Area

Prior to evaluating if conditions within the Near-field area have changed over time (Section 6.2.4.3.4), the 2018 water quality data at each Near-field station were qualitatively examined for spatial patterns:

- Scatter plots for water chemistry parameters from AEMP stations in the Near-field area were evaluated to identify spatial patterns and trends. The scatter plots were developed to illustrate station data relative to distance from the CP1 diffuser and by station.

Parameters that markedly differed among stations (i.e., by more than a factor of two based on median concentrations) were identified as key parameters and discussed in-text. Detection limits were set as one-half DL when comparing median concentrations. Concentrations of key parameters that increased with distance within the Near-field area were categorized as being positive patterns, while key parameters with declining concentration with increasing distance were categorized as negative patterns. Parameters with greater than 50% of data below RDL were not included in analysis.

6.2.4.3.4 Identification of Temporal Trends

Time series plots of parameter concentrations were completed (Appendix 6F) for Meliadine Lake Exposure and Reference Areas and qualitatively examined to identify increasing trends in 2018 relative to previous AEMP monitoring years (i.e., 2015 to 2017). Temporal trends were first evaluated in the Near-field area and if identified, were further analyzed on temporal box-and-whisker plots by area (Appendix 6G). This analysis was conducted separately for ice-covered and open-water conditions.

6.2.4.4 Comparison to FEIS Predictions

Comparison of Near-field area data for 2018 were compared to applicable model predictions in the FEIS for Meliadine (Agnico Eagle 2014). The FEIS predictions for water quality included an evaluation of water quality in the mixing zone of Meliadine Lake to evaluate potential contaminants of concern. The results of the model predictions indicated that background concentrations of cadmium exceeded CCME guidelines for the protection of aquatic life. It was predicted that the addition of effluent would not increase concentrations of cadmium at the edge of the mixing zone to above background.

Within the mixing zone of Meliadine Lake, FEIS predictions indicated that several parameter concentrations would increase above baseline: TDS, major ions (i.e., chloride, sodium, fluoride and sulphate) and several total metals. To examine this prediction, concentrations at the edge of the mixing zone in the Near-field were compared to FEIS predictions.

In the east bay of Meliadine Lake, the FEIS predictions indicated that TDS and major ions would gradually increase during the construction and operations phases of the Mine; the maximum concentrations are predicted to occur in the last year of the operations phase (i.e., 176, 66, and 19 mg/L TDS, chloride, and sodium, respectively). These predicted maximum concentrations do not exceed guidelines for TDS, chloride and sodium but exceed the range of concentrations observed in Meliadine Lake during baseline.

Concentrations of DO in Meliadine Lake were modelled under construction, operations and closure phases. Predictions indicate that DO concentrations in Meliadine Lake are expected to be above CCME guidelines for the protection of aquatic life (i.e., 6.5 mg/L; CCME 1999) under most conditions. In the mixing zone, it is predicted that DO will fall below the guideline in late summer during the operations phase.

Overall, based on the conceptual diffuser design, the predicted Mine water quality and quantity discharged to Meliadine Lake, and the physical mixing attributes in Meliadine Lake in the vicinity of the diffuser, it was predicted that there will be a minor change in water quality, but that no parameters will exceed CCME guidelines at the edge of the mixing zone. Therefore, no residual impacts from the point source discharge of effluent into Meliadine Lake are anticipated and it is predicted that water quality outside of the mixing zone would support the same uses as during baseline conditions (i.e., safe for aquatic life, safe for use as drinking water, and for recreational activities; Agnico Eagle 2014).

6.3 Quality Assurance/Quality Control

6.3.1 Overview of Procedures

The QA/QC practices applied during this study and detailed results of the QC analyses for discrete water quality samples collected at Meliadine Lake are provided in Appendix 6A. The QA components of the program included the use of trained personnel and an accredited analytical laboratory; QC components included assessments of duplicates and field, equipment, and travel blank samples. Dissolved and total parameter concentrations were also compared.

6.3.2 Summary of Results

Detailed results are provided in Appendix 6A. The results of the review of field and laboratory data indicated that field measurements and laboratory data were of high quality. Key findings from the 2018 QA/QC evaluation are as follows:

- In general, field measurements and results of laboratory samples collected during the 2018 sampling program were within the ranges that would be expected for Meliadine Lake, with the exception of several field pH measurements collected in August. These field pH measurements were invalidated because the values were far outside of the range of historical variation at these stations. DO measurements in the Near-field and Mid-field areas during ice-covered conditions were also far outside the range considered likely (i.e., were in the range of extreme supersaturation). These data were deemed unreliable and excluded from analysis.
- No issues were identified in analytical methods used or units reported by the laboratory.
- Holding times recommended by the laboratory were exceeded for some parameters. The holding time exceedances were not expected to affect data quality for the Meliadine water quality program.
- QC samples (i.e., blanks and duplicates) accounted for approximately 16% of the total number of water samples submitted for analysis.
- The water quality QC sample evaluation indicated that for the combined equipment and travel blanks, 1% of parameters were detected at concentrations more than five times the DL. No notable contamination occurred in the blank samples.
- Approximately 3% of paired concentrations in duplicate discrete water quality samples had a relative percent difference (RPD) of more than 20%. Within-station variability and field precision for the 2018 dataset were rated as low and high, respectively.

The overall quality of the water quality data was rated high. Therefore, the results reported in the report are considered reliable and meet the needs of the program.

6.4 Results and Discussion

6.4.1 Field Measured Physicochemical Parameters

Field physicochemical water column profiles for each of the three water quality sampling periods are presented in Appendix 6C.

During ice-covered conditions (March sampling event) the field profiles followed a similar pattern between Near-field and Mid-field areas. A summary of field profiles for the Near-field and Mid-field areas is presented in Appendix 6C, Tables 6C.2-1 and 6C.2-4 (respectively) and described below:

- Water temperatures were generally consistent among Near-field and Mid-field stations at approximately 0°C below ice cover, and slightly higher (i.e., 1.9°C to 2.6°C) above the lakebed (Appendix 6C, Figure 6C.1-1).
- Water column pH ranged from 7.1 to 8.1 in the Near-field area and 7.2 to 8.0 in the Mid-field area (Appendix 6C, Figure 6C.1-7). In both areas, pH declined with depth. Surface pH was within the acceptable CWQG-PAL range of 6.5 to 9.0 at all stations in the Near-field and Mid-field areas.
- Water column specific conductivity ranged between 102 to 161 µS/cm in the Near-field area and 91 to 126 µS/cm in the Mid-field area. Specific conductivity generally declined with depth (Figure 6C.1-10).

During open-water conditions (July and August sampling events) the field profiles generally followed similar patterns among areas. A summary of field profiles for the Near-field, Mid-field and reference areas is presented in Appendix 6C, Tables 6C.2-2 to 6C.2-11 and described below:

- Water temperature was relatively constant with depth in all areas during the July program, with the exception of the Mid-field area and Reference Area 1, both of which showed a slight decrease in temperature at approximately 5 and 4 m depth, respectively (Figure 6C.1-2). In August, no thermal stratification was observed in any area (Figure 6C.1-3). Surface water temperatures across all areas varied between 8°C to 13°C.
- DO was close to saturated to supersaturated in all areas in July and August, and remained relatively constant through the water column. A greater variability in DO with depth was observed in July, relative to August in all areas (Appendix 6C, Figure 6C.1-5 and 6C.1-6). Surface DO was well above CWQG-PAL of 6.5 mg/L at all stations in the Near-field and Mid-field areas.
- Water column pH ranged from 7.0 to 8.1 in all areas and was consistent with depth in July and August (Appendix 6C, Figure 6C.1-8 and 6C.1-9). Surface pH was within the acceptable CWQG-PAL range of 6.5 to 9.0 at all stations during open-water conditions.
- Water column specific conductivity was constant with depth in all areas in July and August, with the exception of three stations in the Near-field area in July; at MEL-01-07, MEL-01-08, and MEL-01-09 specific conductivity increased between 4 to 7 m depths and then declined in deeper waters (Appendix 6C, Figure 6C.1-11 and 6C.1-12). Water column specific conductivity ranged between 76 to 98 µS/cm in the Near-field area, 69 to 78 µS/cm in the Mid-field area, and 63 to 76 µS/cm in the References Areas.

6.4.2 Water Chemistry

Water chemistry data for discrete samples collected from Meliadine Lake in 2018 are presented in Appendix 6D, Tables 6D-1 to 6D-5. Summary statistics were calculated for each sampling area during ice-cover (Table 6.4-1) and open-water conditions (Tables 6.4-2). Open-water summary statistics were based on pooled data for the July and August sampling programs because water quality variability was low between the two programs. Summary statistics for the reference areas during open-water conditions were calculated used pooled reference area data. Time-series plots for selected parameters of interest are presented in Appendix 6F to illustrate general trends in parameter concentrations in Meliadine Lake.

6.4.2.1 AEMP

6.4.2.1.1 Overview

Lake water quality during ice-covered conditions (Table 6.4-1; Appendix 6D, Table 6D-1 and 6D-2) was characterized as follows:

- low ionic strength (Near-field and Mid-field area median laboratory specific conductivity was 118 and 99 µS/cm, respectively)
- bicarbonate, chloride, calcium, and sodium are the dominant major ions
- basic pH (median field-measured pH in the Near-field and Mid-field areas was 7.6)
- low hardness (median values in the Near-field and Mid-field areas of 36 and 30 mg/L as $CaCO_3$, respectively; this indicates soft water according to the scale of water hardness by McNeely et al. [1979])
- low nutrient concentrations, with median TP and TN concentrations in the Near-field (0.0046 mg-P/L and 0.15 mg-N/L, respectively) and Mid-field (0.0038 mg-P/L and 0.067 mg-N/L, respectively) areas within the range of oligotrophic classification according to the scale of trophic status by Vollenweider (1968)
- low metal concentrations, which were either below detection or below water quality guidelines

In general, lake water quality during the open-water season was characterized as follows (Table 6.4-2; Appendix 6D, Table 6D-1 to 6D-5):

- low ionic strength (median laboratory specific conductivity across all areas ranged from 74 to 85 µS/cm)
- bicarbonate, chloride, and calcium as the major ions
- basic pH (median field-measured pH across all areas ranged from 7.4 to 7.5)
- low hardness (median values across all areas ranged from 21 to 25 mg/L as $CaCO_3$; this indicates soft water according to the scale of water hardness by McNeely et al. [1979])
- low nutrient concentrations, with median TP and TN concentrations across all areas (0.0025 to 0.0035 mg-P/L and 0.18 to 0.24 mg-N/L, respectively) within the range of oligotrophic classification according to the scale of trophic status by Vollenweider (1968)
- low metal concentrations across all areas, which were either below detection or below water quality guidelines

The following sections provide a more detailed analysis of the AEMP water chemistry data collected from each of the lake areas. In particular, notable water quality results (e.g., guideline exceedances) are presented and discussed.

Table 6.4-1: Water Quality Summary during Ice-Covered Conditions in Meliadine Lake, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary Statistics												
		CCME Aquatic Life		Health Canada Drinking Water Guideline	Aesthetic Objective	SSWQO	Near-field							Mid-field					
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Field Measured																				
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.6	7.6	7.3	7.8	0.19	0	5	7.6	7.6	7.5	7.6	0.056	0	5
Specific conductivity	µS/cm	-	-	-	-	-	120	120	116	123	2.8	0	5	101	101	100	102	0.69	0	5
Temperature	°C	-	-	-	15	-	1.5	1.5	1.4	1.5	0.054	0	5	1.3	1.3	1.2	1.3	0.047	0	5
Dissolved oxygen	mg/L	-	6.5	-	-	-	-[a]	-	-	-	-	-	-	-[a]	-	-	-	-	-	-
Dissolved oxygen	%	-	-	-	-	-	-[a]	-	-	-	-	-	-	-[a]	-	-	-	-	-	-
Conventional Parameters																				
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.3	7.2	7.3	0.019	0	5	7.3	7.3	7.2	7.3	0.039	0	5
Specific conductivity	µS/cm	-	-	-	-	-	118	118	115	122	2.7	0	5	99	99	98	100	0.71	0	5
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	36	36	35	37	0.93	0	5	30	30	29	30	0.47	0	5
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	27	27	27	28	0.60	0	5	25	25	25	25	0.33	0	5
Total dissolved solids	mg/L	-	-	-	500	-	68	68	66	70	1.5	0	5	61	61	58	63	2.1	0	5
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	59	59	59	61	0.78	0	5	50	49	49	50	0.40	0	5
Total suspended solids	mg/L	-	-	-	-	-	<1.0	-	<1.0	<1.0	-	5	5	<1.0	-	<1.0	<1.0	-	5	5
Turbidity	NTU	-	-	-	-	-	0.24	0.23	0.20	0.28	0.034	0	5	0.14	0.14	0.12	0.16	0.017	0	5
Major Ions																				
Bicarbonate	mg/L	-	-	-	-	-	33	33	32	34	0.75	0	5	30	30	30	31	0.41	0	5
Calcium	mg/L	-	-	-	-	-	11	11	11	12	0.30	0	5	9.2	9.3	9.1	9.5	0.20	0	5
Carbonate	mg/L	-	-	-	-	-	<0.6	-	<0.6	<0.6	-	5	5	<0.6	-	<0.6	<0.6	-	5	5
Chloride	mg/L	640	120	-	250	-	15	15	14	15	0.42	0	5	12	12	12	12	0.071	0	5
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.029	0.029	0.027	0.030	0.0011	0	5	0.025	0.025	0.025	0.025	0	0	5
Magnesium	mg/L	-	-	-	-	-	2.0	2.0	1.9	2.0	0.087	0	5	1.5	1.6	1.5	1.7	0.094	0	5
Potassium	mg/L	-	-	-	-	-	1.4	1.5	1.4	1.5	0.024	0	5	1.3	1.3	1.3	1.3	0.020	0	5
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.71	0.71	0.68	0.77	0.035	0	5	0.46	0.46	0.45	0.49	0.015	0	5
Sodium	mg/L	-	-	-	200	-	7.8	7.9	7.7	8.3	0.25	0	5	6.2	6.2	6.1	6.4	0.12	0	5
Sulphate	mg/L	-	-	-	500	-	5.8	5.8	5.7	5.9	0.080	0	5	4.5	4.5	4.4	4.5	0.045	0	5
Nutrients and Organics																				
Nitrate	mg-N/L	124	2.9	10	-	-	0.0089	0.0083	0.0054	0.012	0.0027	0	5	0.012	0.012	0.011	0.016	0.0018	0	5
Nitrite	mg-N/L	-	0.06	1.0	-	-	<0.001	-	<0.001	0.0017	-	4	5	<0.001	-	<0.001	<0.001	-	5	5
Nitrate + nitrite	mg-N/L	-	-	-	-	-	0.0089	0.0087	0.0054	0.014	0.0033	0	5	0.012	0.012	0.011	0.016	0.0018	0	5
Total ammonia	mg-N/L	-	2.6 to 7.9[b]	-	-	-	0.0078	0.0079	<0.005	0.012	0.0038	1	5	0.012	0.012	0.011	0.014	0.0012	0	5
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.14	0.15	0.11	0.21	0.039	0	5	0.055	0.086	<0.05	0.23	0.081	1	5
Total phosphorus	mg-P/L	-	-	-	-	-	0.0046	0.0047	0.0039	0.0057	0.00066	0	5	0.0038	0.0039	0.0032	0.0046	0.00051	0	5
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0021	0.0022	0.0020	0.0027	0.00029	0	5	0.0020	0.0019	0.0016	0.0022	0.00022	0	5
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	5	5	<0.001	-	<0.001	<0.001	-	5	5
Total organic carbon	mg/L	-	-	-	-	-	4.0	4.0	3.9	4.2	0.11	0	5	3.0	3.0	3.0	3.1	0.038	0	5
Dissolved organic carbon	mg/L	-	-	-	-	-	3.8	3.8	3.7	4.0	0.11	0	5	3.0	3.0	2.9	3.1	0.068	0	5

Table 6.4-1: Water Quality Summary during Ice-Covered Conditions in Meliadine Lake, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary Statistics												
		CCME Aquatic Life		Health Canada Drinking Water Guideline	Aesthetic Objective	SSWQO	Near-field							Mid-field					
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Total Metals																				
Aluminum	µg/L	-	100[c, d]	-	-	-	0.50	0.52	0.39	0.69	0.11	0	5	0.69	0.67	0.46	0.87	0.15	0	5
Antimony	µg/L	-	-	6.0	-	-	<0.02	-	<0.02	<0.02	-	5	5	<0.02	-	<0.02	<0.02	-	5	5
Arsenic	µg/L	-	5.0	10	-	25	0.53	0.53	0.52	0.54	0.0097	0	5	0.31	0.31	0.28	0.34	0.024	0	5
Barium	µg/L	-	-	1,000	-	-	12	12	11	12	0.57	0	5	11	11	11	11	0.21	0	5
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	5	5	<0.01	-	<0.01	<0.01	-	5	5
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	5	5	<0.01	-	<0.01	<0.01	-	5	5
Boron	µg/L	29,000	1,500	5,000	-	-	5.4	5.3	5.1	5.5	0.20	0	5	4.8	4.8	4.1	5.3	0.52	0	5
Cadmium	µg/L	0.60 to 0.77[e]	0.057 to 0.070[e]	5.0	-	-	<0.005	-	<0.005	<0.005	-	5	5	<0.005	-	<0.005	<0.005	-	5	5
Chromium	µg/L	-	1.0	50[f]	-	-	<0.06	-	<0.06	<0.06	-	5	5	<0.06	-	<0.06	<0.06	-	5	5
Cobalt	µg/L	-	-	-	-	-	0.012	0.012	0.010	0.013	0.0015	0	5	<0.01	-	<0.01	<0.01	-	5	5
Copper	µg/L	-	2.0[e]	-	1,000	-	1.1	1.1	1.0	1.2	0.047	0	5	0.88	0.88	0.86	0.89	0.015	0	5
Iron	µg/L	-	300	-	300	1,060	5.7	5.6	4.4	6.6	0.83	0	5	2.2	2.5	2.1	3.2	0.50	0	5
Lead	µg/L	-	1.0[e]	10	-	-	0.057	0.063	0.035	0.11	0.027	0	5	0.039	0.038	0.027	0.045	0.0068	0	5
Lithium	µg/L	-	-	-	-	-	<0.5	-	<0.5	0.98	-	4	5	<0.5	-	<0.5	0.63	-	3	5
Manganese	µg/L	-	-	-	50	-	2.0	2.0	1.7	2.2	0.21	0	5	1.0	1.1	1.0	1.2	0.077	0	5
Mercury	µg/L	-	0.026	1.0	-	-	0.0010	0.00098	0.00090	0.0011	0.000084	0	5	0.00080	0.00084	0.00070	0.0010	0.00011	0	5
Molybdenum	µg/L	-	73	-	-	-	0.099	0.10	0.096	0.11	0.0054	0	5	0.085	0.094	0.071	0.12	0.020	0	5
Nickel	µg/L	-	25[e]	-	-	-	0.79	0.80	0.78	0.82	0.017	0	5	0.57	0.57	0.55	0.59	0.016	0	5
Selenium	µg/L	-	1.0	50	-	-	0.057	0.055	0.041	0.070	0.011	0	5	0.049	0.048	<0.04	0.064	0.018	1	5
Silver	µg/L	-	0.25	-	-	-	<0.005	-	<0.005	<0.005	-	5	5	<0.005	-	<0.005	<0.005	-	5	5
Strontium	µg/L	-	-	-	-	-	51	50	48	51	1.5	0	5	45	45	41	49	3.0	0	5
Thallium	µg/L	-	0.80	-	-	-	<0.005	-	<0.005	<0.005	-	5	5	<0.005	-	<0.005	<0.005	-	5	5
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	5	5	<0.05	-	<0.05	<0.05	-	5	5
Titanium	µg/L	-	-	-	-	-	<0.1	-	<0.1	<0.1	-	5	5	<0.1	-	<0.1	<0.1	-	5	5
Uranium	µg/L	33	15	20	-	-	0.018	0.018	0.017	0.019	0.00084	0	5	0.015	0.015	0.015	0.015	0	0	5
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	5	5	<0.05	-	<0.05	<0.05	-	5	5
Zinc	µg/L	-	-	-	5,000	-	<0.8	-	<0.8	0.85	-	4	5	<0.8	-	<0.8	0.86	-	3	5
Dissolved Metals																				
Aluminum	µg/L	-	-	-	-	-	<0.3	-	<0.3	2.8	-	3	5	0.35	0.34	<0.3	0.46	0.12	1	5
Antimony	µg/L	-	-	-	-	-	<0.02	-	<0.02	<0.02	-	5	5	<0.02	-	<0.02	<0.02	-	5	5
Arsenic	µg/L	-	-	-	-	-	0.53	0.53	0.52	0.56	0.016	0	5	0.31	0.31	0.29	0.33	0.018	0	5
Barium	µg/L	-	-	-	-	-	12	12	12	12	0.37	0	5	11	11	11	11	0.12	0	5
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	5	5	<0.01	-	<0.01	<0.01	-	5	5
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	5	5	<0.01	-	<0.01	<0.01	-	5	5
Boron	µg/L	-	-	-	-	-	5.4	5.6	5.3	6.3	0.41	0	5	4.6	4.7	4.4	5.1	0.27	0	5
Cadmium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	5	5	<0.005	-	<0.005	<0.005	-	5	5
Chromium	µg/L	-	-	-	-	-	<0.06	-	<0.06	<0.06	-	5	5	<0.06	-	<0.06	<0.06	-	5	5
Cobalt	µg/L	-	-	-	-	-	<0.01	-	<0.01	0.010	-	4	5	<0.01	-	<0.01	<0.01	-	5	5

Table 6.4-1: Water Quality Summary during Ice-Covered Conditions in Meliadine Lake, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary Statistics												
		CCME Aquatic Life		Health Canada Drinking Water Guideline	Aesthetic Objective	SSWQO	Near-field							Mid-field					
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Dissolved Metals (cont'd)																				
Copper	µg/L	-	-	-	-	-	1.1	1.1	1.0	1.1	0.050	0	5	0.85	0.85	0.81	0.89	0.029	0	5
Iron	µg/L	-	-	-	-	-	2.1	2.0	1.4	2.5	0.42	0	5	<1.0	-	<1.0	<1.0	-	5	5
Lead	µg/L	-	-	-	-	-	0.056	0.056	0.036	0.078	0.019	0	5	0.040	0.038	0.029	0.044	0.0062	0	5
Lithium	µg/L	-	-	-	-	-	0.86	0.85	0.69	1.0	0.13	0	5	0.59	0.58	<0.5	0.86	0.22	1	5
Manganese	µg/L	-	-	-	-	-	0.23	0.24	0.22	0.28	0.027	0	5	0.22	0.21	0.18	0.23	0.025	0	5
Mercury	µg/L	-	-	-	-	-	0.00060	0.00056	0.00050	0.00060	0.000055	0	5	0.00050	0.00042	<0.0005	0.00060	0.00016	2	5
Molybdenum	µg/L	-	-	-	-	-	0.10	0.10	0.096	0.11	0.0046	0	5	0.076	0.077	0.073	0.080	0.0031	0	5
Nickel	µg/L	-	-	-	-	-	0.80	0.80	0.77	0.82	0.019	0	5	0.56	0.56	0.55	0.56	0.0044	0	5
Selenium	µg/L	-	-	-	-	-	0.051	0.052	0.044	0.060	0.0065	0	5	0.051	0.039	<0.04	0.055	0.018	2	5
Silver	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	5	5	<0.005	-	<0.005	<0.005	-	5	5
Strontium	µg/L	-	-	-	-	-	52	52	52	54	0.78	0	5	44	44	43	46	1.2	0	5
Thallium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	5	5	<0.005	-	<0.005	<0.005	-	5	5
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	5	5	<0.05	-	<0.05	<0.05	-	5	5
Titanium	µg/L	-	-	-	-	-	<0.1	-	<0.1	<0.1	-	5	5	<0.1	-	<0.1	<0.1	-	5	5
Uranium	µg/L	-	-	-	-	-	0.018	0.018	0.016	0.019	0.0013	0	5	0.015	0.015	0.014	0.016	0.00084	0	5
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	5	5	<0.05	-	<0.05	<0.05	-	5	5
Zinc	µg/L	36 to 47[g]	7.9 to 13[h]	-	-	-	<0.8	-	<0.8	0.86	-	4	5	<0.8	-	<0.8	<0.8	-	5	5
Other																				
Total Cyanide	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	5	5	<0.001	-	<0.001	<0.001	-	5	5
Free Cyanide	mg/L	-	0.005	0.20	-	-	<0.001	-	<0.001	<0.005	-	5	5	<0.005	-	<0.001	<0.005	-	5	5
Cyanide WAD	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	5	5	<0.002	-	<0.001	<0.002	-	5	5
Radium-226	Bq/L	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-	-	-	0	0

(a) Dissolved oxygen measurements during ice-covered conditions were outside the acceptable range. Data were deemed unreliable and excluded from analysis.

(b) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (2.61 mg-N/L) is based on the combination of field pH (7.8) and water temperature (1.5°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.3 to 7.8). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(d) Guideline is pH dependent: 5 µg/L at pH <6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(e) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (29.1 to 37.1 mg/L as CaCO3). The guideline is calculated based on the individual hardness value for each sample.

(f) Guideline is for chromium VI.

(g) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (29.1 to 37.1 mg/L as $CaCO_3$) and DOC (2.9 to 4.0 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(h) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.3 to 7.8), hardness (29.1 to 37.1 mg/L as $CaCO_3$) and DOC (2.9 to 4.0 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range of pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L). When field pH was not available laboratory pH was used.

Note:

In cases where 50% or more of data were <DL, no mean or standard deviation was calculated.

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; SD = standard deviation; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; Bq/L = Becquerels per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; WAD = weak acid dissociable; - = no guideline or data not measured.

Table 6.4-2: Water Quality Summary during Open-water Conditions Meliadine Lake, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary																				
		CCME Aquatic Life		Health Canada Drinking Water Guidelines	Aesthetic Objectives	SSWQO	Near-field							Mid-field							Pooled Reference Areas						
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Field Measured																											
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.8	7.7	7.4	8.0	0.19	0	5	7.6	7.7	7.4	8.6	0.38	0	8	7.9	7.8	7.3	8.0	0.21	0	12
Specific conductivity	µS/cm	-	-	-	-	-	86	85	77	91	3.8	0	10	76	75	70	78	2.9	0	11	73	72	63	85	5.3	0	19
Temperature	°C	-	-	-	15	-	11	12	11	13	1.2	0	10	12	11	9.0	13	1.2	0	11	9.6	9.7	8.4	12	1.2	0	19
Dissolved oxygen	mg/L	-	6.5	-	-	-	12	12	12	12	0.14	0	10	12	11	10	12	0.84	0	11	12	12	11	13	0.37	0	19
Dissolved oxygen	%	-	-	-	-	-	112	112	109	115	2.4	0	10	103	104	95	113	7.1	0	11	105	107	102	116	5.4	0	18
Conventional Parameters																											
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.4	7.4	7.4	7.5	0.037	0	10	7.5	7.5	7.4	7.6	0.059	0	10	7.5	7.5	7.4	7.6	0.046	0	19
Specific conductivity	µS/cm	-	-	-	-	-	85	86	83	90	2.6	0	10	77	77	73	82	2.8	0	10	74	73	67	81	4.3	0	19
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	25	25	24	26	1.0	0	10	23	22	18	23	1.7	0	9	21	22	20	39	4.0	0	19
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	16	16	15	17	0.57	0	10	17	18	16	21	1.4	0	10	17	18	16	21	1.6	0	19
Total dissolved solids	mg/L	-	-	-	500	-	53	54	50	63	4.5	0	10	45	46	35	53	5.8	0	10	46	43	20	54	9.1	0	19
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	42	42	40	44	1.2	0	10	37	37	32	39	2.2	0	9	36	36	33	40	1.7	0	19
Total suspended solids	mg/L	-	-	-	-	-	<1.0	-	<1.0	<1.0	-	10	10	<1.0	-	<1.0	2.8	-	9	10	<1.0	-	<1.0	1.0	-	18	19
Turbidity	NTU	-	-	-	-	-	0.41	0.43	0.31	0.59	0.079	0	10	0.29	0.31	0.24	0.46	0.068	0	10	0.22	0.25	0.16	0.84	0.15	0	19
Major Ions																											
Bicarbonate	mg/L	-	-	-	-	-	20	20	18	20	0.70	0	10	21	22	20	25	1.7	0	10	21	22	20	25	1.9	0	19
Calcium	mg/L	-	-	-	-	-	7.5	7.6	7.3	8.2	0.32	0	10	7.0	6.7	5.0	7.2	0.64	0	10	6.7	7.0	6.4	12	1.2	0	19
Carbonate	mg/L	-	-	-	-	-	<0.6	-	<0.6	<0.6	-	10	10	<0.6	-	<0.6	<0.6	-	10	10	<0.6	-	<0.6	<0.6	-	19	19
Chloride	mg/L	640	120	-	250	-	13	13	11	14	0.72	0	10	9.4	9.4	9.2	9.6	0.16	0	10	8.4	8.4	7.9	8.7	0.26	0	19
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.023	0.021	<0.02	0.024	0.0043	1	10	0.024	0.024	0.022	0.028	0.0021	0	10	0.026	0.025	<0.02	0.028	0.0042	1	19
Magnesium	mg/L	-	-	-	-	-	1.4	1.4	1.3	1.5	0.054	0	10	1.2	1.1	0.45	1.3	0.25	0	10	1.1	1.2	1.1	2.2	0.24	0	19
Potassium	mg/L	-	-	-	-	-	0.98	0.98	0.95	1.0	0.022	0	10	0.93	0.87	0.25	0.97	0.22	0	10	0.90	0.92	0.84	1.3	0.10	0	19
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.39	0.39	0.35	0.43	0.035	0	10	0.35	0.34	0.28	0.40	0.039	0	10	0.25	0.25	0.22	0.28	0.018	0	19
Sodium	mg/L	-	-	-	200	-	5.7	5.8	5.5	6.2	0.29	0	10	4.9	4.6	1.8	5.2	0.99	0	10	4.4	4.6	4.1	8.5	0.97	0	19
Sulphate	mg/L	-	-	-	500	-	4.3	4.2	3.8	4.5	0.20	0	10	3.8	3.9	3.8	4.1	0.096	0	10	3.6	3.6	3.2	3.8	0.16	0	19
Nutrients and Organics																											
Nitrate	mg-N/L	124	2.9	10	-	-	0.011	-	<0.005	0.022	-	5	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	0.0073	-	17	18
Nitrite	mg-N/L	-	0.06	1.0	-	-	<0.001	-	<0.001	0.0017	-	6	10	<0.001	-	<0.001	<0.001	-	10	10	<0.001	-	<0.001	<0.001	-	18	18
Nitrate + nitrite	mg-N/L	-	-	-	-	-	0.011	-	<0.005	0.024	-	5	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	0.0073	-	17	18
Total ammonia	mg-N/L	-	0.22 to 4.6[(a)]	-	-	-	<0.005	-	<0.005	0.0094	-	9	10	<0.005	-	<0.005	0.018	-	7	10	<0.005	-	<0.005	0.029	-	15	19
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.23	0.23	0.18	0.30	0.031	0	10	0.23	0.23	0.15	0.34	0.061	0	10	0.17	0.18	0.11	0.26	0.047	0	19
Total phosphorus	mg-P/L	-	-	-	-	-	0.0045	0.0062	0.0021	0.020	0.0056	0	10	0.0025	0.0029	<0.001	0.0061	0.0019	1	10	0.0035	0.0032	<0.001	0.0044	0.0012	2	19
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0029	-	<0.001	0.0034	-	5	10	0.0019	-	<0.001	0.0029	-	5	10	0.0022	0.0020	<0.001	0.0030	0.00076	3	19
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	-	<0.001	0.0010	-	9	10	<0.001	-	<0.001	<0.001	-	10	10	<0.001	-	<0.001	0.0033	-	18	19
Total organic carbon	mg/L	-	-	-	-	-	3.1	3.2	2.9	3.6	0.24	0	10	2.7	2.7	2.3	2.8	0.20	0	10	2.3	2.3	2.2	2.6	0.11	0	19
Dissolved organic carbon	mg/L	-	-	-	-	-	3.1	3.1	2.9	3.4	0.15	0	10	2.7	2.7	2.3	3.1	0.22	0	10	2.3	2.3	2.2	2.7	0.099	0	19

Table 6.4-2: Water Quality Summary during Open-water Conditions Meliadine Lake, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary																			
		CCME Aquatic Life					Near-field							Mid-field							Pooled Reference Areas						
		Acute	Chronic	Health Canada Drinking Water Guidelines	Aesthetic Objectives	SSWQO	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Total Metals																										
Aluminum	µg/L	-	100[b, c]	-	-	-	8.3	14	7.0	29	8.4	0	10	3.0	3.2	2.6	3.9	0.46	0	10	2.8	3.1	1.8	10	1.9	0	19
Antimony	µg/L	-	-	6.0	-	-	<0.02	-	<0.02	<0.02	-	10	10	<0.02	-	<0.02	<0.02	-	10	10	<0.02	-	<0.02	<0.02	-	19	19
Arsenic	µg/L	-	5.0	10	-	25	0.38	0.39	0.34	0.45	0.037	0	10	0.25	0.26	0.24	0.29	0.015	0	10	0.20	0.21	0.18	0.26	0.026	0	19
Barium	µg/L	-	-	1,000	-	-	8.2	8.3	7.9	9.0	0.45	0	10	8.1	8.2	7.6	8.6	0.45	0	10	7.7	7.7	7.1	8.2	0.28	0	19
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	19	19
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	19	19
Boron	µg/L	29,000	1,500	5,000	-	-	5.0	5.0	4.5	5.3	0.22	0	10	4.1	4.1	3.7	4.6	0.30	0	10	3.9	3.7	2.8	4.0	0.35	0	19
Cadmium	µg/L	0.36 to 0.80[d]	0.038 to 0.072[d]	5.0	-	-	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	19	19
Chromium	µg/L	-	1.0	50[e]	-	-	<0.06	-	<0.06	0.10	-	9	10	<0.06	-	<0.06	0.065	-	8	10	<0.06	-	<0.06	0.56	-	15	19
Cobalt	µg/L	-	-	-	-	-	0.025	0.024	0.019	0.028	0.0033	0	10	0.019	0.018	0.012	0.027	0.0045	0	10	0.012	0.013	<0.01	0.027	0.0065	4	19
Copper	µg/L	-	2.0[d]	-	1,000	-	0.79	0.83	0.70	1.3	0.19	0	10	0.71	0.73	0.65	0.92	0.084	0	10	0.68	0.70	0.62	0.88	0.078	0	19
Iron	µg/L	-	300	-	300	1,060	24	25	20	40	6.0	0	10	18	19	9.8	32	7.9	0	10	11	12	5.5	25	5.7	0	19
Lead	µg/L	-	1.0[d]	10	-	-	0.010	0.012	<0.01	0.024	0.0067	3	10	<0.01	-	<0.01	0.027	-	9	10	<0.01	-	<0.01	0.098	-	14	19
Lithium	µg/L	-	-	-	-	-	1.5	1.5	1.2	1.8	0.25	0	10	0.64	0.82	0.57	1.3	0.32	0	10	0.58	0.53	<0.5	0.66	0.13	3	19
Manganese	µg/L	-	-	-	50	-	5.9	6.0	4.3	8.6	1.6	0	10	4.3	4.2	3.1	5.2	0.78	0	10	2.8	2.7	2.1	3.4	0.45	0	19
Mercury	µg/L	-	0.026	1.0	-	-	0.00090	0.00091	0.00060	0.0013	0.00020	0	10	0.0012	0.0010	<0.0005	0.0014	0.00039	1	10	0.00050	0.00048	<0.0005	0.00080	0.00021	7	19
Molybdenum	µg/L	-	73	-	-	-	0.080	0.077	0.055	0.10	0.015	0	10	0.078	0.080	0.055	0.11	0.023	0	10	0.078	0.077	0.057	0.11	0.013	0	19
Nickel	µg/L	-	25[d]	-	-	-	0.66	0.67	0.61	0.75	0.041	0	10	0.61	0.63	0.47	0.97	0.15	0	10	0.39	0.45	0.35	0.78	0.13	0	19
Selenium	µg/L	-	1.0	50	-	-	<0.04	-	<0.04	0.047	-	9	10	<0.04	-	<0.04	0.046	-	9	10	<0.04	-	<0.04	0.050	-	17	19
Silver	µg/L	-	0.25	-	-	-	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	19	19
Strontium	µg/L	-	-	-	-	-	49	51	45	59	6.0	0	10	35	38	34	44	4.2	0	10	32	32	28	34	1.3	0	19
Thallium	µg/L	-	0.80	-	-	-	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	19	19
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	10	10	<0.05	-	<0.05	<0.05	-	10	10	<0.05	-	<0.05	0.19	-	18	19
Titanium	µg/L	-	-	-	-	-	0.19	0.16	<0.1	0.24	0.072	2	10	<0.1	-	<0.1	0.11	-	8	10	<0.1	-	<0.1	0.14	-	17	19
Uranium	µg/L	33	15	20	-	-	0.017	0.017	0.016	0.021	0.0016	0	10	0.016	0.015	0.013	0.017	0.0015	0	10	0.013	0.015	<0.01	0.048	0.0084	1	19
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	0.057	-	8	10	<0.05	-	<0.05	<0.05	-	10	10	<0.05	-	<0.05	<0.1	-	19	19
Zinc	µg/L	-	30	-	5,000	-	<0.8	-	<0.8	1.4	-	9	10	<0.8	-	<0.8	<0.8	-	10	10	<0.8	-	<0.8	1.4	-	15	19
Dissolved Metals																										
Aluminum	µg/L	-	-	-	-	-	5.1	9.0	2.9	22	7.6	0	10	1.5	1.7	0.68	3.4	0.79	0	10	1.4	1.3	0.92	1.9	0.23	0	19
Antimony	µg/L	-	-	-	-	-	<0.02	-	<0.02	0.10	-	8	10	0.023	0.053	<0.02	0.24	0.074	4	10	<0.02	-	<0.02	0.17	-	16	19
Arsenic	µg/L	-	-	-	-	-	0.37	0.37	0.32	0.41	0.039	0	10	0.25	0.23	0.10	0.27	0.048	0	10	0.20	0.21	0.18	0.25	0.021	0	19
Barium	µg/L	-	-	-	-	-	8.2	8.3	7.9	8.8	0.30	0	10	8.1	7.5	3.1	8.4	1.6	0	10	7.5	7.7	7.3	11	0.72	0	19
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	19	19
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	<0.01	-	19	19
Boron	µg/L	-	-	-	-	-	4.7	4.7	4.4	5.0	0.23	0	10	3.9	3.7	2.5	4.1	0.52	0	10	3.5	3.8	3.0	9.5	1.4	0	19
Cadmium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	19	19
Chromium	µg/L	-	-	-	-	-	<0.06	-	<0.06	0.18	-	8	10	<0.06	-	<0.06	0.084	-	9	10	<0.06	-	<0.06	0.13	-	15	19
Cobalt	µg/L	-	-	-	-	-	0.010	-	<0.01	0.022	-	5	10	<0.01	-	<0.01	0.011	-	8	10	<0.01	-	<0.01	0.076	-	15	19
Copper	µg/L	-	-	-	-	-	0.70	0.75	0.64	1.0	0.13	0	10	0.68	0.66	0.19	0.92	0.18	0	10	0.65	0.66	0.57	0.82	0.058	0	19
Iron	µg/L	-	-	-	-	-	8.7	8.1	5.6	11	2.1	0	10	7.5	6.8	<1.0	12	3.7	1	10	4.5	5.7	3.0	13	3.1	0	19

Table 6.4-2: Water Quality Summary during Open-water Conditions Meliadine Lake, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary																						
		CCME Aquatic Life		Health Canada Drinking Water Guidelines	Aesthetic Objectives	SSWQO	Near-field							Mid-field							Pooled Reference Areas						
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Dissolved Metals (cont'd)																													
Lead	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	10	10	<0.01	-	<0.01	0.010	-	9	10	<0.01	-	<0.01	0.012	-	18	19
Lithium	µg/L	-	-	-	-	-	1.5	1.6	1.2	2.0	0.31	0	10	0.79	0.83	0.71	1.0	0.11	0	10	0.66	0.81	<0.5	4.4	0.90	4	19
Manganese	µg/L	-	-	-	-	-	0.98	1.2	0.33	2.7	0.94	0	10	0.87	0.90	0.24	1.6	0.50	0	10	0.47	1.4	0.32	16	3.4	0	19
Mercury	µg/L	-	-	-	-	-	0.00090	0.00089	<0.0005	0.0015	0.00045	1	10	0.00085	0.00087	<0.0005	0.0014	0.00045	1	10	0.00080	0.00068	<0.0005	0.0015	0.00042	8	19
Molybdenum	µg/L	-	-	-	-	-	0.083	0.082	0.054	0.10	0.020	0	10	0.069	0.072	0.058	0.095	0.012	0	10	0.082	0.087	0.063	0.18	0.025	0	19
Nickel	µg/L	-	-	-	-	-	0.63	0.61	0.55	0.65	0.040	0	10	0.58	0.56	0.19	0.77	0.16	0	10	0.42	0.46	0.34	0.70	0.12	0	19
Selenium	µg/L	-	-	-	-	-	<0.04	-	<0.04	0.042	-	8	10	<0.04	-	<0.04	0.045	-	9	10	<0.04	-	<0.04	0.042	-	18	19
Silver	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	19	19
Strontium	µg/L	-	-	-	-	-	49	50	44	56	5.2	0	10	35	34	26	36	2.9	0	10	32	37	30	122	21	0	19
Thallium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	10	10	<0.005	-	<0.005	<0.005	-	19	19
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	10	10	<0.05	-	<0.05	0.14	-	8	10	<0.05	-	<0.05	0.39	-	15	19
Titanium	µg/L	-	-	-	-	-	<0.1	-	<0.1	<0.1	-	10	10	<0.1	-	<0.1	<0.1	-	10	10	<0.1	-	<0.1	<0.1	-	19	19
Uranium	µg/L	-	-	-	-	-	0.017	0.017	0.014	0.020	0.0023	0	10	0.015	0.014	0.010	0.016	0.0020	0	10	0.013	0.018	0.011	0.11	0.023	0	19
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	0.063	-	8	10	<0.05	-	<0.05	0.053	-	7	10	<0.05	-	<0.05	<0.1	-	15	19
Zinc	µg/L	23 to 45[f]	4.2 to 13[g]	-	-	-	<0.8	-	<0.8	1.6	-	9	10	1.3	1.3	<0.8	3.0	0.79	2	10	<0.8	-	<0.8	2.9	-	15	19
Other																													
Total Cyanide	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	10	10	<0.001	-	<0.001	<0.001	-	10	10	<0.001	-	<0.001	<0.001	-	19	19
Free Cyanide	mg/L	-	0.005	0.20	-	-	<0.001	-	<0.001	<0.005	-	10	10	<0.001	-	<0.001	<0.005	-	10	10	<0.001	-	<0.001	<0.005	-	19	19
Cyanide WAD	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.002	-	10	10	<0.001	-	<0.001	<0.002	-	10	10	<0.001	-	<0.001	<0.002	-	19	19
Radium-226	Bq/L	-	-	-	-	-	0.0072	-	<0.0053	0.10	-	7	10	-	-	-	-	-	0	0	<0.0083	-	<0.0034	0.011	-	9	10

(a) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.22 mg-N/L) is based on the combination of field pH (8.6) and water temperature (11.9°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.3 to 8.6). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent: 5 µg/L at pH <6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (17.7 to 39 mg/L as CaCO3). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (17.7 to 38.7 mg/L as $CaCO_3$) and DOC (2.2 to 3.4 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.3 to 8.6), hardness (17.7 to 38.7 mg/L as CaCO3) and DOC (2.2 to 3.4 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L). When field pH was not available laboratory pH was used.

Note:

In cases where 50% or more of data were <DL, no mean or standard deviation was calculated.

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; SD = standard deviation; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; Bq/L = Becquerels per litre; DOC = dissolved organic carbon; CaCO3 = calcium carbonate; WAD = weak acid dissociable; - = no guideline or data not measured.

6.4.2.1.2 Exposure versus Reference Area Comparison

The results of the statistical analysis (with outliers excluded) are presented in Tables 6.4-3 (ice-cover) and 6.4-4 (open-water). Statistical outliers and the results of the statistical tests with outliers included (where applicable) are presented in Appendix 6E. In all cases, outliers were not the result of data entry errors. The outcome of the statistical test with and without outliers included was the same for all parameters except for TKN and total lead during ice-covered conditions. These results are discussed in more detail below.

Spatial patterns during ice-covered conditions were detected for 45 of 55 water quality parameters (Table 6.4-3). Spatial patterns during open-water conditions were detected for 43 of 51 water quality parameters (Table 6.4-4). Time-series plots are presented in Appendix 6F and were qualitatively examined to identify if similar spatial patterns were present in years prior to 2018. The following sections discuss water chemistry and the results of the spatial analysis among exposure and reference areas in more detail.

Field Parameters

Median pH was similar between ice-cover and open-water conditions, whereas conductivity and DO were generally higher during ice-covered conditions (compared to open-water conditions), and temperature was lower during ice-covered conditions (compared to open-water conditions) (Tables 6.4-1 and 6.4-2). Field and laboratory pH in all areas was within the acceptable range for the CWQG-PAL.

A negative spatial trend was detected for field specific conductivity and a positive spatial trend was detected for DO (mg/L) in 2018. Specific conductivity was significantly higher in the Near-field relative to Mid-field (ice-cover and open-water) and reference areas (open-water). A similar spatial trend was observed in 2016 and 2017. Field DO concentrations in all areas during open-water conditions were above the minimum acceptable limit (i.e., 6.5 mg/L) based on the CWQG-PAL.

Conventional Parameters

Specific conductivity, water hardness and total alkalinity (as $CaCO_3$) in Meliadine Lake were elevated during ice-covered conditions (ranging from 98 to 122 µS/cm, 29 to 37 mg/L, and 25 to 28 mg/L, respectively) compared to open-water conditions (ranging from 63 to 91 µS/cm, 18 to 39 mg/L, and 15 to 21 mg/L, respectively; Table 6.4-1). Salt exclusion during ice formation can result in elevated ions and conductivity under-ice (Agnico Eagle 2014). A similar phenomenon was observed in previous monitoring years and during baseline monitoring in Meliadine Lake (Agnico Eagle 2014; Golder 2018c).

Median concentrations of TDS in 2018 ranged from 45 to 68 mg/L (Tables 6.4-1 and 6.4-2). Similar to hardness and total alkalinity, TDS was elevated during ice-covered conditions in the Near-field and Mid-field areas in 2018, relative to previous years, but was within the range of concentrations observed in previous years during open-water conditions (Golder 2018c). However, all TDS concentrations in 2018 were well below the Health Canada aesthetic objective of 500 mg/L (Health Canada 2017). Concentrations of total suspended solids (TSS) were all less than DL, with the exception of a single measurement in the Mid-field area in August (Appendix 6D, Table 6D-2).

Negative spatial patterns were detected in 2018 for specific conductivity, hardness, TDS and turbidity. Concentrations were highest in the Near-field, followed by the Mid-field (under-ice and open-water) and lowest in the reference areas (open-water), with the exception of TDS. TDS concentrations did not significantly differ between the Mid-field and reference areas. Similar spatial patterns were observed in 2016 and 2017, although the relative difference in concentration of specific conductivity and hardness among areas appears to have increased over the duration of the AEMP monitoring program. A positive spatial pattern was detected for total alkalinity;

concentrations were significantly lower in the Near-field area relative to the Mid-field and reference areas but did not significantly differ between Mid-field and reference areas. Turbidity had the highest magnitude of difference among areas during ice-covered and open-water conditions (Tables 6.4-3 and 6.4-4; Figure 6.41).

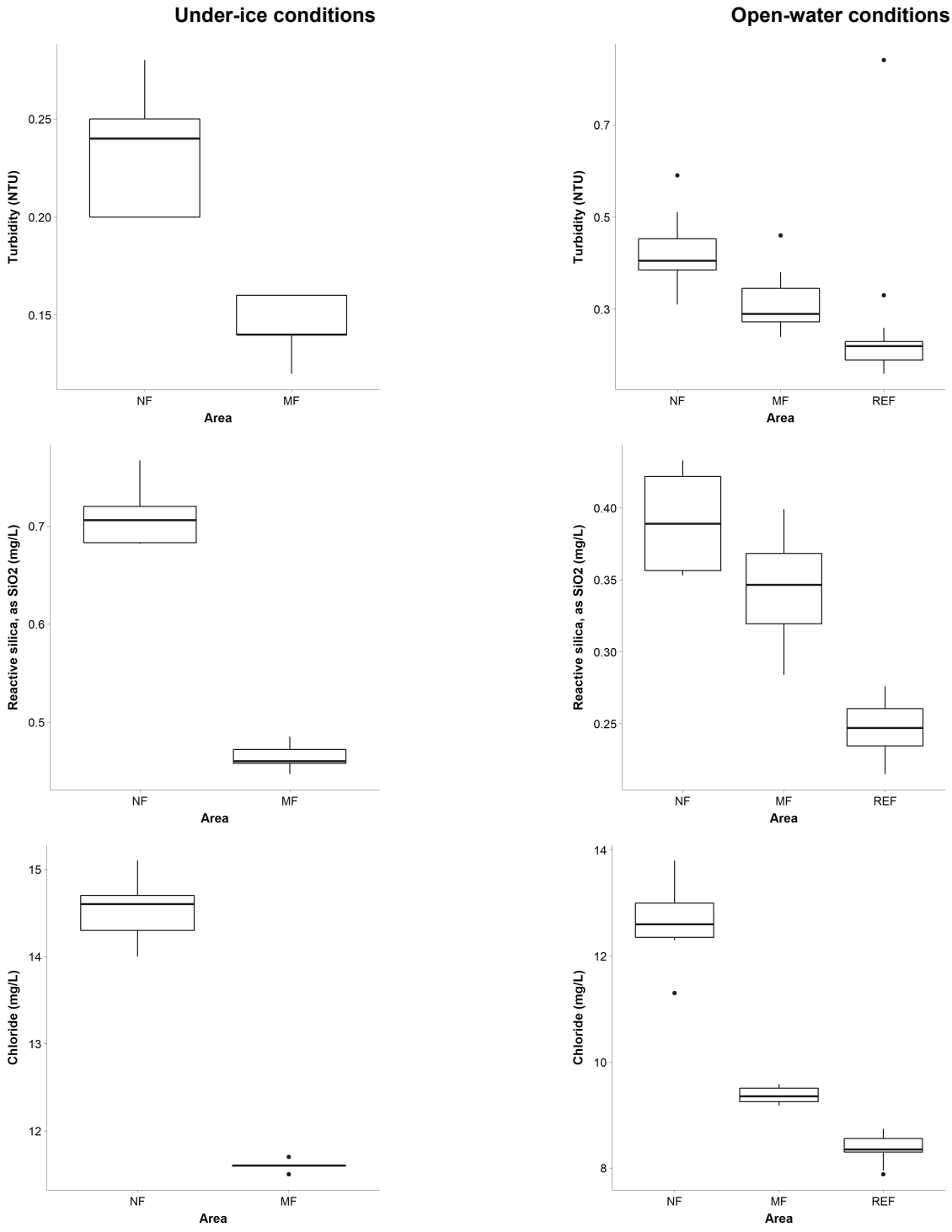
Major Ions

Generally, concentrations of major ions measured in 2018 were within similar ranges as those measured in previous three years (Appendix 6D). Bicarbonate, chloride, and calcium were the dominant ions during both ice-cover and open-water conditions (Tables 6.4-1 and 6.4-2); carbonate was non-detectable in all samples. Similar to 2017, major ion concentrations in 2018 were elevated under-ice, relative to open-water, but overall, concentrations in 2018 were slightly higher under-ice relative to 2017 (Golder 2018c). Similar to previous years, chloride, fluoride, sodium and sulphate were all below applicable CWQG-PAL, CDWQG and aesthetic objectives, and SSWQOs in all areas during ice-cover and open-water conditions (Tables 6.4-2 and 6.4-2).

Negative spatial patterns were detected for all major ions during ice-covered and open-water conditions, except bicarbonate and fluoride (open-water only) (Tables 6.4-3 and 6.4-4). Concentrations were highest in the Near-field, followed by the Mid-field (under-ice and open-water) and lowest in the reference areas (open-water). Positive spatial patterns were detected for bicarbonate and fluoride, with higher concentrations in the Mid-field (bicarbonate only) and reference areas relative to Near-field.

Spatial patterns of chloride, magnesium and sodium in 2018 were similar to 2016 and 2017 (i.e., higher in the Near-field, then Mid-field and lowest in the reference areas), although the relative difference in concentration of these ions among areas appears to have increased during the duration of the AEMP monitoring program. Reactive silica similarly varied among areas in 2016 and 2017, relative to 2018. Based on the time-series plots (Appendix 6F), there was higher variability in sulphate concentrations among areas in 2017, relative to 2018 and 2016; sulphate spatial patterns were similar in 2016 and 2018.

During ice-covered conditions, reactive silica had the highest magnitude of difference between Near-field and Mid-field areas (Figure 6.41). In open-water, the magnitude of difference was highest for chloride and reactive silica concentrations in the Near-field area, relative to the Mid-field and reference areas (Figure 6.41). Although significantly higher ion concentrations were observed in the Near-field area relative to Mid-field and reference areas, the concentrations were orders of magnitude below the generic and conservative guidelines and are therefore, not ecologically relevant.



NF = Near-field Area; MF = Mid-field Area; REF = pooled Reference Area data; mg/L = milligrams per litre; NTU = Nephelometric Turbidity Units; SiO_2 = silicon dioxide.

Figure 6.4-1: Box-and-Whisker Plots for Selected Conventional and Major Ion Parameters with Spatial Patterns Among Areas in Meliadine Lake, 2018

Nutrients

Nutrient concentrations in 2018 were low and generally consistent with previous years (Golder 2018c). Median nitrate concentrations under-ice in the Mid-field area were higher (median 0.012 mg/L) relative to concentrations observed during open-water conditions, which were below detection (i.e., <0.005 mg/L). The opposite was true in the Near-field area, with lower concentrations under-ice (median 0.0089 mg/L), relative to open-water (0.012 mg/L). Nitrite was below detection during ice-covered and open-water conditions in all areas (i.e., <0.001 mg/L), with the exception of open-water concentrations in the Near-field area (range <0.001 to 0.0017 mg/L). Nitrate and nitrite concentrations were below CWQG-PAL and CDWQG and aesthetic objectives (Table 6.4-2).

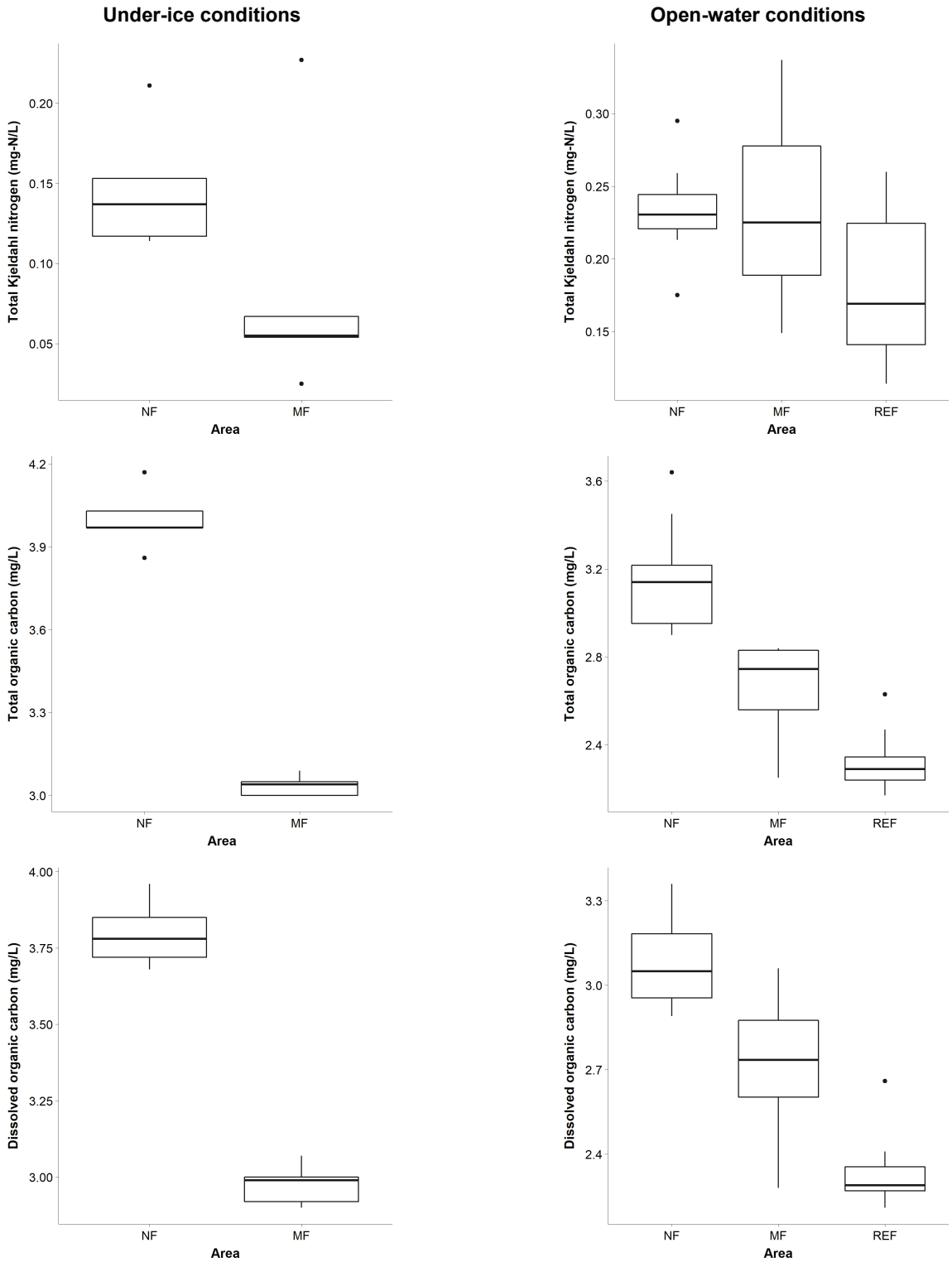
Total ammonia concentrations were low in 2018, ranging from <0.005 to 0.029 mg-N/L (Tables 6.4-1 and 6.4-2). Similar to previous years, total ammonia concentrations in the Near-field and Mid-field areas were elevated in ice-covered relative to open-water conditions. However, concentrations under-ice in 2018 were not as high as observed in previous years (Golder 2018c). All detected ammonia concentrations were below the CWQG-PAL.

Concentrations of TKN were similar to previous years and were slightly lower under-ice compared to open-water conditions (i.e., <0.05 to 0.23 mg-N/L and 0.11 to 0.34 mg-N/L, respectively; Golder 2018c). Concentrations of TP and TDP in 2018 were similar to previous years, ranging from <0.001 to 0.02 mg-P/L and <0.001 to 0.003 mg-P/L, respectively (Tables 6.4-1 and 6.4-2; Golder 2018c).

Similar to 2017, organic carbon in 2018 occurred primarily in the dissolved form (Golder 2018c). Concentrations of TOC and DOC in 2018 were within ranges observed in previous years, at 2.2 to 4.2 mg/L and 2.2 to 4.0 mg/L, respectively. Median TOC and DOC concentrations were slightly higher in the Near-field and Mid-field areas during ice-covered conditions relative to open-water (Tables 6.4-1 and 6.4-2).

During ice-covered conditions, negative spatial patterns were detected for TKN, TN, TP, TOC and DOC, whereas positive spatial patterns were detected for nitrate, nitrate and nitrite, and total ammonia; the greatest magnitude of difference between Near-field and Mid-field concentrations under-ice was observed for TKN, TN, and TOC (Table 6.4-3; Figure 6.4-2). With an outlier from the Mid-field area (0.227 mg/L) included in the analysis, the outcome of the statistical test changed for TKN; no significant difference was detected during ice-covered conditions between Near-field and Mid-field areas (Appendix 6E).

During open-water conditions, fewer nutrient parameters were statistically analyzed because several parameters had >50% of measurements below DL. TP and TDP were not significantly different among areas in 2018 and showed similar spatial patterns as 2016 and 2017; however, median concentrations of TP in 2018 were higher in the Near-field area (0.0045 mg-P/L), relative to the Mid-field area (0.0025 mg-P/L), and the pooled reference areas (0.0032 mg-P/L; Table 6.4-4). Negative spatial patterns were detected for TKN, TOC and DOC. Spatial patterns for TKN, TOC, and DOC in 2018 were similar to 2017; no patterns were observed in 2016. The highest magnitude of difference among areas was observed for TKN between Near-field and reference areas and Mid-field and reference areas, and for TOC and DOC, between Near-field and reference areas (Figure 6.4-2).



NF = Near-field Area; MF = Mid-field Area; REF = pooled Reference Area data; mg-N/L = milligrams nitrogen per litre; mg/L = milligrams per litre.

Figure 6.4-2: Box-and-Whisker Plots for Selected Nutrient Parameters with Spatial Patterns among Areas in Meliadine Lake, 2018

Metals

Total and dissolved metals analyzed in 2018 were detected in most samples, but concentrations were generally low. Metals were analyzed using DLs below applicable guidelines and SSWQOs, and all detected metal concentrations in 2018 were lower than applicable CWQG-PAL, CDWQG and aesthetic objectives, and SSWQOs (Tables 6.4-1 and 6.4-2).

Several metals were detected below the DL in all samples, including total antimony, beryllium, bismuth, cadmium, silver, and thallium, as well as dissolved beryllium, bismuth, cadmium, silver, thallium, and titanium. Total chromium, tin, titanium, vanadium and dissolved antimony, chromium, tin and vanadium were not detected in any sample collected during ice-covered conditions but were detected in some samples during open-water conditions (Appendix 6D, Tables 6D-1 to 6D-5). All total and dissolved metal concentrations were well below applicable CWQG-PAL, CDWQG and aesthetic objectives, and SSWQOs in 2018 (Tables 6.4-1 and 6.4-2).

In general, metals were primarily in the dissolved form (i.e., ratio between total and dissolved metals was less than two) in all areas during ice-cover and open-water conditions except for aluminum, iron and manganese. The ratio between total and dissolved metal concentrations for total aluminum, iron, and manganese was greater than two in all areas during ice-cover and open-water conditions suggesting that a greater relative fraction of these metals occurs as particulate matter rather than dissolved.

Several total metals were excluded from statistical analysis because the datasets contained >50% of concentrations below DL. During ice-covered conditions, negative spatial patterns were detected for total arsenic, barium, boron, copper, iron, manganese, mercury, nickel, strontium and uranium (Table 6.4-3). Median concentrations of total uranium in the Near-field (0.018 µg/L) and Mid-field (0.015 µg/L) areas were just above the DL (i.e., 0.01 µg/L) and therefore, the statistical variability in concentrations between these areas may be a result of analytical variability associated with measuring low analyte concentrations. Total aluminum, lead, molybdenum, and selenium were not significantly different between Near-field and Mid-field areas during ice-covered conditions. The magnitude of difference between Near-field and Mid-field area concentrations under-ice was highest for total arsenic, iron, manganese, and nickel (Figure 6.4-3). With an outlier from the Near-field area (0.107 µg/L) included in the analysis, the outcome of the statistical test changed for total lead; a significant negative spatial pattern was detected during ice-covered conditions between Near-field and Mid-field areas (Appendix 6E).

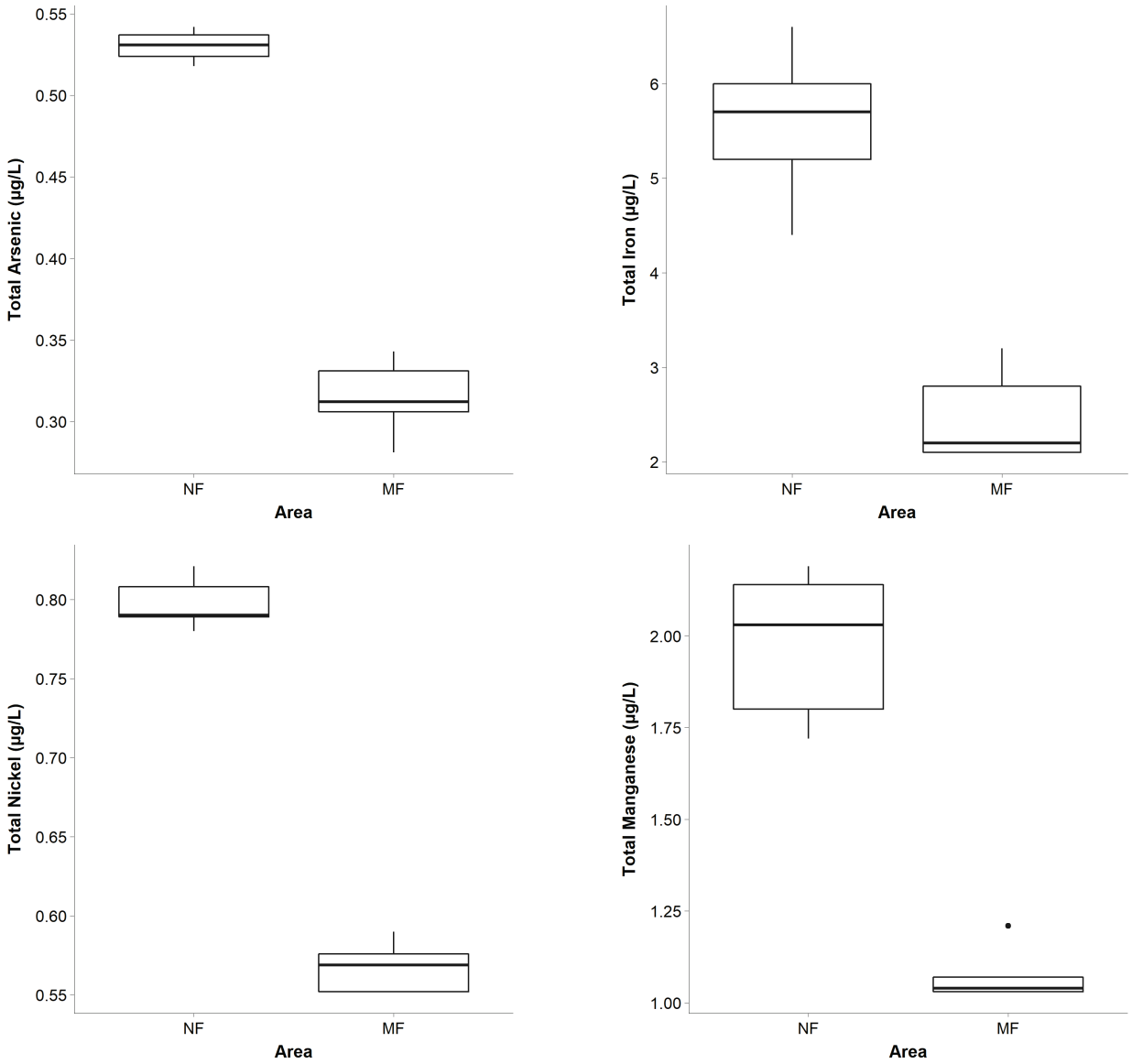
Spatial patterns among areas in 2018 were similar for total barium, copper, iron, and manganese relative to 2016 and 2017. Spatial patterns among areas in 2018 for total arsenic, mercury, nickel, strontium and uranium were also similar to 2016 and 2017, except that in 2018 the relative differences in concentration among areas appear to have increased.

During open-water conditions, negative spatial patterns were detected for total aluminum, arsenic, barium, boron, cobalt, copper, iron, lithium, manganese, mercury, nickel, strontium, and uranium (Table 6.4-4; Figure 6.4-5). Total molybdenum did not significantly differ among areas. Median concentrations of total cobalt and uranium in the Near-field, Mid-field and reference areas were just above their respective DLs (i.e., 0.01 and 0.01 µg/L, respectively) and therefore, the statistical variability in concentrations between these areas may be a result of analytical variability associated with measuring low analyte concentrations (Table 6.4-4). Significant differences in concentrations were observed among all areas for these metals, with the following exceptions: total aluminum and copper did not differ significantly between Mid-field and reference areas, and mercury did not differ significantly between Near-field and Mid-field areas.

Spatial patterns during open-water conditions in 2018 for arsenic, barium, cobalt, copper, iron, and manganese were similar to those observed in 2016 and 2017. Concentrations of total aluminum, and lithium were variable among areas in 2016 and 2017, with spatial patterns emerging in 2018. In 2017, total boron and uranium had similar spatial patterns as 2018, but no spatial pattern was observed in 2016. Spatial patterns of total strontium were similar in 2016, 2017 and 2018, but the relative differences in concentration among areas appear to have increased in each successive sampling year.

Cyanide

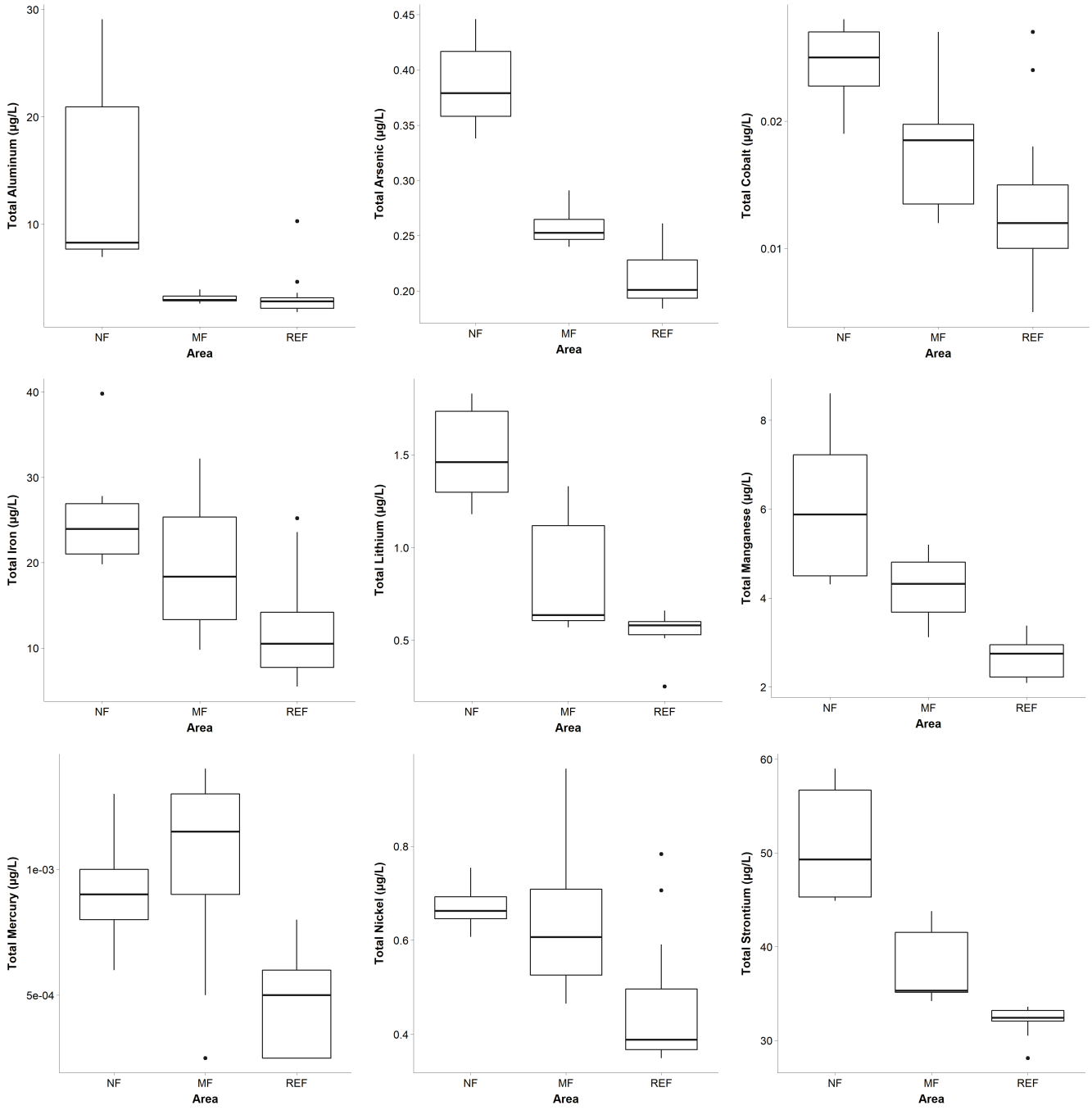
Free and weak acid dissociable cyanide species measured in 2018 were below the analytical DL for all stations and sampling events (Tables 6.4-1 and 6.4-2). Detection limits for cyanide species were lower than the applicable guidelines (i.e., 0.005 mg/L, CCME 1999).



NF = Near-field; MF = Mid-field; µg/L = micrograms per litre.

Figure 6.4-3: Box-and-Whisker Plots for Selected Total Metal Parameters with Spatial Patterns among Areas in Meliadine Lake during Ice-covered Conditions, 2018

.



NF = Near-field; MF = Mid-field; REF = pooled Reference Area data; µg/L = micrograms per litre.

Figure 6.4-4: Box-and-Whisker Plots for Selected Total Metal Parameters with Spatial Patterns among Areas in Meliadine Lake during Open-water Conditions, 2018

Table 6.4-3: Spatial Comparison of Selected Water Quality Parameters between Near-field and Mid-field Exposure Areas during Ice-covered Conditions in 2018

Parameter	Unit	Test[(a)]	*P*-value	Magnitude (%)	Overall Trend
Field Measured					
pH	unitless	Mann-Whitney	0.834	NS	No change
Specific conductivity	µS/cm	ANOVA	**<0.001**	18	↓
Conventional Parameters					
pH	unitless	ANOVA	0.288	NS	No change
Specific conductivity	µS/cm	Mann-Whitney	**0.009**	20	↓
Hardness (as $CaCO_3$)	mg/L	ANOVA	**<0.001**	21	↓
Total alkalinity (as $CaCO_3$)	mg/L	ANOVA	**<0.001**	10	↓
Total dissolved solids	mg/L	ANOVA	**<0.001**	13	↓
Turbidity	NTU	ANOVA	**0.001**	63	↓
Major Ions					
Bicarbonate	mg/L	ANOVA	**<0.001**	10	↓
Calcium	mg/L	ANOVA	**<0.001**	20	↓
Chloride	mg/L	Mann-Whitney	**0.008**	26	↓
Fluoride	mg/L	Mann-Whitney	**0.005**	16	↓
Magnesium	mg/L	ANOVA	**<0.001**	26	↓
Potassium	mg/L	ANOVA	**<0.001**	14	↓
Reactive silica (as SiO_2)	mg/L	ANOVA	**<0.001**	53	↓
Sodium	mg/L	ANOVA	**<0.001**	27	↓
Sulphate	mg/L	ANOVA	**<0.001**	30	↓
Nutrients and Organics					
Nitrate	mg-N/L	ANOVA	**0.022**	-33	↑
Nitrate + nitrite	mg-N/L	ANOVA	**0.057**	-30	↑
Total ammonia	mg-N/L	ANOVA	**0.037**	-36	↑
Total Kjeldahl nitrogen	mg-N/L	Mann-Whitney	**0.014**	149	↓
Total phosphorus	mg-P/L	ANOVA	**0.059**	21	↓
Total organic carbon	mg/L	ANOVA	**<0.001**	32	↓
Dissolved organic carbon	mg/L	ANOVA	**<0.001**	28	↓
Total Metals					
Aluminum	µg/L	ANOVA	0.108	NS	↓
Arsenic	µg/L	ANOVA	**<0.001**	69	↓
Barium	µg/L	Mann-Whitney	**0.058**	10	↓
Boron	µg/L	ANOVA	**0.071**	11	↓
Copper	µg/L	ANOVA	**<0.001**	24	↓
Iron	µg/L	ANOVA	**<0.001**	125	↓
Lead	µg/L	Mann-Whitney	0.14	NS	No change
Manganese	µg/L	Mann-Whitney	**0.009**	95	↓

Table 6.4-3: Spatial Comparison of Selected Water Quality Parameters between Near-field and Mid-field Exposure Areas during Ice-covered Conditions in 2018

Parameter	Unit	Test[(a)]	*P*-value	Magnitude (%)	Overall Trend
Total Metals (cont'd)					
Mercury	µg/L	ANOVA	**0.058**	17	↓
Molybdenum	µg/L	Mann-Whitney	0.602	NS	No change
Nickel	µg/L	ANOVA	**<0.001**	40	↓
Selenium	µg/L	ANOVA	0.452	NS	No change
Strontium	µg/L	ANOVA	**0.008**	12	↓
Uranium	µg/L	Mann-Whitney	**0.007**	20	↓

(a) Statistical results are presented with outliers removed. Results with outliers included are provided in Appendix 6E.

Note:

Bold values indicate statistical significance. Tests were considered significant at P <0.1.

Parameters with greater than 50% of the dataset below the detection limit were excluded from analysis and are not shown in this table.

ANOVA = analysis of variance; Mann-Whitney = Mann Whitney U test; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; $CaCO_3$ = calcium carbonate; <= less than; NS = no significant difference between areas; ↓ = negative spatial pattern; ↑ = positive spatial pattern.

Table 6.4-4: Spatial Comparison of Select Water Quality Parameters between Near-field and Mid-field Exposure Areas and Reference Areas during Open-water Conditions in 2018

Parameter	Unit	Overall Model[a]		Pairwise Comparisons[a]						Overall Trend
				Near-field to Mid-field		Near-field to Reference[b]		Mid-field to Reference[b]		
		Test	*P*-value	*P*-value	Magnitude (%)	*P*-value	Magnitude (%)	*P*-value	Magnitude (%)	
Field Measured										
pH	unitless	K-W	0.197	-	-	-	-	-	-	No change
Specific conductivity	µS/cm	K-W	**<0.001**	**<0.001**	12	**<0.001**	18	**0.009**	5	↓
Dissolved oxygen	mg/L	K-W	0.128	-	-	-	-	-	-	No change
Dissolved oxygen	%	K-W	**0.038**	0.013	8	**0.036**	6	0.439	NS	↓
Conventional Parameters										
pH	-	K-W	**<0.001**	**<0.001**	-1	**<0.001**	-1	0.792	NS	↑; No change MF to REF
Specific conductivity	µS/cm	K-W	**<0.001**	**<0.001**	11	**<0.001**	15	**0.077**	3	↓
Hardness (as $CaCO_3$)	mg/L	ANOVA	**<0.001**	**<0.001**	14	**<0.001**	14	**0.015**	0	↓
Total alkalinity (as $CaCO_3$)	mg/L	K-W	**0.001**	**0.001**	-6	**<0.001**	-7	0.998	NS	↑; No change MF to REF
Total dissolved solids	mg/L	K-W	**<0.001**	**0.001**	18	**<0.001**	15	0.443	NS	↓; No change MF to REF
Turbidity	NTU	K-W	**<0.001**	**0.002**	40	**<0.001**	84	**<0.001**	32	↓
Major Ions										
Bicarbonate	mg/L	K-W	**0.001**	**0.001**	-6	**<0.001**	-6	0.998	NS	↑; No change MF to REF
Calcium	mg/L	K-W	**<0.001**	**<0.001**	8	**<0.001**	13	0.156	NS	↓; No change MF to REF
Chloride	mg/L	K-W	**<0.001**	**<0.001**	35	**<0.001**	51	**<0.001**	12	↓
Fluoride	mg/L	K-W	**0.002**	0.264	NS	**<0.001**	-13	**0.007**	-10	↑: No change NF to MF
Magnesium	mg/L	K-W	**<0.001**	**<0.001**	13	**<0.001**	21	**<0.001**	8	↓
Potassium	mg/L	K-W	**<0.001**	**0.001**	5	**<0.001**	9	**0.006**	3	↓
Reactive silica (as SiO_2)	mg/L	K-W	**<0.001**	**0.030**	12	**<0.001**	57	**<0.001**	40	↓
Sodium	mg/L	K-W	**<0.001**	**<0.001**	16	**<0.001**	30	**<0.001**	12	↓
Sulphate	mg/L	K-W	**<0.001**	**<0.001**	12	**<0.001**	19	**<0.001**	6	↓
Nutrients and Organics										
Total Kjeldahl nitrogen	mg-N/L	K-W	**0.021**	0.827	NS	**0.013**	36	**0.023**	33	↓; No change MF to REF
Total phosphorus	mg-P/L	K-W	0.396	-	-	-	-	-	-	No change
Dissolved phosphorus	mg-P/L	K-W	0.259	-	-	-	-	-	-	No change
Total organic carbon	mg/L	K-W	**<0.001**	**<0.001**	14	**<0.001**	37	**<0.001**	20	↓
Dissolved organic carbon	mg/L	K-W	**<0.001**	**<0.001**	12	**<0.001**	33	**<0.001**	19	↓
Total Metals										
Aluminum	µg/L	K-W	**<0.001**	**<0.001**	179	**<0.001**	193	0.175	NS	↓; No change MF to REF
Arsenic	µg/L	K-W	**<0.001**	**<0.001**	50	**<0.001**	89	**<0.001**	26	↓
Barium	µg/L	K-W	**<0.001**	**0.053**	1	**<0.001**	6	**0.007**	6	↓
Boron	µg/L	K-W	**<0.001**	**<0.001**	23	**<0.001**	28	**0.002**	4	↓
Cobalt	µg/L	K-W	**<0.001**	**0.007**	35	**<0.001**	108	**0.011**	54	↓
Copper	µg/L	K-W	**0.011**	**0.077**	11	**0.002**	15	0.182	NS	↓; No change MF to REF
Iron	µg/L	K-W	**<0.001**	**0.077**	31	**<0.001**	128	**0.004**	75	↓

Table 6.4-4: Spatial Comparison of Select Water Quality Parameters between Near-field and Mid-field Exposure Areas and Reference Areas during Open-water Conditions in 2018

Parameter	Unit	Overall Model[a]		Pairwise Comparisons[a]						Overall Trend
				Near-field to Mid-field		Near-field to Reference[b]		Mid-field to Reference[b]		
		Test	*P*-value	*P*-value	Magnitude (%)	*P*-value	Magnitude (%)	*P*-value	Magnitude (%)	
Total Metals (cont'd)										
Lithium	µg/L	K-W	**<0.001**	**<0.001**	130	**<0.001**	152	**<0.001**	9	↓
Manganese	µg/L	K-W	**<0.001**	**0.023**	37	**<0.001**	111	**<0.001**	54	↓
Mercury	µg/L	K-W	**<0.001**	0.175	NS	**<0.001**	80	**<0.001**	130	↓; No change NF to MF
Molybdenum	µg/L	K-W	0.990	0.421	-	-	-	-	-	No change
Nickel	µg/L	K-W	**<0.001**	**<0.001**	9	**<0.001**	71	**<0.001**	56	↓
Strontium	µg/L	K-W	**<0.001**	**<0.001**	40	**<0.001**	52	**<0.001**	9	↓
Uranium	µg/L	K-W	**<0.001**	**0.009**	6	**<0.001**	31	**0.002**	23	↓

(a) Statistical results are presented with outliers removed. Results with outliers included are provided in Appendix 6E.

(b) Reference area data were pooled from Reference Areas 1, 2, and 3.

Note:

Bold values indicate statistical significance. Tests were considered significant at *P* <0.1.

Parameters with greater than 50% of the dataset below the detection limit were excluded from analysis and are not shown in this table.

ANOVA = analysis of variance; K-W = Kruskal-Wallis Test; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; $CaCO_3$ = calcium carbonate; <= less than; NS = post-hoc test indicated no significant difference between areas; - = pairwise comparison was not conducted because overall model indicated no significant difference; ↓ = negative spatial pattern; ↑ = positive spatial pattern.

6.4.2.2 EEM

6.4.2.2.1 Comparison to Canadian Water Quality Guidelines

For the purposes of the EEM, the results of the comparison to CWQG-PAL (CCME 1999) are summarized below.

- All samples collected in the Exposure Area (i.e., Near-field) and Reference Area (i.e., Reference Area 1) during the 2018 EEM program were below CWQG-PAL (Table 6.4-2).

6.4.2.2.2 Exposure versus Reference Area Comparison

The EEM TGD (Environment Canada 2012) recommends that a comparison of water quality data be conducted between the exposure and reference areas. In particular, parameters that are greater than a magnitude of two in the exposure area should be identified. A summary of the parameters where exposure area median concentrations (Near-field; MEL-01) were more than two times greater than the reference area (Reference Area 1; MEL-03) concentrations is provided in Table 6.4-5.

Table 6.4-5: Comparison of Near-field (Exposure Area) and MEL-03 (Reference Area) Water Quality, 2018

Sampling Period	Exposure Area Concentrations More than Two Times Greater than the Reference Area Concentrations	
Open-water[a]	Routine Parameters	none
	Major Ions	none
	Nutrients	Nitrate[b] and nitrate plus nitrite[b]
	Total Metals	aluminum, arsenic, lithium, manganese, titanium[b]
	Dissolved Metals	aluminum, arsenic, cobalt[b], lithium

Notes:

(a) Data were pooled from the 19 to 25 July and the 15 August to 2 September 2018 programs.

(b) The MEL-03 (reference area) parameter concentrations were below reported detection limits; comparison to corresponding Near-field area concentrations were based on setting values below detection to half the reported detection limit.

Environment Canada (2012) recommends that for parameters with exposure area medians more than two times greater than the reference area means, the Mine estimate the geographic extent for which this condition exists. This recommendation also provides supporting information for biological monitoring results. An assessment of the treated effluent plume was completed during this EEM cycle and can be used to estimate the geographic extent of these conditions based on the measured Mine effluent mixing zone (Section 2.4.3). As discussed in Section 2.4.3, the geographic extent of the plume extended to sampling stations located 100 m away from the diffuser but did not extend to stations located 250 m away from the diffuser. Therefore, the conditions for water quality parameters present in the Near-field area at concentrations two times higher than the Reference Area is unlikely to persist beyond 250 m distance from the effluent diffuser.

6.4.3 Comparison to Normal Range

Meliadine Lake Near-field mean/median concentrations were higher than their respective normal range upper bound concentrations during open-water conditions for field pH, specific conductivity, hardness, TDS, calcium, chloride, magnesium, potassium, sodium, sulphate, reactive silica, nitrate, total aluminum, arsenic, barium, cobalt, iron, lithium, manganese, mercury, nickel, and strontium (Table 6.4-6). Meliadine Lake Mid-field mean/median concentrations were higher than their respective normal range upper bound concentrations during open-water conditions for specific conductivity, hardness, TDS, chloride, magnesium, sodium, sulphate, reactive silica, total arsenic, barium, iron, manganese, mercury, nickel, and strontium. Meliadine Lake pooled reference area mean/median concentrations fell within their respective normal range for all parameters in 2018.

Table 6.4-6: Normal Ranges for Selected Water Quality Parameters during Open-water Conditions in Meliadine Lake and Comparisons of 2018 Results to Normal Ranges

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Baseline Years	AEMP Reference Years	Calculation Method	Normal Ranges		2018 Mean/Median[a]		
								Lower Bound	Upper Bound	Near-field	Mid-field	Reference Area[b]
Conventional Parameters												
pH (field)	unitless	0.1[c]	83	0	1997 to 2013	2015 to 2018	Percentile	7.0	7.9	**8.3**	7.8	7.9
Specific conductivity (laboratory)	µS/cm	1	96	1	1997 to 2013	2015 to 2018	Percentile	58	74	**85**	**77**	73
Hardness (as $CaCO_3$)	mg/L	0.2	85	2	1997 to 2013	2015 to 2018	Percentile	18	23	**25**	**23**	21
Total alkalinity (as $CaCO_3$)	mg/L	1	96	1	1997 to 2013	2015 to 2018	Percentile	14	18	16	17	17
Total dissolved solids (calculated)	mg/L	-	79	1	1997 to 2013	2015 to 2018	Percentile	32	37	**42**	**37**	36
Total suspended solids	mg/L	1	75	1	1997 to 2013	2015 to 2018	Percentile	0[d]	1.0	0.5	0.5	0.5
Turbidity	NTU	0.1	85	1	1997 to 2013	2015 to 2018	PI(λ)	0.18	0.43	0.41	0.29	0.21
Major Ions												
Bicarbonate	mg/L	1.2	96	1	1997 to 2013	2015 to 2018	Percentile	16	22	20	21	21
Calcium	mg/L	0.02	95	2	1997 to 2013	2015 to 2018	Percentile	5.6	7.2	**7.5**	7.0	6.7
Chloride	mg/L	0.1	97	0	1997 to 2013	2015 to 2018	Percentile	5.1	8.5	**12.6**	**9.4**	8.4
Fluoride	mg/L	0.020	76	0	2013	2015 to 2018	Percentile	0.020	0.028	0.023	0.024	0.027
Magnesium	mg/L	0.004	96	1	1997 to 2013	2015 to 2018	Percentile	0.8	1.1	**1.4**	**1.2**	1.1
Potassium	mg/L	0.02	96	1	1997 to 2013	2015 to 2018	PI	0.74	0.96	**0.98**	0.87	0.90
Reactive silica (as SiO_2)	mg/L	0.01	69	0	-	2015 to 2018	Percentile	0.19	0.27	**0.39**	**0.35**	0.25
Sodium	mg/L	0.005	96	1	1997 to 2013	2015 to 2018	Percentile	3.1	4.4	**5.7**	**4.9**	4.4
Sulphate	mg/L	0.3	97	0	1997 to 2013	2015 to 2018	Percentile	2.7	3.6	**4.3**	**3.8**	3.6
Nutrients and Organics												
Nitrate	mg-N/L	0.005	68	1	-	2015 to 2018	Percentile	0[d]	0.005[e]	**0.007**	0.0025	0.0025
Nitrite	mg-N/L	0.001	68	0	-		Percentile	0[d]	0.001[e]	0.0005	0.0005	0.0005
Total ammonia	mg-N/L	0.005	68	1	-	2015 to 2018	Percentile	0[d]	0.009	0.003	0.0025	0.0025
Total Kjeldahl nitrogen	mg-N/L	0.05	97	0	1997 to 2013	2015 to 2017	PI	0.07	0.25	0.23	0.23	0.18
Total phosphorus	mg-P/L	0.001	96	1	1997 to 2013	2015 to 2018	Percentile	0.0031	0.0065	0.0045	0.0025	0.0035
Dissolved phosphorus	mg-P/L	0.001	96	1	1997 to 2013	2015 to 2018	Percentile	0.001	0.0034	0.0017	0.0012	0.0022
Orthophosphate	mg-P/L	0.001	94	3	1997 to 2013	2015 to 2018	Percentile	0[d]	0.001[e]	0.001	0.0005	0.0005
Total organic carbon	mg/L	0.5	95	2	1997 to 2013	2015 to 2018	Percentile	2.1	3.0	**3.1**	2.7	2.3
Dissolved organic carbon	mg/L	0.5	84	0	1997 to 2013	2015 to 2018	Percentile	2.1	2.8	**3.1**	2.7	2.3
Total Metals												
Aluminum	µg/L	0.3	68	1	-	2015 to 2018	PI(λ)	1.8	4.5	**10**	3.1	2.6
Antimony	µg/L	0.02	67	0	-	2015 to 2018	-	0[f]	0.02[f]	0.01	0.01	0.01
Arsenic	µg/L	0.02	69	0	-	2015 to 2018	PI(λ)	0.17	0.24	**0.38**	**0.25**	0.21
Barium	µg/L	0.05	69	0	-	2015 to 2018	PI	7.3	7.9	**8.3**	**8.2**	7.7
Beryllium	µg/L	0.01	69	0	-	2015 to 2018	-	0[f]	0.01[f]	0.005	0.005	0.005
Bismuth	µg/L	0.01	69	0	-	2015 to 2018	-	0[f]	0.01[f]	0.005	0.005	0.005
Boron	µg/L	1	69	0	-	2015 to 2018	Percentile	2.5	7.1	5.0	4.1	3.9
Cadmium	µg/L	0.005	68	1	-	2015 to 2018	Percentile	0[d]	0.005[e]	0.003	0.0025	0.0025
Chromium	µg/L	0.06	68	1	-	2015 to 2018	Percentile	0[d]	0.06[e]	0.03	0.03	0.03

Table 6.4-6: Normal Ranges for Selected Water Quality Parameters during Open-water Conditions in Meliadine Lake and Comparisons of 2018 Results to Normal Ranges

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Baseline Years	AEMP Reference Years	Calculation Method	Normal Ranges		2018 Mean/Median[a]		
								Lower Bound	Upper Bound	Near-field	Mid-field	Reference Area[b]
Total Metals (cont'd)												
Cobalt	µg/L	0.01	68	1	-	2015 to 2018	Percentile	0[d]	0.02	**0.03**	0.02	0.01
Copper	µg/L	0.1	69	0	-	2015 to 2018	PI(λ)	0.65	0.83	0.78	0.71	0.68
Iron	µg/L	1	68	1	-	2015 to 2018	Percentile	6.7	14.7	**24**	**18**	11
Lead	µg/L	0.01	68	1	-	2015 to 2018	Percentile	0[d]	0.02	0.01	0.005	0.005
Lithium	µg/L	0.5	69	0	-	2015 to 2018	Percentile	0[d]	0.71	**1.5**	0.64	0.58
Manganese	µg/L	0.05	68	0	-	2015 to 2018	Percentile	2.1	3.3	**5.9**	**4.3**	2.7
Mercury	µg/L	0.0005	69	0	-	2015 to 2018	Percentile	0[d]	0.0008	**0.0009**	**0.0012**	0.0005
Molybdenum	µg/L	0.05	69	0	-	2015 to 2018	Percentile	0.05	0.083	0.080	0.078	0.078
Nickel	µg/L	0.06	67	2	-	2015 to 2018	Percentile	0.33	0.43	**0.66**	**0.61**	0.38
Selenium	µg/L	0.02	69	0	-	2015 to 2018	Percentile	0.02	0.04	0.02	0.02	0.02
Silver	µg/L	0.005	69	0	-	2015 to 2018	-	0[f]	0.005[f]	0.0025	0.0025	0.0025
Strontium	µg/L	0.05	69	0	-	2015 to 2018	PI	30	33	**51**	**38**	32
Thallium	µg/L	0.005	69	0	-	2015 to 2018	Percentile	0[d]	0.005[e]	0.0025	0.0025	0.0025
Tin	µg/L	0.05	68	1	-	2015 to 2018	Percentile	0[d]	0.05[e]	0.025	0.025	0.025
Titanium	µg/L	0.1	69	0	-	2015 to 2018	Percentile	0[d]	0.25	0.19	0.05	0.05
Uranium	µg/L	0.01	68	1	-	2015 to 2018	PI(λ)	0.01	0.02	0.02	0.02	0.01
Vanadium	µg/L	0.05	69	0	-	2015 to 2018	-	0[f]	0.05[f]	0.025	0.025	0.025
Zinc	µg/L	0.8	68	1	-	2015 to 2018	Percentile	0[d]	2.3	0.4	0.4	0.4
Dissolved Metals												
Zinc	µg/L	0.8	68	1	-	2015 to 2018	Percentile	0[d]	2.0	0.4	1.3	0.4
Other												
Total cyanide	mg/L	0.001	67	2	-	2015 to 2018	Percentile	0[f]	0.001[f]	0.0005	0.0005	0.0005

(a) Lake area means were calculated using the back-transformed mean when the normal range was defined as the prediction interval using Box-Cox transformed data. The arithmetic mean was used when the normal range was defined using untransformed data. The median was used when the calculation method was Percentile. When normal range could not be calculated because the dataset contained too many values below DL, the median was used.

(b) Reference area data were pooled from Reference Areas 1, 2, and 3.

(c) Detection limit for laboratory pH is provided.

(d) The lower bound of the normal range was less than the detection limit; therefore, the lower bound of the normal range was set to zero.

(e) The upper bound of the normal range was less than the detection limit; therefore, the upper bound of the normal range was set to the detection limit.

(f) All values in the dataset were non-detect; therefore, the normal range was set from zero to the detection limit.

Bolded concentrations exceed the upper bound of the normal range.

Percentile = 2.5th and 97.5th percentiles; PI= 80% prediction intervals; PI(λ) = 80% prediction interval on Box-Cox transformed data.

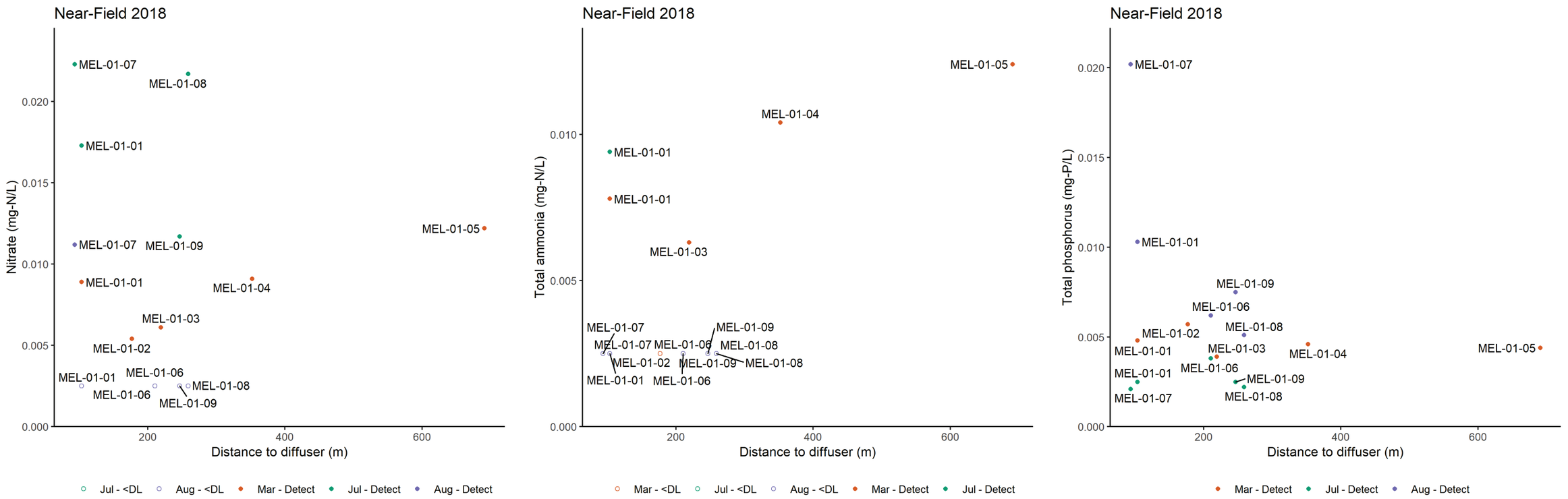
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg‑N/L = milligrams nitrogen per litre; mg‑P/L = milligrams phosphorus per litre; µg/L = micrograms per litre; - = baseline data were unavailable and/or normal range could not be calculated because all values in the dataset were below detection.

6.4.4 Spatial Patterns in the Near-field Area

Visual assessment was used to evaluate spatial trends in water quality in the Near-field area in relation to the CP1 diffuser in Meliadine Lake. Positive and negative spatial patterns were detected for a few water quality parameters during ice-covered and open-water conditions in the Near-field area.

Variability among stations in the Near-field area was low overall (i.e., less than two-fold differences in concentrations) for conventional parameters (e.g., specific conductivity, TDS, hardness) and major ions during ice-covered and open-water conditions. Spatial patterns within the Near-field area were observed for nitrate and total ammonia during ice-covered conditions (selected parameters are shown in Figure 6.4-5). Concentrations of these parameters were lower at stations in closer proximity to the diffuser (i.e., MEL-01-02 and 01-03), relative to stations located farther away (i.e., MEL-01-04 and 01-05), with the exception of nitrate at station MEL-01-01; at this station, concentrations of nitrate were similar to MEL-01-04 and 01-05. In general, concentrations of nitrate and total ammonia were higher at MEL-01-05, which is located the farthest west of the Near-field stations. Sampling at this station was discontinued in July 2018. Total and dissolved lead concentrations were variable (i.e., by more than two-times) among Near-field stations but a spatial pattern was not observed with distance from the diffuser.

During open-water conditions, the only within Near-field spatial pattern observed was for total phosphorus (Figure 6.4-5). A weak negative spatial pattern was observed for total phosphorus with concentrations decreasing with distance from the diffuser for the August samples only; a within Near-field area spatial pattern was not observed in July. Nitrate, total aluminum, lead, and dissolved aluminum concentrations were variable (i.e., by more than two-times) among Near-field stations but a spatial pattern was not observed with distance from the diffuser.



MEL-01 = Meliadine Near-field Station; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; OW = open-water; UI = under-ice.

Figure 6.4-5: Scatter Plots for Selected Parameters with Spatial Patterns Observed in the Near-field Area, 2018

6.4.5 Investigation of Temporal Trends

Water quality data within Meliadine Lake were qualitatively examined for temporal patterns on temporal box plots presented in Appendix 6G. If observed, trends were further evaluated in temporal box-and-whisker plots presented in Appendix 6G.

Ice-cover Season

Temporal patterns were observed for most conventional parameters, nutrients, major ions and total metals in the Near-field area during ice-covered conditions. Temporal trends were not observed for field and laboratory pH, turbidity, fluoride, sulphate, nitrite, nitrate, total ammonia, total aluminum, antimony, boron, cobalt, manganese, molybdenum, nickel, and lead.

Temporal patterns detected during ice-covered conditions in the Near-field were as follows:

- Gradual increases in each consecutive year were observed in the Near-field area for specific conductivity, hardness, TDS, turbidity, TOC, DOC, calcium, chloride, magnesium, potassium, reactive silica, sulphate, total arsenic, mercury, molybdenum, nickel, selenium, and strontium. Similar trends were observed in the Mid-field area, except that concentrations were generally lower relative to the Near-field area (especially in 2018).
- Step-trend increases were observed in 2018 in the Near-field area for total alkalinity, bicarbonate, sodium, barium, and copper. Similar trends were observed in the Mid-field, with the exception of total copper.
- Step-trend increases in 2017 persisting to 2018 was observed for TP and total uranium.
- TKN, total iron and lithium decreased in 2018, relative to 2016 and 2017. Similar temporal trends were observed in the Mid-field area. Total manganese decreased in 2017 (Near-field) or 2018 (Near-field and Mid-field) relative to 2016.

Of note, despite temporal trends for several parameters in the Near-field area under-ice between 2016 and 2018, all concentrations were well below applicable water quality guidelines in 2018 (Section 6.4.2.1.2), and therefore, below concentrations anticipated to result in adverse effects on aquatic life.

Open-water Season

Temporal patterns were observed for conventional parameters, nutrients, major ions and total metals in the Near-field during open-water conditions. Temporal trends were not observed for field and laboratory pH, turbidity, total phosphorus, dissolved phosphorus, nitrate, nitrite, total ammonia, fluoride, sulphate, total antimony, boron, cobalt, iron, lead, manganese, selenium, and uranium.

Temporal patterns detected during open-water conditions were as follows:

- Gradual increases in the Near-field area each consecutive year were observed for specific conductivity, hardness, total alkalinity, TDS, calcium, chloride, magnesium, potassium, sodium, total barium, and strontium in the Near-field. Similar temporal trends were observed in the Mid-field area. In the pooled reference area, similar temporal trends were observed for conductivity and total alkalinity.
- Step-trend increases in 2018 were observed in the Near-field area for total aluminum and lithium. Similar temporal trends were not observed in the Mid-field and reference areas.

- Step-trend increases in 2017 persisting to 2018 were observed for bicarbonate, TOC and DOC in the Near-field. Similar trends were observed in the Mid-field area for all three parameters, and in the reference areas for bicarbonate and TKN.
- Increasing temporal trends up to 2017 were observed for reactive silica, total arsenic, copper, mercury, molybdenum, and nickel. Similar temporal trends were observed in both the Mid-field and reference areas for these metals, and in the Mid-field area for reactive silica.

Increasing concentrations of TDS, hardness, DOC, TOC, TP and major ions may be related to ongoing construction activities on-site, sewage effluent, and/or mine effluent discharge. Increases in total aluminum and lithium in 2018 in the Near-field area only (i.e., no observable temporal trend in the Mid-field or reference areas) suggest that these metals may have increased as result of mine effluent discharge from the CP1 diffuser; concentrations of both metals are still relatively low in the Near-field area (i.e., median concentrations during open-water in 2018 were 8.3 and 1.5 µg/L for total aluminum and lithium, respectively). However, there is uncertainty associated with identifying a source of water quality temporal trends in the Near-field area due to the limited dataset. Temporal trends will continue to be monitored in future AEMP programs to identify potential Mine-related effects on water quality in Meliadine Lake.

Despite temporal trends observed for several parameters in the Near-field area during open-water conditions between 2015 and 2018, all concentrations were well below applicable water quality guidelines in 2018 (Section 6.4.2.1.2) and therefore, are below levels expected to result in adverse effects on aquatic life.

6.4.6 Comparisons to FEIS predictions

As per FEIS predictions, water quality guidelines for the protection of aquatic and human health (CCME 1999; Health Canada 2017) were expected to be met at the edge of the mixing zone (i.e., in the Near-field area) and no residual impacts from the effluent discharge were anticipated in Meliadine Lake outside of the mixing zone (i.e., same as baseline conditions; and below WQGs). Minor changes in water quality in Meliadine Lake were predicted at the edge of the mixing zone. A minor change is a measurable increase in a water quality parameter that is outside the range of baseline values but is still within water quality guidelines.

In the mixing zone, FEIS predictions indicated that DO could fall below the CWQG-PAL (i.e., 6.5 mg/L) in late summer during the operations phase. In 2018, concentrations of DO in Meliadine Lake in all areas were above the CCME CWQG-PAL during ice-covered and open-water conditions.

Median concentrations in the Near-field area during open-water conditions were compared to maximum allowable effluent concentrations predicted at the edge of the mixing zone (Appendix 7.4A in Agnico Eagle 2014; Table 6.4-7). The 2018 water quality in Near-field area was within FEIS predictions, with the following exception: chloride concentrations during open-water (13 mg/L) and ice-covered (15 mg/L) conditions were just below and above (respectively) the FEIS prediction of 14 mg/L at the edge of the mixing zone. Fluoride and sodium concentrations were just above FEIS predictions, but major ion concentrations were below their respective WQGs (Section 6.4.2.1.2). Median TDS concentrations under-ice were at the FEIS prediction of 68 mg/L, whereas during open-water conditions TDS concentrations were just below the FEIS prediction at 53 mg/L. All other parameter concentrations fell below FEIS predictions at the edge of the mixing zone.

The preliminary maximum allowable effluent concentrations in the mixing zone represent a snap-shot of predicted effects during mine effluent discharge. FEIS predictions were modelled for TDS, chloride, and sodium and assumed that accumulation would occur in the east basin of Meliadine Lake (based on the characteristics of the basin). It was predicted that concentrations of these parameters would gradually increase during the construction

and operation phases of the Mine and that maximum concentrations would be achieved in the final year of operations (i.e., 176, 66, and 19 mg/L for TDS, chloride, and sodium, respectively). Concentrations of major ions in the Near-field area have increased over time (Section 6.4.5), but median open-water concentrations (i.e., 53, 13, and 5.7 mg/L for TDS, chloride, and sodium, respectively) are still well below predicted maximum concentrations in the final year of operations.

Concentrations of several parameters have increased over time in the Near-field area during ice-covered and open-water conditions (Section 6.4.2.1.2; Section 6.4.5), and were outside the normal range in recent years (Section 6.4.3):

- Field specific conductivity, hardness, turbidity, TDS, and major ions have gradually increased in the Near-field area over time, and compared to the Mid-field and reference areas. In 2018, these parameters (with the exception of turbidity and selected major ions) were outside their respective normal ranges for Meliadine Lake in the Near-field and Mid-field areas.
- TOC and DOC have increased in the Near-field area relative to the Mid-field and reference areas, and TOC concentrations have increased in 2018 relative to previous AEMP monitoring years. In 2018, TOC and DOC were outside of their respective normal ranges for Meliadine Lake in the Near-field area but not in the Mid-field area.
- Increasing temporal trends up to 2017 were observed for total copper, mercury, molybdenum, nickel, and uranium. Similar temporal trends were observed in both the Mid-field and reference areas for these metals. These metals were outside their respective normal ranges in the Near-field and Mid-field in 2018 for mercury and nickel.
- Increasing temporal trends up to and including 2018 were detected for total aluminum, barium, lithium, and strontium. Total barium and strontium have increased in each consecutive year. During open-water conditions, total aluminum and lithium increased in the Near-field area relative to the Mid-field and reference areas, and relative to previous AEMP monitoring years. In 2018, these parameters were outside their respective normal ranges in the Near-field area for all parameters, and in the Mid-field area for barium and strontium.

Increases in specific conductivity and concentrations of major ions, organics and selected total metals in the Near-field area over time, combined with spatial patterns observed in 2018, suggest a Mine-related effect on water quality. Concentrations of TDS, and major ions in Meliadine Lake were projected to increase during all phases of Mine operation. Lake-wide mean/median concentrations for all water quality parameters in Meliadine Lake during ice-covered and open-water conditions were within expectations and remained below WQGs.

Table 6.4-7: Water Quality in the Near-field Area in Meliadine Lake in 2018 Compared to FEIS Predictions for the Edge of the Mixing Zone

Parameter	Unit	FEIS Predictions at Edge of Mixing Zone	2018 Median Values	
			Ice-Cover	Open-water
Conventional Parameters				
Total dissolved solids	mg/L	68	68	53
Total suspended solids	mg/L	31	<1.0	<1.0
Major Ions				
Chloride	mg/L	14	**15**	13
Fluoride	mg/L	0.0084	**0.029**	**0.023**
Sodium	mg/L	5.3	**7.8**	**5.7**
Sulphate	mg/L	38	5.8	4.3
Nutrients				
Nitrate	mg-N/L	0	0.0089	0.011
Nitrite	mg-N/L	0.051	<0.001	<0.001
Total ammonia	mg-N/L	0.540	0.0078	<0.005
Total phosphorus	mg-P/L	0.0049	0.0046	0.0045
Total Metals				
Aluminum	µg/L	9.1	0.50	8.3
Antimony	µg/L	0.51	<0.02	<0.02
Arsenic	µg/L	3.8	0.53	0.38
Barium	µg/L	77	12	8.2
Boron	µg/L	23	5.4	5.0
Cadmium	µg/L	0.05	<0.005	<0.005
Chromium	µg/L	1.1	<0.06	<0.06
Copper	µg/L	2	1.1	0.79
Iron	µg/L	42	5.7	24
Lead	µg/L	0.15	0.057	0.010
Manganese	µg/L	5.5	2.0	**5.9**
Mercury	µg/L	0.02	0.0010	0.00090
Molybdenum	µg/L	5.2	0.099	0.080
Nickel	µg/L	2.7	0.79	0.66
Selenium	µg/L	0.16	0.057	<0.04
Silver	µg/L	0.1	<0.005	<0.005
Thallium	µg/L	0.1	<0.005	<0.005
Tin	µg/L	1.5	<0.05	<0.05
Uranium	µg/L	1.1	0.018	0.017
Zinc	µg/L	6.7	<0.8	<0.8
Other				
Cyanide	mg/L	9	<0.001	<0.001

Note: FEIS predictions are sourced from Agnico Eagle 2014.

6.5 Summary

6.5.1 EEM

The results of the EEM water quality monitoring program are summarized below:

- In 2018, surface water quality monitoring for the Meliadine Mine was performed on two occasions as part of the EEM program: 19 to 25 July, and 15 August to 2 September.
- Concentrations of water quality parameters in the exposure area (Near-field area) and reference area (Reference Area 1) were below the CWQG-PAL.
- Nitrate, nitrate and nitrite, total aluminum, arsenic, lithium, magnesium, and titanium, as well as dissolved aluminum, arsenic, cobalt and lithium were two times higher in the exposure area, relative to the reference area.

6.5.2 AEMP

This section summarizes the water quality results relative to guidelines, normal ranges and FEIS predictions in the context of the two key questions for the AEMP water quality component.

Are concentrations of key parameters in Meliadine Lake consistent with FEIS predictions and less than AEMP Action Levels?

In 2018, concentrations and values of water quality parameters in Meliadine Lake remained within their respective WQGs during ice-covered and open-water conditions. Concentrations and values of key water quality parameters in all areas of Meliadine Lake were measured within CWQG-PAL and CDWQG.

Water quality in the Near-field and Mid-field areas of Meliadine Lake in 2018 was outside of the normal range for specific conductivity, TDS, hardness, several major ions and selected total metals (Section 6.4.3). However, the water quality in the Near-field area was generally consistent with FEIS predictions (Section 6.4.6).

An assessment of water quality parameters and exceedances of Action Levels is provided in Section 12.2.2.

Are concentrations in the exposure area increasing over time relative to the reference areas?

Increasing concentrations over time in the Near-field area and relative to temporal variation in reference areas were identified for specific conductivity, hardness, TDS, major ions (in particular calcium, chloride, magnesium, potassium, sodium, and sulphate), TOC, DOC, total aluminum, barium, lithium, and strontium. Concentrations of these parameters also exceeded the upper bound of their respective normal ranges in the Near-field area. Concentrations declined with distance from the Near-field area, but exceeded the upper bound of their respective normal ranges in the Mid-field area for all parameters except calcium, TOC, DOC, aluminum, and lithium. All parameters were within their respective normal ranges in the reference areas.

The analysis of the 2018 water quality results focused on comparing 2018 and 2017 construction phase data to pre-construction phase data in the Near-field area, and comparing water quality between the Near-field, Mid-field and reference areas in 2018. The observed changes in water quality suggest a Mine-related effect on water quality in the Near-field and Mid-field areas. The effect is within the range of conditions predicted by FEIS. However, given the limited dataset, there is uncertainty associated with identifying a source for the spatial and temporal trends identified in this report. It is anticipated that the 2019 and 2020 monitoring will allow for more detailed analysis of trends and Mine-related effects.

6.6 Recommendations

There are no recommendations for the 2019 AEMP water quality monitoring program.

6.7 List of Appendices

- Appendix 6A Water Quality QA/QC, which includes detailed methods and findings from the QA/QC assessment for the 2018 AEMP water quality program;
- Appendix 6B Normal Range Data Screening, which includes detailed description of the data screening approach and results used for calculating the normal ranges for water quality in Meliadine Lake;
- Appendix 6C Field Water Profile Measurements, which includes field data tables and vertical field profile plots;
- Appendix 6D 2018 Water Chemistry Tables, which includes raw water chemistry data tables for the 2018 water quality monitoring program in Meliadine Lake;
- Appendix 6E Statistical Outliers, which includes a data tables of statistical outliers excluded from spatial and temporal statistical analysis in the 2018 AEMP water quality monitoring report for Meliadine Lake;
- Appendix 6F Time-series Plots, which includes time-series plots of AEMP data collected in the Near-field, Mid-field and reference areas between 2015 and 2018 during open-water and ice-covered conditions;
- Appendix 6G Temporal Box-and-Whisker Plots by Area, which includes box-and-whisker plots for select parameters in the Near-field, Mid-field and reference areas between 2015 and 2018 during open-water and ice-covered conditions; and,
- Appendix 6H Historical Summary Statistics for the Near-field, which includes summary statistic tables for Near-field data collected in Meliadine Lake between 2015 and 2017.

6.8 References

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7.0 WATER QUALITY – PENINSULA LAKES

In support of the AEMP and Water Licence (2AM-MEL1631) requirements of the Mine, water quality monitoring was completed between 2015 to 2018 in Peninsula Lakes.

This report section provides a summary of the water quality monitoring programs completed in 2018 at Peninsula Lakes, and an interpretation of the results as per the requirements of the AEMP. Data analyses presented in this report were based on the AEMP Design Plan (Golder 2016a), and response to comments from ECCC, INAC, and KIA during review of the 2017 AEMP Annual Report (Golder 2018a).

7.1 Objectives

The specific objective of AEMP monitoring activities at Peninsula Lakes was to detect potential indirect effects of the Mine on the lakes (i.e., aerial deposition and physical alteration of watersheds). The primary objectives of the water quality component of the Peninsula Lake study, as defined in the AEMP Design Plan (Golder 2016a) were to:

- characterize and interpret water quality in the selected monitoring lakes for purposes of identifying Mine-related effects;
- verify and update the FEIS predictions;
- assess efficacy of impact mitigation strategies to minimize the water quality effects of the Mine; and,
- provide data to inform management intended to reduce or eliminate Mine-related effects to water quality in the Peninsula Lakes.

To meet the primary objectives of the water quality component, analysis and interpretation of water quality data in 2018 were focused on answering two key questions, as defined in the AEMP Design Plan (Golder 2016a):

1) Are concentrations of key parameters in the Peninsula Lakes consistent with FEIS predictions and less than AEMP benchmarks[2]?

2) Are concentrations in the Peninsula Lakes increasing over time relative to baseline or reference conditions?

For the field survey and data analysis methods used to answer the key questions are described in Section 7.2. A summary of QA/QC assessment on the 2018 data are provided in Section 7.3. Results and discussion are presented in Section 7.4. and a summary of the water quality results and conclusions is provided in Section 7.5.

[2] This key question has been revised to refer to AEMP benchmarks instead of Action Levels.

7.2 Methods

7.2.1 Sampling Design

The 2018 Peninsula Lakes program consisted of two sampling programs during open-water conditions (Table 6.2-1). As a result of a number of site-related factors of field-related occurrences, a few adjustments were made to each program. These included the following:

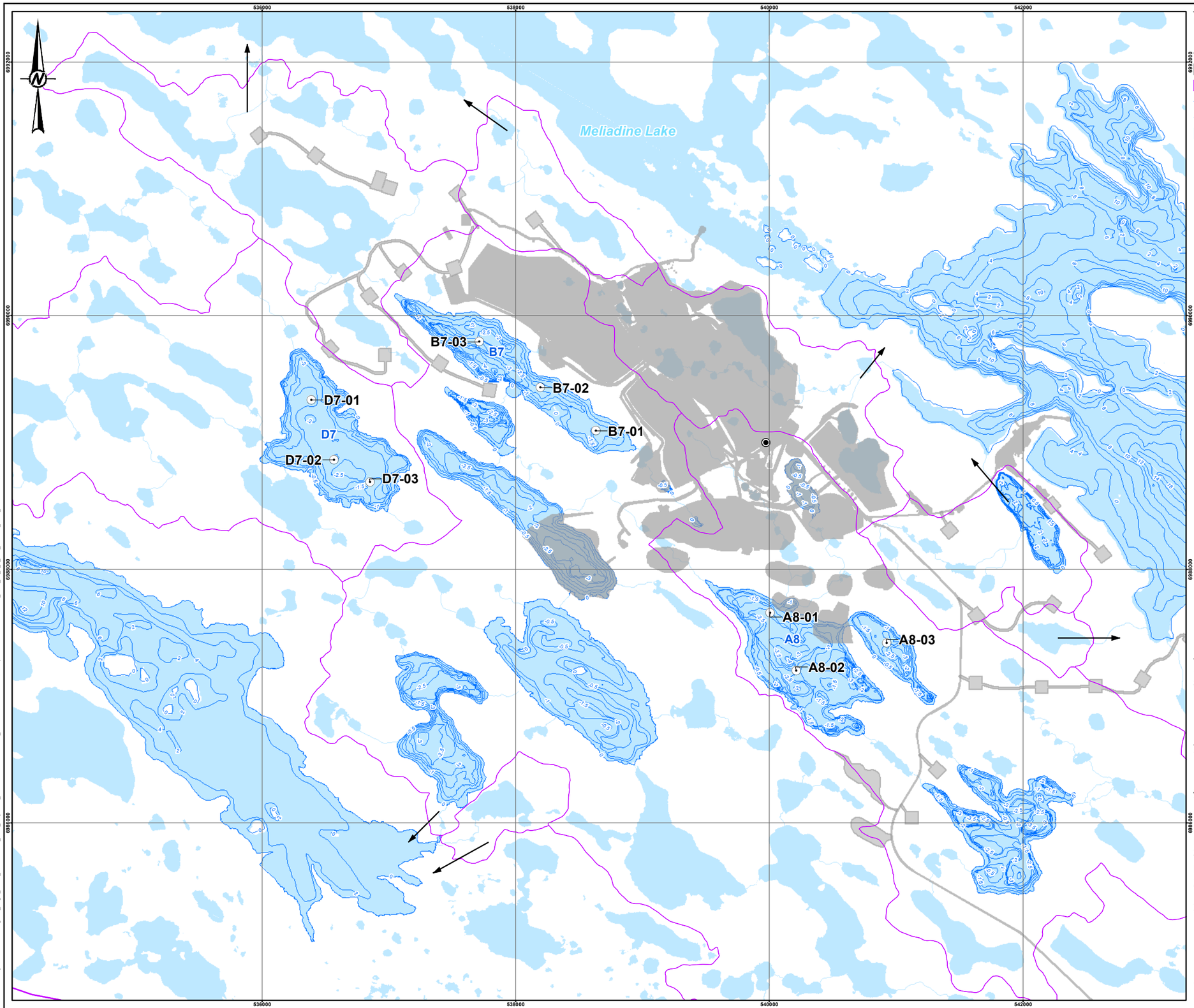
- Field pH measurements collected at stations B-07-01 and B-07-02 during the July program and A8-01, A8-02, A8-03, B7-01, B7-02, and B7-03 during the August program were deemed unreliable during the data quality review (i.e., data were anomalous, being well outside the range of previously measured data; Appendix 6A), and were subsequently invalidated. These data were excluded from the assessments. For these invalidated field data, laboratory pH was used as a surrogate pH measurement to characterize open-water season water quality and in water quality guideline calculation at individual stations. However, as laboratory pH was measured outside the holding time requirement, it is acknowledged that these laboratory pH data have corresponding uncertainty.
- Stations D7-02 and D7-03 were not sampled as part of the July program because of weather delays (i.e., high wind).
- In 2018, water quality monitoring was scheduled for three times per calendar year, but the September water quality program was cancelled due to unsafe boating conditions (i.e., high winds) that prevented safe access to the open-water stations.

QA/QC procedures described in Section 7.3 and Appendix 6A were followed during the 2018 water quality monitoring program.

7.2.2 Field Methods

7.2.2.1 Sample Location and Sampling Frequency

As per the AEMP Design Plan, three stations in each of Lakes A8, B7, and D7, with a target water depth of 1.5 to 2.5 m, were sampled as part of the Peninsula Lakes study (Figure 7.2-1). The three lakes were sampled twice during the open-water season in July and August. The location and timing of sample collection in 2018 are summarized in Table 7.2-1.



LEGEND

- WATER QUALITY STATION
- DIRECTION OF FLOW AT WATERSHED OUTLET
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- BATHYMETRIC CONTOUR (0.5 AND 2 m INTERVAL)
- WATERCOURSE
- WATERBODY



0 600 1,200

1:30,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

PENINSULA LAKES WATER QUALTY STATIONS SAMPLED IN 2018

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	JL
PREPARED	MH
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
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Table 7.2-1: Water Quality Sampling Stations and Sampling Effort Summary for Peninsula Lakes in 2018

Peninsula Lake	Station ID	UTM Coordinates (NAD 83, Zone 15V)		Average Total Depth[a] (m)	Average Secchi Depth[b] (m)	22 to 24 Jul	17 Aug to 1 Sept
		Easting	Northing			Late Spring[c]	Summer[c]
Lake A8	A8-01	540007	6987659	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	1.7	-	✓	✓
	D7-02	536567	6988868	1.7	-	-[d]	Yes
	D7-03	536852	6988689	1.8	-	-[d]	Yes

Samples were analyzed for the required parameters listed in Table 6.2-2, except where noted otherwise.

✓ = Sample collected.

(a) The total depths recorded during each sampling program were averaged for individual stations, when stations were sampled on more than one occasion.

(b) The average Secchi depth (a measure of the clarity of surface waters) was not calculated because the secchi was visible to the lake bed at all stations.

(c) Blank samples (i.e., travel and equipment) were collected.

(d) Samples were not collected at these locations during the July program due to weather delays (i.e., high wind).

ID = identifier; UTM = Universal Transverse Mercator; NAD = North American Datum.

7.2.2.2 Collection of Supporting Field Measurements

At each sampling station, water depth and physicochemical measurements were collected. Total depth of the water column was measured either by using a sounding line or a boat-mounted sonar unit. Prior to collecting surface water samples, field measurements of the following four parameters were recorded using a Eureka Manta II multiprobe:

- water temperature (degrees Celsius [°C])
- pH
- DO (in mg/L and percent [%])
- specific conductivity (in microSiemens per centimetre [µS/cm])

In situ physicochemical measurements were taken at 0.5 m below the surface, and every 0.5 m thereafter throughout the water column, ending at approximately 0.5 m above the lake bed. Secchi depth was measured using a Secchi disk at each station.

7.2.2.3 Water Sample Collection

Surface water samples were collected as grab samples in accordance with Golder's technical procedures, the Standard Operating Procedures for Water Quality Sampling prepared by Golder, and specific laboratory instructions. Discrete water samples were collected at each sampling station from a depth of approximately 1 m using a Kemmerer sampler. Water for filling ultra-low metals and ultra-low mercury sample bottles were collected with a Teflon Kemmerer sampler, whereas the remaining bottles were filled with water from the Polyvinyl Chloride (PVC) Kemmerer sampler. At each station, the Kemmerer was triple-rinsed with surface water representative of the station, and then lowered to the required depth, triggered by the messenger to collect a sample, returned to the surface, and used to fill the lab-supplied sample bottles. This procedure was repeated until all sample bottles for the station were filled.

7.2.2.4 Laboratory Analysis

Water quality samples collected during the 2018 Peninsula Lake study were analyzed by ALS (Edmonton and Winnipeg locations). ALS is an analytical laboratory accredited by the CALA. Specific ALS analytical methods and RDL for the required analyses are provided in Appendix 6A.

Water sample bottles were provided by ALS (Section 7.2.2.3). Water samples were processed (i.e., filtered and/or preserved as required, and refrigerated) at site according to the instructions provided by the laboratory. Water samples requiring filtration were filtered through a 0.45 micrometre (µm) Millipore filter in a Nalgene filter tower using a vacuum pump before being preserved with laboratory-provided preservative based on the required analysis. Water samples were kept refrigerated before shipping; ice packs were added to the coolers to keep the samples as cool as possible during transport. Samples were shipped to ALS as soon as possible after sample collection and processing.

Water quality samples were analyzed for the following suite of parameters:

- routine parameters: pH, specific conductivity, hardness, total alkalinity, total dissolved solids [TDS], total suspended solids [TSS], and turbidity
- major ions: bicarbonate, carbonate, chloride, fluoride, sulphate, calcium, magnesium, potassium, sodium, and silica
- nutrients: nitrate, nitrite, total ammonia, total Kjeldahl nitrogen [TKN], total nitrogen [TN], total phosphorus [TP], total dissolved phosphorus [TDP], orthophosphate, total organic carbon [TOC], and dissolved organic carbon [DOC]
- total and dissolved metals, metalloids, and non-metals[3]: aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, and zinc
- cyanide (i.e., weak acid dissociable, total, and free)

[3] Metals, metalloids (e.g., arsenic), and non-metals (e.g., selenium) are referred to as "metals" in this document.

The samples were analyzed using laboratory test methods with analytical DLs below the CWQG-PAL for the protection of aquatic life (CCME 1999), and Health Canada Drinking Water Quality Guidelines (CDWQGs; Health Canada 2017). Specific ALS analytical methods and RDL for the required analyses are provided in Appendix 6A.

7.2.3 Data Analysis

Comparisons of key parameters to FEIS predictions, water quality guidelines and normal ranges are provided in this section. Descriptive statistics were calculated and presented for the 2018 dataset by lake. Descriptive statistics included the sample size, mean, median, minimum, maximum, and standard deviation. Field data (physicochemical) profiles were compared graphically within each lake (by showing results for each station) to qualitatively evaluate vertical patterns. Water temperature, DO concentration and percent saturation, pH, and specific conductivity, were plotted against measured depth.

7.2.3.1 Comparison to Water Quality Guidelines

The approach for comparison to WQGs is outlined in Section 6.2.4.1. Guidelines and objectives are summarized in Table 6.2-2; these guidelines, in addition to baseline data, form a starting point for the future monitoring benchmarks.

Water quality results for Peninsula Lake stations were compared to acute and chronic CWQG-PAL (CCME 1999), drinking water quality guidelines and aesthetic objectives (Health Canada 2017). Water quality results from Peninsula Lake stations were also compared to the SSWQO developed for the Mine (Golder 2013).

Water chemistry results were plotted as a time series plot for each parameter at each station, with visual representation of guidelines and SSWQOs to qualitatively evaluate water quality trends against guidelines and SSWQOs in 2018, relative to previous years.

7.2.3.2 Normal Ranges

Normal range concentrations were calculated for Peninsula Lakes using water quality data collected during baseline conditions between 2015 and 2017, and using historical data collected between 1995 and 2011. The calculation methods used to estimate normal ranges are described in Section 6.2.4.2 and Appendix 6B.

7.2.3.3 Comparison to FEIS Predictions

Comparison of near-field exposure data for 2018 were compared to applicable model predictions reported by the FEIS for Meliadine (Agnico Eagle 2014). The FEIS predictions for water quality included an evaluation of the water quality in Lakes A8, B7, and D7 to evaluate the potential for indirect effects in small waterbodies within the vicinity of the Mine. The results of the model predictions indicated that changes to water quality in the small waterbodies could result from diversion of water, changes in watershed size and contributing areas, natural hydrological processes, evaporation, and aerial deposition of particulate matter (modelled as TSS), nutrients from blasting activities at the Mine (modelled as nitrate), and metals (modelled by individual metal parameter). It was predicted that aerial deposition from mine activities will increase from background levels during pre-production, peak during pit development, and decrease to background levels by closure (Agnico Eagle 2014). Specific model predictions for the small waterbodies were as follows:

- Total suspended solids (TSS) was not predicted to increase to concentrations that would affect aquatic life (i.e., concentrations will be less than guidelines, or less than 10% different from baseline conditions) in any waterbody.

- Nitrate was not predicted to increase to concentrations that would affect aquatic life (i.e., concentrations will be less than guidelines, or less than 10% different from baseline conditions) in any waterbody.
- In Lake A8, metal concentrations were not predicted to be more than background or guidelines.
- In Lake D7, titanium was expected to be more than 10% higher than background concentrations.

Lake B7 was not included in the model predictions under FEIS (Agnico Eagle 2014). These predictions are examined in Section 7.4.4.

7.2.3.4 Identification of Temporal Trends

Time series plots of parameter concentrations were completed (Appendix 7C) for stations in Peninsula Lakes A8, B7 and D7 and qualitatively examined to identify increasing trends in 2018 relative to baseline conditions (i.e., 2015 to 2017).

7.3 Quality Assurance/Quality Control

The QA/QC practices applied during this study and detailed results of the QC analyses for discrete water quality samples collected at Peninsula Lakes are provided in Appendix 6A. QA components of the program included the use of trained personnel and an accredited analytical laboratory; QC components included assessments of duplicates and field, equipment, and travel blank samples. Dissolved and total parameter concentrations were also compared.

7.3.1 Summary of Results

Detailed results are provided in Appendix 6A. The results of the review of field and laboratory data indicated that field measurements and laboratory data were of high quality. Key findings from the 2018 QA/QC evaluation are as follows:

- In general, field measurements and results of laboratory samples collected during the 2018 sampling program were within the ranges that would be expected for the Peninsula Lakes water quality program, with the exception of two field pH measurements collected in July and all field pH measurements collected in August at Lakes A8 and B7. These field pH measurements were invalidated because the values were far outside of the range of historical variation at these stations.
- No issues were identified in analytical methods used or units reported by the laboratory.
- Holding times recommended by the laboratory were for exceeded some parameters. The holding time exceedances were not expected to affect data quality for the Peninsula Lakes water quality program.
- QC samples were collected in coordination with the Meliadine Lake water quality program. QC samples (i.e., blanks and duplicates) accounted for approximately 16% of the total number of water samples submitted for analysis.
- The water quality QC sample evaluation indicated that for the combined equipment and travel blanks, 1% of parameters were detected at concentrations more than five times the DL. No notable contamination occurred in the blank samples.

- Approximately 3% of paired concentrations in duplicate discrete water quality samples had a RPD of more than 20%. Within-station variability and field precision for the 2018 dataset were rated as low and high, respectively.

The overall quality of the water quality data was rated high. Therefore, the results reported in the report are considered reliable and meet the needs of the program.

7.4 Results and Discussion

7.4.1 Field Measured PhysicoChemical Parameters

The field profiles generally followed similar patterns among Peninsula Lakes. A summary of field profiles for Lakes A8, B7, and D7 are presented in Appendix 7A, Tables 7A.1-1 to 7A.1-6, and below:

- No thermal stratification was observed during the July and August programs in the Peninsula Lakes (Appendix 7A, Figures 7A.1-1 and 7A.1-2). Average surface water temperatures were higher in July than August in all lakes. Average temperatures in Lake A8, B7, and D7 in July and August were 15.7°C and 11.7°C, 17.1°C and 10.5°C, and 18.0°C and 9.7°C, respectively.
- DO was close to saturated in all lakes in July and August, and remained relatively constant through the water column (Appendix 7A, Figure 7A.1-3 and 7A.1-4). Surface DO was well above CWQG-PAL of 6.5 mg/L at all stations in the Near-field and Mid-field.
- Water column pH in Lake A8, B7, and D7 ranged between 8.3 to 8.6 in all lakes and was consistent with depth in July and August (Appendix 6C, Figure 6A.1-5 and 6A.1-6). Surface pH was within the acceptable CWQG-PAL range of 6.5 to 9.0 at all stations during the open-water season.
- Water column specific conductivity was constant with depth in all lakes in July and August (Appendix 7A, Figure 7A.1-7 and 7A.1-8). Water column specific conductivity was highest in Lake A8 ranging between 193 to 240 µS/cm compared to 134 to 159 µS/cm in Lake B7 and 117 to 141 µS/cm in Lake D7.

7.4.2 Water Chemistry

Water quality results from 2018 in the Peninsula Lakes are presented below and summarized in Table 7.4-1. Raw water quality data collected between 2015 and 2018 are provided in Appendix 7B, Table 6B-1 to 6B-6. Peninsula Lakes water quality can be characterized as having:

- low to moderate ionic strength (median laboratory specific conductivity in Lake A8, B7 and D7 was 225, 151, and 142 µS/cm, respectively);
- bicarbonate, chloride, and calcium as the major ions; chloride, fluoride, sodium, and sulphate concentrations fell below their applicable WQGs in Peninsula Lakes;
- basic pH (median field-measured pH across all lakes ranged from 7.6 to 7.8). Field and laboratory pH were within the acceptable range (i.e., 6.5 to 9.0) of the CWQG-PAL for all samples in Lakes A8, B7, and D7;
- low to moderately low hardness (hardness was low in Lakes B7 and D7 with median values of 57 and 48 mg/L as $CaCO_3$, respectively and moderately low in Lake A8 with a median value of 84 mg/L; this indicates soft water in Lake B7 and D7 and moderately soft water in Lake A8, according to the scale of water hardness by McNeely et al. [1979]);

- low to moderate TDS with median concentrations of 174, 101, and 77 mg/L in Lakes A8, B7, and D7, respectively. TDS concentrations fell below the aesthetic objective of 500 mg/L.
- low nutrient concentrations, with median TP and TN concentrations in Lakes A8, B7 and D7 of 0.0047 and 0.40 mg/L, 0.0069 and 0.37 mg/L, and 0.016 and 0.35 mg/L, respectively. The concentrations of TP and TN in the Peninsula Lakes were within the range of oligotrophic lakes classification, according to the scale of trophic status by Vollenweider (1968). Nitrate, nitrite, and total ammonia concentrations fell below their applicable WQGs in Peninsula Lakes; and
- low total and dissolved metal concentrations in all lakes, which were either below detection or below water quality guidelines.

Table 7.4-1: Water Quality Summary at Peninsula Lakes, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary																			
		CCME Aquatic Life		Health Canada Drinking Water Guidelines	Aesthetic Objectives	SSWQO	Lake A8							Lake B7							Lake D7						
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Field Measured																										
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	8.5	8.6	8.5	8.6	0.036	0	3	8.5	8.5	-	-	-	0	1	8.3	8.3	8.3	8.4	0.026	0	4
Specific conductivity	µS/cm	-	-	-	-	-	218	219	193	240	19	0	6	147	146	134	158	12	0	6	140	135	118	141	11	0	4
Temperature	°C	-	-	-	15	-	14	14	12	16[(a)]	2.2	0	6	14	14	9.8	17[(a)]	3.7	0	6	9.7	12	9.5	18[(a)]	4.2	0	4
Dissolved oxygen	mg/L	-	6.5	-	-	-	11	11	11	11	0.048	0	6	11	11	11	11	0.046	0	6	12	11	10	12	0.63	0	4
Dissolved oxygen	%	-	-	-	-	-	104	104	99	109	4.9	0	6	104	104	95	112	8.4	0	6	104	105	103	111	3.0	0	4
Conventional Parameters																										
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.8	7.8	7.8	7.9	0.025	0	6	7.6	7.6	7.5	7.8	0.11	0	6	7.8	7.8	7.8	7.8	0.0050	0	4
Specific conductivity	µS/cm	-	-	-	-	-	225	225	204	239	13	0	6	151	150	140	160	8.6	0	6	142	136	117	142	12	0	4
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	84	84	80	86	2.2	0	6	57	57	55	58	1.4	0	6	48	47	44	50	2.6	0	4
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	43	43	40	49	3.3	0	6	32	33	29	43	5.2	0	6	50	48	44	51	3.3	0	4
Total dissolved solids	mg/L	-	-	-	500	-	174	175	163	189	10.0	0	6	101	104	99	113	6.4	0	6	77	77	71	84	5.9	0	4
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	110	110	102	117	5.4	0	6	73	75	71	82	4.3	0	6	73	70	62	73	5.3	0	4
Total suspended solids	mg/L	-	-	-	-	-	<1.0	-	<1.0	1.2	-	4	6	1.3	1.3	1.0	1.7	0.25	0	6	1.6	-	<1.0	1.8	-	2	4
Total organic carbon	mg/L	-	-	-	-	-	3.6	3.7	3.3	4.3	0.39	0	6	4.0	4.0	3.8	4.2	0.15	0	6	4.8	4.6	4.0	4.9	0.42	0	4
Dissolved organic carbon	mg/L	-	-	-	-	-	3.5	3.6	3.2	4.1	0.35	0	6	3.9	3.9	3.8	4.1	0.090	0	6	4.7	4.5	4.0	4.7	0.34	0	4
Turbidity	NTU	-	-	-	-	-	0.54	0.56	0.49	0.66	0.074	0	6	0.48	0.49	0.40	0.59	0.074	0	6	0.71	0.69	0.56	0.77	0.091	0	4
Major Ions																										
Bicarbonate	mg/L	-	-	-	-	-	53	53	48	59	4.1	0	6	39	40	36	53	6.4	0	6	61	59	53	62	4.0	0	4
Calcium	mg/L	-	-	-	-	-	28	28	26	29	0.74	0	6	19	19	19	20	0.45	0	6	15	15	14	15	0.70	0	4
Carbonate	mg/L	-	-	-	-	-	<0.6	-	<0.6	<0.6	-	6	6	<0.6	-	<0.6	<0.6	-	6	6	<0.6	-	<0.6	<0.6	-	4	4
Chloride	mg/L	640	120	-	250	-	39	39	33	43	3.6	0	6	24	24	23	25	0.66	0	6	11	10	9.0	11	0.80	0	4
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.028	0.028	0.025	0.032	0.0025	0	6	0.025	0.025	0.023	0.026	0.0014	0	6	0.045	0.044	0.039	0.047	0.0035	0	4
Magnesium	mg/L	-	-	-	-	-	3.7	3.6	3.4	3.7	0.12	0	6	2.1	2.0	2.0	2.1	0.058	0	6	2.7	2.7	2.4	2.8	0.21	0	4
Potassium	mg/L	-	-	-	-	-	1.7	1.7	1.5	1.8	0.080	0	6	1.3	1.3	1.2	1.4	0.056	0	6	1.3	1.3	1.1	1.3	0.10	0	4
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.72	0.76	0.70	0.94	0.093	0	6	0.58	0.57	0.46	0.68	0.086	0	6	0.21	0.21	0.20	0.22	0.0086	0	4
Sodium	mg/L	-	-	-	200	-	6.5	6.6	5.8	8.0	0.74	0	6	3.6	3.5	3.2	3.7	0.23	0	6	8.0	7.8	7.1	8.3	0.56	0	4
Sulphate	mg/L	-	-	-	500	-	5.5	5.5	4.4	6.3	0.72	0	6	4.9	4.9	4.5	5.2	0.22	0	6	5.1	4.7	3.2	5.2	0.99	0	4
Nutrients and Organics																										
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	4	4
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	4	4
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	-	<0.0051	<0.0051	-	6	6	<0.0051	-	<0.0051	<0.0051	-	6	6	<0.0051	-	<0.0051	<0.0051	-	4	4
Total ammonia	mg-N/L	-	0.16 to 1.8[(b)]	-	-	-	<0.005	-	<0.005	0.011	-	4	6	<0.005	-	<0.005	<0.005	-	6	6	0.0079	0.021	<0.005	0.067	0.030	1	4
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.40	0.40	0.34	0.48	0.047	0	6	0.37	0.38	0.30	0.50	0.074	0	6	0.35	0.34	0.24	0.42	0.075	0	4
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.40	0.40	0.34	0.48	0.047	0	6	0.37	0.38	0.30	0.50	0.074	0	6	0.35	0.34	0.24	0.42	0.075	0	4
Total phosphorus	mg-P/L	-	-	-	-	-	0.0047	0.0046	0.0017	0.0071	0.0024	0	6	0.0069	0.0060	0.0027	0.0079	0.0023	0	6	0.016	0.014	0.0074	0.019	0.0050	0	4
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0021	0.0020	<0.001	0.0038	0.0015	2	6	0.0024	0.0024	<0.001	0.0049	0.0020	2	6	0.0063	0.0063	0.0058	0.0069	0.00047	0	4
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	0.0011	-	5	6	<0.001	-	<0.001	<0.001	-	4	4

Table 7.4-1: Water Quality Summary at Peninsula Lakes, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary																			
		CCME Aquatic Life		Health Canada Drinking Water Guidelines	Aesthetic Objectives	SSWQO	Lake A8							Lake B7							Lake D7						
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Total Metals																										
Aluminum	µg/L	-	100[c, d]	-	-	-	3.2	4.3	2.4	7.9	2.4	0	6	3.3	4.0	2.9	7.1	1.6	0	6	5.3	5.1	4.1	5.7	0.74	0	4
Antimony	µg/L	-	-	6.0	-	-	<0.02	-	<0.02	0.021	-	4	6	<0.02	-	<0.02	<0.02	-	6	6	<0.02	-	<0.02	<0.02	-	4	4
Arsenic	µg/L	-	5.0	10	-	25	2.5	2.5	2.2	2.9	0.26	0	6	1.6	1.6	1.4	1.8	0.17	0	6	0.93	1.0	0.90	1.4	0.22	0	4
Barium	µg/L	-	-	1,000	-	-	24	24	23	25	0.95	0	6	20	20	20	21	0.32	0	6	18	18	16	18	0.86	0	4
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	4	4
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	4	4
Boron	µg/L	29,000	1,500	5,000	-	-	2.9	2.9	2.5	3.1	0.24	0	6	10	10	10	11	0.27	0	6	12	12	11	13	0.94	0	4
Cadmium	µg/L	0.90 to 1.8[e]	0.08 to 0.14[e]	5.0	-	-	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	4	4
Chromium	µg/L	-	1.0	50[f]	-	-	<0.06	-	<0.06	0.15	-	5	6	<0.06	-	<0.06	0.066	-	4	6	<0.06	-	<0.06	0.33	-	3	4
Cobalt	µg/L	-	-	-	-	-	0.047	0.048	0.032	0.066	0.011	0	6	0.042	0.045	0.032	0.061	0.010	0	6	0.068	0.064	0.051	0.069	0.0086	0	4
Copper	µg/L	-	2.0 to 2.1[e]	-	1,000	-	0.67	0.70	0.57	0.84	0.11	0	6	0.71	0.73	0.64	0.85	0.087	0	6	0.93	0.93	0.86	0.99	0.062	0	4
Iron	µg/L	-	300	-	300	1,060	79	78	58	97	17	0	6	68	72	54	90	13	0	6	57	67	52	100	22	0	4
Lead	µg/L	-	2.4 to 2.6[e]	10	-	-	0.018	0.020	<0.01	0.043	0.013	1	6	0.024	0.024	0.018	0.032	0.0049	0	6	0.019	0.018	0.015	0.019	0.0020	0	4
ok.	µg/L	-	-	-	-	-	6.6	6.6	5.4	7.6	0.74	0	6	14	15	14	15	0.46	0	6	1.4	1.4	1.3	1.4	0.080	0	4
Manganese	µg/L	-	-	-	50	-	13	12	6.5	19	4.7	0	6	6.5	7.0	2.3	11	3.1	0	6	16	16	14	18	1.7	0	4
Mercury	µg/L	-	0.026	1.0	-	-	0.001	0.001	0.001	0.001	0.000	0	6	0.0010	0.0010	0.00090	0.0011	0.00007	0	6	0.0005	0.0007	0.0005	0.0013	0.0004	0	4
Molybdenum	µg/L	-	73	-	-	-	0.25	0.25	0.18	0.33	0.063	0	6	0.18	0.19	0.15	0.25	0.045	0	6	0.55	0.53	0.43	0.58	0.063	0	4
Nickel	µg/L	-	81 to 85[e]	-	-	-	0.82	0.84	0.69	1.1	0.14	0	6	0.94	0.94	0.87	1.00	0.055	0	6	0.83	0.82	0.73	0.88	0.069	0	4
Selenium	µg/L	-	1.0	50	-	-	<0.04	-	<0.04	<0.04	-	6	6	<0.04	-	<0.04	0.042	-	5	6	<0.04	-	<0.04	0.042	-	3	4
Silver	µg/L	-	0.25	-	-	-	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	4	4
Strontium	µg/L	-	-	-	-	-	212	212	173	246	25	0	6	220	226	206	251	19	0	6	76	74	68	76	4.1	0	4
Thallium	µg/L	-	0.80	-	-	-	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	4	4
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	6	6	<0.05	-	<0.05	<0.05	-	6	6	<0.05	-	<0.05	<0.05	-	4	4
Titanium	µg/L	-	-	-	-	-	0.10	-	<0.1	0.26	-	3	6	0.14	-	<0.1	0.29	-	3	6	0.26	0.23	0.12	0.30	0.081	0	4
Uranium	µg/L	33	15	20	-	-	0.037	0.038	0.030	0.048	0.0066	0	6	0.025	0.023	0.018	0.027	0.0036	0	6	0.070	0.065	0.048	0.074	0.012	0	4
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	0.067	-	5	6	0.074	0.070	<0.05	0.092	0.023	1	6	0.070	0.071	0.064	0.080	0.0073	0	4
Zinc	µg/L	-	-	-	5,000	-	<0.8	-	<0.8	<0.8	-	6	6	0.91	0.81	<0.8	1.3	0.34	2	6	<0.8	-	<0.8	<0.8	-	4	4
Dissolved Metals																										
Aluminum	µg/L	-	-	-	-	-	1.9	1.9	1.5	2.1	0.26	0	6	2.3	2.6	1.3	4.3	1.0	0	6	2.3	2.8	1.8	4.8	1.4	0	4
Antimony	µg/L	-	-	-	-	-	<0.02	-	<0.02	0.13	-	4	6	<0.02	-	<0.02	0.25	-	4	6	<0.02	-	<0.02	<0.02	-	4	4
Arsenic	µg/L	-	-	-	-	-	2.0	2.1	1.9	2.5	0.26	0	6	1.4	1.4	1.2	1.8	0.22	0	6	0.80	0.88	0.79	1.1	0.16	0	4
Barium	µg/L	-	-	-	-	-	24	24	23	24	0.32	0	6	19	19	19	20	0.47	0	6	17	18	16	21	2.0	0	4
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	4	4
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	4	4
Boron	µg/L	-	-	-	-	-	2.5	2.6	2.0	3.1	0.37	0	6	9.6	9.5	8.4	11	0.92	0	6	13	12	11	13	0.97	0	4
Cadmium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	4	4
Chromium	µg/L	-	-	-	-	-	<0.06	-	<0.06	0.16	-	4	6	<0.06	-	<0.06	0.085	-	4	6	<0.06	-	<0.06	<0.06	-	4	4

Table 7.4-1: Water Quality Summary at Peninsula Lakes, 2018

Parameter	Unit	Water Quality Guidelines and Objectives					Summary																			
		CCME Aquatic Life		Health Canada Drinking Water Guidelines	Aesthetic Objectives	SSWQO	Lake A8							Lake B7							Lake D7						
		Acute	Chronic				Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Dissolved Metals (cont'd)																										
Cobalt	µg/L	-	-	-	-	-	0.020	0.022	0.016	0.033	0.0063	0	6	0.020	0.026	0.014	0.061	0.017	0	6	0.023	0.023	0.021	0.024	0.0013	0	4
Copper	µg/L	-	-	-	-	-	0.59	0.65	0.56	0.84	0.11	0	6	0.64	0.67	0.57	0.82	0.085	0	6	0.78	0.78	0.78	0.79	0.0058	0	3
Iron	µg/L	-	-	-	-	-	35	35	26	51	9.1	0	6	40	45	26	89	23	0	6	24	28	20	45	12	0	4
Lead	µg/L	-	-	-	-	-	0.011	0.012	<0.01	0.017	0.0040	1	6	0.018	-	<0.01	0.022	-	3	6	0.013	-	<0.01	0.083	-	2	4
Lithium	µg/L	-	-	-	-	-	6.5	6.3	5.6	6.8	0.50	0	6	14	14	13	14	0.55	0	6	1.6	1.6	1.4	1.7	0.15	0	4
Manganese	µg/L	-	-	-	-	-	1.7	1.6	1.2	2.0	0.31	0	6	1.5	2.9	0.66	11	3.9	0	6	0.82	1.1	0.75	1.9	0.53	0	4
Mercury	µg/L	-	-	-	-	-	0.00095	0.00086	<0.0005	0.0013	0.00041	1	6	0.00095	0.00092	0.00050	0.0013	0.00035	0	6	0.00065	0.00083	0.00060	0.0014	0.00039	0	4
Molybdenum	µg/L	-	-	-	-	-	0.23	0.23	0.20	0.27	0.027	0	6	0.17	0.17	0.15	0.19	0.025	0	6	0.56	0.53	0.42	0.59	0.076	0	4
Nickel	µg/L	-	-	-	-	-	0.83	0.86	0.72	1.1	0.16	0	6	0.88	0.87	0.83	0.93	0.039	0	6	0.79	0.77	0.70	0.81	0.051	0	4
Selenium	µg/L	-	-	-	-	-	<0.04	-	<0.04	<0.04	-	6	6	<0.04	-	<0.04	0.046	-	5	6	<0.04	-	<0.04	0.046	-	3	4
Silver	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	4	4
Strontium	µg/L	-	-	-	-	-	198	193	171	209	16	0	6	209	209	203	218	5.1	0	6	73	72	65	77	6.3	0	4
Thallium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.008	-	6	6	0.0050	-	<0.005	0.0080	-	4	6	<0.005	-	<0.005	<0.005	-	4	4
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	6	6	<0.05	-	<0.05	<0.05	-	6	6	<0.05	-	<0.05	<0.05	-	4	4
Titanium	µg/L	-	-	-	-	-	<0.1	-	<0.1	<0.1	-	6	6	<0.1	-	<0.1	<0.1	-	6	6	<0.1	-	<0.1	<0.1	-	4	4
Uranium	µg/L	-	-	-	-	-	0.037	0.037	0.031	0.048	0.0058	0	6	0.023	0.022	0.019	0.024	0.0022	0	6	0.079	0.073	0.051	0.082	0.015	0	4
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	0.061	-	4	6	0.061	0.056	<0.05	0.085	0.027	2	6	0.061	0.054	<0.05	0.068	0.020	1	4
Zinc	µg/L	55 to 95[g]	10 to 20[h]	-	-	-	0.90	0.89	<0.8	1.5	0.44	2	6	0.96	1.2	<0.8	3.6	1.2	2	6	0.84	-	<0.8	2.4	-	2	4
Other																										
Total Cyanide	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	4	4
Free Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	4	4
Cyanide WAD	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	4	4

(a) Temperature for some samples fell above the aesthetic objective of 15°C but were not flagged in this table.

(b) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.16 mg-N/L) is based on the combination of field pH (8.6) and water temperature (15.6°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.8 to 8.9). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(d) Guideline is pH dependent: 5 µg/L at pH <6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(e) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (43.6 to 86.2 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(f) Guideline is for chromium VI.

(g) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (43.6 to 86.2 mg/L as $CaCO_3$) and DOC (3.2 to 4.7 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(h) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.8 to 8.9), hardness (43.6 to 86.2 mg/L as $CaCO_3$) and DOC (3.2 to 4.7 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L). When field pH was not available laboratory pH was used.

Note:

In cases where 50% or more of data were <DL, no mean or standard deviation was calculated.

Half of the detection limit value was used for total Kjeldahl nitrogen to calculate total nitrogen concentrations.

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; SD = standard deviation; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; WAD = Weak Acid Dissociable; - = no guideline or data not measured.

7.4.3 Comparison to Normal Range

The 2018 Lake A8 mean/median concentrations of total aluminum, arsenic, iron, and molybdenum were higher than upper bound concentrations of their respective normal ranges (Tables 7.4-2). The 2018 Lake B7 mean/median concentrations were higher than upper bound concentrations of their normal ranges for total boron, lithium, and strontium (Table 7.4-3). The 2018 Lake D7 mean/median concentrations of total ammonia, total barium, cobalt, manganese, molybdenum, nickel, and dissolved zinc were higher than upper bound concentrations of their normal ranges (Table 7.4-4).

Table 7.4-2: Normal Ranges (1997 to 2009; 2015 to 2017) for Selected Parameters, Lake A8

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Calculation Method	Normal Ranges		2018 Mean/Median[a]
						Lower Bound	Upper Bound	
Conventional Parameters								
pH (field)	unitless	0.1[b]	21	1	PI	7.7	8.3	8.2[c]
Specific conductivity	µS/cm	1	20	0	Percentile	100	334	218
Hardness (as $CaCO_3$)	mg/L	0.2	20	0	Percentile	37	123	84
Total alkalinity (as $CaCO_3$)	mg/L	1	15	0	PI(λ)	29	83.6	43
Total dissolved solids (calculated)	mg/L	-	17	0	Percentile	57	152	110
Total suspended solids	mg/L	1	19	1	Percentile	0[d]	4	1
Turbidity	NTU	0.1	17	0	PI(λ)	0.37	0.87	0.54
Major Ions								
Bicarbonate	mg/L	1.2	20	0	PI(λ)	36	91	52
Calcium	mg/L	0.02	20	0	Percentile	12	40	28
Chloride	mg/L	0.1	20	0	Percentile	7	61	39
Fluoride	mg/L	0.02	13	0	PI	0.03	0.04	0.03
Magnesium	mg/L	0.004	20	0	Percentile	1.7	5.6	3.7
Potassium	mg/L	0.02	20	0	Percentile	0.7	2.5	1.7
Reactive silica (as SiO_2)	mg/L	0.01	17	1	PI	0.18	1.3	0.76
Sodium	mg/L	0.005	20	0	Percentile	1.9	8.4	6.5
Sulphate	mg/L	0.3	20	0	PI	2.7	9.3	5.5
Nutrients and Organics								
Nitrate	mg-N/L	0.005	13	0	Percentile	0[d]	0.015	0.003
Nitrite	mg-N/L	0.005	13	0	-	0[f]	0.0005[f]	0.0005
Total ammonia	mg-N/L	0.005	13	0	Percentile	0[d]	0.011	0.003
Total Kjeldahl nitrogen	mg-N/L	0.05	19	0	PI(λ)	0.22	0.63	0.39
Total nitrogen	mg-N/L	0.05	10	0	PI	0.25	0.37	-[g]
Total phosphorus	mg-P/L	0.001	19	0	PI	0.004	0.009	0.001
Dissolved phosphorus	mg-P/L	0.001	19	0	PI(λ)	0.002	0.006	0.002
Orthophosphate	mg-P/L	0.001	19	0	Percentile	0[d]	0.0023	0.001
Total organic carbon	mg/L	0.5	17	1	PI	3.5	4.7	3.7
Dissolved organic carbon	mg/L	0.5	14	1	PI	3.5	4.9	3.6
Total Metals								
Aluminum	µg/L	0.3	13	0	PI(λ)	1.1	3.0	**3.5**
Antimony	µg/L	0.02	13	0	Percentile	0[d]	0.40	0.02
Arsenic	µg/L	0.02	13	0	PI	1.7	2.4	**2.5**
Barium	µg/L	0.05	13	0	PI	23	32	24
Beryllium	µg/L	0.01	13	0	-	0[f]	0.01[f]	0.01
Bismuth	µg/L	0.01	13	0	-	0[f]	0.01[f]	0.01
Boron	µg/L	1	13	0	Percentile	2.5	5	2.9
Cadmium	µg/L	0.005	13	0	Percentile	0[d]	0.005[e]	0.005
Chromium	µg/L	0.06	13	0	Percentile	0[d]	0.06[e]	0.03

Table 7.4-2: Normal Ranges (1997 to 2009; 2015 to 2017) for Selected Parameters, Lake A8

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Calculation Method	Normal Ranges		2018 Mean/Median[a]
						Lower Bound	Upper Bound	
Total Metals (cont'd)								
Cobalt	µg/L	0.01	13	0	PI	0.02	0.05	0.05
Copper	µg/L	0.1	13	0	PI	0.54	0.89	0.7
Iron	µg/L	1	13	0	PI	18	67	**78**
Lead	µg/L	0.01	13	0	Percentile	0.01	0.03	0.02
Lithium	µg/L	0.5	13	0	Percentile	7.5	10	6.6
Manganese	µg/L	0.05	13	0	PI	3.0	13	12
Mercury	µg/L	0.0005	13	0	PI	0[d]	0.0012	0.001
Molybdenum	µg/L	0.05	13	0	Percentile	0.17	0.22	**0.25**
Nickel	µg/L	0.06	13	0	PI	0.75	0.92	0.84
Selenium	µg/L	0.02	13	0	-	0[f]	0.02[f]	0.02
Silver	µg/L	0.005	13	0	-	0[f]	0.005[f]	0.005
Strontium	µg/L	0.05	13	0	PI(λ)	203	273	214
Thallium	µg/L	0.005	13	0	Percentile	0[d]	0.005[e]	0.005
Tin	µg/L	0.05	13	0	Percentile	0[d]	0.05[e]	0.05
Titanium	µg/L	0.1	13	0	Percentile	0.05	0.25	0.08
Uranium	µg/L	0.01	13	0	PI(λ)	0.027	0.054	0.037
Vanadium	µg/L	0.01	13	0	-	0[d]	0.01[e]	0.025
Zinc	µg/L	0.8	13	0	Percentile	0.4	1.2	0.8
Dissolved Metals								
Zinc	µg/L	0.8	13	0	Percentile	0[d]	8.5	1.1
Other								
Total cyanide	mg/L	0.001	17	0	-	0[d]	0.001	0.001

(a) Lake area means were calculated using the back-transformed mean when the normal range was defined as the prediction interval using Box-Cox transformed data. The arithmetic mean was used when the normal range was defined using untransformed data. The median was used when the calculation method was Percentile.

(b) Detection limit for laboratory pH is provided.

(c) Laboratory pH was used in place of field pH for select 2018 samples in cases where field pH was invalidated.

(d) The lower bound of the normal range was less than the detection limit; therefore, the lower bound of the normal range was set to zero.

(e) The upper bound of the normal range was less than the detection limit; therefore, the upper bound of the normal range was set to the detection limit.

(f) All values in the dataset were non-detect; therefore, the normal range was set from zero to the detection limit.

(g) Total nitrogen was not measured during the July or August 2018 water quality programs.

Bolded concentrations exceed the upper bound of the normal range.

Percentile = 2.5th and 97.5th percentiles; PI= 80% prediction intervals; PI(λ) = 80% prediction interval on Box-Cox transformed data.

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg‑N/L = milligrams nitrogen per litre; mg‑P/L = milligrams phosphorus per litre; µg/L = micrograms per litre.

Table 7.4-3: Normal Ranges (1997 to 2011; 2015 to 2017) for Selected Parameters, Lake B7

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Calculation Method	Normal Ranges		2018 Mean/Median[a]
						Lower Bound	Upper Bound	
Conventional Parameters								
pH (field)	unitless	0.1[b]	25	0	PI(λ)	7.0	8.2	7.7
Specific conductivity (laboratory)	µS/cm	1	24	1	Percentile	101	302	151
Hardness (as $CaCO_3$)	mg/L	0.2	24	1	Percentile	42	118	57
Total alkalinity (as $CaCO_3$)	mg/L	1	24	0	Percentile	29	110	32
Total dissolved solids (calculated)	mg/L	-	19	0	Percentile	77	171	101
Total suspended solids	mg/L	1	24	0	PI(λ)	0[d]	3	1.3
Turbidity	NTU	0.1	21	0	PI(λ)	0.34	0.69	0.48
Major Ions								
Bicarbonate	mg/L	1.2	24	0	Percentile	32	135	39
Calcium	mg/L	0.02	24	1	Percentile	14	39	19
Chloride	mg/L	0.1	24	1	Percentile	5	25	24
Fluoride	mg/L	0.02	16	0	PI(λ)	0.02	0.04	0.02
Magnesium	mg/L	0.004	24	0	Percentile	1.4	5.3	2.1
Potassium	mg/L	0.02	24	0	Percentile	0.9	2.8	1.3
Reactive silica (as SiO_2)	mg/L	0.01	21	0	Percentile	0.34	2.3	0.58
Sodium	mg/L	0.005	24	0	Percentile	2.1	7.5	3.6
Sulphate	mg/L	0.3	24	0	Percentile	3.8	6.0	4.9
Nutrients and Organics								
Nitrate	mg-N/L	0.005	16	1	Percentile	0[d]	0.005[e]	0.005
Nitrite	mg-N/L	0.005	16	0	-	0[f]	0.005[f]	0.005
Total ammonia	mg-N/L	0.005	16	0	Percentile	0[d]	0.025	0.005
Total Kjeldahl nitrogen	mg-N/L	0.05	23	0	PI(λ)	0.27	0.73	0.37
Total nitrogen	mg-N/L	0.05	12	0	PI	0.28	0.42	-[g]
Total phosphorus	mg-P/L	0.001	23	1	PI(λ)	0.006	0.010	0.006
Dissolved phosphorus	mg-P/L	0.001	24	0	PI(λ)	0.002	0.008	0.002
Orthophosphate	mg-P/L	0.001	24	1	Percentile	0[d]	0.001[e]	0.0005
Total organic carbon	mg/L	0.5	23	1	PI(λ)	4.6	7.6	4.0
Dissolved organic carbon	mg/L	0.5	17	1	PI	4.8	5.5	3.9
Total Metals								
Aluminum	µg/L	0.3	16	0	PI(λ)	1.4	6.6	3.5
Antimony	µg/L	0.02	16	0	-	0[f]	0.02[f]	0.02
Arsenic	µg/L	0.02	16	0	PI(λ)	1.3	1.8	1.6
Barium	µg/L	0.05	16	0	Percentile	18	20	20
Beryllium	µg/L	0.01	16	0	-	0[f]	0.01[f]	0.01
Bismuth	µg/L	0.01	16	0	-	0[f]	0.01[f]	0.01
Boron	µg/L	1	16	0	Percentile	2.5	8	**10**
Cadmium	µg/L	0.005	16	1	Percentile	0[d]	0.007	0.005
Chromium	µg/L	0.06	16	0	Percentile	0[d]	0.06[e]	0.03

Table 7.4-3: Normal Ranges (1997 to 2011; 2015 to 2017) for Selected Parameters, Lake B7

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Calculation Method	Normal Ranges		2018 Mean/Median[a]
						Lower Bound	Upper Bound	
Total Metals (cont'd)								
Cobalt	µg/L	0.01	16	1	PI	0.03	0.05	0.04
Copper	µg/L	0.1	16	0	Percentile	0.6	1.13	0.71
Iron	µg/L	1	16	0	PI	51	103	72
Lead	µg/L	0.01	16	0	Percentile	0.01	0.08	0.02
Lithium	µg/L	0.5	16	0	PI(λ)	4.1	7.5	**14**
Manganese	µg/L	0.05	16	0	Percentile	4.2	8.6	6.5
Mercury	µg/L	0.0005	16	0	PI(λ)	0[d]	0.004	0.001
Molybdenum	µg/L	0.05	16	0	PI(λ)	0.14	0.24	0.18
Nickel	µg/L	0.06	16	0	PI(λ)	0.81	1.4	0.94
Selenium	µg/L	0.02	16	0	Percentile	0.02	0.04	0.02
Silver	µg/L	0.005	16	1	-	0[f]	0.005[f]	0.005
Strontium	µg/L	0.05	16	0	PI	136	155	**226**
Thallium	µg/L	0.005	16	0	Percentile	0[d]	0.005	0.005
Tin	µg/L	0.05	16	0	Percentile	0[d]	0.05[e]	0.05
Titanium	µg/L	0.1	16	0	Percentile	0[d]	0.25	0.1
Uranium	µg/L	0.01	16	0	PI	0.023	0.030	0.023
Vanadium	µg/L	0.01	16	1	-	0[f]	0.01[f]	0.07
Zinc	µg/L	0.8	16	1	Percentile	0[d]	1.9	0.91
Dissolved Metals								
Zinc	µg/L	0.8	16	0	Percentile	0[d]	2.2	1.0
Other								
Total Cyanide	mg/L	0.001	23	0	-	0[d]	0.001	0.001

(a) Lake area means were calculated using the back-transformed mean when the normal range was defined as the prediction interval using Box-Cox transformed data. The arithmetic mean was used when the normal range was defined using untransformed data. The median was used when the calculation method was Percentile.

(b) Detection limit for laboratory pH is provided.

(c) Laboratory pH was used in place of field pH for select 2018 samples in cases where field pH was invalidated.

(d) The lower bound of the normal range was less than the detection limit; therefore, the lower bound of the normal range was set to zero.

(e) The upper bound of the normal range was less than the detection limit; therefore, the upper bound of the normal range was set to the detection limit.

(f) All values in the dataset were non-detect; therefore, the normal range was set from zero to the detection limit.

(g) Total nitrogen was not measured during the July or August 2018 water quality programs.

Bolded concentrations exceed the upper bound of the normal range.

Percentile = 2.5th and 97.5th percentiles; PI= 80% prediction intervals; PI(λ) = 80% prediction interval on Box-Cox transformed data.

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg‑N/L = milligrams nitrogen per litre; mg‑P/L = milligrams phosphorus per litre; µg/L = micrograms per litre; - = normal range could not be calculated because all values in the dataset were below detection.

Table 7.4-4: Normal Ranges (1994 to 2011; 2015 to 2017) for Selected Parameters, Lake D7

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Calculation Method	Normal Ranges		2018 Mean/Median[a]
						Lower Bound	Upper Bound	
Conventional Parameter								
pH (field)	unitless	0.1[b]	21	0	PI(λ)	7.6	8.3	8.3
Specific conductivity	µS/cm	1	20	1	Percentile	111	159	142
Hardness (as $CaCO_3$)	mg/L	0.2	20	1	Percentile	41	56	48
Total alkalinity (as $CaCO_3$)	mg/L	1	20	1	Percentile	38	55	50
Total dissolved solids (calculated)	mg/L	-	19	1	Percentile	57	81	73
Total suspended solids	mg/L	1	20	0	Percentile	0[c]	2	1.1
Turbidity	NTU	0.1	18	0	PI	0.51	1.1	0.71
Major Ions								
Bicarbonate	mg/L	1.2	19	1	Percentile	46	68	61
Calcium	mg/L	0.02	20	1	Percentile	13	17	15
Chloride	mg/L	0.1	20	0	Percentile	8	25	11
Fluoride	mg/L	0.02	16	0	Percentile	0.03	0.05	0.045
Magnesium	mg/L	0.004	20	1	Percentile	2.2	3.3	2.7
Potassium	mg/L	0.02	20	1	PI(λ)	1.0	1.8	1.3
Reactive silica (as SiO_2)	mg/L	0.01	17	1	Percentile	0.14	0.28	0.21
Sodium	mg/L	0.005	20	0	Percentile	5.2	17	8.0
Sulphate	mg/L	0.3	20	0	Percentile	2.5	10	5.1
Nutrients								
Nitrate	mg-N/L	0.005	15	0	-	0[e]	0.005[e]	0.005
Nitrite	mg-N/L	0.005	15	0	-	0[e]	0.0005[e]	0.005
Total ammonia	mg-N/L	0.005	15	0	PI	0[c]	0.009	**0.02**
Total Kjeldahl nitrogen	mg-N/L	0.05	19	1	PI(λ)	0.26	0.52	0.35
Total nitrogen	mg-N/L	0.05	12	0	PI	0.25	0.43	-[f]
Total phosphorus	mg-P/L	0.001	20	1	Percentile	0.01	0.02	0.01565
Dissolved phosphorus	mg-P/L	0.001	19	1	PI(λ)	0.003	0.008	0.006
Orthophosphate	mg-P/L	0.001	19	0	Percentile	0[c]	0.003	0.0005
Total organic carbon	mg/L	0.5	19	0	Percentile	3.5	14	4.8
Dissolved organic carbon	mg/L	0.5	15	0	PI(λ)	3.4	5.1	4.6
Total Metals								
Aluminum	µg/L	0.3	15	0	PI	3.8	6.7	5.1
Antimony	µg/L	0.02	15	0	Percentile	0.0	0.03	0.02
Arsenic	µg/L	0.02	15	0	PI	0.9	1.2	1.0
Barium	µg/L	0.05	15	0	PI	15	17	**18**
Beryllium	µg/L	0.01	15	0	-	0[e]	0.01[e]	0.01
Bismuth	µg/L	0.01	15	0	-	0[e]	0.01[e]	0.01
Boron	µg/L	1	15	0	PI	9.4	17	12
Cadmium	µg/L	0.005	15	1	-	0[e]	0.005[e]	0.005
Chromium	µg/L	0.06	15	0	Percentile	0[c]	0.06[d]	0.03

Table 7.4-4: Normal Ranges (1994 to 2011; 2015 to 2017) for Selected Parameters, Lake D7

Parameter	Unit	Detection Limit	Sample Size	Outliers Removed	Calculation Method	Normal Ranges		2018 Mean/Median[a]
						Lower Bound	Upper Bound	
Total Metals (cont'd)								
Cobalt	µg/L	0.01	15	0	Percentile	0.04	0.05	**0.07**
Copper	µg/L	0.1	15	0	PI	0.55	1.0	0.93
Iron	µg/L	1	15	0	PI(λ)	41	112	59
Lead	µg/L	0.01	15	0	Percentile	0.01	0.02	0.019
Lithium	µg/L	0.5	15	0	PI	1.2	1.9	1.4
Manganese	µg/L	0.05	15	0	PI	8.6	13	**16**
Mercury	µg/L	0.0005	15	0	PI	0[c]	0.001	0.0007
Molybdenum	µg/L	0.05	15	0	PI(λ)	0.28	0.48	**0.54**
Nickel	µg/L	0.06	15	0	PI	0.55	0.75	**0.82**
Selenium	µg/L	0.02	15	0	Percentile	0.02	0.06	0.02
Silver	µg/L	0.005	15	0	-	0[e]	0.005[e]	0.005
Strontium	µg/L	0.05	15	0	PI(λ)	63	83	75
Thallium	µg/L	0.005	15	0	Percentile	0[c]	0.005[d]	0.005
Tin	µg/L	0.05	15	0	Percentile	0[c]	0.05[d]	0.05
Titanium	µg/L	0.1	15	0	PI(λ)	0.16	0.34	0.25
Uranium	µg/L	0.01	15	0	PI	0.06	0.10	0.07
Vanadium	µg/L	0.01	15	0	PI(λ)	0.04	0.07	0.07
Zinc	µg/L	0.8	15	0	Percentile	0[c]	2.0	0.8
Dissolved Metals								
Zinc	µg/L	0.8	15	0	Percentile	0[c]	1.4	**1.6**
Other								
Total Cyanide	mg/L	0.001	18	0	Percentile	0[c]	0.001[d]	0.001

(a) Lake area means were calculated using the back-transformed mean when the normal range was defined as the prediction interval using Box-Cox transformed data. The arithmetic mean was used when the normal range was defined using untransformed data. The median was used when the calculation method was Percentile.

(b) Detection limit for laboratory pH is provided.

(c) The lower bound of the normal range was less than the detection limit; therefore, the lower bound of the normal range was set to zero.

(d) The upper bound of the normal range was less than the detection limit; therefore, the upper bound of the normal range was set to the detection limit.

(e) All values in the dataset were non-detect; therefore, the normal range was set from zero to the detection limit.

Bolded concentrations exceed the upper bound of the normal range.

Percentile = 2.5th and 97.5th percentiles; PI= 80% prediction intervals; PI(λ) = 80% prediction interval on Box-Cox transformed data.

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre; NTU = nephelometric turbidity unit; mg‑N/L = milligrams nitrogen per litre; mg‑P/L = milligrams phosphorus per litre; µg/L = micrograms per litre; - = normal range could not be calculated because all values in the dataset were below detection.

7.4.4 Comparison to FEIS Predictions

As per FEIS predictions, it was expected that WQGs would be met for all parameters in Peninsula Lakes and that minor changes to water quality would occur as a result of indirect effects from Mine-related activities. (Agnico Eagle 2014). The 2018 water quality data were examined relative to the specific model predictions for the Peninsula Lakes.

- Mean/median concentrations for all water quality parameters in remained below their respective WQGs;
- Concentrations of TSS measured in 2018 in the Peninsula Lakes were within the normal range;
- Concentrations of nitrate measured in 2018 in the Peninsula Lakes were within the normal range;
- In Lake A8, concentrations of four metals exceeded the upper bound of the respective normal range: total aluminum, arsenic, iron, and molybdenum. However, these metals did not exceed the upper bounds of their respective normal range by more than 10%, with the exception of iron.
- In Lake D7, titanium concentrations were within the normal range.

7.4.5 Temporal Trends

Water quality data within each Peninsula Lake were qualitatively examined for temporal patterns on time-series plots presented in Appendix 7C. Temporal patterns were observed for some parameters in Lake A8, B7, and D7 as follows:

- Steady increases in concentrations in each consecutive year were observed for: reactive silica, total aluminum and arsenic in Lake A8; dissolved phosphorus, and total aluminum in Lake B7; and dissolved phosphorus and total molybdenum in Lake D7.
- Step increase in concentration in 2018 (relative to previous years) was observed for: total manganese in Lake A8; total boron, lithium, strontium, and vanadium in Lake B7; total manganese and vanadium in Lake D7.

The analysis of the 2018 water quality results in the Peninsula Lakes focused on comparing year-to-year changes in water quality within each lake. It is anticipated that the 2019 and 2020 monitoring will allow for more detailed trends analysis and results interpretation with respect to potential Mine-related effects.

7.5 Summary

This section summarizes the water quality results relative to guidelines, normal ranges and FEIS predictions in the context of the two key questions for the AEMP water quality component.

Are concentrations of key parameters in Peninsula Lakes consistent with FEIS predictions and less than AEMP Action Levels?

In 2018, concentrations and values of water quality parameters in Peninsula Lakes remained below applicable WQGs and AEMP benchmarks for all parameters. Water quality in Peninsula Lakes in 2018 was outside of the normal range for some total metals in Lakes A8, B7, and D7 (Section 7.4.3). However, water quality in all lakes was generally consistent with FEIS predictions (Section 7.4.4).

Are concentrations in the Peninsula Lakes increasing over time relative to baseline or reference conditions?

A qualitative analysis of temporal trends observed increasing trends in each consecutive year for reactive silica (Lake A8), dissolved phosphorus (Lake B7 and D7), total aluminum (Lake A8 and B7), arsenic (Lake A8), and molybdenum (Lake D7), relative to previous AEMP monitoring years. A step-increase in concentrations in 2018 (relative to previous monitoring years) was observed for total manganese (Lake A8 and D7), total boron, lithium, and strontium (Lake B7), and total vanadium (Lake B7 and D7). The analysis of the 2018 water quality results focused on visually comparing 2018 construction phase data to pre-construction phase data in the Peninsula Lakes and detecting gradual trends. Given the limited dataset, there is uncertainty associated with trend detection, and potential sources of the temporal trends are not identified in this report. It is anticipated that the 2019 and 2020 monitoring will allow for more detailed trend analysis.

7.6 Recommendations

There are no recommendations for the 2019 Peninsula Lake water quality program.

7.7 List of Appendices

- Appendix 7A Field Plots, which includes field data tables and vertical field profile plots;
- Appendix 7B 2018 Water Chemistry Tables, which includes raw water chemistry data tables for the 2018 water quality monitoring program in the Peninsula Lakes; and,
- Appendix 7C Time-series plots, which includes time-series plots of AEMP data collected in the Peninsula Lakes between 2015 and 2018.

7.8 References

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8.0 SEDIMENT QUALITY

To date, sediment quality monitoring has been completed at Meliadine Lake in 2015, 2016, and 2018 to meet Type A Water Licence requirements, and to meet MDMER EEM program requirements for the first year of the mine effluent discharge in 2018. Sampling was completed in August as per the AEMP Design Plan and the Cycle 1 EEM Study Design approved by the relevant regulatory agencies (Golder 2016, 2017).
Sediment monitoring programs in 2015 and 2016 were intended to characterize baseline conditions within exposure and reference areas on Meliadine Lake. Sediment quality and supporting data generated were evaluated in the 2017 AEMP Annual Report to establish baseline conditions for the AEMP prior to the onset of operations (Golder 2018c).

This section provides a summary of sediment quality data obtained in 2018 during the first year of mine effluent discharge, an analysis of the baseline and construction data collected between 2015 and 2018 in Meliadine Lake, and an interpretation of the results as per the requirements of the AEMP and EEM programs.

Data analyses presented in this section have been undertaken as per the AEMP Design Plan (Golder 2016a), the Cycle 1 EEM Study Design (Golder 2017a), and in response to comments from ECCC, INAC, and KIA during review of the 2017 AEMP Annual Report. The report also considers comments provided by ECCC on that design document (Golder 2018d).

8.1 Objectives

According to the AEMP Design Plan (Golder 2016a), the objective of the sediment quality component is to determine whether treated Mine effluent has had effects on sediment quality in Meliadine Lake, and to provide supporting information for the AEMP benthic invertebrate component. Specific objectives of the sediment quality component were to:

- characterize sediment quality in Meliadine Lake;
- verify predictions made in the FEIS in relation to sediment quality in Meliadine Lake (Agnico Eagle 2014);
- collect supporting data for the benthic invertebrate and water quality components to aid in interpretation of results (as per Part 2, Schedule 16 (a) (iii) of the MDMER regulations [Government of Canada 2018]); and
- provide data to inform adaptive management intended to reduce or eliminate Mine-related effects on Meliadine Lake sediment quality.

To achieve these objectives, analysis and interpretation of sediment quality data in 2018 were focused on answering two key questions, as defined in the AEMP Design Plan (Golder 2016a):

- Are concentrations of sediment quality parameters in Meliadine Lake less than benchmarks?
- Are concentrations in the exposure area increasing over time relative to the reference areas?

Field survey and data analysis methods employed to answer these key questions are described in Section 8.2. A summary of quality assurance (QA) and quality control (QC) assessment on the 2018 data is provided in Section 8.3. Results and discussion are presented in Section 8.4. Results to meet AEMP requirements are discussed in this section, followed by results to meet the Cycle 1 EEM study requirements not already covered under the AEMP. A summary of the sediment quality results and conclusions are provided for both the AEMP and the Cycle 1 EEM study in Section 8.5.

8.2 Methods

8.2.1 Sampling Design

The 2018 sediment quality program was designed to align with the AEMP Design Plan (Golder 2016a) and Cycle 1 EEM requirements under the MDMER (Golder 2017a, 2018b; Government of Canada 2018). The program consisted of one sediment sampling event with concomitant water quality and benthic invertebrate sampling events in August 2018.

As previously described in the 2017 AEMP Annual Report (Golder 2018c), the Near-field and reference areas had different substrates, with the Near-field area being silt-dominated and the reference areas sand-dominated. In order to minimize this potential confounding factor, a Sediment Reconnaissance Survey (Appendix 9A) was planned and executed in July 2018 prior to the sediment quality sampling event. The purpose of the survey was to further investigate suitable and comparable stations for sediment and benthos sampling within the already established exposure and reference areas. Based on the survey results and consideration of the Plume Delineation Study (Section 2.2.4), some sampling stations were relocated for the August 2018 sampling event to optimize the AEMP and EEM sampling locations. Detailed results of the Sediment Reconnaissance Survey are presented in Appendix 9A.

Although the 2018 study design remained consistent with the AEMP Design Plan and the Cycle 1 EEM Study Design, there were some modifications to sampling station locations as a result of the Sediment Reconnaissance Survey and the Plume Delineation Study (Section 2.4.4). Specific deviations in relation to station location were as follows:

- **Near-field Stations**: MEL-01-01 was retained because it was the only original station included by the water quality component Near-field station re-alignment after review of the 2018 plume delineation study results (Section 2.4.3). Furthermore, the 2018 Sediment Reconnaissance Survey confirmed that sampling efficiency and grab fullness at this station were acceptable. The other four stations confirmed by the water quality station re-alignment (i.e., MEL01-06, MEL01-07, MEL01-08 and MEL01-09) were also adopted as 2018 sediment and benthic monitoring stations because they had acceptable sampling efficiency and grab fullness. Furthermore, substrate composition was relatively consistent among the five 2018 Near-field water quality stations.
- **Mid-field Stations**: 2018 sediment stations were selected to maintain alignment with water quality, and also to avoid excessive sampling effort in retrieving acceptable grab samples. Therefore, MEL-02-06 and MEL-02-08 were chosen to replace MEL-02-01 and MEL-02-04, because of difficulty retrieving acceptable samples from MEL-02-01 and MEL-02-04 with respect to sample fullness and efficiency. For stations that were re-sampled for consistency with previous years, some stations were adjusted to within 5 to 10 m of the original sample locations.
- **Reference Areas**: Sediment quality samples were not taken from the MEL-04 reference area (Reference Area 2) due to meteorological challenges; i.e., strong winds during August that limited the time available for sediment sampling, such that only two of the three reference areas were sampled. Reference Area 2 was removed from the sampling program, because of limited similarity in terms of sample composition to the Near-field area during previous sampling years (i.e., 2015 and 2018), and limited sampling success during the Sediment Reconnaissance Survey (Appendix 9A). Reference areas 1 (MEL-03) and 3 (MEL-05) were sampled in 2018.

QA/QC procedures described in Section 8.3 were followed during the 2018 sediment quality monitoring program.

8.2.2 Field Methods

8.2.2.1 Sample Location and Timing

According to the AEMP Design Plan, five stations in each one of the five sampling areas were scheduled to be sampled once during the open-water season, in August 2018. EEM and AEMP sampling areas were aligned, in that the Near-field area was considered the EEM exposure area and Reference Area 1 was considered the EEM reference area. The location and timing of sample collection is summarized in Table 8.2-1 and presented in Figure 8.2-1.

Table 8.2-1: Sediment Quality Sampling Stations and Sampling Effort Summary for Meliadine Lake in 2018

Area	Station ID	UTM Coordinates (NAD 83, Zone 15V)		Geographic Coordinates		Average Total Depth[a] (m)	Open-Water
		Easting	Northing	Latitude	Longitude		15 Aug to 2 Sept
Near-field Exposure	MEL-01-01	542690	6989132	92° 9' 22.811"W	63° 1' 45.420"N	9.0	✓
	MEL-01-06(N)	542952	6988993	92° 10' 1.727"W	63° 1' 52.953"N	7.2	✓[b]
	MEL-01-07(N)	542873	6989218	92° 9' 4.304"W	63° 1' 40.818"N	8.0	✓
	MEL-01-08(N)	543044	6989067	92° 9' 9.712"W	63° 1' 48.120"N	7.5	✓
	MEL-01-09(N)	542555	6989188	92° 8' 57.690"W	63° 1' 43.169"N	7.2	✓QC-dup
Mid-field Exposure	MEL-02-02	537093	6992642	92° 15' 58.118"W	63° 3' 41.039"N	7.0	✓
	MEL-02-03	537497	6992332	92° 15' 29.601"W	63° 3' 30.874"N	8.6	✓
	MEL-02-05	537831	6992692	92° 15' 5.519"W	63° 3' 42.379"N	8.5	✓[c]
	MEL-02-06(N)	536922	6992853	92° 16' 10.125"W	63° 3' 47.919"N	7.3	✓
	MEL-02-08(N)	538342	6991952	92°14'29.749"W	63°3'18.278"N	9.0	✓
Reference Area 1	MEL-03-01	533321	6998540	92°20'22.432"W	63°6'52.915"N	6.8	✓
	MEL-03-02	533253	6998664	92°20'27.192"W	63°6'56.944"N	6.9	✓
	MEL-03-03	532954	6998860	92°20'48.384"W	63°7'3.375"N	9.5	✓
	MEL-03-04	533629	6998660	92°20'0.368"W	63°6'56.690"N	6.6	✓
	MEL-03-05	533997	6998265	92°19'34.406"W	63°6'43.804"N	6.1	✓[d]
Reference Area 2	MEL-04-01	525634	7000884	92°29'29.572"W	63°8'10.907"N	-	[e]
	MEL-04-02	526151	7001525	92°28' 2.287"W	63°8'31.483"N	-	[e]
	MEL-04-03	525343	7001363	92°29'50.083"W	63°8'26.457"N	-	[e]
	MEL-04-04	525401	7001085	92°29'46.096"W	63°8'17.460"N	-	[e]
	MEL-04-05	525727	7001134	92°29'22.790"W	63°8'18.960"N	-	[e]

Table 8.2-1: Sediment Quality Sampling Stations and Sampling Effort Summary for Meliadine Lake in 2018

Area	Station ID	UTM Coordinates (NAD 83, Zone 15V)		Geographic Coordinates		Average Total Depth[(a)] (m)	Open-Water
		Easting	Northing	Latitude	Longitude		15 Aug to 2 Sept
Reference Area 3	MEL-05-01	530922	6990859	92°23'18.811"W	63°2'45.520"N	9.0	✓
	MEL-05-02	530675	6990883	92° 23' 36.377"W	63° 2' 46.371"N	9.3	✓QC-dup
	MEL-05-03	530737	6991365	92°23'31.639"W	63°3'1.925"N	8.5	✓
	MEL-05-04	530573	6991231	92°23'43.404"W	63°2'57.645"N	9.5	✓
	MEL-05-05	530241	6991156	92°24'7.088"W	63°2'55.322"N	8.5	✓

Note: Samples were collected during daylight hours. EEM study areas included the Near-field area and Reference Area 1.

✓ = Sample collected.

N = New station added for the 2018 sediment quality program.

(a) Average depth for each grab sample

(b) Station MEL-01-06 was sampled approximately 230 m south of the planned location at UTM coordinates of 542907 E, 6988767 N.

(c) Station MEL-02-05 was sampled approximately 140 m north of the planned location at UTM coordinates of 537842 E, 6992835 N.

(d) Station MEL-03-05 was sampled approximately 130 m south of the planned location at UTM coordinates of 533956 E, 69985004 N.

(e) Sample collection at these locations was not undertaken due to time, weather, and safety constraints.

QC-dup = duplicate quality control samples were collected; - = data not available.

ID = identifier; UTM = Universal Transverse Mercator; NAD = North American Datum

525000
530000
535000
540000
7000000
6995000
6990000

REFERENCE AREA 2 (MEL-04)

REFERENCE AREA 1 (MEL-03)
MEL-03-03
MEL-03-04
MEL-03-05
MEL-03-02
MEL-03-01

MID-FIELD EXPOSURE AREA (MEL-02)
MEL-02-06
MEL-02-05
MEL-02-03
MEL-02-02
MEL-02-08

REFERENCE AREA 3 (MEL-05)
MEL-05-04
MEL-05-03
MEL-05-05
MEL-05-01
MEL-05-02

NEAR-FIELD EXPOSURE AREA (MEL-01)
MEL-01-01
MEL-01-09
MEL-01-07
MEL-01-08
MEL-01-06

LEGEND

- SEDIMENT QUALITY SAMPLING LOCATION
- DIRECTION OF FLOW AT WATERSHED OUTLET
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- BATHYMETRIC CONTOUR (0.5 AND 2m INTERVAL)
- WATERCOURSE
- WATERBODY



DRAFT

0 1.5 3
1:70,000 KILOMETRES

REFERENCE(S)
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT
AGNICO EAGLE MINES LIMITED
AGNICO EAGLE

PROJECT
CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE
MELIADINE LAKE SEDIMENT QUALITY SAMPLING LOCATIONS, 2018

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	JL
PREPARED	MH
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
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8.2.2.2 Sediment Sample Collection

The sediment quality monitoring program was based on the AEMP Design Plan (Golder 2016a), the Cycle 1 EEM Study Design (Golder 2017a), and the EEM TGD for metal mines (Environment Canada 2012) (hereafter referred to as TGD). Sediment quality samples were collected as a composite of grab samples from surficial sediments at each station. Sediment samples were collected either on the same day or within two days before or after collection of water quality samples. When water and sediment samples were collected on the same day, sediment samples were collected after all *in situ* measurements and water quality samples had been collected.

Composite sediment samples were collected using a stainless steel Petite Ponar grab (15.24 × 15.24 cm; bottom sampling area of 0.0232 m²). Each composite sample comprised up to five separate grabs collected at the sampling station. Lake sediment was removed from the Ponar grab with a plastic trowel; sediments were removed from the center of the grab to avoid the metal sides of the Ponar grab, from the upper 5 cm of the sample. The process was repeated up to five times until sufficient sediment was collected (approximately 450 g dry weight or 1.5 kg wet weight) for analysis of the required parameters. Sediment samples were composited by placing each of the five subsamples into a clean, shallow, plastic pan and mixed with a plastic spoon. Sediment samples were placed in plastic bags and jars provided by the analysical laboratory, kept refrigerated, and transported to the laboratory as soon as possible.

8.2.3 Laboratory Methods

Sediment quality samples were analyzed by ALS (Edmonton and Saskatoon). ALS is an analytical laboratory accredited by the CALA. Specific ALS analytical methods and RDL for the required analyses are provided in Appendix 8A.

Sediment samples were then analyzed for the following parameters:

- particle-size distribution (sand: 0.05 to 2 mm; silt: 0.002 to 0.05 mm; and clay: <0.002 mm);
- total organic carbon; and
- metals: aluminum, antimony, arsenic, barium, beryllium, bismuth, cadmium, chromium, cobalt, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, sulfur, thallium, tin, titanium, uranium, vanadium, and zinc.

Sediment quality laboratory test methods with analytical DLs less than the CCME sediment quality guidelines for the protection of aquatic life (CCME 2001) were used to analyze the samples collected in 2018.

8.2.4 Data Analysis

The data analysis approach for the 2018 sediment quality data was developed to address Cycle 1 EEM Study Design and AEMP Design Plan requirements (Golder 2016, 2017). These included calculation of descriptive statistics, comparison of sediment chemistry to available CCME guidelines, statistical comparisons between exposure areas and reference areas, temporal comparison between years for the Near-field area, a comparison to FEIS predictions, and comparison to normal ranges calculated for the AEMP.

Details of data analysis methods are provided in the following subsections.

8.2.4.1 Summary Statistics and Comparison to Canadian Sediment Quality Guidelines

Comparisons to sediment quality guidelines allow an assessment of potential adverse effects to aquatic biota. CCME sediment quality guidelines are based on toxicological information according to a standard protocols (CCME 2001). These guidelines apply Canada-wide and do not necessarily account for site-specific factors, such as the natural geology of the study area. Thus, guideline exceedances in reference areas can be indicative of naturally elevated concentrations due to site-specific factors. Sediment quality can vary spatially within a lake or between lakes due to lake morphology, composition of the bedrock, interaction of surface and groundwater, tributary inputs, and other factors.

Descriptive statistics were calculated from data collected from the exposure and reference areas sampled in 2018. Specifically, mean, median, minimum, maximum values were calculated and compared to CCME Interim Sediment Quality Guideline (ISQG) and Probable Effects Level (PEL) for the protection of freshwater aquatic life (CCME 2001; Table 8.2-2). The percentage of exceedances above sediment quality guidelines was also calculated, and sample size and standard deviation were provided. For mean and standard deviation calculations, data below the RDL were replaced with half the RDL. When more than 50% of the data were below RDL, the standard deviation was not calculated.

CCME (2001) indicates that at concentrations below the ISQG, adverse biological effects are not expected to occur, while at concentrations above the ISQG adverse biological effects may occur. At concentrations above the PEL adverse biological effects are likely, but not certain, to occur.

Table 8.2-2: Canadian Sediment Quality Guidelines for Metals

Parameter	Unit	Canadian Council of Ministers of the Environment Sediment Quality Guidelines[a]	
		Interim Sediment Quality Guideline (ISQG)	Probable Effect Level (PEL)
Arsenic	µg/g dw	5.9	17
Cadmium	µg/g dw	0.6	3.5
Chromium	µg/g dw	37.3	90
Copper	µg/g dw	35.7	197
Lead	µg/g dw	35	91.3
Mercury	µg/g dw	0.17	0.486
Zinc	µg/g dw	123	315

(a) CCME (2001).

µg/g dw = micrograms per gram dry weight.

8.2.4.2 Statistical Analysis

8.2.4.2.1 Exposure versus Reference: 2018 Spatial Comparison

8.2.4.2.1.1 EEM

Given that sediment quality is a supporting component within the EEM program, the TGD does not provide specific details on comparisons of sediment quality between exposure and reference areas. The TGD recommends that particle-size and TOC analysis be used to determine if there are habitat differences between exposure and reference areas. The TGD encourages the determination of metal concentrations in sediments to facilitate interpretation of BIC data collected concurrently. Thus, to address EEM requirements for this report and as communicated in the approved Cycle 1 EEM Study Design, particle-size distribution, TOC and metal concentrations were summarized statistically, screened against applicable sediment quality guidelines, and qualitatively compared between the EEM exposure and reference areas. The findings of this assessment support the comparison of benthic invertebrate communities among sampling areas in Section 9.4.1.

8.2.4.2.1.2 AEMP

Spatial patterns in 2018 were qualitatively and statistically examined to determine if sediment quality differed among Near-field and Mid-field exposure areas, and reference areas. Box-and-whisker plots of sediment chemistry parameters from Near-field and Mid-field exposure areas and pooled reference areas were visually evaluated for spatial patterns. Additionally, a statistical analysis was undertaken to determine if there were significant differences in parameter concentrations between Near-field exposure, Mid-field exposure, and the reference areas.

Prior to statistical analyses, values below the RDL were substituted with one-half of the RDL and normalized to percent fines. Statistical outliers were evaluated using SRs from the ANOVA model. A magnitude of |3.5| for the SR was used to identify observations that may be unusual. When an outlier was detected, the validity of the data point was examined. If the outlier was determined to be the result of a data entry error, it was corrected. If the outlier was not the result of data entry errors and could not be resolved otherwise, the analysis was completed with and without the outlier included.

To compare sediment quality parameter concentrations among AEMP areas in Meliadine Lake, an ANOVA was completed in SYSTAT Version 13.1 (Systat Inc. 2009), followed by *post-hoc* pairwise comparisons (Tukey's tests; Zar 1999) if the ANOVA test result was significant. Prior to analysis, the sediment quality data were checked for statistical assumptions (i.e., normality, and homoscedasticity; Zar 1999). If data did not meet the statistical assumptions, the equivalent non-parametric test (e.g., K-W with *post-hoc* Conover-Inman tests; Systat Inc. 2009) were completed. Data were considered significantly different at $\alpha = 0.1$.

Reference area data collected in 2018 were pooled and the following statistical comparisons were made:

- Near-field versus Mid-field area
- Near-field versus reference areas
- Mid-field versus reference areas

When significant differences in sediment quality parameters were observed between sampling areas, the magnitude of difference among the areas (i.e., Near-field, Mid-field and pooled reference) was calculated by expressing the difference as a percentage of the mean or median. The area farthest away from the Mine was set as the denominator in the calculation of magnitude of difference. For example, to calculate the magnitude of difference between Near-field and pooled reference areas for a parameter, the equation was as follows:

$$Magnitude = \frac{\bar{x}_{NF} - \bar{x}_{Reference\ Areas}}{\bar{x}_{Reference\ Areas}}$$

where $\bar{x}$ is the mean or median and NF is the Near-field area.

If the statistical comparison between sampling areas was conducted using the K-W test, the data were not considered to be normally distributed and the magnitude was calculated using medians. As the K-W test is a non-parametric method for testing whether samples originate from the same distribution (i.e., it is not a comparison of sample medians), situations were a K-W test was significant, but no differences in medians were observed are possible.

When spatial patterns were detected (i.e., as significant statistical test results), concentrations of parameters that increased with distance from the Near-field area were categorized as being positive patterns, while parameters with declining concentration with increasing distance were categorized as negative patterns.

8.2.4.2.2 Within Near-field Area Temporal Comparison (2015 to 2018)

A qualitative temporal evaluation of Near-field data collected between 2015 and 2018 was undertaken to evaluate whether sediment parameter concentrations within the Near-field area have increased over time. Prior to completing this analysis, values below the RDL were substituted with one-half of the RDL. Box-and-whisker plots of raw data and fine-normalized data were generated for each sediment parameter to facilitate this evaluation.

Comparison to FEIS Predictions

During the development of the FEIS, predictions of contaminants of potential concern in sediments were not completed due to the high degree of uncertainty associated with these predictions. In addition, the FEIS noted high variability in evidence for changes in sediment quality from other mines in Northern Canada (Agnico Eagle 2014, Volume 7, Section 7.4.6.1.3). The FEIS also predicted that changes to water quality would result in final water concentrations lower than the applicable guidelines and that the TSS in the effluent would be regulated to meet the MDMER. Based on this information, the FEIS qualitatively predicted that sediment quality in the vicinity of the diffuser would be comparable to baseline sediment quality.

8.2.4.3 Comparison to Normal Ranges

Normal ranges were calculated for each sediment quality parameter using available baseline data for Meliadine Lake stations; i.e.,1994, 1998, 2008, 2011, 2013, 2015, 2016, and 2018.

Prior to completing statistical analyses and normal range calculations, one half the RDL was substituted for non-detect values in the dataset. Sediment quality data were then normalized to the fraction of fine sediments ([silt + clay]/100) to account for the relationship of most parameters with percent fines. This procedure is aligned with the recommendation provided by the EEM TGD (Environment Canada 2012) to account for sediment particle size influence. If a linear regression between concentration of a parameter and percent fines was significant at $\alpha = 0.1$, normalization was achieved by dividing each individual metal concentration with the respective fine sediment proportion of the sample.

Methods for estimating normal ranges for sediment quality followed the methods of Barrett et al. (2015) and are consistent with the approach used for calculating normal ranges for other AEMP components (i.e., water quality, benthos, and plankton). A summary of the methods used in this assessment is provided below:

- When data were normally distributed, the normal range was estimated as the 80% prediction interval (PI) of the dataset. Normality was assessed using the Shapiro-Wilk test, using $\alpha = 0.05$ to indicate a significant departure from normality.
- When the baseline data were not normally distributed, but normality could be achieved after Box-Cox transformation (Box and Cox 1964), the normal range was calculated on the Box-Cox transformed data and the upper and lower bound of the normal ranges were back-transformed.
- If neither the untransformed data or Box-Cox transformed datasets were normally distributed, the normal range boundaries were defined as the 10th and 90th percentile of the baseline data. In cases where the percentile method was used, a dataset of 1,000 samples was randomly generated from the normal range dataset and the 10th and 90th percentile were calculated from this distribution of 1,000 samples to estimate the normal range.

It should be noted that the normal ranges provided in this report are considered provisional during the initial monitoring years under the AEMP, due to the limited sample sizes used in the calculations. The normal range is intended to estimate the range of natural spatial and temporal variability, and the more reference data are incorporated into the calculation, the more accurate the estimate becomes. These normal ranges may be redefined in future reports to allow for the inclusion of additional monitoring data from reference areas as they become available.

Each calculated normal range was evaluated for representativeness. For example, some parameters had variable RDLs, or parameters with low detection frequency could have calculated upper bound normal ranges that were less than the RDL, whereas actual concentrations could be anywhere between zero and the RDL. Consequently, the calculated normal ranges for parameters with non-detect concentrations in the dataset were revised according to the following criteria:

- If all values were less than the RDL, then the lower bound of the normal range was set to zero and the upper bound was set to the RDL value.
- If the lower bound of the normal range was less than the RDL, then it was set to zero.
- If the upper bound of the normal range was less than the RDL, then it was set to the RDL value.
- If the dataset included a mix of RDLs and all the values were non-detect, then the normal range was set to zero (lower bound) and the most common used RDL (upper bound).
- If the dataset included a mix of RDLs, and the upper bound of the normal range was between the lowest and highest RDL, then the upper bound of the normal range was set to the highest RDL.

If the dataset included a mix of RDLs, and the RDLs varied by more than an order of magnitude, then the data with the higher RDL was removed from analysis and the normal range was re-calculated.

8.3 Quality Assurance/Quality Assurance

8.3.1 Overview of Procedures

The QA/QC practices applied during this study and detailed results of the QC analyses for sediment quality samples collected in Meliadine Lake are provided in Appendix 8A. QA components of the program included the use of trained personnel, standard procedures, and an accredited analytical laboratory; QC components included assessments of duplicate samples.

8.3.2 Summary of Results

Detailed results are provided in Appendix 8A. The results of the review of field and laboratory data indicated that field measurements and laboratory data were of high quality. Key findings from the 2018 QA/QC results are as follows:

- Overall good repeatability was observed in the analysis.
- Two sets of duplicate samples were collected and analyzed, equivalent to 20% of the total sampling effort for 2018. In duplicates analyzed, only 4% of the results had an RPD of more than 30% when one or both parameter concentrations were above five times the DL.
- Re-analyses were requested for ALS for particle-size analysis of MEL-01-09 and cadmium of MEL-05-02, results were confirmed by the re-analyses.

8.4 Results and Discussion

8.4.1 Summary Statistics and Sediment Quality Guideline Comparison

For the 2018 sediment data, descriptive statistics (minimum, median, mean, maximum, standard deviation, and sample count) were calculated for the Near-field, Mid-field, and reference areas and the results were compared to applicable PELs and ISQGs (Tables 8.4.1 to 8.4.3). The full 2018 dataset is presented in Appendix 8B and the time-series plots for the parameters analyzed are presented in Appendix 8C. Box-and-whisker plots showing parameter concentrations by area in 2018 are presented in Appendix 8D.

Table 8.4-1: Sediment Quality Summary for the Near-Field Exposure Area in 2018

Parameter	Unit (Dry Weight)	Guidelines		Summary Statistics							
		ISQG	PEL	Median	Mean	Minimum	Maximum	Standard Deviation	Count	% Above Guideline	
										I	P
Particle-size and Organic Carbon											
Sand	%	-	-	24	21	6.3	42	14	5	-	-
Silt	%	-	-	64	69	55	82	12	5	-	-
Clay	%	-	-	11	10	3.3	15	4.2	5	-	-
Fines (Silt + Clay)	%	-	-	76	79	58	94	14	5	-	-
Total organic carbon	%	-	-	4.5	4.5	3.0	5.7	1.1	5	-	-
Metals											
Aluminum	µg/g	-	-	12,700	12,960	11,100	14,500	1,315	5	-	-
Antimony	µg/g	-	-	0.15	0.15	0.13	0.18	0.019	5	-	-
Arsenic	µg/g	5.9	17	**23**[I, P]	**24**[I, P]	**15**[I]	**33**[I, P]	7	5	100	80
Barium	µg/g	-	-	115	115	90	136	20	5	-	-
Beryllium	µg/g	-	-	0.33	0.32	0.28	0.37	0.033	5	-	-
Bismuth	µg/g	-	-	0.32	0.32	0.25	0.37	0.045	5	-	-
Boron	µg/g	-	-	6.9	6.8	5.9	8.2	0.92	5	-	-
Cadmium	µg/g	0.6	3.5	0.52	0.52	0.41	**0.6**[I]	0.07	5	20	-
Calcium	µg/g	-	-	4,460	4,368	3,760	4,700	360	5	-	-
Chromium	µg/g	37	90	**51**[I]	**51**[I]	**43**[I]	**57**[I]	5.5	5	100	-
Cobalt	µg/g	-	-	16	16	8.5	27	6.9	5	-	-
Copper	µg/g	36	197	**81**[I]	**81**[I]	**61**[I]	**95**[I]	13	5	100	-
Iron	µg/g	-	-	29,400	27,020	20,200	31,600	4,669	5	-	-
Lead	µg/g	35	91	11	11	8.8	13	1.7	5	-	-
Lithium	µg/g	-	-	15	15	13	17	1.7	5	-	-

Table 8.4-1: Sediment Quality Summary for the Near-Field Exposure Area in 2018

Parameter	Unit (Dry Weight)	Guidelines		Summary Statistics							
		ISQG	PEL	Median	Mean	Minimum	Maximum	Standard Deviation	Count	% Above Guideline	
										I	P
Metals (cont'd)											
Magnesium	µg/g	-	-	7,180	7,254	6,160	8,030	722	5	-	-
Manganese	µg/g	-	-	351	360	273	471	72	5	-	-
Mercury	µg/g	0.17	0.49	0.028	0.03	0.019	0.044	0.01	5	-	-
Molybdenum	µg/g	-	-	4.4	5.3	3.0	9.4	2.5	5	-	-
Nickel	µg/g	-	-	69	67	47	85	14	5	-	-
Potassium	µg/g	-	-	2,290	2,304	1,940	2,530	242	5	-	-
Selenium	µg/g	-	-	0.94	0.95	0.69	1.2	0.17	5	-	-
Silver	µg/g	-	-	0.2	0.19	0.14	0.22	0.033	5	-	-
Sodium	µg/g	-	-	330	318	250	360	44	5	-	-
Strontium	µg/g	-	-	25	24	20	27	2.5	5	-	-
Thallium	µg/g	-	-	0.37	0.36	0.26	0.45	0.073	5	-	-
Tin	µg/g	-	-	<2.0	-	<2.0	<2.0	-	5	-	-
Titanium	µg/g	-	-	739	726	641	786	58	5	-	-
Uranium	µg/g	-	-	4.2	4.3	3.6	5.1	0.51	5	-	-
Vanadium	µg/g	-	-	57	58	47	66	6.9	5	-	-
Zinc	µg/g	123	315	94	91	71	101	12	5	-	-

Bolded values are higher than sediment quality guidelines.

(I) = value higher than the Interim Sediment Quality Guideline.

(P) = value higher than the Probable Effects Level.

Sediment quality data shown in this table were rounded to reflect laboratory precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

ISQG = Interim Sediment Quality Guideline; PEL = Probable Effects Level; µg/g = micrograms per gram; - = no guideline or data.

Table 8.4-2: Sediment Quality Summary for the Mid-Field Exposure Area in 2018

Parameter	Unit (Dry Weight)	Guidelines		Summary Statistics							
		ISQG	PEL	Median	Mean	Minimum	Maximum	Standard Deviation	Count	% Above Guideline	
										I	P
Particle-size and Organic Carbon											
Sand	%	-	-	46	50	33	68	15	5	-	-
Silt	%	-	-	44	39	24	51	12	5	-	-
Clay	%	-	-	9.5	11	7.3	17	3.9	5	-	-
Fines (Silt + Clay)	%	-	-	54	50	32	67	15	5	-	-
Total organic carbon	%	-	-	6.2	6.7	4.6	9.0	1.6	5	-	-
Metals											
Aluminum	µg/g	-	-	10,500	10,142	7,560	12,000	1,748	5	-	-
Antimony	µg/g	-	-	0.11	0.096	<0.1	0.14	0.043	5	-	-
Arsenic	µg/g	5.9	17	**11**[(I)]	**11**[(I)]	**8.4**[(I)]	**16**[(I)]	2.9	5	100	-
Barium	µg/g	-	-	115	107	91	120	14	5	-	-
Beryllium	µg/g	-	-	0.28	0.26	0.22	0.29	0.032	5	-	-
Bismuth	µg/g	-	-	0.23	0.19	<0.2	0.25	0.079	5	-	-
Boron	µg/g	-	-	7.0	6.1	<5.0	8.2	2.2	5	-	-
Cadmium	µg/g	0.6	3.5	0.34	0.33	0.22	0.45	0.082	5	-	-
Calcium	µg/g	-	-	5,070	4,692	3,840	5,250	641	5	-	-
Chromium	µg/g	37	90	**45**[(I)]	**44**[(I)]	31	**54**[(I)]	9.1	5	80	-
Cobalt	µg/g	-	-	10	10	7.6	12	1.8	5	-	-
Copper	µg/g	36	197	**88**[(I)]	**80**[(I)]	**56**[(I)]	**99**[(I)]	18	5	100	-
Iron	µg/g	-	-	19,000	18,000	12,900	21,700	3,552	5	-	-
Lead	µg/g	35	91	8.7	8.4	6.1	10	1.7	5	-	-
Lithium	µg/g	-	-	12	12	10	15	1.8	5	-	-
Magnesium	µg/g	-	-	5,930	5,920	4,370	7,010	1,002	5	-	-
Manganese	µg/g	-	-	300	293	193	400	80	5	-	-
Mercury	µg/g	0.17	0.49	0.018	0.019	0.013	0.029	0.0060	5	-	-

Table 8.4-2: Sediment Quality Summary for the Mid-Field Exposure Area in 2018

Parameter	Unit (Dry Weight)	Guidelines		Summary Statistics							
		ISQG	PEL	Median	Mean	Minimum	Maximum	Standard Deviation	Count	% Above Guideline	
										I	P
Metals (cont'd)											
Molybdenum	µg/g	-	-	3.7	3.7	2.6	5.2	0.94	5	-	-
Nickel	µg/g	-	-	50	48	38	60	10	5	-	-
Potassium	µg/g	-	-	1,840	1,732	1,320	2,040	292	5	-	-
Selenium	µg/g	-	-	0.91	0.84	0.55	1.1	0.20	5	-	-
Silver	µg/g	-	-	0.15	0.13	<0.1	0.17	0.048	5	-	-
Sodium	µg/g	-	-	290	258	190	310	58	5	-	-
Strontium	µg/g	-	-	27	25	20	28	3.5	5	-	-
Thallium	µg/g	-	-	0.25	0.24	0.18	0.29	0.043	5	-	-
Tin	µg/g	-	-	<2.0	-	<2.0	<2.0	-	5	-	-
Titanium	µg/g	-	-	599	560	419	677	103	5	-	-
Uranium	µg/g	-	-	3.2	3.0	1.9	3.8	0.75	5	-	-
Vanadium	µg/g	-	-	46	42	32	48	7.2	5	-	-
Zinc	µg/g	123	315	91	83	68	96	14	5	-	-

Bolded values are higher than sediment quality guidelines.

(I) = value higher than the Interim Sediment Quality Guideline.

(P) = value higher than the Probable Effects Level.

Sediment quality data shown in this table were rounded to reflect laboratory precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

ISQG = Interim Sediment Quality Guideline; PEL = Probable Effects Level; µg/g = micrograms per gram; - = no guideline or data.

Table 8.4-3: Sediment Quality Summary for the Pooled Reference Areas in 2018

Parameter	Unit (Dry Weight)	Guidelines		Summary Statistics							
		ISQG	PEL	Median	Mean	Minimum	Maximum	Standard Deviation	Count	% Above Guideline	
										I	P
Particle-size and Organic Carbon											
Sand	%	-	-	55	54	13	92	24	10	-	-
Silt	%	-	-	37	40	7.5	77	21	10	-	-
Clay	%	-	-	5.8	6.1	<1.0	16	4.8	10	-	-
Fines (Silt + Clay)	%	-	-	45	46	8.0	87	24	10	-	-
Total organic carbon	%	-	-	5.9	4.7	0.29	7.7	2.9	10	-	-
Metals											
Aluminum	µg/g	-	-	7,820	8,146	5,160	13,600	2,764	10	-	-
Antimony	µg/g	-	-	<0.1	-	<0.1	0.27	-	10	-	-
Arsenic	µg/g	5.9	17	**6.4**[I]	**7.9**[I]	3.4	**23**[I, P]	5.7	10	50	10
Barium	µg/g	-	-	65	68	22	132	34	10	-	-
Beryllium	µg/g	-	-	0.19	0.18	<0.1	0.27	0.066	10	-	-
Bismuth	µg/g	-	-	<0.2	-	<0.2	0.35	-	10	-	-
Boron	µg/g	-	-	5.1	4.5	<5.0	8.0	2.2	10	-	-
Cadmium	µg/g	0.6	3.5	0.18	0.18	<0.02	0.43	0.12	10	-	-
Calcium	µg/g	-	-	3,745	3,847	1,530	6,080	1,428	10	-	-
Chromium	µg/g	37	90	33	36	19	**65**[I]	16	10	40	-
Cobalt	µg/g	-	-	7.1	7.2	3.6	15	3.5	10	-	-
Copper	µg/g	36	197	**62**[I]	**50**[I]	7.4	**92**[I]	31	10	70	-
Iron	µg/g	-	-	12,650	13,875	9,000	28,300	5,612	10	-	-
Lead	µg/g	35	91	4.9	5.0	1.8	10	2.5	10	-	-
Lithium	µg/g	-	-	9.9	11	6.4	17	3.2	10	-	-
Magnesium	µg/g	-	-	4,660	4,979	2,930	8,800	1,785	10	-	-
Manganese	µg/g	-	-	158	166	104	285	62	10	-	-
Mercury	µg/g	0.17	0.49	0.009	0.0082	<0.005	0.015	0.0046	10	-	-

Table 8.4-3: Sediment Quality Summary for the Pooled Reference Areas in 2018

Parameter	Unit (Dry Weight)	Guidelines		Summary Statistics							
		ISQG	PEL	Median	Mean	Minimum	Maximum	Standard Deviation	Count	% Above Guideline	
										I	P
Metals (cont'd)											
Molybdenum	µg/g	-	-	2.4	2.7	0.5	9.5	2.5	10	-	-
Nickel	µg/g	-	-	33	32	12	65	16	10	-	-
Potassium	µg/g	-	-	1,265	1,490	654	3,160	711	10	-	-
Selenium	µg/g	-	-	0.52	0.5	<0.2	1.2	0.36	10	-	-
Silver	µg/g	-	-	<0.1	-	<0.1	0.17	-	10	-	-
Sodium	µg/g	-	-	190	204	<100	360	95	10	-	-
Strontium	µg/g	-	-	19	19	8.3	31	7.2	10	-	-
Thallium	µg/g	-	-	0.14	0.15	0.056	0.31	0.076	10	-	-
Tin	µg/g	-	-	<2.0	-	<2.0	<2.0	-	10	-	-
Titanium	µg/g	-	-	512	551	350	819	144	10	-	-
Uranium	µg/g	-	-	1.8	2.2	0.46	7.2	1.9	10	-	-
Vanadium	µg/g	-	-	33	36	20	77	16	10	-	-
Zinc	µg/g	123	315	48	44	20	70	17	10	-	-

Bolded values are higher than sediment quality guidelines.

(I) = value higher than the Interim Sediment Quality Guideline.

(P) = value higher than the Probable Effects Level.

Sediment quality data shown in this table were rounded to reflect laboratory precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

ISQG = Interim Sediment Quality Guideline; PEL = Probable Effects Level; µg/g = micrograms per gram; - = no guideline or data.

8.4.1.1 Particle-size and Organic Carbon

Sediment particle-size analysis revealed different substrate types across the AEMP study area. As observed in previous years, a greater percentage of silt was observed in the Near-field and Mid-field areas compared to the reference areas, which tended to be more dominated by sand (Figures 8.4.1 and 8.4.2). In 2018, TOC ranged from 0.3% and 9.0% at the stations sampled, but most values were between 4.0% and 8.0%. This range is consistent with results obtained in the previous years for Meliadine Lake (Figure 8.4-3). Of the areas sampled in 2018, the reference areas were more variable in TOC compared to the exposure areas.

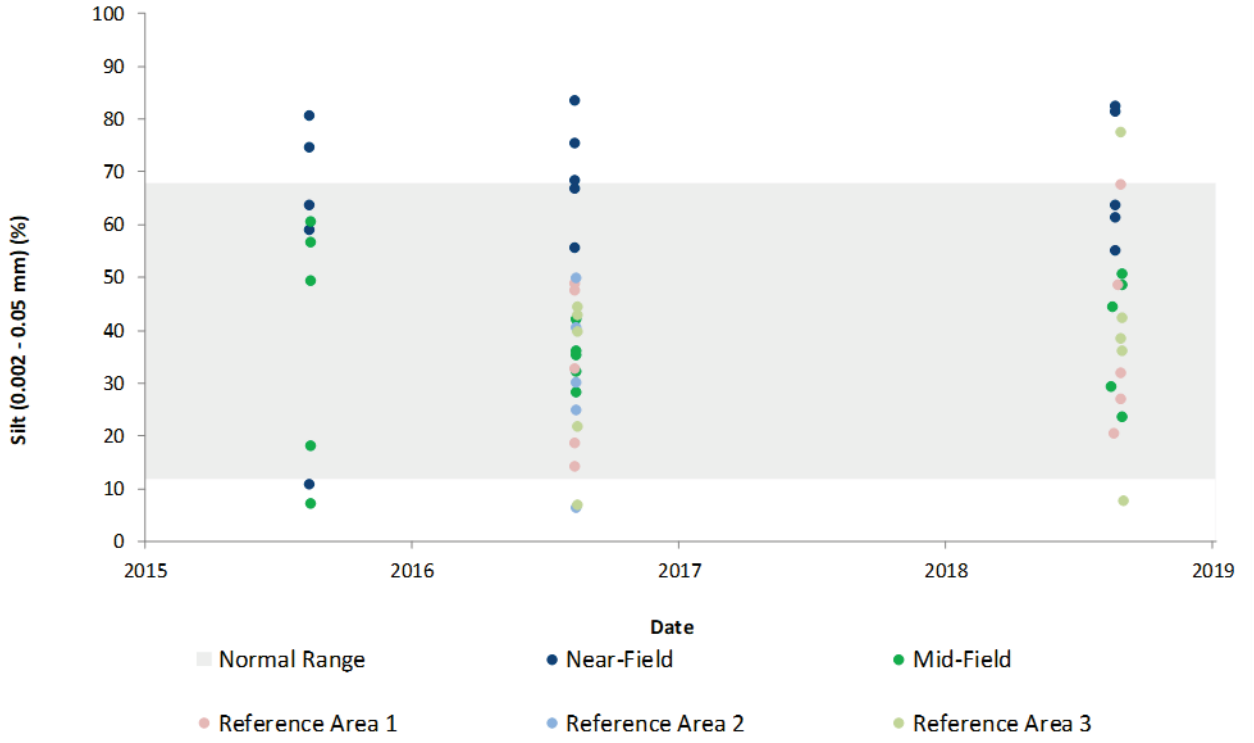


Figure 8.4-1: Silt (%) in Meliadine Lake, 2015 to 2018

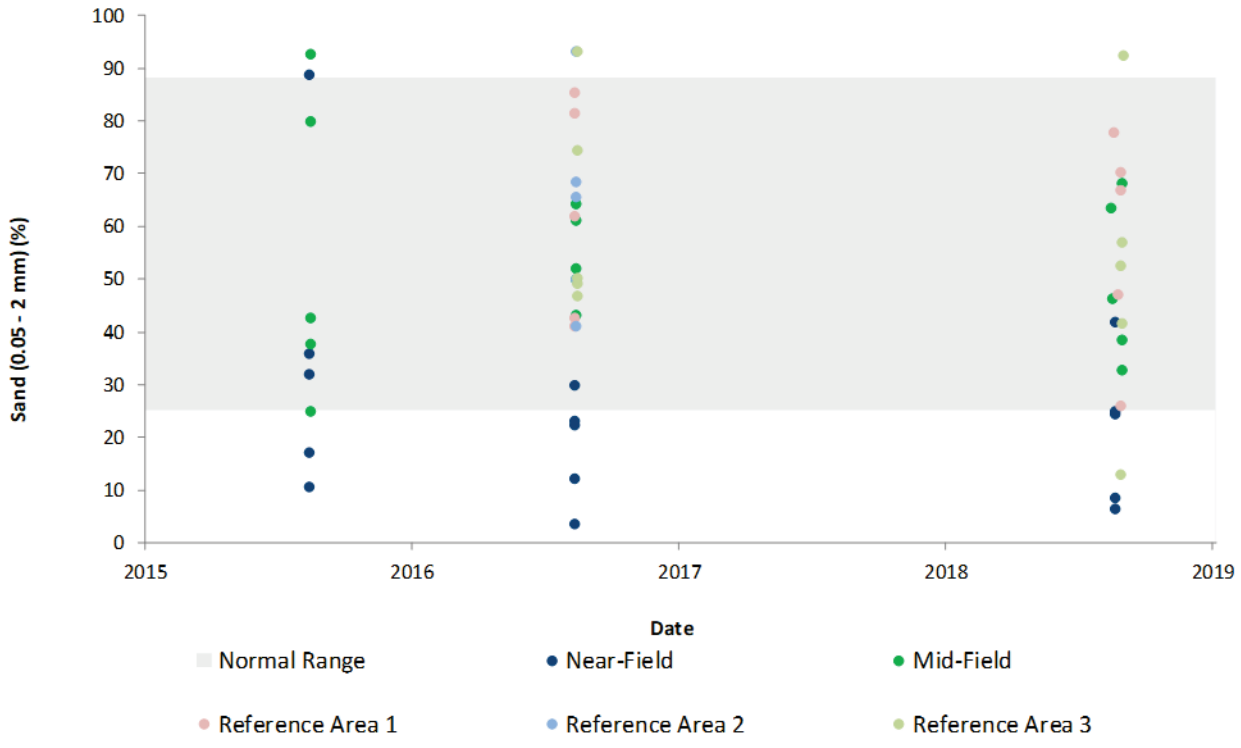


Figure 8.4-2: Sand (%) in Meliadine Lake, 2015 to 2018

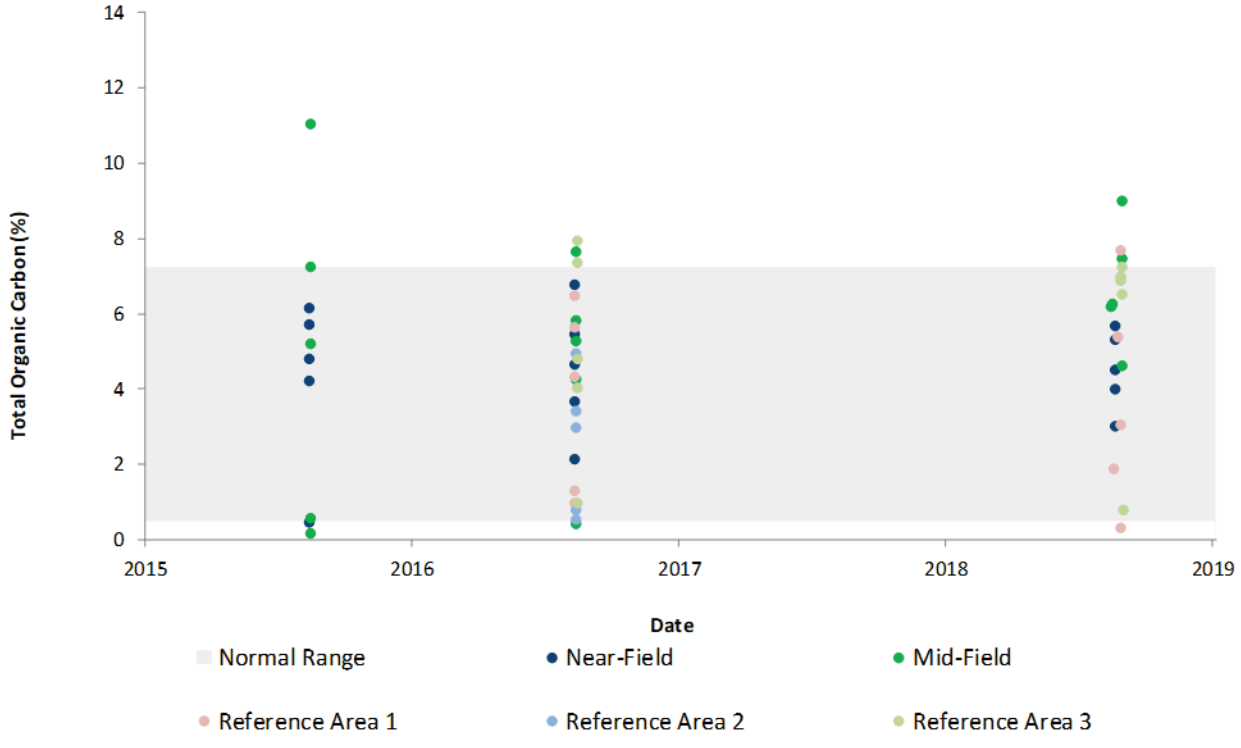


Figure 8.4-3: Concentrations of Total Organic Carbon in Meliadine Lake, 2015 to 2018

8.4.1.2 Metals

Concentrations of metals and metalloids[4] at exposure and reference stations sampled in 2018 were below sediment quality guidelines with the following exceptions:

- Arsenic concentrations at the five Near-field stations exceeded the ISQG. Concentrations at four of the five stations also exceeded the PEL (Figure 8.4.4). The maximum arsenic concentration of 33 µg/g was 5.6 times the ISQG and 1.9 times the PEL. For chromium and copper, sediments at all five Near-field stations were above the ISQGs but were below their respective PELs.
- In the Mid-field area, arsenic and copper concentrations exceeded ISQG at the five stations sampled in 2018 but did not exceed PEL. Chromium concentrations were also above the ISQG but below the PEL at four of the five stations sampled.
- At one Near-field station, sediment cadmium concentration was equivalent to the ISQG.
- In Reference Area 1, only one out of five samples exceeded the ISQG for arsenic and chromium, whereas for copper concentrations at three of the five stations were above the ISQG.
- In Reference Area 3, ISQGs were exceeded at four of the five stations sampled for arsenic and three of the five stations for copper. The arsenic concentration at one station of 23 µg/g was also above the PEL by a factor of 1.4.

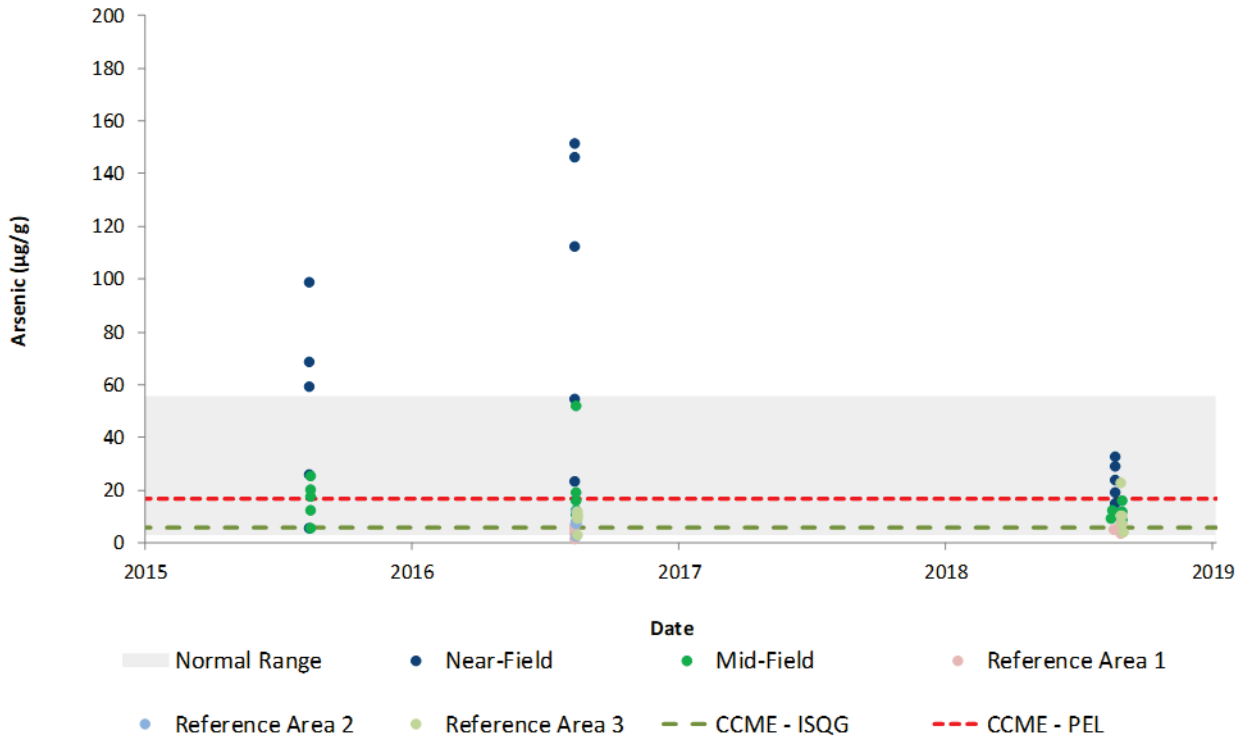


Figure 8.4-4: Concentrations of Arsenic in Meliadine Lake, 2015 to 2018

Metals, metalloids (e.g., arsenic), and non-metals (e.g., selenium) are referred to as “metals” in this document.

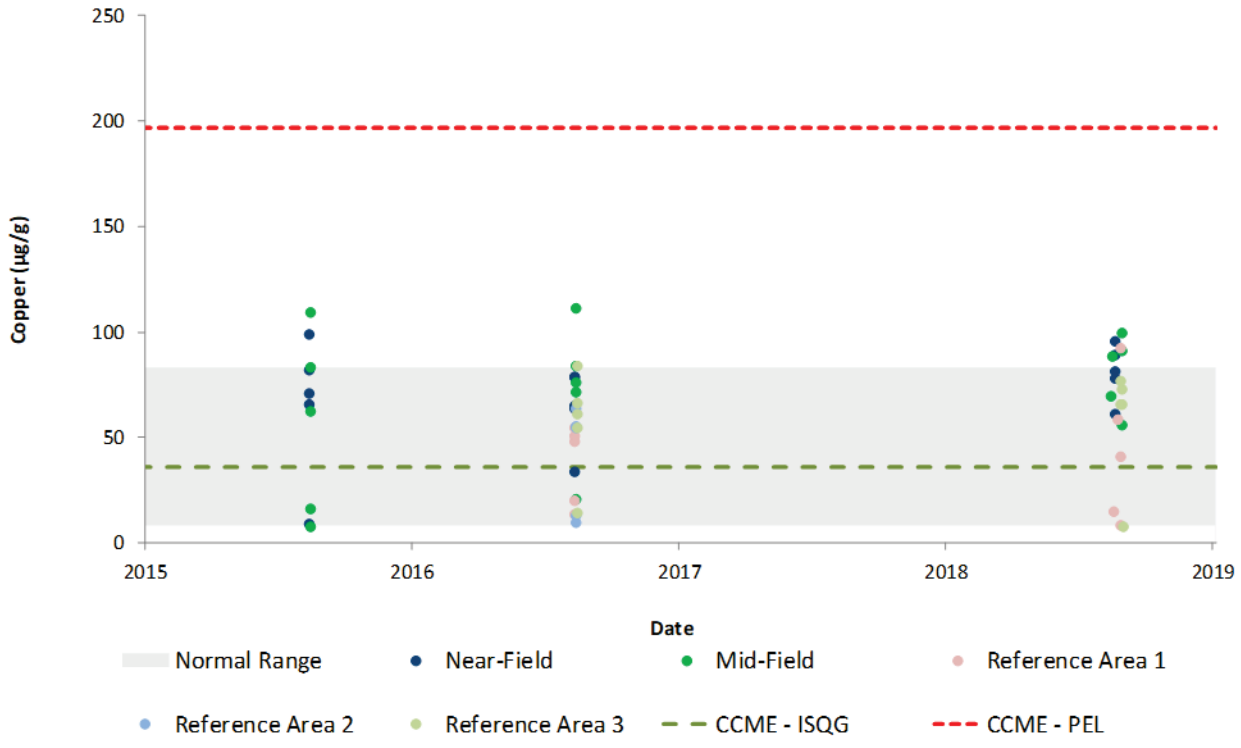


Figure 8.4-5: Concentrations of Copper in Meliadine Lake, 2015 to 2018

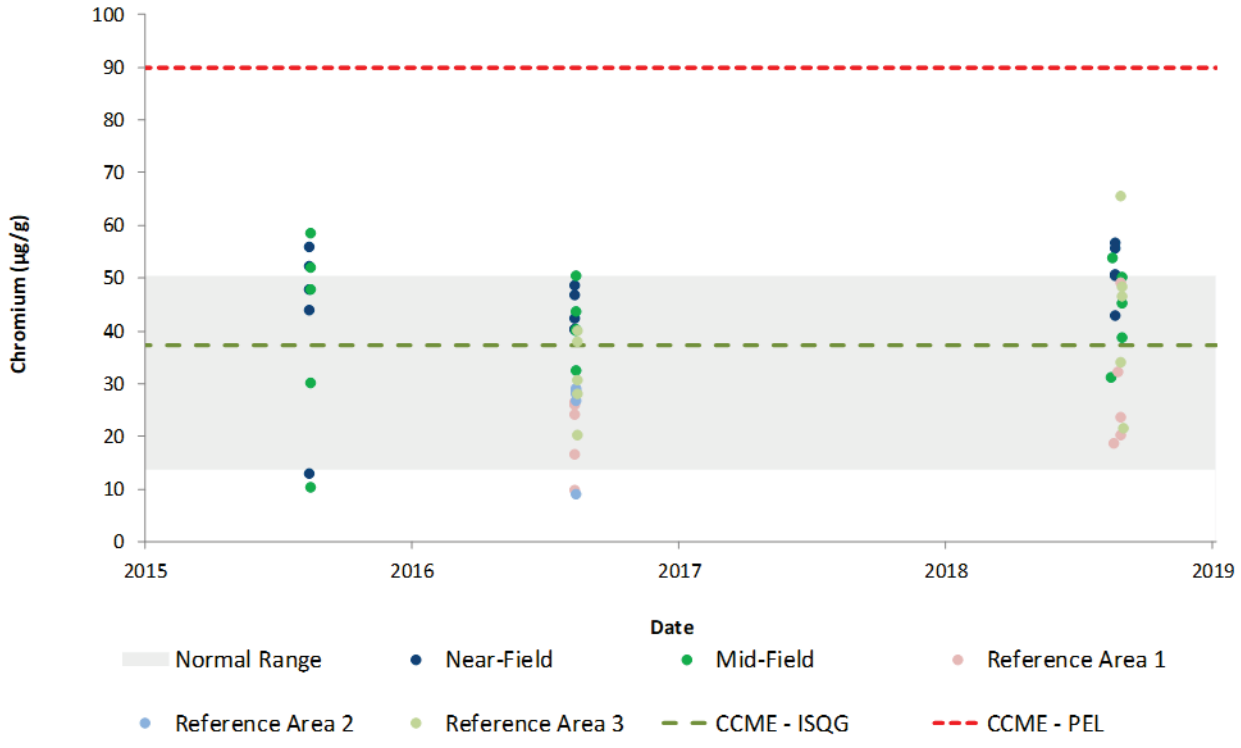


Figure 8.4-6: Concentrations of Chromium in Meliadine Lake, 2015 to 2018

Naturally elevated concentrations of arsenic, chromium, and copper have also been observed in sediments in other northern Canadian lakes. The occurrence of ISQG exceedances for several metals and the occasional arsenic PEL exceedance in the 2018 sediment data are consistent with observations made by Puznicki (1997) in an overview of sediment chemistry in lakes of the Northwest Territories (NT). The author reported that arsenic and nickel concentrations frequently exceeded ISQGs (>70% of samples) and occasionally PELs (>15% of samples); other metals also occasionally exceeded ISQGs (i.e., cadmium, chromium, copper, lead, mercury, zinc).

With specific reference to arsenic, sediment concentrations reported in the Near-field area under baseline conditions in 2015 and 2016 were above sediment quality guidelines and extended above the concentration range reported for this area in 2018 (Figure 8.4-4 and Table 8.4-1). Although to a lesser extent, arsenic guideline exceedances were also reported under baseline conditions for the Mid-field and reference areas located further away from the mine (Figure 8.4-4 and Table 8.4-3). Naturally elevated arsenic concentrations were previously identified in sediments and soils within the vicinity of the Meliadine Mine Site during baseline sampling and development of the FEIS (Agnico Eagle 2014, Volume 6, SD6-3; Volume 7; Section 7.4). For example:

- Mean sediment arsenic concentration in Meliadine Lake exceeded the ISQG by a factor of two, and arsenic concentrations in Peninsula Lakes exceeded both ISQG and PEL.
- Soil arsenic concentrations in the vicinity of the Meliadine Mine Site ranged from 10 to 10,000 µg/g, with an average of 30 µg/g.

Naturally high concentrations of arsenic associated with gold deposits are a common feature (Straskraba and Moran 1990), as the arsenic-associated minerals arsenopyrite, pyrite, pyrrhotite, and chalcopyrite are directly associated with gold mineralization (Agnico Eagle 2014).

8.4.1.3 Relationship Between Particle Size and Metal Concentrations

Particle-size is a key factor in determining the distribution of metals in lake sediments, with a propensity for most metals to preferentially accumulate in finer sediments, such as silt and clay. As well as sediment texture, TOC content can also influence metal concentrations in sediments, with higher concentrations typically associated with higher TOC values. However for the AEMP, TOC values were relatively consistent across study areas in 2018 when compared to particle-size, which, as described in Section 8.4.1.1 differed between the Near-field area and the other study areas located farther away from the Mine. Similar observations regarding differences in particle-size between areas were also made by Golder (2018c) for data collected under baseline conditions. Golder (2018c) demonstrated that a higher proportion of finer sediments in the Near-field area was associated with proportionally higher concentrations of some metals compared to the reference areas. As a consequence, 2015 and 2016 sediment metals data were normalized prior to statistical analysis for the 2018 assessment to address the potentially confounding factor of varying particle-size distribution among sampling areas.

Normalization of metal data is a procedure that aims to reduce the influence of particle-size and mineralogy on metal concentrations, and thus allows assessing the differences between natural and anthropogenic inputs (Ho et al. 2012). It is well documented that finer sediments tend to offer more binding sites for metals, and so are often highly correlated with metal concentrations (Environment Canada 2012). The use of fine sediments to normalize sediment chemistry was appropriate for the 2015 to 2018 dataset, because strong correlations were observed between metal concentrations and percent fines (Table 8.4-4, Figure 8.4-7). This is the normalization method suggested by EC (2012) to address differences in substrate composition. An alternative normalization method is to normalize sediment data to conservative elements such aluminum, iron or lithium (Ho et al 2012). The high correlation between aluminum and fines in 2018 (r = 0.929; Figure 8.4-7) suggests that both

normalization procedures would yield similar results, which was confirmed by the scatter-plots (Appendix 8E) and correlation matrices for 2018 and all available data (Table 8.4-4).

Table 8.4-4: Spearman Rank Correlations between Percent-fines or Aluminum and Sediment Quality Variables, 2015 to 2018 (n=55) and 2018 only (n=20).

Sediment Variable	2015 to 2018				2018			
	Correlation Coefficient (*r*)		*P*-value		Correlation Coefficient (*r*)		*P*-value	
	Fines (%)	Aluminum	Fines (%)	Aluminum	Fines (%)	Aluminum	Fines (%)	Aluminum
Fines (%)	1.000	0.819	**<0.001**	**<0.001**	1.000	0.929	**<0.001**	**<0.001**
Aluminum	0.819	1.000	**<0.001**	**<0.001**	0.929	1.000	**<0.001**	**<0.001**
Antimony	0.729	0.715	**<0.001**	**<0.001**	0.814	0.760	**<0.001**	**<0.001**
Arsenic	0.784	0.818	**<0.001**	**<0.001**	0.886	0.893	**<0.001**	**<0.001**
Barium	0.783	0.914	**<0.001**	**<0.001**	0.843	0.894	**<0.001**	**<0.001**
Beryllium	0.823	0.946	**<0.001**	**<0.001**	0.855	0.916	**<0.001**	**<0.001**
Bismuth	0.785	0.897	**<0.001**	**<0.001**	0.881	0.916	**<0.001**	**<0.001**
Boron	0.628	0.626	**<0.001**	**<0.001**	0.848	0.814	**<0.001**	**<0.001**
Cadmium	0.806	0.893	**<0.001**	**<0.001**	0.829	0.865	**<0.001**	**<0.001**
Calcium	0.662	0.818	**<0.001**	**<0.001**	0.785	0.776	**<0.001**	**<0.001**
Chromium	0.811	0.971	**<0.001**	**<0.001**	0.893	0.971	**<0.001**	**<0.001**
Cobalt	0.833	0.907	**<0.001**	**<0.001**	0.875	0.949	**<0.001**	**<0.001**
Copper	0.683	0.852	**<0.001**	**<0.001**	0.839	0.806	**<0.001**	**<0.001**
Iron	0.783	0.871	**<0.001**	**<0.001**	0.905	0.974	**<0.001**	**<0.001**
Lead	0.842	0.912	**<0.001**	**<0.001**	0.901	0.927	**<0.001**	**<0.001**
Lithium	0.814	0.934	**<0.001**	**<0.001**	0.893	0.938	**<0.001**	**<0.001**
Magnesium	0.804	0.977	**<0.001**	**<0.001**	0.891	0.988	**<0.001**	**<0.001**
Manganese	0.776	0.870	**<0.001**	**<0.001**	0.852	0.909	**<0.001**	**<0.001**
Mercury	0.713	0.708	**<0.001**	**<0.001**	0.776	0.818	**<0.001**	**<0.001**
Molybdenum	0.729	0.773	**<0.001**	**<0.001**	0.877	0.869	**<0.001**	**<0.001**
Nickel	0.880	0.938	**<0.001**	**<0.001**	0.926	0.951	**<0.001**	**<0.001**
Potassium	0.876	0.908	**<0.001**	**<0.001**	0.911	0.950	**<0.001**	**<0.001**
Selenium	0.826	0.885	**<0.001**	**<0.001**	0.903	0.904	**<0.001**	**<0.001**
Silver	0.775	0.890	**<0.001**	**<0.001**	0.854	0.869	**<0.001**	**<0.001**
Sodium	0.878	0.907	**<0.001**	**<0.001**	0.930	0.940	**<0.001**	**<0.001**
Strontium	0.720	0.889	**<0.001**	**<0.001**	0.811	0.811	**<0.001**	**<0.001**
Thallium	0.843	0.891	**<0.001**	**<0.001**	0.853	0.886	**<0.001**	**<0.001**
Titanium	0.779	0.855	**<0.001**	**<0.001**	0.770	0.854	**<0.001**	**<0.001**
TOC	0.538	0.549	**<0.001**	**<0.001**	0.439	0.365	**0.053**	**0.113**
Uranium	0.837	0.930	**<0.001**	**<0.001**	0.907	0.932	**<0.001**	**<0.001**
Vanadium	0.810	0.930	**<0.001**	**<0.001**	0.918	0.979	**<0.001**	**<0.001**
Zinc	0.780	0.928	**<0.001**	**<0.001**	0.795	0.844	**<0.001**	**<0.001**

Fines (%) = silt + clay, TOC = total organic carbon.

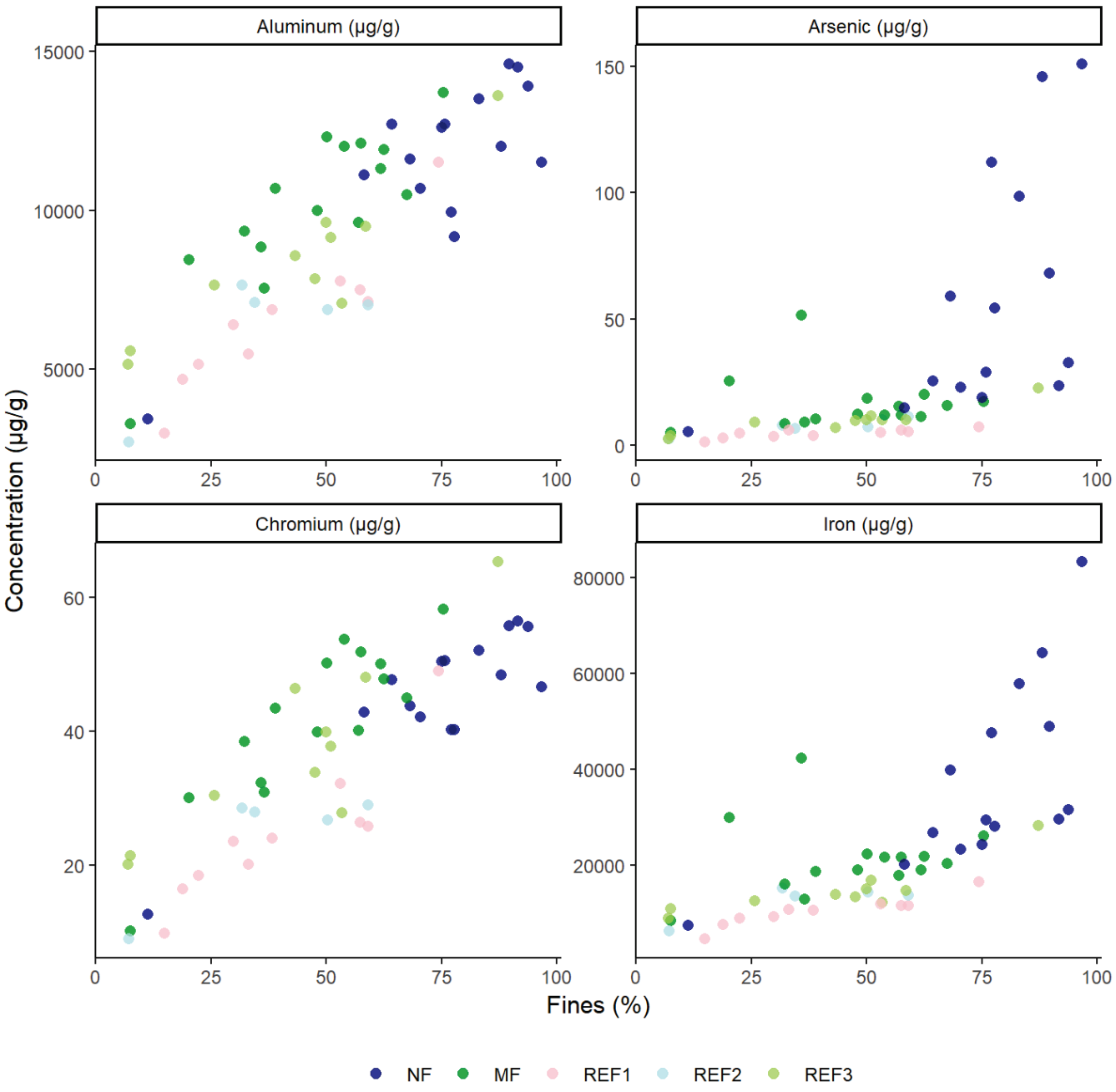


Figure 8.4-7: Scatter-plots of Selected Sediment Metal Concentrations versus Percent-fines in Meliadine Lake, 2015 to 2018

8.4.2 2018 Spatial Comparison

8.4.2.1 EEM

The Cycle 1 EEM Study Design is based on a control-impact comparison of Near-field area (MEL-01) and Reference Area 1 (MEL-03). Summary statistics calculated for both areas are presented in Table 8.4-5.

In 2018, the following parameters had a mean concentration in the Near-field area that was greater than two times the Reference area mean, up to a maximum of 4.6 times the reference mean (arsenic):

- clay
- arsenic
- bismuth
- cadmium
- cobalt
- iron
- lead
- manganese
- mercury
- molybdenum
- nickel
- selenium
- thallium
- uranium
- zinc

Sediments at Near-field area stations were mostly silt-dominated in comparison to sediments sampled at Reference Area 1, which had a higher percentage of sand (Table 8.4-5). Mean% fines in the Near-field area was approximately 1.9 times higher than mean% fines in Reference Area 1. Correspondingly, mean% sand in the Near-field area was approximately 2.5 times lower than mean% sand in Reference Area 1. Higher metal concentrations and finer sediments documented in the Near-field area in 2018 relative to the reference areas also occurred prior to the Mine effluent discharge under baseline conditions in 2015 and 2016 (as discussed in Section 8.4.1.2).

For arsenic, the 2018 Near-field concentrations were substantially lower than those reported under baseline conditions, as discussed further in Section 8.4.1.2 and shown in Figures 8.4-4 to 8.4-6. Sediment arsenic concentrations were also less variable between Near-field stations in 2018 compared to the previous two monitoring years.

Table 8.4-5: Sediment Quality Summary for the Cycle 1 EEM Exposure and Reference Areas in 2018

Parameter	Unit (Dry Weight)	Guidelines		Summary Statistics												
				Exposure Area						Reference Area						Comparison
		ISQG	PEL	Median	Mean	Minimum	Maximum	Standard Deviation	Count	Median	Mean	Minimum	Maximum	Standard Deviation	Count	EXP / REF
Particle-size and Organic Carbon																
Sand	%	-	-	24	21	6.3	42	14	5	67	57	26	78	21	5	0.4
Silt	%	-	-	64	69	55	82	12	5	32	39	20	67	19	5	1.8
Clay	%	-	-	11	10	3.3	15	4.2	5	3.1	3.6	1.5	6.9	2.2	5	2.8
Fines (Silt + Clay)	%	-	-	76	79	58	94	14	5	33	43	22	74	21	5	1.9
Total organic carbon	%	-	-	4.5	4.5	3.0	5.7	1.1	5	3.0	3.6	0.29	7.7	2.9	5	1.3
Total Metals																
Aluminum	µg/g	-	-	12,700	12,960	11,100	14,500	1,315	5	6,410	7,268	5,160	11,500	2575	5	1.8
Antimony	µg/g	-	-	0.15	0.15	0.13	0.18	0.019	5	<0.1	-[(a)]	<0.1	0.12	-[(a)]	5	-[(a)]
Arsenic	µg/g	5.9	17	**23**[(I, P)]	**24**[(I, P)]	**15**[(I)]	**33**[(I, P)]	7	5	5.0	5.2	3.4	**7.2**[(I)]	1.4	5	4.6
Barium	µg/g	-	-	115	115	90	136	20	5	63	65	31	104	31	5	1.8
Beryllium	µg/g	-	-	0.33	0.32	0.28	0.37	0.033	5	0.15	0.18	0.12	0.27	0.060	5	1.8
Bismuth	µg/g	-	-	0.32	0.32	0.25	0.37	0.045	5	<0.2	0.12	<0.2	0.21	0.049	5	2.7
Boron	µg/g	-	-	6.9	6.8	5.9	8.2	0.92	5	<5.0	4.0	<5.0	6.9	2.1	5	1.7
Cadmium	µg/g	0.6	3.5	0.52	0.52	0.41	**0.6**[(I)]	0.07	5	0.18	0.14	<0.02	0.28	0.11	5	3.7
Calcium	µg/g	-	-	4,460	4,368	3,760	4,700	360	5	3,300	3,752	2,660	5,880	1355	5	1.2
Chromium	µg/g	37	90	**51**[(I)]	**51**[(I)]	**43**[(I)]	**57**[(I)]	5.5	5	24	29	19	**49**[(I)]	13	5	1.8
Cobalt	µg/g	-	-	16	16	8.5	27	6.9	5	5.8	5.8	3.6	9.0	2.3	5	2.8
Copper	µg/g	36	197	**81**[(I)]	**81**[(I)]	**61**[(I)]	**95**[(I)]	13	5	**41**[(I)]	**42**[(I)]	7.6	**92**[(I)]	34	5	1.9
Iron	µg/g	-	-	29,400	27,020	20,200	31,600	4,669	5	10,700	11,510	9,000	16,600	3069	5	2.3
Lead	µg/g	35	91	11	11	8.8	13	1.7	5	3.4	4.1	2.8	6.9	1.6	5	2.7
Lithium	µg/g	-	-	15	15	13	17	1.7	5	9.6	11	7.9	17	3.4	5	1.4
Magnesium	µg/g	-	-	7,180	7,254	6,160	8,030	722	5	3,840	4,180	2,930	6,500	1447	5	1.7
Manganese	µg/g	-	-	351	360	273	471	72	5	123	149	104	251	61	5	2.4
Mercury	µg/g	0.17	0.49	0.028	0.03	0.019	0.044	0.01	5	0.0064	0.0071	<0.005	0.015	0.0053	5	4.2
Molybdenum	µg/g	-	-	4.4	5.3	3.0	9.4	2.5	5	1.7	2.0	1.4	2.8	0.63	5	2.7
Nickel	µg/g	-	-	69	67	47	85	14	5	24	26	15	46	13	5	2.6
Potassium	µg/g	-	-	2,290	2,304	1,940	2,530	242	5	1,330	1,454	1040	2,200	469	5	1.6
Selenium	µg/g	-	-	0.94	0.95	0.69	1.2	0.17	5	0.34	0.36	<0.2	0.79	0.29	5	2.6
Silver	µg/g	-	-	0.2	0.19	0.14	0.22	0.033	5	<0.1	0.062	<0.1	0.11	0.027	5	3.1
Sodium	µg/g	-	-	330	318	250	360	44	5	190	208	130	350	89	5	1.5
Strontium	µg/g	-	-	25	24	20	27	2.5	5	16	18	12	31	7.6	5	1.3
Thallium	µg/g	-	-	0.37	0.36	0.26	0.45	0.073	5	0.15	0.13	0.058	0.21	0.066	5	2.8
Tin	µg/g	-	-	<2.0	-[(a)]	<2.0	<2.0	-[(a)]	5	<2.0	-[(a)]	<2.0	<2.0	-[(a)]	5	-[(a)]
Titanium	µg/g	-	-	739	726	641	786	58	5	525	570	486	787	124	5	1.3
Uranium	µg/g	-	-	4.2	4.3	3.6	5.1	0.51	5	1.4	1.7	0.91	3.1	0.88	5	2.5
Vanadium	µg/g	-	-	57	58	47	66	6.9	5	25	30	22	45	9.0	5	1.9
Zinc	µg/g	123	315	94	91	71	101	12	5	41	41	20	70	21	5	2.2

(a) Not calculated due to high percentage of results below the detection limits

Bolded values are higher than sediment quality guidelines.

Shaded values are greater than 2 times those in the Reference Area. Calculations were based on mean results.

(I) = value higher than the Interim Sediment Quality Guideline.

(P) = value higher than the Probable Effects Level.

Sediment quality data shown in this table were rounded to reflect laboratory precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.

ISQG = Interim Sediment Quality Guideline; PEL = Probable Effects Level; µg/g = micrograms per gram; EXP = Exposure Area; REF = Reference Area; - = no guideline or data.

8.4.2.2 AEMP

A spatial comparison between the three sampling areas (i.e. Near-field, Mid-field and pooled Reference) was completed for the 2018 sediment quality dataset. As discussed above, sediment metals data were normalized to percent-fines prior to conducting the analysis. The results are summarized in Table 8.4-6 and presented visually in box-and-whisker plots in Appendix 8D. The results identified as outliers are presented in Appendix 8F, the overall test results are also available in Table 8F-1, while the results obtained after outlier removal are presented and discussed below (Table 8.4-6).

A total of thirty-two parameters underwent statistical analysis to compare normalized metal concentrations between the exposure areas and the pooled reference areas[5]. Nineteen parameters met ANOVA assumptions for normality and homoscedasticity while thirteen parameters failed to meet these assumptions and were therefore tested using the non-parametric Kruskal-Wallis test.

A significant statistical difference between study areas was identified at $\alpha = 0.1$ for the majority of parameters, with the exception clay content and several normalized metals (i.e., aluminum, lithium, magnesium, potassium, titanium, vanadium) (Table 8.4-6). Where significant differences between the reference and exposure area were identified, the following were noted:

- Statistical testing confirmed differences observed in particle-size composition between the Near-field, Mid-field, and pooled reference areas.
- Sediments in the Near-field area had a significantly greater% of silt and a significantly lower% sand relative to the other areas.
- Percentages of silt and sand did not differ significantly between the Mid-field and pooled reference areas.
- Normalized TOC concentrations were significantly different for all comparisons, and followed the order Mid-field >Near-field >Reference area. Thus, the Mid-field had significantly higher TOC relative to the other areas.
- Normalized arsenic concentrations were significantly higher in the Near-field area compared to the pooled reference areas.
- For normalized cadmium, both the Near-field and Mid-field areas had higher concentrations relative to the pooled reference areas.
- Chromium and copper had greater normalized concentrations in the Mid-field area relative to the Near-field area, while Near-field area and pooled reference area concentrations were not significantly different.
- For three parameters, the outlier removal affected the test results; these are arsenic, cobalt and nickel. For these parameters, the overall comparison was not significant when the outliers were included, but tests were significant without the outliers.

The combined presence of higher concentrations of some normalized metals and TOC in the Mid-field area suggests that the TOC content could be partly responsible for the observed metal concentrations, given that some metals preferentially accumulate in sediments with elevated organic matter (Ho et al. 2012). Concentrations of several metals, both within and between the AEMP study areas, have consistently been shown to exhibit a degree

[5] Antimony, bismuth, silver and tin were removed from the parameter list due to the high percentage of results below DL.

of natural variability in part due to variability in substrate type and organic matter content. The exception is arsenic, which even when normalized for fine sediment content, still had significantly higher concentrations compared to the reference areas. Higher concentrations of arsenic in Near-field sediments even after normalization could be an indication of local sources (i.e., different mineralogy in a local scale) or effects of mine effluent discharge. Arsenic was not, however, elevated in the effluent or in the lake water (concentrations were also below the effluent discharge limit and the AEMP benchmark); therefore, the higher concentrations in the Near-field area were not linked to the Mine effluent discharge. Furthermore, as discussed in Section 8.4.1, a concentration gradient for sediment arsenic with higher concentrations within the Near-field area was evident before start-up of the Mine effluent discharge in 2018.

Statistical outliers were identified for a number of metals. As described in Section 8.2.4.2.1.2, the among-area statistical comparisons were completed with and without the relevant outliers, and the results are provided in Appendix 8F. The removal of the outliers reduced the *P*-value which resulted in three parameters (arsenic, cobalt, and nickel) showing a significant difference between areas that was not detected when the outliers were included in the analysis. However, excluding outliers did not substantially influence responses to the AEMP key questions for the sediment quality component, or the overall conclusions of the 2018 AEMP.

Table 8.4-6: Sediment Quality Comparison among Near-field, Mid-field Exposure Areas and the Pooled Reference Areas, 2018

Parameter	Unit	Overall Model		Outliers Removed	Near-field		Mid-field		Pooled Reference Area		Pairwise Comparisons					
											Near-field to Mid-field		Near-field to Reference		Mid-field to Reference	
		Test	*P*-value		Median	Mean	Median	Mean	Median	Mean	*P*-value	Magnitude (%)	*P*-value	Magnitude (%)	*P*-value	Magnitude (%)
Sand	%	ANOVA	**0.024**	-	24	21	46	50	55	54	**0.094**	-58%	**0.021**	-61%	0.907	NS
Silt	%	ANOVA	**0.016**	-	64	69	44	39	37	40	**0.040**	77%	**0.019**	73%	0.999	NS
Clay	%	ANOVA	0.102	-	11	10	9.5	11	5.8	6.1	-	-	-	-	-	-
Clay+Silt	%	ANOVA	**0.024**	-	76	79	54	50	45	46	**0.094**	57%	**0.021**	73%	0.908	NS
Total organic carbon	% /%Fines	ANOVA	**<0.001**	1	5.3	5.7	13	14	10	9.9	**<0.001**	-59%	**0.001**	-42%	**0.093**	41%
Aluminum	µg/g dw%Fines	ANOVA	0.112	-	16755	16654	20656	21164	16524	22920	-	-	-	-	-	-
Arsenic	µg/g dw%Fines	ANOVA	**0.001**	1	26	30	23	23	17	19	0.125	NS	**0.001**	58%	0.103	NS
Barium	µg/g dw%Fines	ANOVA	**0.002**	1	148	146	217	223	152	163	**0.004**	-35%	0.977	NS	**0.002**	37%
Beryllium	µg/g dw%Fines	ANOVA	**0.080**	-	0.41	0.42	0.54	0.54	0.41	0.43	0.113	NS	0.955	NS	0.105	NS
Boron	µg/g dw%Fines	ANOVA	**0.054**	-	8.1	8.8	12	12	9.7	11	**0.072**	-27%	0.914	NS	**0.084**	9%
Cadmium	µg/g dw%Fines	ANOVA	**0.001**	-	0.66	0.68	0.66	0.67	0.4	0.37	1.000	NS	**0.002**	84%	**0.002**	81%
Calcium	µg/g dw%Fines	ANOVA	**0.001**	1	5778	5631	9518	9771	8008	9739	**0.002**	-42%	**0.006**	-42%	0.436	NS
Chromium	µg/g dw%Fines	ANOVA	**0.052**	-	67	66	84	90	77	95	**0.043**	-27%	0.432	NS	0.217	NS
Cobalt	µg/g dw%Fines	Kruskal-Wallis	**0.077**	1	17	20	21	21	17	19	0.393	NS	0.166	NS	**0.026**	24%
Copper	µg/g dw%Fines	Kruskal-Wallis	**0.007**	1	104	103	163	163	117	105	**0.001**	-36%	0.267	NS	**0.002**	39%
Iron	µg/g dw%Fines	Kruskal-Wallis	**0.088**	-	33725	34378	35246	37241	31723	40259	0.951	NS	**0.058**	6%	**0.067**	11%
Lead	µg/g dw%Fines	Kruskal-Wallis	**0.001**	1	14	14	17	17	11	12	**0.033**	-18%	**<0.001**	27%	**<0.001**	55%
Lithium	µg/g dw%Fines	Kruskal-Wallis	0.257	-	19	19	27	26	23	30	-	-	-	-	-	-
Magnesium	µg/g dw%Fines	Kruskal-Wallis	0.213	-	9472	9322	11940	12495	10067	14369	-	-	-	-	-	-
Manganese	µg/g dw%Fines	Kruskal-Wallis	**0.001**	-	467	458	593	594	340	457	**0.011**	-21%	**0.001**	37%	**<0.001**	74%
Mercury	µg/g dw%Fines	ANOVA	**<0.001**	-	0.036	0.037	0.04	0.039	0.019	0.019	0.947	NS	**<0.001**	95%	**<0.001**	105%
Molybdenum	µg/g dw%Fines	Kruskal-Wallis	**0.035**	1	5.3	6.8	7.7	7.6	5.3	5.7	**0.029**	-31%	1.000	NS	**0.010**	45%
Nickel	µg/g dw%Fines	ANOVA	**0.003**	1	81	86	101	99	72	77	0.299	-13%	**0.094**	12%	**0.003**	29%
Potassium	µg/g dw%Fines	Kruskal-Wallis	0.362	-	2983	2958	3607	3605	3169	3791	-	-	-	-	-	-
Selenium	µg/g dw%Fines	Kruskal-Wallis	**0.004**	-	1.2	1.2	1.7	1.7	1.2	1.0	**0.003**	-29%	0.429	NS	**<0.001**	42%
Sodium	µg/g dw%Fines	Kruskal-Wallis	**0.090**	-	399	406	519	526	423	478	**0.028**	-23%	0.147	NS	0.228	NS
Strontium	µg/g dw%Fines	ANOVA	**0.002**	1	32	31	52	53	41	49	**0.001**	-42%	**0.047**	-37%	**0.064**	8%
Thallium	µg/g dw%Fines	ANOVA	**0.002**	1	0.45	0.46	0.47	0.5	0.33	0.36	0.812	NS	**0.013**	28%	**0.003**	39%
Titanium	µg/g dw%Fines	Kruskal-Wallis	0.205	-	929	938	1145	1200	1116	1588	-	-	-	-	-	-
Uranium	µg/g dw%Fines	ANOVA	**<0.001**	1	5.6	5.5	6.0	6.1	4.1	4.5	0.459	NS	**0.008**	22%	**<0.001**	36%
Vanadium	µg/g dw%Fines	Kruskal-Wallis	0.234	-	75	74	89	87	79	94	-	-	-	-	-	-
Zinc	µg/g dw%Fines	ANOVA	**<0.001**	1	118	116	171	172	98	114	**0.002**	-33%	0.263	NS	**<0.001**	51%

Note:
Shaded values indicate that the magnitude of difference was greater or equal to ±30%
Bolded values were significantly different at α = 0.1.
Italicized values were detection limits set as one-half the detection limit
Parameters with greater than 50% of the dataset below the detection limit were excluded from analysis and are not shown in this table.
ANOVA = analysis of variance; µg/g dw%Fines = microgram per grams dry weight normalized to percent-fines; NS = post-hoc test indicated no significant difference among areas; - = pairwise comparison was not conducted because overall model indicated no significant difference.

8.4.3 Temporal Comparison in the Near-field Area

Box-and-whisker Plots of the Near-field data are provided in Appendix 8G to facilitate interpretation of the Near-field area data over time. Box plots were generated for all reported sediment parameters with the exception of antimony, bismuth, silver and tin, which had a high percentage of results below RDLs.

Particle size parameters and TOC concentrations were reasonably consistent over time, and no clear trend was visible (Figure 8.4-8 and 8.4-9, Appendix 8G). These results suggest that the changes in the sampling station locations within in the Near-field area between 2016 and 2018 did not substantially influence the sediment substrate type sampled.

A decrease in arsenic concentrations between 2016 and 2018 within the Near-field area was observed (Figure 8.4-10, Appendix 8G). Arsenic concentrations in 2018 were lower than those reported in 2016 and 2015. These results highlight the natural variability of metal concentrations within the Near-field area of Meliadine Lake over time, given that grain size and TOC were reasonably consistent between years. Iron and mercury also showed a decrease between 2016 and 2018, but not to the same extent as observed for arsenic.

Several other metals increased in concentration between 2016 and 2018; i.e., aluminum, beryllium, chromium, copper, magnesium, sodium, strontium, thallium, titanium, vanadium and zinc. These increases between years were also considered to reflect natural variability in sediment metal concentrations within the Near-field area over time. This conclusion is further supported by the identification of variability for several metals between baseline years prior to the mine effluent discharge.

The re-positioning of the Near-field stations in 2018 in response to the Plume Delineation Study and the Sediment Reconnaissance Survey may also account, at least in part, for differences in the concentrations of some metals between 2015/2016 and 2018. The geochemical baseline study that supported the FEIS observed small-scale variability in the chemical composition of the soil (or overburden) (Agnico Eagle 2014), consistent with the natural spatial and temporal variability identified for lake sediments by the AEMP.

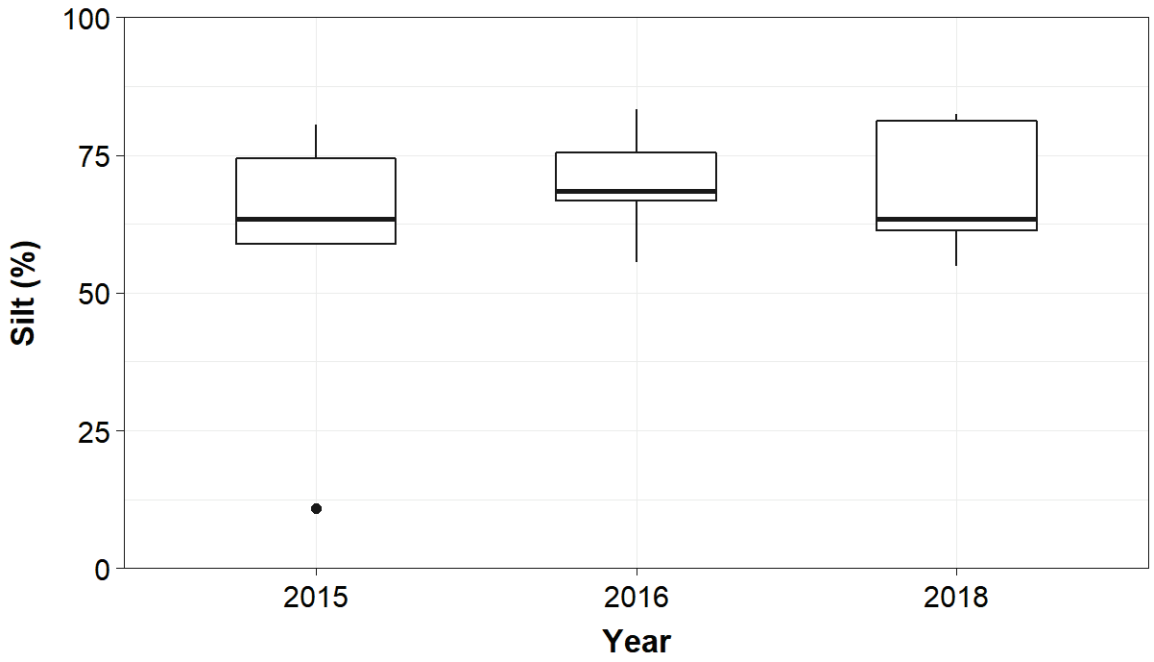
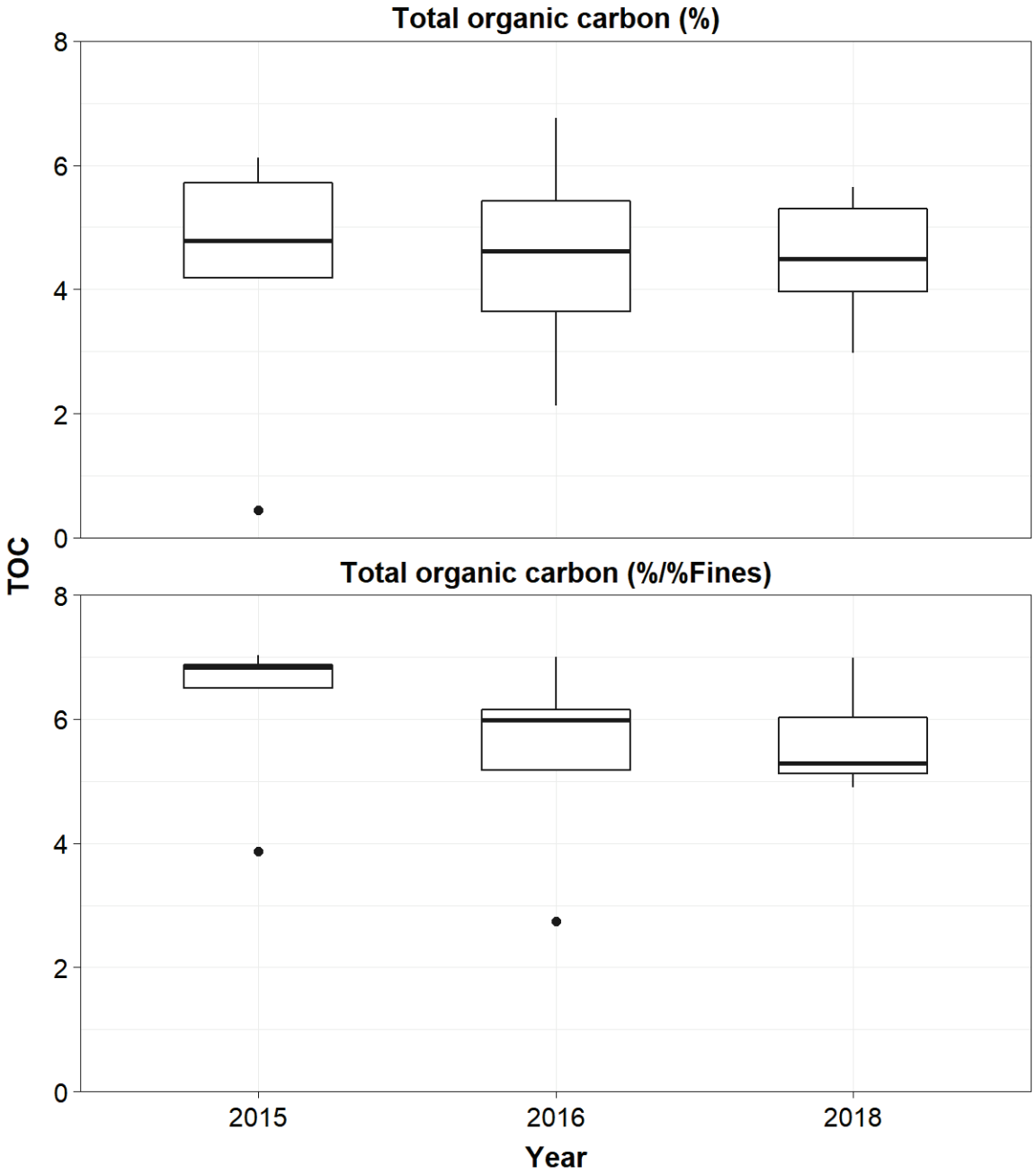
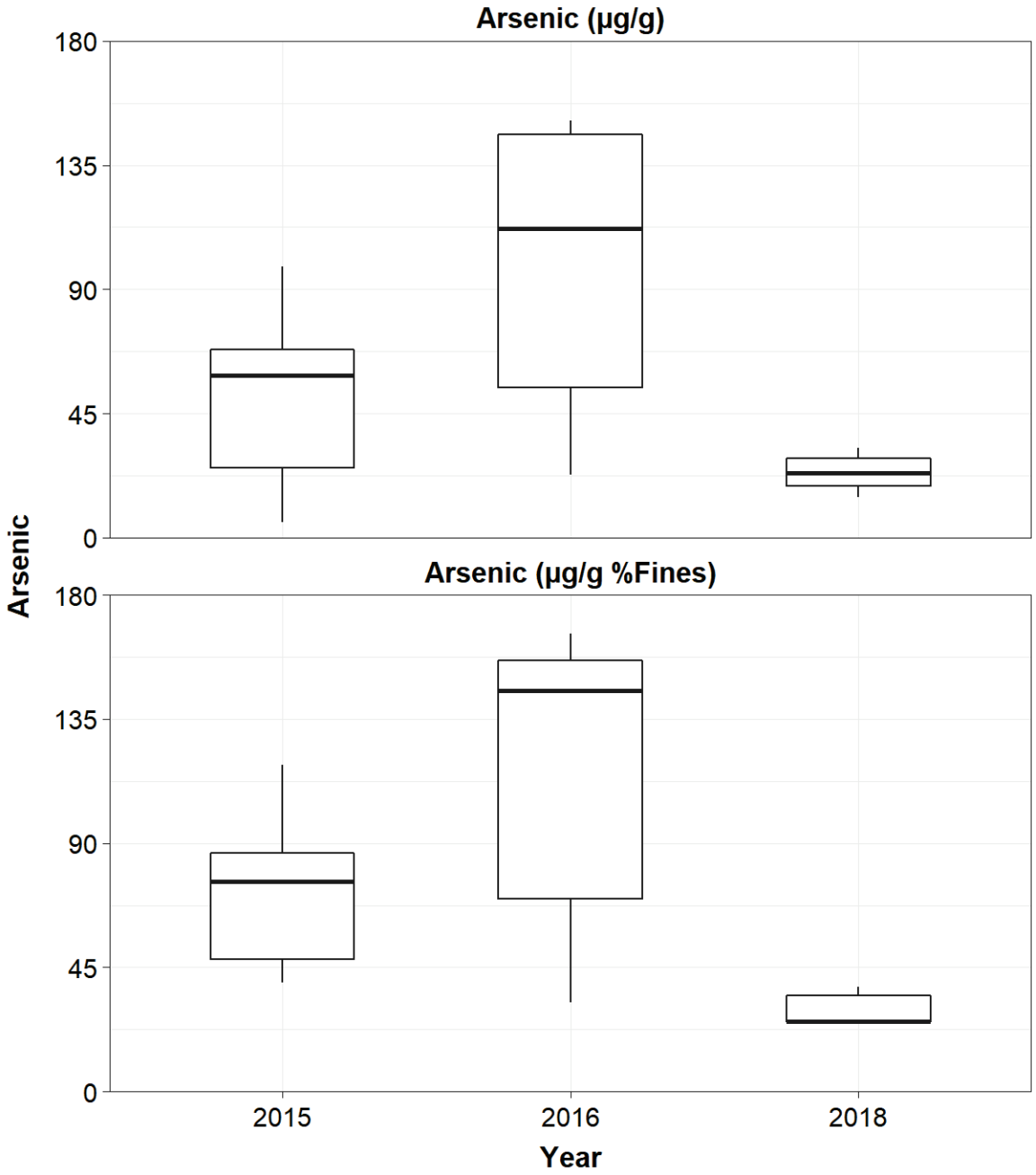


Figure 8.4-8: Box-and-whisker Plots of Silt (%) in the Meliadine Lake Near-field Area, 2018



Note: top: non-normalized data; bottom: data normalized to% fines.

Figure 8.4-9: Box-and-whisker Plots of Total Organic Carbon Concentrations in the Meliadine Lake Near-field Area, 2018



Note: top: non-normalized data; bottom: data normalized to% fines.

Figure 8.4-10: Box-and-whisker Plots of Arsenic Concentrations in Meliadine Lake Near-field Area, 2018

8.4.4 Comparison to Normal Ranges

Normal ranges were calculated using data available from the AEMP Reference areas, 2015 and 2016 data from the Near-field and Mid-field AEMP exposure areas, and appropriate pre-2015 data included in the FEIS[6]. These data were included in the normal range calculation to make sure that the normal ranges captured the natural spatial and temporal variability in particle-size and some metals, as identified within and among AEMP study areas by this 2018 assessment. Normal ranges may be updated with future AEMP reference area data as they become available to further characterize natural variability.

The normal ranges are summarized in Table 8.4-7 and shown graphically on plots provided in Appendix 8C. The lower bound of the normal range for clay, beryllium, bismuth, boron, mercury, selenium and silver was set to zero because the calculated value was below the most frequent DL. Tin was the only parameter where all results were below the DL, thus the lower bound was set to zero and the upper bound was set to the DL.

Near-field measures of central tendency (i.e., means or medians) for the first year of the mine effluent discharge (2018) are also provided in Table 8.4-8 and were compared to the normal range for each parameter. The 2018 Near-field mean/median values for the following parameters exceeded their respective normal ranges: % fines, aluminum, beryllium, cadmium, nickel, silver, thallium, and zinc. In the Mid-field area, only the copper mean/median value was above the normal range upper boundary.

Where mean/median values exceeded a normal range, values were only marginally above, by less than a factor of 1.2 (i.e., 20%), which is within the range of sampling variability that is typically observed in sediment quality data. As more sediment quality data are collected as part of the AEMP and the EEM program, emerging temporal trends will be evaluated relative to the normal ranges.

Table 8.4-7: Sediment Quality Normal Ranges for Meliadine Lake, 2018

Parameter	Unit (dry wt.)	Detection Limit[a]	Sample Size	Outliers Removed	Calculation Method	Normal Range		2018 Mean/Median[b]		
						Lower Bound	Upper Bound	Near-field	Mid-field	Reference Area[c]
Particle-size and Organic Carbon										
Sand	%	1	70	0	PI	25	88	21	50	54
Silt	%	1	70	0	PI(λ)	12	68	67	40	38
Clay	%	1	70	0	PI(λ)	0[d]	12	11	10	4.9
Fines (Silt + Clay)	%	1	70	0	PI	12	75	**79**	50	46
Total organic carbon	%	0.05	77	0	Percentile	0.49	7.2	4.5	6.2	5.9
Metals										
Aluminum	µg/g	50	60	0	PI	4,139	12,738	**12,960**	10,142	8,146
Antimony	µg/g	0.1	54	0	Percentile	0[d]	0.24	0.15	0.11	<0.1
Arsenic	µg/g	0.1	75	1	PI(λ)	2.9	56	23	11	6.1
Barium	µg/g	0.5	76	0	PI(λ)	25	134	115	109	64
Beryllium	µg/g	0.1	54	0	Percentile	0[d]	0.3	**0.33**	0.28	0.19
Bismuth	µg/g	0.2	54	0	Percentile	0[d]	0.35	0.32	0.23	<0.2

[6] With exceptions for antimony, beryllium, bismuth, cadmium, mercury, silver, thallium, tin and uranium analyzed under higher detection limits and with high percentage of non-detects. If data with high DLs was included it would artificially increase the upper lower of the normal ranges, therefore, following a conservative approach it was decided that these results should be excluded from analysis.

Table 8.4-7: Sediment Quality Normal Ranges for Meliadine Lake, 2018

Parameter	Unit (dry wt.)	Detection Limit[a]	Sample Size	Outliers Removed	Calculation Method	Normal Range		2018 Mean/Median[b]		
						Lower Bound	Upper Bound	Near-field	Mid-field	Reference Area[c]
Metals (cont'd)										
Boron	µg/g	5	54	0	Percentile	0[d]	7.8	6.9	7.0	5.1
Cadmium	µg/g	0.02	54	0	Percentile	0.033	0.51	**0.52**	0.34	0.18
Calcium	µg/g	100	60	0	Percentile	1,519	5,363	4,460	5,070	3,745
Chromium	µg/g	0.5	76	0	Percentile	14	51	51	45	33
Cobalt	µg/g	0.1	75	1	PI(λ)	2.9	17	15	10	6.4
Copper	µg/g	0.5	76	0	Percentile	8.4	83	81	**88**	62
Iron	µg/g	50	60	0	PI(λ)	7,446	45,945	27,759	18,407	12,319
Lead	µg/g	0.5	73	0	Percentile	2.1	14	11	8.7	4.9
Lithium	µg/g	0.5	55	0	Percentile	5.2	15	15	12	9.9
Magnesium	µg/g	20	60	0	PI(λ)	2,523	7,176	7,341	6,045	4,619
Manganese	µg/g	1	58	2	PI(λ)	102	625	352	289	150
Mercury	µg/g	0.005	54	0	PI(λ)	0[d]	0.061	0.029	0.018	0.0079
Molybdenum	µg/g	0.1	73	1	PI(λ)	0.73	6.7	4.7	3.6	2.1
Nickel	µg/g	0.5	76	0	Percentile	10	67	**69**	50	33
Potassium	µg/g	50	60	0	PI	647	2,453	2,304	1,732	1,490
Selenium	µg/g	0.2	73	0	Percentile	0[d]	1.2	0.94	0.91	0.52
Silver	µg/g	0.1	54	0	Percentile	0[d]	0.18	**0.2**	0.15	<0.1
Sodium	µg/g	100	60	0	Percentile	50	352	330	290	190
Strontium	µg/g	0.5	59	0	PI	10.1	29.6	24	25	19
Thallium	µg/g	0.05	54	0	Percentile	0[e]	0.32	**0.37**	0.25	0.14
Tin	µg/g	2	54	-	-	0[e]	2[e]	<2.0	<2.0	<2.0
Titanium	µg/g	1	59	0	PI	280	815	726	560	551
Uranium	µg/g	0.05	54	0	PI(λ)	0.67	4.3	4.3	3.1	1.6
Vanadium	µg/g	0.2	76	0	PI(λ)	15	59	58	43	31
Zinc	µg/g	2	76	0	Percentile	20	93	**94**	91	48

(a) Most frequent report detection limit.

(b) Lake area means or medians were calculated using the back-transformed mean when the normal range was defined as the prediction interval using Box-Cox transformed data. The arithmetic mean was used when the normal range was defined using untransformed data.

(c) Reference area data were pooled from Reference Areas 1 and 3.

(d) The lower bound of the normal range was less than the detection limit; therefore, the lower bound of the normal range was set to zero.

(e) All values in the dataset were non-detect; therefore, the normal range was set from zero to the detection limit.

Bolded concentrations exceed the upper bound of the normal range.

Percentile = 2.5th and 97.5th percentiles; PI= 80% prediction interval; PI(λ) = 80% prediction interval on Box-Cox transformed data; µg/g = micrograms per gram.

8.5 Summary

8.5.1 EEM

The main findings of the Cycle 1 EEM sediment quality assessment to support the EEM benthic invertebrate assessment were the following:

- ISQG exceedances for arsenic, cadmium and chromium were identified in both exposure and reference areas. Near-field arsenic concentrations in sediments were also above the PEL, by less than a factor of 2. The arsenic concentration at one reference station was above the PEL, by a factor of 1.4. All other sediment metal concentrations reported in 2018 were below sediment quality guidelines.
- Differences between exposure and reference areas were mainly associated with natural variability, which was also observed in 2015 and 2016, prior to the Mine effluent discharge. For metals above sediment quality guidelines in the Near-field area, concentrations in 2018 were lower than those reported under baseline conditions in 2015 and 2016.
- Higher concentrations of metals and finer sediments in the Near-Field area compared to reference areas was also observed under baseline conditions prior to the 2018 Mine effluent discharge; therefore, Near-field area concentrations are considered representative of pre-discharge conditions.

8.5.2 AEMP

In 2018, the AEMP sediment quality assessment was undertaken as per the approved AEMP Design Plan for the first year of Mine effluent discharge (Golder 2016a). This AEMP summary is focused on providing responses to two AEMP key questions:

- Are concentrations of sediment quality parameters in Meliadine Lake less than benchmarks[7]?
- Are concentrations in the exposure area increasing over time relative to the reference areas?

Action levels are not discussed here, because Action Levels for sediment chemistry were not developed for the current AEMP Design Plan. With respect to FEIS predictions, the FEIS stated that sediment quality was not expected to change due to the Mine effluent discharge, but the FEIS did not generate quantitative sediment quality predictions for contaminants of potential concern. The FEIS conclusion of no expected mine effluent-related change in sediment quality is addressed below in relation to the two AEMP key questions.

Are concentrations of sediment quality parameters in Meliadine Lake less than benchmarks?

Data obtained for the sediment quality component in 2018 identified ISQG exceedances for arsenic, copper, and chromium. The PEL for arsenic was exceeded in the Near-field area by less than a factor of 2 and at one reference station by a factor of 1.4. The 2018 Near-field mean/median values exceeded their respective normal ranges for % fines and several metals (i.e., aluminum, beryllium, cadmium, nickel, silver, thallium, and zinc). In the Mid-field area, copper exceeded its normal range. Reference area mean/median values were within normal ranges.

[7] Sediment quality guidelines are assumed surrogate for AEMP benchmarks for the purposes of this 2018 AEMP report.

Arsenic ISQG and PEL exceedances were more frequent in the Near-field area, possibly due to the combination of higher content of fine sediments and the known association of arsenic with gold deposits (i.e., the Near-field area might be more mineralogically enriched with arsenic compared to areas farther away from the mine). Arsenic concentrations within the same range were reported under AEMP baseline conditions and have been documented in other regional northern lakes. Thus, when 2018 Near-field data were compared to the arsenic normal range, the 2018 data were within that normal range calculated to represent the observed variability.

The majority of 2018 sediment metal concentrations were either below AEMP benchmarks or within normal range boundaries. Where mean/median values exceeded a normal range, values were only marginally above, by less than a factor of 1.2 (i.e., 20%), which is within the range of sampling variability typically observed in sediment quality data.

Are concentrations in the exposure area increasing over time relative to the reference areas?

Differences in particle-size composition among AEMP study areas was identified as a potential confounding factor in differentiating between mine-effluent related effects and natural variability within Meliadine Lake. After normalization to% fines to try to account for this potential confounding factor, arsenic, cadmium, iron, lead, manganese, mercury, nickel, thallium and uranium concentrations were still higher in the Near-field area.

Although some metals had higher concentrations in the Near-field area compared to baseline years, only a subset of these metals had mean/median values above their respective normal ranges. Normal ranges were calculated to represent natural variability observed in the sediment AEMP dataset to date. Where mean/median values exceeded a normal range, values were only marginally above, by less than a factor of 1.2 (i.e., 20%), which is within the range of sampling variability that is typically observed in sediment quality data. Thus, when natural variability was accounted for, the 2018 data indicated that concentrations in the Near-field area had not increased over time relative to the reference areas.

As more sediment quality data are collected by the AEMP, temporal trends will be further evaluated relative to normal ranges.

Overall, sediment quality in Meliadine Lake study areas was generally consistent with FEIS predictions.

8.6 Recommendations

No recommendations are provided for changes to benthic invertebrate monitoring under the EEM or AEMP.

8.7 List of Appendices

- Appendix 8A – Quality Assurance and Quality Control
- Appendix 8B – 2018 Sediment Quality Dataset
- Appendix 8C – Time Series Plots with Normal Ranges
- Appendix 8D – Box-and-Whisker Plots Comparing Sampling Areas
- Appendix 8E – Scatter Plots of Sediment Quality Parameter Concentrations versus Fines
- Appendix 8F – Statistical Outliers
- Appendix 8G – Box-and-Whisker Plots Comparing Sediment Quality among Years in the Near-field Area

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9.0 BENTHIC INVERTEBRATE COMMUNITY

To date, AEMP BIC monitoring has been completed at Meliadine Lake in 2015, 2016, and 2018 to meet Type A Water Licence requirements (Type A Water Licence (2AM-MEL1631, Part I, Item 3), and MDMER EEM program requirements for the first year of the Mine effluent discharge in 2018. Sampling was completed in August of each year as per the AEMP Design Plan and the Cycle 1 EEM Study Design approved by the relevant regulatory agencies (Golder 2016; 2017b). Sample collection was aligned with AEMP water and sediment quality monitoring programs in August 2018.

Benthic invertebrate monitoring programs in 2015 and 2016 were intended to characterize baseline conditions within exposure and reference areas on Meliadine Lake. The BIC and supporting data generated were evaluated in the 2017 AEMP Annual Report to establish baseline conditions for the AEMP prior to the onset of mine effluent discharge (Golder 2018c). This section provides a summary of BIC data obtained in 2018, analysis of the 2018 data and baseline data, and an interpretation of the results as per the requirements of the AEMP and EEM programs. Data analyses presented in this section have been undertaken as per the AEMP Design Plan (Golder 2016a), the Cycle 1 EEM Study Design (Golder 2017a), and in response to comments from ECCC, INAC, and the KIA during review of the 2017 AEMP annual report (Golder 2018a). The report also follows the Cycle 1 EEM Study Design and considers comments provided by ECCC on the design document (Golder 2017a; 2018d).

9.1 Objectives

The main objective of the 2018 benthic invertebrate program with respect to fulfilling EEM requirements was to determine if the Mine effluent discharge has had an effect on the BIC in Meliadine Lake. The primary objective of 2018 benthic invertebrate program with respect to fulfilling AEMP requirements was to determine whether treated Mine effluent has the potential to cause short- or long-term effects on the BIC due to changes in water or sediment quality in Meliadine Lake.

Specific objectives for the BIC component of the 2018 AEMP are as follows:

- Compare benthic invertebrate communities in exposure areas in Meliadine Lake at the lowest trophic level (LTL) to within-lake reference areas, based on benthic invertebrate effect endpoints (e.g., invertebrate density, taxonomic richness, evenness, and similarity to reference communities)
- Verify predictions made in the FEIS relating to benthic invertebrate communities
- Meet the requirements of Part 2, Schedule 9 (d) of the MDMER regulations (Government of Canada 2018).
- Assess the efficacy of mitigation strategies proposed in the AEMP Design Plan (Golder 2016a) and the Environmental Management and Protection Plan to minimize the effects of the Mine on the aquatic environment
- Provide data to inform adaptive management intended to reduce or eliminate Mine-related effects on benthic invertebrate communities in Meliadine Lake

To achieve these objectives, analysis and interpretation of benthic invertebrate data in 2018 were focused on answering the following key question, as defined in the AEMP Design Plan (Golder 2016a):

Is the benthic invertebrate community affected by potential Mine-related changes in water and sediment quality in Meliadine Lake?

Field survey and data analysis methods employed to answer these key questions are described in Section 9.2. A summary of QA and QC assessment on the 2018 data is provided in Section 9.3. Results and discussion are presented in Section 9.4. A summary of the BIC results and conclusions are provided for both the EEM Cycle 1 EEM study and the AEMP in Section 9.5.

9.2 Methods

9.2.1 Sampling Design

Benthic invertebrate community monitoring was completed according to the methods outlined in the Cycle 1 EEM Study Design (Golder 2017a) and the AEMP Design Plan (Golder 2016a). The program consisted of one benthic sampling event with concomitant water quality and sediment sampling events in August 2018.

The Cycle 1 EEM study was designed to evaluate potential structural differences in Meliadine Lake communities between the area exposed to the MEL-14 effluent discharge (i.e., Near-field area) and Reference Area 1. Determination of effect was based on statistical analysis of BIC effect endpoints, such as density, richness, and evenness and the Bray-Curtis similarity index, as recommended by EEM TGD (Environment Canada 2012). Supporting endpoints were analyzed to provide additional input in assessment a range of effects that may result from Mine effluent discharge at the family level (FL).

For the 2018 AEMP program, BIC sampling was undertaken at two exposure areas (i.e., Near-field area and Mid-field area) and two reference areas (Reference Area 1 and Reference Area 3) in 2018 (Table 9.2-1, Figure 9.2-1). Although the study designs were consistent between the EEM and the AEMP, some modifications to these designs were made, as outlined below for each program.

Sampling in 2018 deviated from the Cycle 1 EEM study design as follows:

- A petite Ponar grab was used in place of an Ekman grab in 2018, following an evaluation of the success rate of each grab sampler during the 2018 Sediment Reconnaissance Survey (described further below; details are provided in Appendix 9A). Previous monitoring programs (2015 and 2016) used both the Ekman and Ponar grabs in Meliadine Lake. The Ponar grab was selected to provide better penetration and recovery of coarse sand substrates. Equipment dimensions and sampling area were unchanged from the original study design (15.24 × 15.24 cm; bottom sampling area of 0.0232 m²).
- The location of the Near-field area differed from that specified in the EEM study design (located close the MEL-D-1 diffuser location for the previous dewatering discharge). As approved by ECCC, the Near-field area was re-located for the 2018 sampling event to monitor the first year of Mine effluent discharge from the CP1 diffuser. Prior to the August 2018 EEM/AEMP sampling event, a Plume Delineation Study was completed to determine placement of the five stations within the Near-field area (Section 2.4.4). Near-field stations remained within the profundal zone to allow for compatibility of habitat characteristics with the Mid-field area and reference areas.
- Discrete samples to assess within-station variability were not collected at Near-field station MEL-01-06 as listed in the EEM study design, due to time constraints related to weather delays and an equipment malfunction. Instead, discrete samples were collected from Reference Area 3 station MEL-05-04.

Although the 2018 study design remained consistent with the AEMP Design Plan, there were some modifications to sampling station locations in response to the Sediment Reconnaissance Survey and the Plume Delineation Study. As described in the 2017 AEMP Annual Report (Golder 2018c), the Near-field and reference areas had

different substrates, with the Near-field area are being silt-dominated and the reference areas sand-dominated. To minimize this potential confounding factor, a Sediment Reconnaissance Survey was executed in July 2018 prior to the August benthic community sampling event. The purpose of the survey was to further investigate suitable and comparable stations for sediment and benthos sampling within the already established exposure and reference areas. Based on the survey results and consideration of the Plume Delineation Study, some sampling stations were relocated for the August 2018 sampling event to optimize the AEMP and EEM study designs. Detailed results of the Sediment Reconnaissance Survey are presented in Appendix 9A.

Specific deviations from the AEMP Design Plan in relation to station location were as follows:

- **Near-field Stations**: MEL-01-01 was retained because it was also retained as part of the water quality component near-field station re-alignment, after review of the 2018 Plume Delineation Study results. Furthermore, the July 2018 Sediment Reconnaissance Survey confirmed that sampling efficiency and grab fullness at this station were acceptable. The other four stations confirmed by the water quality realignment (i.e., MEL01-06, MEL01-07, MEL01-08 and MEL01-09) were adopted as 2018 sediment and benthic monitoring stations because they also had acceptable sampling efficiency and grab fullness. Furthermore, substrate composition was relatively consistent among the five 2018 near-field water quality stations.
- **Mid-field Stations**: 2018 sediment stations were selected to maintain alignment with water quality but to also avoid excessive sampling effort in retrieving acceptable grab samples. Therefore, MEL-02-06 and MEL-02-08 were chosen to replace MEL-02-01 and MEL-02-04 because of difficulty retrieving acceptable samples from MEL-02-01 and MEL-02-04. For stations that were re-sampled for consistency with previous years, locations were adjusted to within 5 to 10 m of the original sample locations based on sampling success.

As a result of the 2018 Sediment Reconnaissance Survey, sampling constraints such as target depth and sampler fullness were adjusted from the previous AEMP program to allow for future success in sediment-limited areas. A target depth range of 7 to 10 m and a grab sampler fullness of >40% was set as the project criteria for sampling; the AEMP Design Plan previously specified 8 to 10 m depth. To assess the potential effect of this adjustment on monitoring results, depth was added as a parameter to the correlation analysis run to evaluate habitat relationships, and sampler fullness was used as a screening variable when identifying outliers prior to data analysis (Appendix 9C).

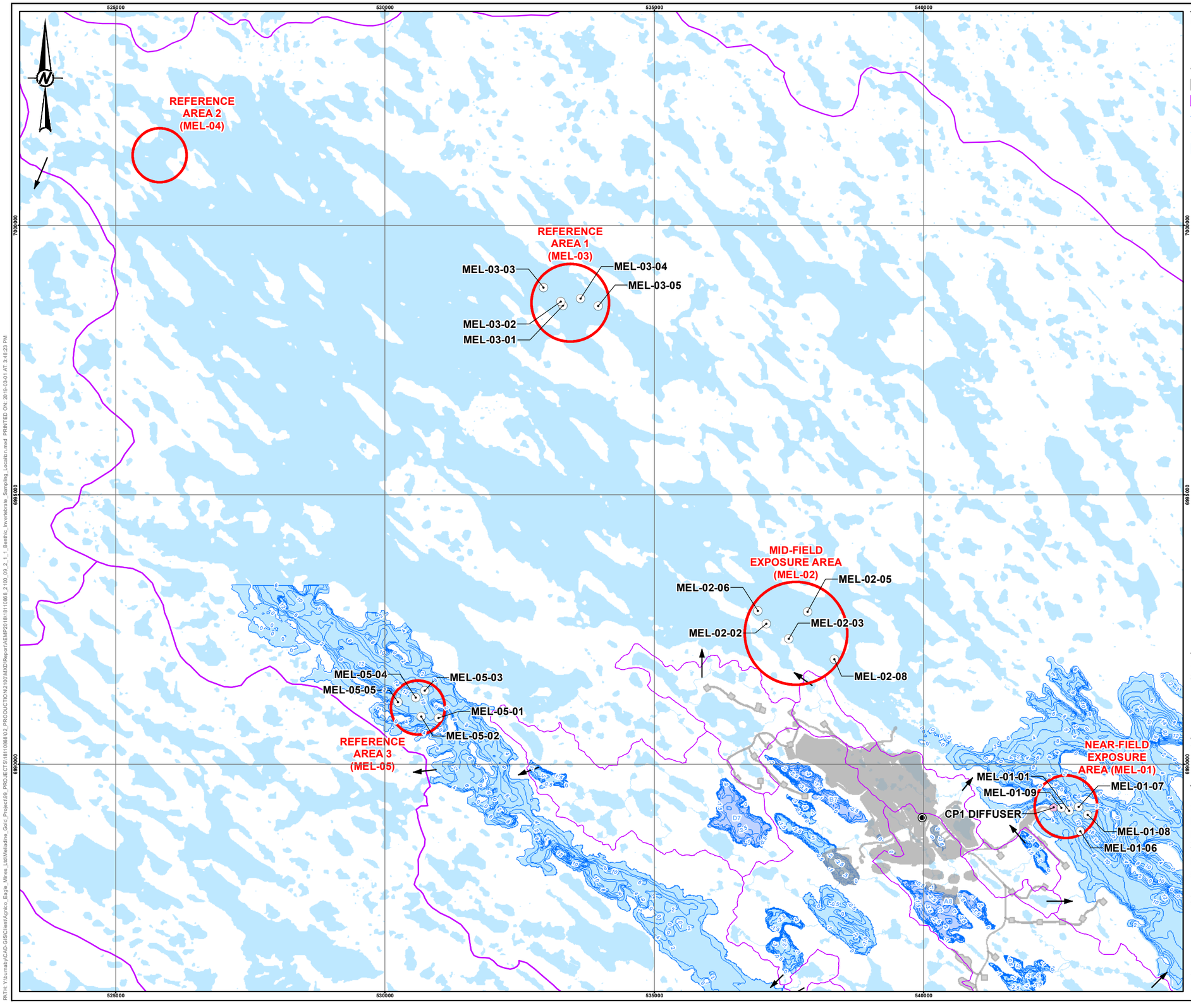
Two of the three reference areas specified in the AEMP Design Plan were sampled in 2018. Benthic invertebrate samples were not taken from Reference Area 2 (MEL-04) due to meteorological challenges; i.e., strong winds during August limited the time available for sediment sampling, such that only two of the three reference areas could be sampled. Reference Area 2 (MEL-04) was removed from the sampling program because it was the least similar to the Near-field area in 2016, and during the 2018 Sediment Reconnaissance Survey it was challenging to meet the sampling success criteria in this area (Appendix 9A).

QA/QC procedures described in Section 9.3 were followed during the 2018 benthic invertebrate monitoring program.

Table 9.2-1: Benthic Invertebrate Community Sampling Stations in Meliadine Lake, 2018

Area	Station ID (Distance from the Diffuser)	Sampling Date	Depth (m)	UTM Coordinates (NAD 83 Zone 15V)		Coordinates	
				Easting	Northing	Latitude	Longitude
Near-field area	MEL-01-01 (295 m)	22-Aug-18	9.0	542701	6989134	63° 1’45.5”N	92° 9’22.0”W
	MEL-01-06 (665 m)	22-Aug-18	7.2	542907	6988757	63° 1’33.5”N	92° 9’7.7”W
	MEL-01-07 (463 m)	21-Aug-18	8.0	542878	6989205	63° 1’47.7”N	92° 9’9.4”W
	MEL-01-08 (644 m)	22-Aug-18	7.5	543043	6989062	63° 1’43.0”N	92° 8’57.8”W
	MEL-01-09 (144 m)	22-Aug-18	7.2	542558	6989186	63° 1’47.2”N	92° 9’32.2”W
Mid-field area	MEL-02-02	31-Aug-18	7.0	537079	6992606	63° 3’39.9”N	92° 15’59.1”W
	MEL-02-03	18-Aug-18	8.6	537496	6992330	63° 3’30.8”N	92° 15’29.7”W
	MEL-02-05	31-Aug-18	8.5	537842	6992835	63° 3’47.0”N	92° 15’4.6”W
	MEL-02-06	31-Aug-18	7.3	536922	6992853	63° 3’47.9”N	92° 16’10.1”W
	MEL-02-08	15-Aug-18	9.0	538342	6991952	63° 3’18.3”N	92° 14’29.7”W
Reference Area 1	MEL-03-01	20-Aug-18	6.8	533305	6998516	63° 6’52.1”N	92° 20’23.6”W
	MEL-03-02	28-Aug-18	6.9	533262	6998588	63° 6’54.5”N	92° 20’26.6”W
	MEL-03-03	28-Aug-18	9.5	532943	6998851	63° 7’3.1”N	92° 20’49.2”W
	MEL-03-04	26-Aug-18	6.6	533629	6998650	63° 6’56.4”N	92° 20’0.4”W
	MEL-03-05	28-Aug-18	6.1	533956	6998504	63° 6’56.4”N	92° 19’37.2”W
Reference Area 3	MEL-05-01	1-Sep-18	9.0	530992	6990859	63° 2’45.5”N	92° 23’13.8”W
	MEL-05-02	30-Aug-18	9.3	530675	6990883	63° 2’46.4”N	92° 23’36.4”W
	MEL-05-03	29-Aug-18	8.5	530737	6991365	63° 3’1.9”N	92° 23’31.6”W
	MEL-05-04	30-Aug-18	9.5	530573	6991231	63° 2’57.6”N	92° 23’24.4”W
	MEL-05-05	29-Aug-18	8.5	530241	6991156	63° 2’55.3”N	92° 24’7.1”W

Samples were collected during daylight hours. EEM study areas included the Near-field area and Reference Area 1.
ID = identification; UTM = Universal Transverse Mercator.



LEGEND

- BENTHIC INVERTEBRATE SAMPLING LOCATION
- CP1 DIFFUSER
- DIRECTION OF FLOW AT WATERSHED OUTLET
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- BATHYMETRIC CONTOUR (0.5 AND 2m INTERVAL)
- WATERCOURSE
- WATERBODY



0 1.5 3

1:70,000 KILOMETRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

MELIADINE LAKE BENTHIC INVERTEBRATE COMMUNITY STATIONS SAMPLED IN 2018

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	JL
PREPARED	MH
REVIEWED	RS
APPROVED	RS

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9.2.2 Field Methods

As discussed above, following the July 2018 sediment reconnaissance and plume delineation surveys, stations in the Near-field and Mid-field areas were relocated based on proximity to the MEL-14 diffuser location, sampling efficiency and retrieval success, and comparable sediment composition. The results of the Sediment Reconnaissance Survey are described in Appendix 9A and the Plume Delineation Study is described further in Section 2.4.4.3.2. Benthic invertebrate community samples were collected in the fall, which is the period of highest community diversity and stability (MOE 2007).

Habitat characteristics were standardized to the extent possible for sediment particle size and water depth (i.e., between 7 and 10 m) to reduce habitat-related variability in the BIC data. Benthic invertebrate samples were collected using a Petite Ponar grab (15.24 × 15.24 cm; bottom sampling area of 0.0232 m^2). At each station, five subsamples were collected and sieved through a 500 µm mesh screen in the field. At the majority of stations sampled, subsamples were combined to form a composite sample from material retained by the mesh, placed in a 500 mL sample bottle, and preserved with 10% neutral buffered formalin.

Pooling of subsamples in the field to form a single composite sample for taxonomic analysis from a station is commonly done to reduce analytical cost, without an effect on study results. Analysis of data collected during EEM and AEMP surveys is based on station as the unit of replication and does not require data for separate subsamples. Analyses of separate subsamples is useful to initially evaluate within-station variation, but once the number of subsamples required is determined, collection of subsample data is no longer necessary. As per the Cycle 1 EEM Study Design (Golder 2017a) and AEMP Design Plan (Golder 2016a), individual subsamples were collected at one station MEL-05-04, and were preserved separately. Samples were shipped to Cordillera Consulting, Summerland, British Columbia, for taxonomic identification and enumeration of invertebrates.

Sediment quality samples were also collected using a Petite Ponar grab, concurrently with BIC samples, to characterize particle size and TOC as outlined in Section 8.0. Environmental data and observations, such as habitat characteristics and field water quality data, were also recorded in conjunction with benthic invertebrate sampling to provide supporting information. Specifically, the following in-situ surface water quality measurements, habitat characteristics, and other information were recorded at each sampling station:

- sampling date
- GPS coordinates, recorded as UTM
- water depth
- presence of aquatic vegetation and algae
- near-bottom in situ water quality measurements of water temperature, DO, pH and specific conductivity
- observations of the sediments for colour, consistency, and odour

9.2.3 Laboratory Methods

Samples were submitted to Cordillera Consulting Inc. (Cordillera; Summerland, BC) for taxonomic identification and enumeration of invertebrates to the lowest practical level (typically genus or species). Cordillera team members are certified by the Society for Freshwater Science in taxonomic identification and have over seven years' experience in sample processing for EEM programs. Benthic invertebrate samples were initially processed to remove the preservative and remaining fine sediment. Samples with high inorganic content were elutriated to separate the organic material from the inorganic material prior to sorting. Inorganic material was checked for shelled or cased invertebrates that may have been too heavy to elutriate; this heavier material was included in the remaining sample to be sorted.

Subsampling was not necessary for any of the 2018 samples. Benthic invertebrates were identified to the genus level where possible. If organisms could not be identified to the genus level, they were identified to the next higher taxonomic level of identification (i.e., family, order, class or phylum). A reference collection was prepared, consisting of representative specimens from each taxon. The reference collection was archived by the taxonomist for possible comparison with BIC data from future studies and for QC of future taxonomic identifications. Further details regarding taxonomy methods and reference collection results are provided in Appendix 9B.

Raw invertebrate abundance data were received from the taxonomist in electronic format. To meet EEM requirements, data were entered into the latest version of ECCC EEM Metal and Diamond Mining Data Entry Software. For reporting purposes, data were stored in Excel spreadsheets.

9.2.4 Data Analysis

9.2.4.1 Review of Field Data

Field data collected in 2018 were pre-screened based on adherence to acceptability criteria for the collection of grab samples:

- acceptable grab sample volume of a minimum 40% fullness
- sample depth between 7 and 10 m

The 2018 field data met these acceptability criteria. With respect to the AEMP baseline dataset brought forward to support interpretation of the 2018 benthic data, there was an absence of sufficient depositional sediments at three locations in 2015 (i.e., stations MEL-01-05, MEL-02-04 and MEL-02-05), resulting in samples with <10% fullness of the petite Ponar grab. As a result, these samples did not meet the ">40% fullness" criterion and were eliminated from the dataset used for 2018 reporting in this section. All samples collected in 2016 and 2018 met this criterion and were considered to be acceptable.

9.2.4.2 Review of Taxonomic Data

The 2018 taxonomic dataset was pre-screened prior to analysis and adjustments were made as described below:

- The composite benthic sample taken at station MEL-05-05 in 2018 contained only one benthic invertebrate organism. This was despite the sample meeting acceptability criteria for suitable particle size, grab fullness and sampling an area equivalent to five grab samples (i.e., 0.116 m^2). Data for this sample were therefore considered to be anomalous, potentially resulting from inadequate sample preservation, and this station was excluded from the data analysis.
- Data for Nematoda and Ostracoda were removed from the dataset before data analysis. These meiofauna are not reliably enumerated using 500 µm mesh sampling gear (Environment Canada 2012).

- Copepoda and Cladocera were excluded from the dataset before data analysis because they are non-benthic organisms.
- *Baetis sp.*, *Zapada columbiana*, and *Brachycentrus occidentalis* were removed from the dataset because they are not considered to be part of the resident BIC in Meliadine Lake. These taxa are typical of fast-flowing waters and were present in low abundance (i.e., one or a few individuals) in some samples as a result of incidental capture at the time of the survey. Each of these taxa represented <1% of the total invertebrate abundance.

9.2.4.3 Variable Selection

A summary of the benthic invertebrate variables calculated from the screened datasets is presented in Table 9.2-2. These variables align with the endpoints recommended of the EEM TGD (Environment Canada 2012), and meet MDMER and AEMP Design Plan requirements (Golder 2016, Government of Canada 2018), and provide supporting information to aid in the interpretation of the results.

Table 9.2-2: Summary of Benthic Invertebrate Variables Assessed for 2018 EEM and AEMP Programs

Variable	Cycle 1 EEM (Family Level)[a]	2018 AEMP (Lowest Level)[b]
Total invertebrate density (number of organisms per square metre)	Effect Endpoint (MDMER-required)	AEMP Variable
Total taxonomic richness (number of taxa per station)	Effect Endpoint (MDMER-required)	AEMP Variable
Simpson's diversity index (SDI)	Supporting Endpoint	AEMP Variable
Simpson's evenness index (SEI)	Effect Endpoint (MDMER-required)	AEMP Variable
Bray-Curtis Index, using the EEM method (i.e., comparisons to reference median) (BCI-EEM)	Effect Endpoint (not MDMER-required)	AEMP Variable
Bray-Curtis Index, using the pairwise method (BCI-PW)	Supporting Endpoint	AEMP Variable
Presence/absence by each taxon	Supporting Endpoint	Supporting Endpoint
Community composition as percentages of major taxonomic groups[c]	Supporting Endpoint	AEMP Variable
Densities of dominant invertebrates: midges (Chironomidae), bivalves (Pisidiidae), andamphipods (Amphipoda)	-	AEMP Variable

a) As presented in the EC EEM TGD (2012) and/or the MDMER (Government of Canada 2018).
b) As presented in the AEMP Design Plan (Golder 2016a).
c) Henceforth reported as relative density.
- = not applicable.

Total invertebrate density was calculated as the number of organisms per square metre (org/m^2) for each station. This calculation was based on the bottom area of the grab sampler (0.0232 m^2) multiplied by 5 grabs (i.e., 0.116 m^2) to represent the total area sampled by five grabs.

$$\frac{\text{number of organisms per replicate sample}}{\textit{(sampler area [0.0232 } m^2\textit{] } \times \textit{ number of subsamples [5])}}$$

Richness is the total number of taxa/station at the family level or the LTL. Richness provides an indication of the diversity of benthic invertebrates in an area; a higher richness value typically indicates a more healthy and balanced community.

For interpretation purposes, ranges in benthic invertebrate densities and LTL richness values were operationally defined as low/moderate/high, based on previous AEMP in northern lakes within Canada and information documented in associated annual reports (e.g., 2016 Diavik AEMP Annual Report [Golder 2017b], 2016 De Beers Gahcho Kue AEMP Annual Report [De Beers 2017c]). Observed density and richness values were categorized as follows:

- **low:** density less than 5,000 org/m²; LTL richness less than 10 taxa/station
- **moderate:** density ranging from 5,000 to 50,000 org/m²; LTL richness ranging from 10 to 40 taxa/station
- **high:** density greater than 50,000 org/m²; LTL richness greater than 40 taxa/station

When compared to other lake environments, the range of densities described above are relatively low considering some lake environments have densities greater than 100,000 individuals per square metre (Hynes 1970; Resh and Rosenberg 1984; Rosenberg and Resh 1993).

Simpson's Diversity Index (SDI) measures the proportional distribution of organisms in the community, taking into account taxonomic richness and how evenly the total density is distributed among these taxa. Certain conditions may favour one organism over another, resulting in the community being dominated by a few taxa, which is reflected in decreased diversity (Simpson 1949). The SDI values range between zero and one, where lower values indicate a less diverse community and higher values indicate a more diverse community. The SDI was calculated using the formula provided by Krebs (Krebs 1999):

$$SDI = 1 - \sum_{i=1}^{S} (p_i)^2$$

Where:

- SDI = Simpson's diversity index
- S = the total number of taxa
- p_i = the proportion of the i^{th} taxon

Simpson's Evenness Index (SEI) is a measure of how evenly the total invertebrate density is distributed among the taxa present at the station. The SEI is included along with the SDI to provide context as to whether taxonomic richness or the distribution of total density among taxa is driving the SDI values. The SEI is also expressed as a value between one and zero, with one representing high evenness (i.e., equal numbers of all taxa present in a sample) and zero representing low evenness (i.e., a high degree of dominance by one or a few organisms). The SEI values were calculated using the following formula (Smith and Wilson 1996):

$$SEI = 1/\sum_{i=1}^{S}(p_i)^2/S$$

Where:

- SEI = Simpson's evenness index
- S = the total number of taxa
- p_i = the proportion of the i^{th} taxon

The above variables are measures of total invertebrate density, taxonomic richness, and structural aspects of the community, but do not consider any quantitative information of the types of organism's present. Therefore, the Bray-Curtis Index (BCI; a dissimilarity index) was calculated to compare entire communities between reference and exposure areas. The BCI summarizes the overall difference in community structure between two stations (Environment Canada 2012). BCI values range between 0 and 1, whereby lower values indicate that the community in the exposure area is more similar to the reference community.

As recommended by Environment Canada (2012), the BCI was calculated following the method by Legendre and Legendre (1983), where the distance statistic is calculated as:

$$\text{B-C}=\frac{\sum_{i=1}^{n}|y_{i1}-y_{i2}|}{\sum_{i=1}^{n}(y_{i1}-y_{i2})}$$

Where:

- B-C = Bray-Curtis distance between sites 1 and 2
- y_{i1} = count for taxon i at site 1
- y_{i2} = count for taxon i at site 2
- n = total number of taxa present at the two sites

BCI values have historically been calculated by comparing the benthic community of each station to the median reference area community (using pooled reference area data). This method (henceforth abbreviated to BCI-EEM in this assessment) is recommended by the EEM TGD (Environment Canada 2012). Hubert et al. (2011) pointed out that using the reference median value as the basis for calculating Bray-Curtis distance values results in frequently finding effects where none exist, referred to as a Type I error (false positive). To correctly calculate Bray-Curtis distance, Huebert et al. (2011) recommended that pairwise, among-area comparisons of individual reference and exposure stations be conducted to generate Bray-Curtis distance values for statistical comparisons.

Therefore, Bray-Curtis distance values were also calculated using the pairwise comparisons method (henceforth abbreviated to BCI-PW in this assessment). For replicated reference areas, this meant that each reference area station was compared to all stations in the other reference area and a mean BCI was calculated (to estimate background among-area variation). Similarly, each exposure station was compared to all reference stations and a mean BCI was calculated. To meet the Cycle 1 EEM requirements and those of the AEMP Study Design, Bray-Curtis distances for all years were calculated using both pairwise and the EEM methods.

9.2.4.4 Normal Range

The magnitude of effect on benthic invertebrate communities was evaluated by comparing benthic variables (i.e., density, richness, SDI, SEI, BCI and densities of dominant taxa) in the Near-field area to background values. Background values (or normal ranges) were calculated using reference area data (i.e., from MEL-03, MEL-04 and MEL-05 [also referred to as Reference areas 1, 2, and 3]) collected from 2015 to 2018, and baseline data collected from the Near-field and Mid-field areas in 2015.

The 2016 Near-field data were excluded from normal range calculations because the 2017 AEMP Annual Report (Golder 2018c) suggested that benthic communities in the Near-field area may have been influenced by STP effluent discharged to a rock-bed channel that emptied into Meliadine Lake near the exploration camp. The benthic invertebrate response pattern in the Near-field area was consistent with mild nutrient enrichment. A review of nutrient loadings from the STP discharge in Section 2.7 identified an approximate doubling of TP loadings, in 2016 relative to 2015, from the STP discharge to the rockbed channel close to the Meliadine Lake Near-field area. The increase in TP loadings from the STP discharge represents a confounding factor that prohibits the 2016 Near-field data (collected under baseline conditions for the Mine effluent discharge) from being included in the dataset used to calculate the normal ranges for BIC variables in Meliadine Lake.

Methods for defining the BIC normal range follow the methods of Barrett et al. (2015) and are consistent with the approach used for defining normal ranges for other AEMP components (i.e., water quality, sediment quality, and plankton). A summary of the methods considered in this assessment is provided below:

- When background data were normally distributed, the normal range was estimated as the 80% prediction interval (PI) of the dataset. Normality was assessed using the Shapiro Wilk test, using $\alpha = 0.05$ to indicate a significant departure from normality.
- When the background data were not normally distributed, but normality could be achieved after Box-Cox transformation (Box and Cox 1964), the normal range was calculated on the Box-Cox transformed data and the upper and lower bound of the normal ranges were back-transformed.

- If neither the untransformed data or Box-Cox transformed datasets were normally distributed, the normal range boundaries were defined as the 10th and 90th percentile of the baseline data. In cases where the percentile method was used, a dataset of 1,000 samples was randomly generated from the normal range dataset and the 10th and 90th percentile were calculated from this distribution of 1,000 samples to estimate the normal range.

It should be noted that the normal ranges provided in this report are considered provisional during the initial monitoring years under the AEMP due to the limited sample sizes used in the calculations. The normal range is intended to estimate the range of natural spatial and temporal variability, and the more reference data incorporated into the calculation, the more accurate the estimate becomes. These normal ranges may be redefined in future reports to allow for the inclusion of additional appropriate monitoring data as they become available.

Normal ranges determined for the 2018 AEMP are summarized in Table 9.2-3.

Table 9.2-3: Normal Ranges for Benthic Invertebrate Community Variables

Benthic Invertebrate Community Variable	Unit	Normal Range	
		Lower Limit	Upper Limit
Total invertebrate density	org/m²	128	1,938
Total taxonomic richness[(a)]	taxa/station	8	18
Simpson's diversity index[(a)]	-	0.69	0.88
Simpson's evenness index[(a)]	-	0.25	0.64
BCI-EEM (compared to REF1 median)[(a)]	-	0.28	0.73
BCI-EEM (compared to REF3 median)[(a)]	-	0.21	0.70
BCI-PW[(a)]	-	0.47	0.74
Chironomid density	org/m²	123	1,588
Bivalve density	org/m²	43	365

a) Normal Ranges were calculated for benthic invertebrate variables at the lowest taxonomic level.

org/m² = organisms per square metre; BCI = Bray-Curtis Index; EEM = Environmental Effects Monitoring; PW = pairwise; REF = reference area.

9.2.4.5 Statistical Analysis

9.2.4.5.1 General Approach

Statistical analysis was used to evaluate whether there were statistically significant differences in EEM BIC endpoints between the Near-field area and Reference Area 1 in 2018. Thus, to evaluate if the Mine effluent discharge had an effect on the BIC in the Near-field area. For the 2018 AEMP data analysis, a similar statistical approach was used to evaluate differences among sampling areas, but it was applied to all areas sampled to meet the objectives of the AEMP Design Plan (Golder 2016a). Univariate statistical tests (i.e., Spearman correlations, ANOVA, pairwise comparisons) were performed using SYSTAT Version 13.2 (Systat Software Inc., Chicago, IL).

Summary statistics (i.e., arithmetic mean, median, minimum, maximum, standard deviation standard error, and sample size) for each BIC endpoint and AEMP variable were calculated and summarized by sampling area.

9.2.4.5.2 Cycle 1 EEM

Prior to undertaking univariate statistical tests for each BIC EEM endpoint, data were screened for outliers and potential data entry errors, as described in Appendix 9C. Based on the screening results presented in Appendix 9C, no outliers were identified in the dataset used for the Cycle 1 EEM statistical analysis.

To compare BIC endpoint values between the Near-field area and Reference Area 1, an ANOVA test was completed in SYSTAT Version 13.1 (Systat Inc. 2017). Prior to analysis, benthic data were checked for statistical assumptions (i.e., normality, homoscedasticity; Zar 1999). If data did not meet the statistical assumptions, the equivalent non-parametric test (e.g., Kruskal-Wallis with post-hoc Conover-Inman) was conducted. Data were considered significantly different at α = 0.1, as recommended by EC (2012).

No data transformations were necessary to satisfy the requirement of normality for ANOVA, with the exception of SEI, where data were ranked prior to analysis. The SEI values are derived variables with unusual statistical properties and, in general, their sampling distributions are unknown (Rosenberg and Resh 1993). Transformation of SEI to rank order (i.e., all stations are pooled for the purpose of ranking) relaxes the assumption of normality and allows the use of ANOVA.

Magnitude of difference between the Near-field area and Reference Area 1 was calculated using untransformed data, according to the following equation:

$$\frac{x_e - x_r}{x_r} \times 100$$

Where:

- x_e = the exposure area mean;
- x_r = the reference area mean

The critical effect size (CES) was calculated as ±2 standard deviations, as recommended by the EEM TGD (Environment Canada 2012), expressed as a percentage of the reference mean. The magnitude of difference was also expressed as the number of reference area standard deviations, as per the following equation:

$$\frac{x_e - x_r}{\sigma_r}$$

Where:

- x_e = the exposure area mean;
- x_r = the reference area mean;
- σ_r = the reference area standard deviation

A statistically significant difference in an effect endpoint was only considered biologically significant if the magnitude of effect exceeded the CES. For a study design with five replicate stations per area, Environment Canada (2012) recommends that α and β be set equally at 0.10 to allow a CES equal to ±2 SD from the reference area mean (refer to Table 9-7 of the EEM TGD [Environment Canada 2002]). Using this design, power was set a priori at 0.90.

For non-significant results, *post-hoc* power analyses were run to determine power required to detect a biologically meaningful effect (i.e., with a magnitude equal to the CES).

9.2.4.5.3 2018 AEMP

Prior to undertaking univariate statistical testing for each benthic AEMP variable, data were screened for outliers, as described in Appendix 9C. Based on the screening results presented in Appendix 9C, no outliers were identified in the dataset used for the AEMP statistical analysis. Reference area data were pooled from Reference Area 1 (MEL-03) and Reference Area 3 (MEL-05) for inclusion in statistical testing for each benthic variable with the Near-field area and the Mid-field area.

To compare benthic variables among AEMP areas within Meliadine Lake, an ANOVA test was completed in SYSTAT Version 13.1 (Systat Inc. 2017). Prior to analysis, benthic data were checked for statistical assumptions (i.e., normality, homoscedasticity; Zar 1999). If data did not meet the statistical assumptions, the equivalent non-parametric test (e.g., Kruskal-Wallis with post-hoc Conover-Inman) was conducted. No data transformations were necessary to satisfy the requirement of normality for ANOVA, with the exception of SEI, where data were ranked prior to analysis by ANOVA (as described in Section 9.2.4.5.2).

Where the overall ANOVA was found to be significant at $\alpha = 0.1$, pairwise comparisons (i.e., planned contrasts) were made to compare the exposure areas to the pooled reference areas for all benthic variables. Specifically, the following pairwise comparisons were made:

- Near-field area versus pooled reference areas
- Mid-field area versus pooled reference areas
- Reference Area 1 versus Reference Area 3

Data were considered significantly different at $\alpha = 0.1$

9.2.4.5.4 Multivariate Analysis

Benthic invertebrate community structure was analyzed using the non-parametric ordination method of non-metric multidimensional scaling (nMDS; Clarke 1993). nMDS is a multivariate method based on the BCI. The nMDS data were scaled in Primer, version 7 for Windows (PRIMER E Ltd., Quest Research 2017; Clarke and Gorley 2016). Lowest taxonomic level (LTL)BIC data were log (x+1) transformed, to improve separation of the data among stations on the nMDS plots and to reduce weighting of the analysis by the most abundant taxa.

A Bray-Curtis resemblance matrix was generated, and the nMDS procedure was applied to this matrix. Using rank order information, nMDS determined the relative positions of stations in two dimensions based on community composition. Goodness-of-fit was determined by examining the Shepard diagrams as well as the stress value, which was calculated from the deviations in the Shepard diagrams. Lower stress values (i.e., less than 0.10) indicate less deviation and a greater goodness-of-fit, higher stress values (i.e., greater than 0.20) must be interpreted with caution and often higher dimensions (i.e., 3-D) are needed to describe the data (Clarke 1993). Points that fall close together on the nMDS ordination plot represent samples with similar community composition; points that are far apart from each other represent samples with dissimilar community composition. A similarity profile (SIMPROF) test was also carried out on the ordination data to identify meaningful clusters of important taxa (i.e., those taxa that behave in a coherent manner across areas) and to prevent over-interpretation of the nMDS plots (Clarke et al. 2014). These SIMPROF clusters were superimposed on the MDS plots.

An overall one-way analysis of similarities (ANOSIM) test was carried out on the Bray-Curtis resemblance matrix to confirm interpretation of the separation of the points on the MDS ordination plot, and to investigate whether differences in community composition observed in the nMDS ordination plots were significant. In addition, an area-level pair-wise ANOSIM was carried out to compare Near-field and Mid-field areas to the reference areas

sampled in 2018. Pair-wise comparisons of the Near-field area between 2015, 2016 and 2018 (all pairwise combinations) were also conducted. A Bray-Curtis resemblance matrix was generated to test differences among areas contrasted with differences among stations within each area (Clarke et al. 2014) or differences among years contrasted with differences among stations within each year in the Near-field area.

An R-statistic ranging from 0 to 1 was produced by the analysis; a strong difference in community composition was indicated by R = 1 and no difference between communities was indicated by R = 0. Significance of the R statistic was achieved when a *P*-value of >0.05 was reported, based on the five replicate stations per area.

9.2.4.5.5 Evaluation of the Effects of Habitat Variation

Spearman rank correlation analysis was used to test the strength of relationships between key habitat variables (i.e., water depth, TOC, particle size, sediment metal concentrations above sediment quality guidelines, nutrient [TN and TP] concentrations in lake water) and benthic community variables (i.e., total density, richness, diversity, evenness, densities of dominant invertebrate groups). This analysis was completed on pooled data from all stations sampled in 2018 to identify environmental factors that could potentially confound the study design (e.g., habitat variables), or account for the variation observed in the benthic community (e.g., metals in sediments). Critical values for significance were determined from Siegel and Castellan (1988). Spearman rank correlation coefficients were calculated using SYSTAT Version 13.2 (Systat Software Inc., Chicago, IL). Thresholds for statistical significance of $P < 0.05$, $P < 0.01$, and $P < 0.001$ were applied to identify significance of correlations.

Results of the correlation analysis were used to evaluate whether variation in key habitat variables may represent confounding factors that could potentially influence statistical comparisons between sampling areas. This analysis also provided a preliminary evaluation of relationships between key sediment and water quality variables, and benthic community variables. Where a correlation between environmental variables and benthic community variables was moderately to highly statistically significant (i.e., P<0.01), scatter plots were produced to support the interpretation of the significant correlations.

9.2.4.5.6 Characterization of Within-Station Variability

To characterize within-station variability, discrete samples were collected from station MEL-05-04 in Reference Area 3. At this station, five subsamples (discrete grab samples) were collected and sorted separately from one another. Total abundance and richness values for the five subsamples were visually assessed and percent standard error of the mean (%SE)[8] of the five subsamples was calculated for each variable. A%SE value of <20% is considered to be indicative of within-station variability typical for benthic invertebrate communities based on Elliott (1971).

[8] SE expressed as the percentage of the mean.

9.3 Quality Assurance/Quality Control

The QA/QC practices applied during this study and detailed results of the QC analyses are provided in Appendix 9C). QA components of the program included the use of trained personnel and a qualified taxonomist; QC components included assessments of sampler fullness and sorting efficiency. A summary of key QC results and observations is provided below.

- Grab sampler fullness was evaluated and only data from samples where grabs were at least 40% full were included in the BIC assessment as per Golder's Specific Work Instructions (Golder 2018e unpublished file information).
- Sorting efficiency was considered acceptable for the two samples tested (96% and 100%) (Environment Canada 2012).
- Samples were sorted in their entirety by the taxonomic laboratory, so an assessment of subsampling efficiency was not required for 2018.
- Due to an equipment malfunction, samples from stations MEL-01-01, MEL-01-06, MEL-01-08, and MEL-01-09 were not field sieved at the time of collection. Samples were preserved and kept cold and sieved at the earliest opportunity. These samples were replenished with the addition of new preservative prior to submission to the taxonomist.

Based on this assessment, the benthic invertebrate monitoring data are considered adequate to meet the requirements of the Cycle 1 EEM Study Design (Golder 2017a) and the AEMP Design Plan (Golder 2016a).

9.4 Results and Discussion

9.4.1 Habitat Characteristics

Habitat characteristics for 2018 are summarized in Table 9.4-1, Figure 9.4-1 and Figure 9.4-2. Detailed habitat data and summary statistics are presented in Appendix 9A, Table 9A-1 and the *Sediment Reconnaissance Survey Summary* (Appendix 9A). Water and sediment quality data collected in conjunction with the BIC monitoring program, for the Water Quality and Sediment Quality AEMP components, are provided in Section 6.0 and 8.0.

The following observations were noted from a review of the 2018 habitat data:

- Mean water depth ranged from 7.2 m (Reference Area 1) to 9.0 m (Reference Area 3) for benthic stations sampled in 2018 (Table 9.4-1). Thus, the reference areas encapsulated the depth range sampled in 2018, with the exposure areas captured within the reference area depth range.
- Average bottom water temperatures represented typical seasonal values for subarctic lakes in Northern Canada, between 8.8°C (Reference Area 3) and 10.7°C (Mid-field area).
- Average DO values indicated the overlying water at all stations in 2018 was well oxygenated and above the CWQG-PAL for minimum DO concentration.
- Average pH values indicated that the overlying water was slightly alkaline and values were within the CWQG-PAL range of 6.5 to 9.0 (Table 9.4-1).

- Mean specific conductivity values in the overlying water were characteristically low, reflective of subarctic environments. Slightly higher mean specific conductivity values were recorded in the Near-field area compared to other areas sampled (i.e., Near-field >Mid-field >Reference Area 3 >Reference Area 1), but they were within a factor of 1.2 of measurements at Reference Area 1 (Table 9.4-1).
- Sediment TOC showed some variability among sampling areas (i.e., Near-field >Mid-field >Reference Area 3 >Reference Area 1), with the Mid-field area TOC higher than Reference Area 1 TOC by a factor of 1.8. The Near-field TOC was most comparable to Reference Area 1 values and the Mid-field TOC was most comparable to Reference Area 3 values Table 9.4-1).
- Sediments sampled from the Near-field area had a higher proportion of fines (i.e., silt + clay) and less sand compared to the Mid-field and reference areas (Figure 9.4-1). These particle size results are consistent with those reported by Golder (2018a) for the 2015 and 2016 AEMP baseline sampling events (Figure 9.4-2). Thus, as discussed by Golder (2018a), spatial differences in particle size distribution between the Near-field area and other sampling areas have the potential to confound the ability of the AEMP and EEM study comparisons made to evaluate whether benthic invertebrate communities were impacted by the Mine effluent discharge in 2018. This is evaluated further in Sections 9.4.2 and 9.4.4.

Table 9.4-1: Summary of Habitat Variables for Meliadine Lake in 2018

Area	Water Depth	In-situ Water Quality				Sediment Total Organic Carbon	Sediment Particle Size			
		Water Temperature	Dissolved Oxygen	pH	Specific Conductivity		Sand	Silt	Clay	Fines (Silt + Clay)
	(m)	(ºC)	(mg/L)	-	(µS/cm)	(%)	(%)	(%)	(%)	(%)
Near-field	7.8	10.6	12.0	8.6	86.8	4.5	21.1	68.7	10.2	78.9
Mid-field	8.1	10.7	10.8	8.3	77.0	6.7	49.7	39.2	11.1	50.4
Reference 1	7.2	9.4	12.0	8.5	72.1	3.7	57.5	38.9	3.6	42.6
Reference 3	9.0	8.8	11.9	8.2	75.9	5.9	50.6	41.1	10.3	49.4

Note: Mean values are presented for each sampling area.

µS/cm = microSiemens per centimetre.

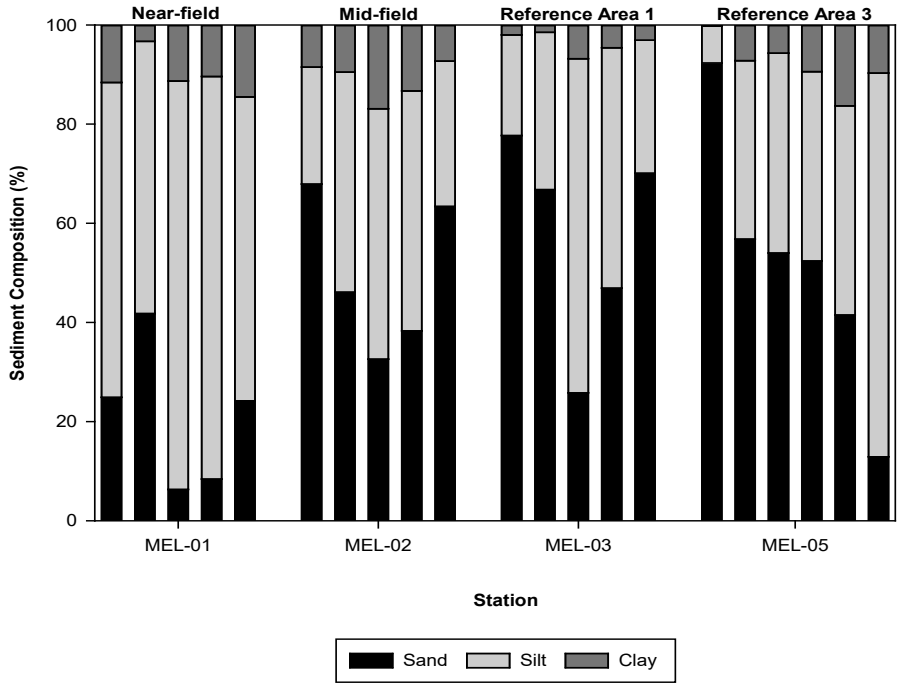
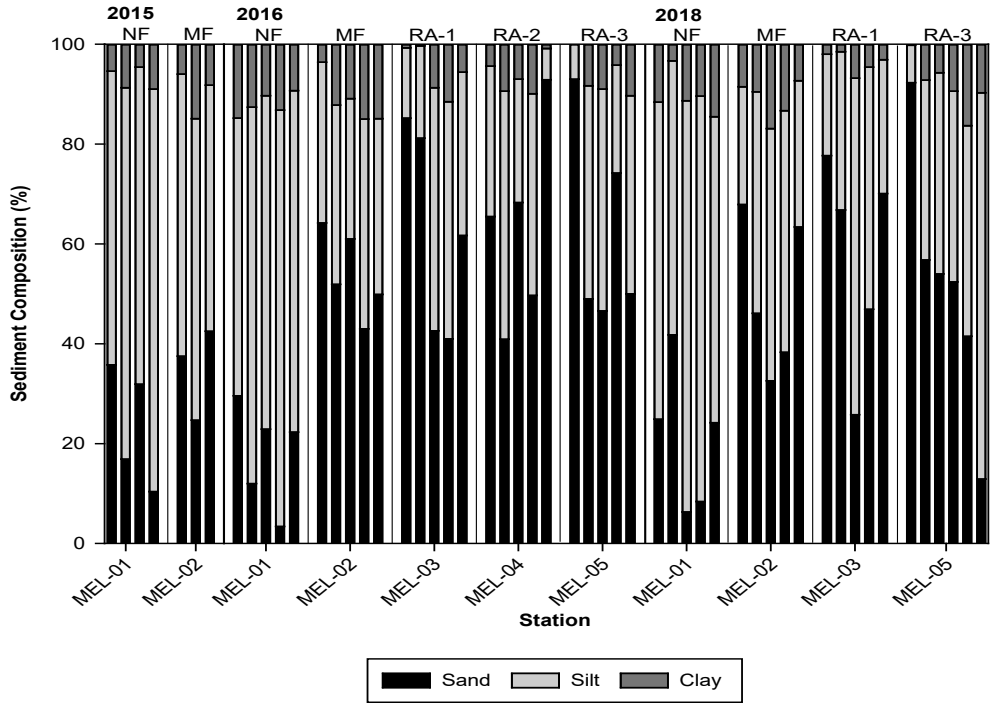


Figure 9.4-1: Sediment Particle Size Comparison for Meliadine Lake, 2018



NF = Near-field area; MF = Mid-field area; RA-1 = Reference Area 1; RA-3 = Reference Area 3

Figure 9.4-2: Sediment Particle Size Comparison for Meliadine Lake, 2015, 2016 and 2018

9.4.2 Benthic Invertebrate Community

Raw benthic invertebrate abundance data, presence/absence data, and a summary of BIC variables calculated from the raw taxonomy data are presented in Appendix 9D, Tables 9D-2 to 9D-4. A summary of the results from the analysis of the EEM and AEMP benthic community variables is provided below.

9.4.2.1 EEM

Total density (<2,000 organisms/m^2 per station) and richness (<6 taxa per station) were low in all areas sampled in Meliadine Lake in 2018. Moderate to low SDI, SEI and BCI values were also calculated in 2018.

EEM BIC comparisons were conducted at the family level to detect differences between the Near-field area and Reference Area 1, in relation to potential impacts from the Mine effluent discharge, as per the EEM TGD (Environment Canada 2012). These EEM results are presented below in Figure 9.4-3 and Figure 9.4-4, with statistical results presented in Table 9.4-2. No statistical differences were found between the Near-field area and Reference Area 1 for the EEM or supporting endpoints (i.e., P>0.1). The CES for these endpoints were not exceeded in 2018 (Table 9.4-2). Thus, for all endpoints included in the Cycle 1 EEM assessment, there were no significant effects of the Mine effluent discharge on benthic invertebrate communities in the Near-field area.

Table 9.4-2: Results of Statistical Tests Comparing EEM Sampling Areas, 2018

Variable	Overall Comparison (NF vs Ref 1)[a]	Direction	Magnitude[b] (SD)	Magnitude[c] (%)	CES (±2SD)[d] (%)	Exceeded CES
Total invertebrate density	0.173	NF<REF1	-0.8	-44.9	170	No
Total taxonomic richness (FL)	0.829	NF=REF1	0.0	0.0	50	No
Simpson's diversity index (FL)	0.408	NF>REF1	0.5	21.1	84	No
Simpson's evenness index (FL)	0.275	NF>REF1	1.3	30.7	41	No
BCI-EEM (compared to REF1 median) (FL)	0.490	NF>REF1	0.4	57.1	161	No
BCI-EEM (compared to REF3 median) (FL)	0.534	NF>REF1	0.4	28.1	145	No
BCI-PW (FL)	0.655	NF>REF1	0.3	10.9	84	No
Chironomidae Density	0.224	NF<REF1	-0.7	-51.9	155	No
Pisidiidae Density	0.862	NF>REF1	0.1	7.6	148	No

Note: Statistical testing was completed using family taxonomic levels for the benthic invertebrate variables.

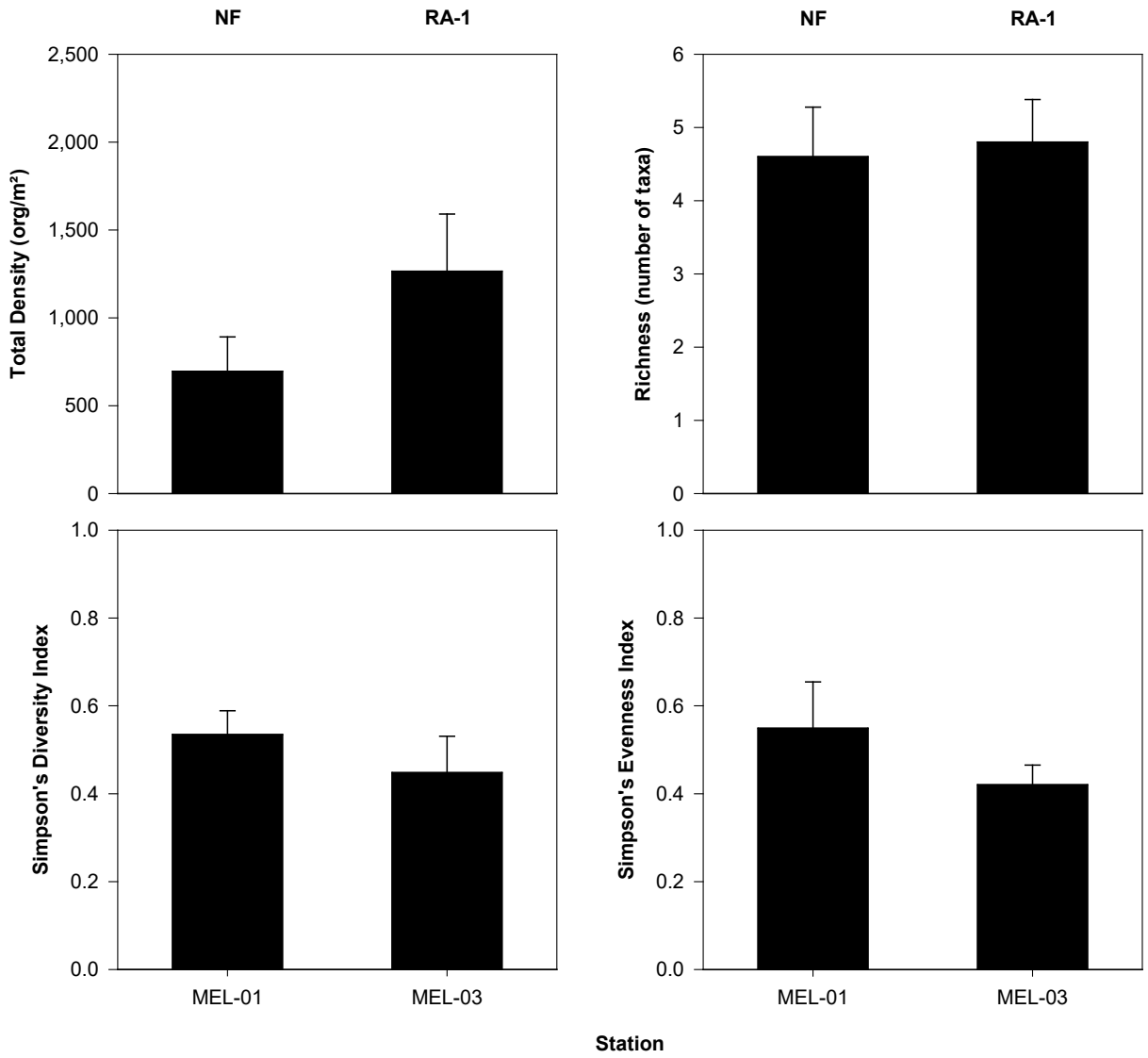
a) Significance evaluated at $\alpha = 0.1$

b) Magnitude was calculated as the difference in number of reference area standard deviations (i.e., NF mean compared to Ref 1 mean).

c) Magnitude was calculated as percent difference between the sampling area means (i.e., NF mean compared to Ref 1 mean).

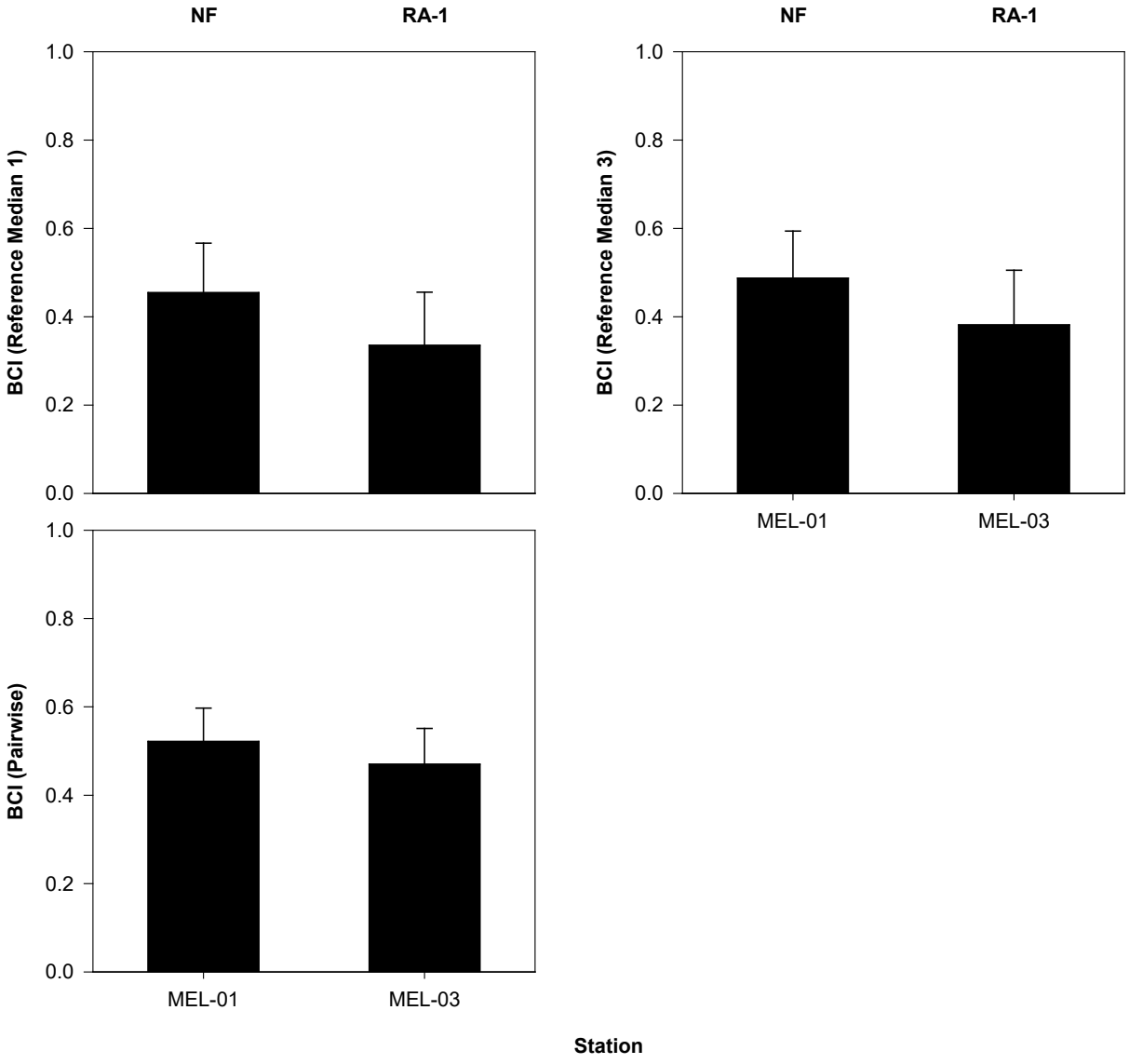
d) Effect size was calculated as ±2 standard deviations, expressed as a percentage of the reference area mean.

BCI = Bray-Curtis Index; EEM = Environmental Effects Monitoring; PW = pairwise; FL = family level; CES = critical effect size; NF = Near-field area; REF = Reference area; SD = standard deviation.



NF = Near-field; MF = Mid-field; RA-1 = Reference Area 1; RA-3 = Reference Area 3. Error bars represent 1 standard error.

Figure 9.4-3: Mean Benthic Invertebrate Endpoints and Supporting Variables in EEM Sampling Areas, 2018



NF = Near-field; MF = Mid-field RA-1 = Reference Area 1; RA-3 = Reference Area 3. Error bars represent 1 standard error.
Note: BCI (Reference Median 1 and Reference Median 3) were calculated using BCI EEM method.

Figure 9.4-4: Mean Bray Curtis Index Values in EEM Sampling Areas, 2018

9.4.2.1.1 *Post-hoc* Power Analysis

As demonstrated in the EEM TGD (Environment Canada 2012), a basic control/impact study design requires five samples per area to attain a power of 0.90 to detect an effect size of ±2SD. *Post-hoc* power analysis specific to the Cycle 1 EEM statistical analysis for the Mine, indicated there was insufficient power for family level richness and family level evenness, despite the sample size of five. In order to detect an effect of ±2SD (based on the Reference Area 1 data) at 90% power, six samples per area would be required for the richness and 16 samples per area for evenness. For evenness, the Cycle 1 EEM dataset had a non-normal data distribution and therefore required rank order transformation prior to analysis, which many have influenced the *post-hoc* power analysis for this endpoint.

9.4.2.2 AEMP

The 2018 AEMP compared data collected from Near-and Mid-field exposure areas to two reference areas through statistical and visual comparisons, to evaluate potential changes in benthic invertebrate communities due to changes in water and sediment quality.

9.4.2.2.1 Spatial Comparisons between Sampling Areas in 2018

Total Density and Richness

In 2018 total invertebrate density and richness in Meliadine Lake were considered to be within the low-density category for subarctic lakes (i.e., <5,000 org/m^2) consistent with the 2015 and 2016 baseline years (Appendix 9D, Table 9D-4, Golder 2018c). In 2018, each sampling area demonstrated a moderate range of variability in density among replicate sampling stations, which was comparable among sampling areas:

- **Exposure Areas**: Near-field area (233 to 1,234 org/m^2), Mid-field area (276 to 1,448 org/m^2)
- **Reference areas**: Reference Area 1 (241 to 1,241 org/m^2), Reference Area 3 (1,078 to 2,172 org/m^2)[9]

At the LTL, total richness values were similar among the Near-field area (8 to 16 taxa), Mid-field area (7 to 18 taxa), and Reference Area 1 (7 to 18 taxa). Richness was higher in Reference Area 3 (13 to 22 taxa).

A significant difference was found between sampling areas for total invertebrate density but not for total richness (Table 9.4-3). *Post-hoc* comparisons found density to be significantly different between the Near-field area and the pooled reference areas. No significant differences in density were detected between the Mid-field area and the pooled reference areas, or between the two reference areas.

Table 9.4-3: Results of Statistical Tests Comparing AEMP Sampling Areas, 2018

Variable	Statistical Test	Overall Comparison[(a)]	NF vs (REF 1 & REF 3)[(a)]	MF vs (REF 1 & REF 3)[(a)]	REF 1 vs REF 3[(a)]
Total invertebrate density	ANOVA	**0.095**	**<0.001**	0.689	0.122
Total taxonomic richness (LTL)	ANOVA	0.258	-	-	-
Simpson's diversity index (LTL)	ANOVA	0.925	-	-	-
Simpson's evenness index (LTL)	ANOVA	0.451	-	-	-
BC-EEM (compared to REF1 median) (LTL)	ANOVA	0.128	-	-	-
BC-EEM (compared to REF3 median) (LTL)	ANOVA	**0.026**	**<0.001**	0.353	0.439
BCI-PW (LTL)	ANOVA	0.158	-	-	-
Chironomidae density	ANOVA	0.142	-	-	-
Pisidiidae density	ANOVA	0.969	-	-	-

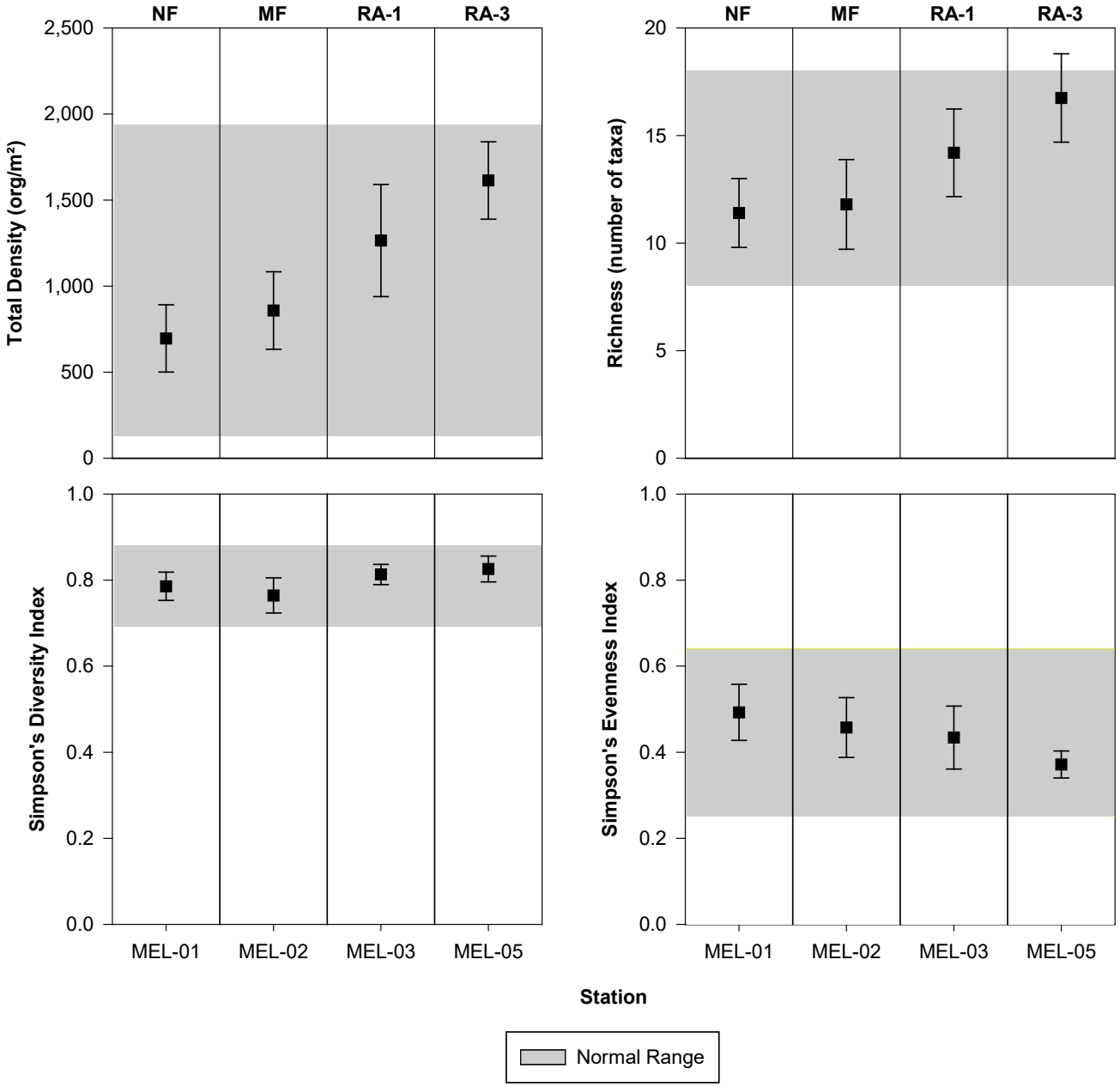
Note: Statistical testing was completed using lowest taxonomic level for the benthic invertebrate variables. No data transformations were required prior to analysis to satisfy parametric test assumptions. Significant differences are **bolded**; significance was evaluated at P <0.10.

a) Significance of planned contrasts was evaluated at P <0.1.

BCI = Bray-Curtis index; EEM = Environmental Effects Monitoring; PW = pairwise; NF = Near-field area; MF = Mid-field area; REF = reference area; REF 1 & REF 3 = pooled reference areas; - = not applicable, ANOVA = analysis of variance; LTL = lowest taxonomic level.

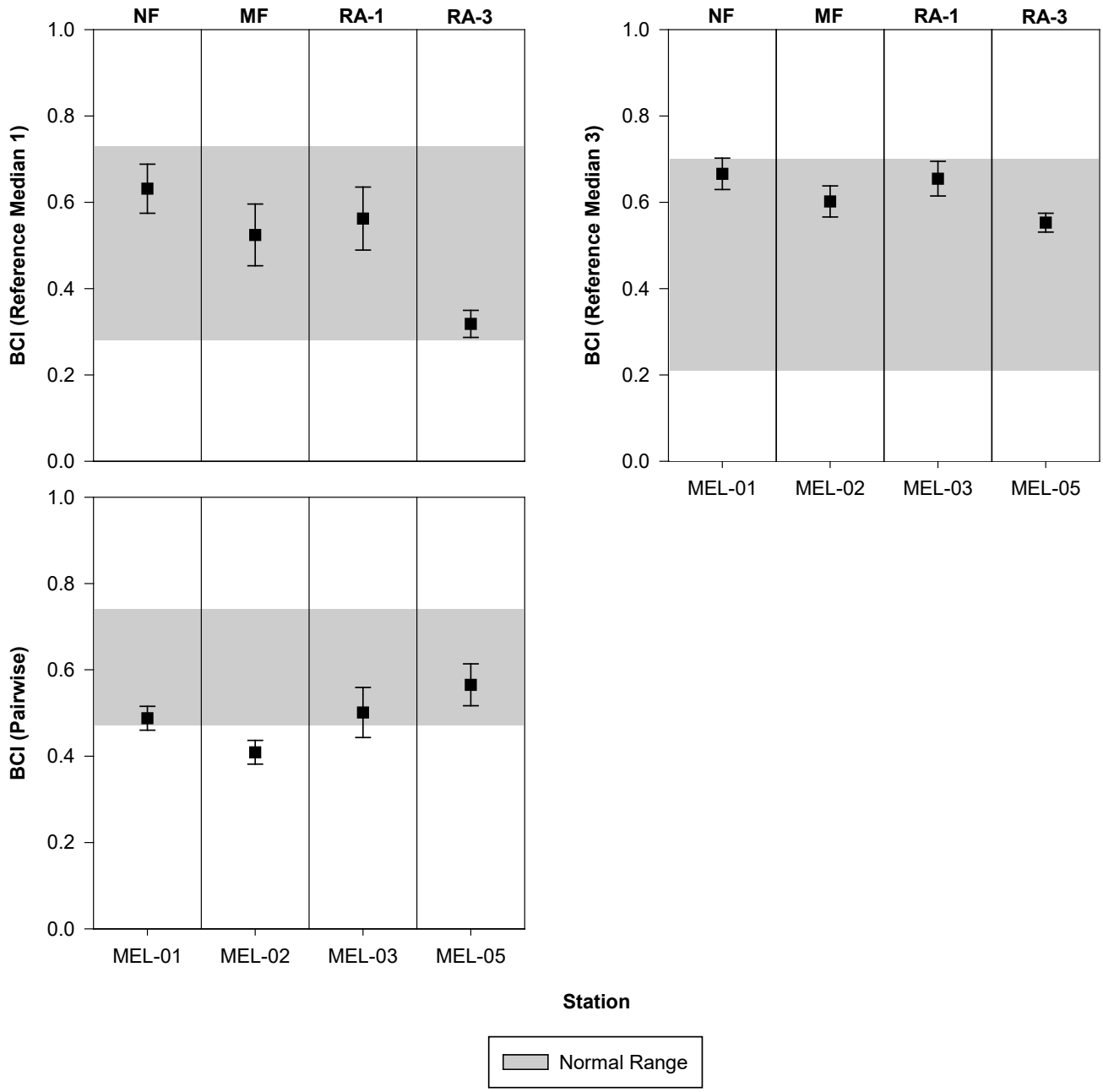
[9] Post removal of the station MEL05-05 from the dataset for Reference Area 3.

All exposure and reference area means were within the normal range for total density and taxonomic richness, although Reference Area 3 mean density and richness values approached the upper limit of the normal range (Figure 9.4-5). Spatial trends showed that the Near-field area and to a lesser degree the Mid-field area had lower mean densities and richness in 2018 compared to Reference Area 1 or Reference Area 3 (Figure 9.4-5). As described above, only density in the Near-field area was significantly lower than the pooled reference area density.



NF = Near-field; MF = Mid-field; RA-1 = Reference Area 1; RA-3 = Reference Area 3. Error bars represent 1 standard error.

Figure 9.4-5: Mean Total Benthic Invertebrate Density, Richness, Simpson's Diversity Index and Simpson's Evenness Index in Meliadine Lake, 2018



NF = Near-field; MF = Mid-field RA-1 = Reference Area 1; RA-3 = Reference Area 3. Error bars represent 1 standard error.
Note: BCI (Reference Median 1 and Reference Median 3) were calculated using BCI EEM method.

Figure 9.4-6: Mean Bray-Curtis Index Values for the Benthic Invertebrate Community in Meliadine Lake, 2018

Diversity, Evenness, and Bray Curtis Indices

In 2018, SDI and SEI calculated at the LTL, showed no statistically significant differences between sampling areas (Table 9.4-3). Diversity (SDI LTL) was consistent across all areas sampled with low variability among replicates (Figure 9.4-5). Evenness (SEI LTL) showed a decreasing trend with distance from the diffuser (i.e. Near-field >Mid-field >Ref 1 >Ref 3) (Figure 9.4-5), but all SDI and SEI values were within the bounds of the normal range.

Consistent with Golder (2018a), 2018 BCI values were calculated using the LTL data for the AEMP analysis, following both EEM and pairwise methods. The following observations were noted from the results from both calculation methods presented in Table 9.4-3 and Figure 9.4-6.

- BCI values were low to moderately dissimilar for all sampling areas using both calculation methods. The Near-field BCI values were most dissimilar compared the Reference Area 3 values using the EEM method and more aligned with those calculated for Reference Area 1. Using the BCI-EEM method (Reference Area 3 median value) a significant difference was detected in the overall ANOVA and for the *post-hoc* comparison, when the Near-field area was compared to the pooled reference areas (Table 9.4-3). Conversely, the ANOVA for the BCI EEM method (Reference Area 1 median value) did not identify a significant difference in the overall comparison.
- Using the BCI-PW method, the Reference Area 3 was the most dissimilar and the Mid-field area the least dissimilar. Again, BCI values calculated for the Near-field area most closely aligned with Reference Area 1. The ANOVA for the BCI PW method did not identify a significant difference in the overall comparison ($P>0.1$).
- All mean BCI values calculated using both the EEM and the pairwise methods were within the bounds of the normal range. The exception was the Mid-field area BCI calculated using the PW method.

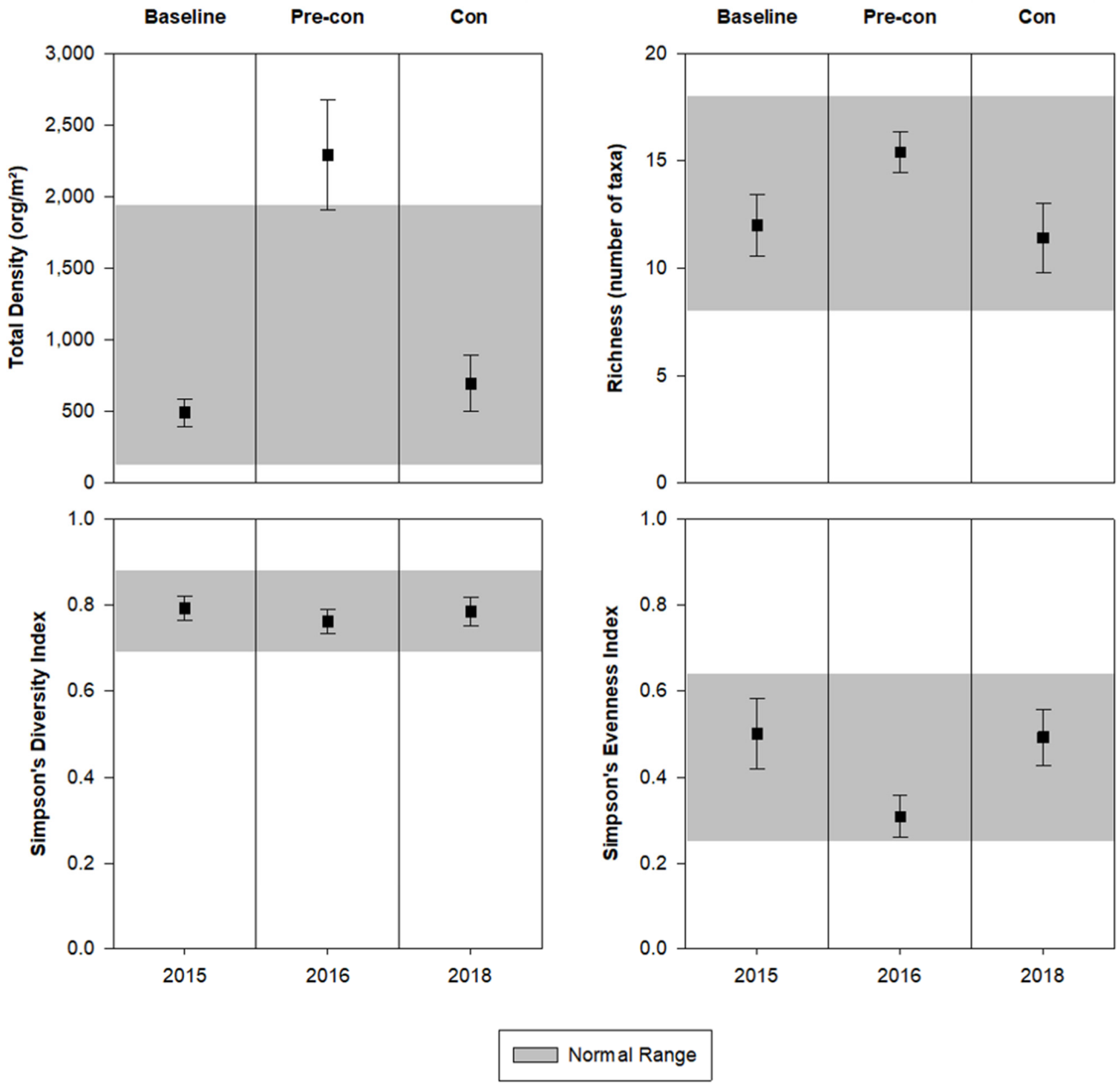
9.4.2.2.2 Temporal Comparisons: Baseline (2015, 2016) and Operation (2018) Years

Temporal trends in biological variables in the Near-field area for the monitoring years 2015, 2016 and 2018 were visually evaluated to evaluate differences in the BIC over time (Figure 9.4-7 and Figure 9.4-8; Figure 9C-2 to 9C-4, Appendix C). The time period evaluated extended from the AEMP baseline into the first year of the Mine effluent discharge.

The following observations were noted with respect to temporal trends:

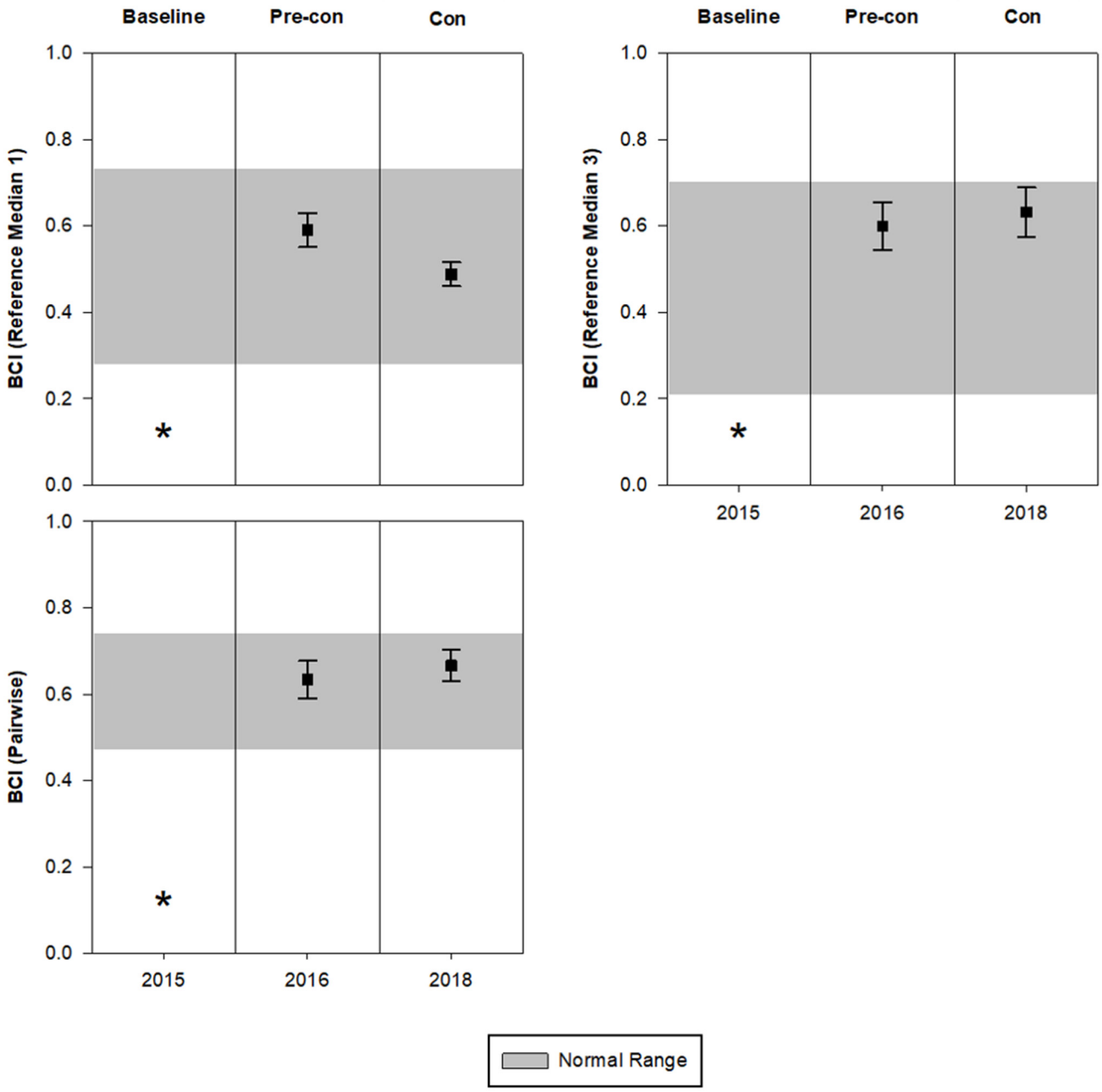
- Total invertebrate density in the Near-field area increased between 2015 and 2016 by almost a factor of two, followed by a decrease from 2016 to 2018 to values similar to those observed in 2015 during pre-construction. Increases in density and richness in 2016 to values above the normal range for density, but within the normal range for richness, potentially reflected a mild nutrient enrichment response, as reported by Golder (2018a). As described in Section 2.6, phosphorus loadings to the Near-field area peaked in 2016 as a result of the exploration camp STP discharge at the MEL-07 and then decreased substantially by 2018. By the 2018 AEMP sampling event, the STP discharge had ceased and the centralized Mine effluent discharge had commenced at the MEL-14 location.
- Unlike density and richness, diversity and evenness values in the Near-field area were reasonably comparable among years, although evenness appeared to decrease in 2016 compared to 2015 and 2018.

- No reference areas were sampled during 2015, therefore no BCI calculations were possible (Figure 9.4-8). BCI values in the Near-field area for both methods (EEM median and PW) showed low to moderate BCI values, with no visual differences among the years, and all years were within the normal range (Figure 9.4-8).



Pre-con = Pre-construction; Con = Construction. Error bars represent 1 standard error.

Figure 9.4-7: Mean Total Benthic Invertebrate Density, Richness, Simpson's Diversity Index and Simpson's Evenness Index in the Near-field Area, 2015, 2016 and 2018



Note: BCI (Reference Median 1 and Reference Median 3) were calculated using BCI EEM method.
Pre-con = Pre-construction; Con = Construction; * = no 2015 reference area data collected, not applicable. Error bars represent 1 standard error; BCI = Bray-Curtis Index.

Figure 9.4-8: Mean Bray-Curtis Index Values for the Benthic Invertebrate Community in the Near-field Area, 2015, 2016 and 2018

9.4.2.2.3 Community Composition and Densities of Dominant Invertebrates

Benthic invertebrate taxa present at all stations consisted of 12 common subarctic taxa from the taxonomic groups Pisidiidae, Hydracarina and Chironomidae subfamilies: Chironominae, Tanypodinae, Orthocladiinae, and Prodiamesinae (Appendix 9D, Table 9D-3).

Dominant benthic invertebrates previously documented in Meliadine Lake include insects, including midges (Chironomidae), fingernail clams (Pisidiidae), valve snails (Valvatidae), and amphipods (shrimp-like crustaceans) (Golder 2018c). Overall, BIC structure in Meliadine Lake is consistent with other subarctic lakes (Golder 2017b and DeBeers 2018). Oliver (1968) stated that dipterans typically contribute one third to one half of total number of species in subarctic benthic invertebrate communities. This is consistent with the 2018 Meliadine Lake AEMP results, which reported Chironomidae to be the dominant group across all sampling stations accounting for 70% of the total density. Pisidiidae (18%) was the subdominant group, followed by Amphipoda (5%) as the third most numerous group (Figure 9.4-9).

The Near-field area benthic community showed a wide range in Chironomidae relative density among stations: from 38% (MEL-01-08) to 80% (MEL-01-07) (Figure 9.4-9 and Figure 9.4-10). Pisidiidae was the subdominant group at all stations in the Near-field area, ranging from 17% (MEL01-07) to 44% (MEL01-06), with the exception of MEL-01-08 where co-dominance was observed between Chironomidae and Pisidiidae. Gastropods were present at all stations at low densities (<18%), likely reflective of their affinity for fine (silt/clay) substrates, which is supported by general preferences of genus present (*Valvata*) (Thorp and Covich 2001). Amphipoda were absent from Near-field area stations.

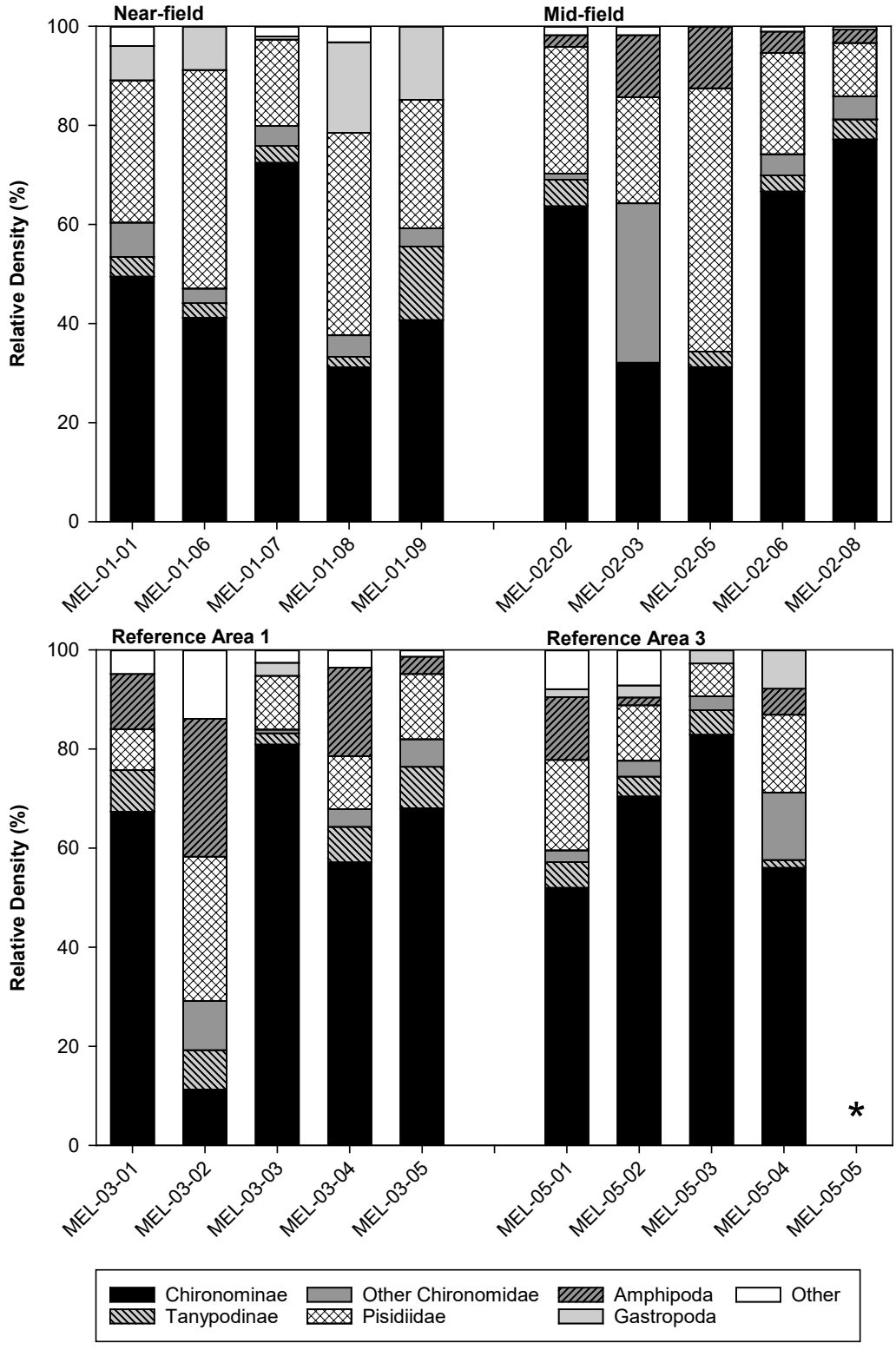
Mid-field area relative densities showed comparable chironomid dominance in comparison to the Near-field area, that ranged from 34% (MEL02-05) to 86% (MEL02-08), and reasonably comparable Pisidiidae densities that ranged from 11% (MEL02-08) to 53% at MEL02-05 (Figure 9.4-9). Amphipods were the third most abundant group, with relative abundance ranging from 2% to 13%. No gastropods were captured in the Mid-field area.

The relative density of Chironomidae in Reference Area 1 was proportionally high at all stations (60% to 84%), with the exception of MEL03-02, where Chironomidae density was 29% in 2018 (Figure 9.4-9). Mean Chironomidae relative density was similar to the Mid-field area (68%). Community composition at MEL03-02 was evenly proportioned among Chironomidae, Pisidiidae and Amphipoda (approximately 29% each). Gastropoda were absent at all stations with the exception of MEL03-03.

Mean Chironomidae relative density in Reference Area 3 in 2018 ranged from 60% (MEL05-01) to 91% (MEL05-04) (Figure 9.4-9). Pisidiidae contributed less than 18% of the relative density in Reference Area 3. Amphipods and gastropods constituted <5% to the community composition. One station (MEL05-05) was removed from the data analyses as it contained only one individual of Chironomidae (*Microtendipes* sp.).

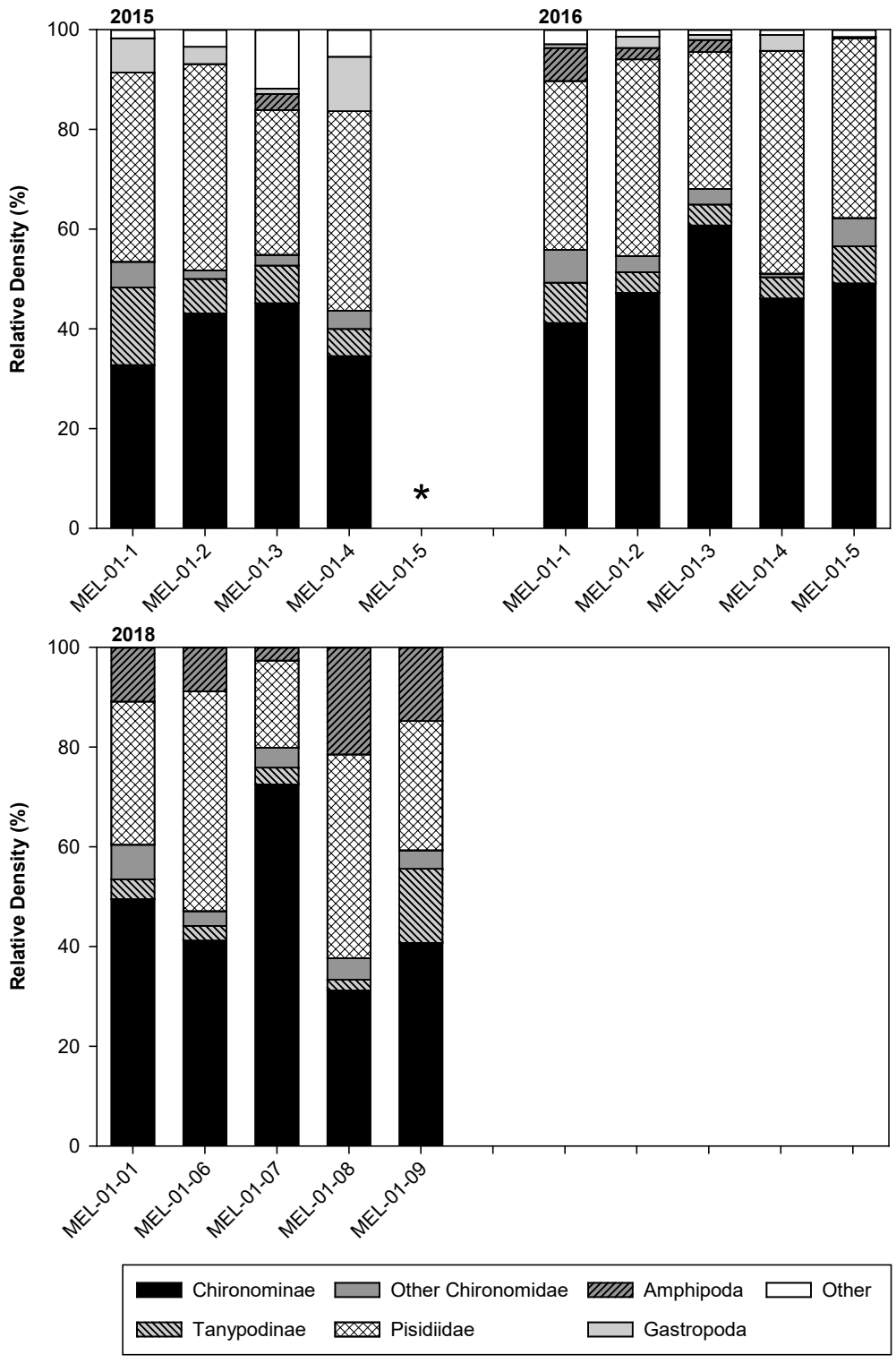
In 2018, there were minor visual differences between the relative densities of dominant taxa (i.e., Chironomidae, Pisidiidae) in the Near-field area compared to Reference Area 1 (Figure 9.4-9). Chironomidae relative density increased with increasing distance from the CP1 diffuser, likely due to higher proportions of sand in the Reference areas. Pisidiidae showed the opposite relationship and the highest proportions were observed in the Near-field and Mid-field areas, likely associated with the presence of finer sediments. Similarly, gastropods were observed in the Near-field area at higher proportions than in any other areas.

Chironomidae density increased with increasing distance from the Near-field area in 2018, while Pisidiidae density was similar in all sampling areas (Fogure 9-12). Visual differences were apparent among years for Chironomidae and Pisidiidae densities: both had higher densities in 2016 compared to both 2015 and 2018 (Figure 9.4-12). However, densities of these groups in 2018 were not visually different from the baseline year of 2015.



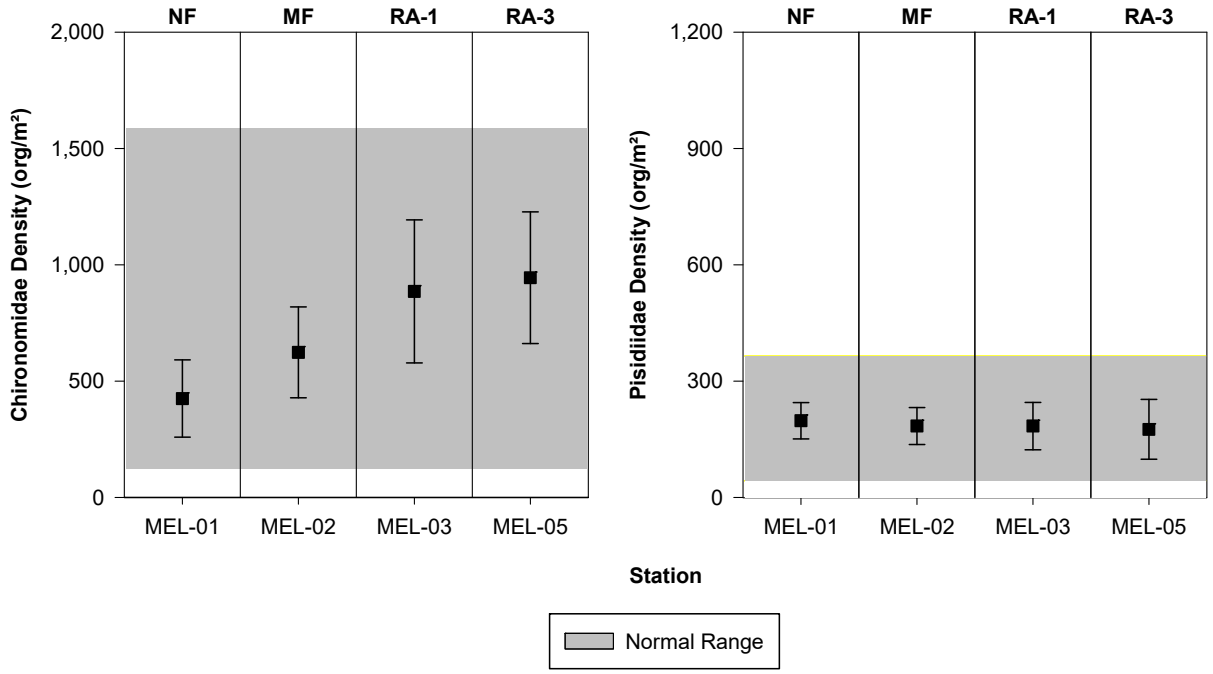
(*) = Sample removed from data analysis due to insufficient densities obtained.

Figure 9.4-9: Relative Densities of Major Benthic Invertebrate Groups in Meliadine Lake, 2018



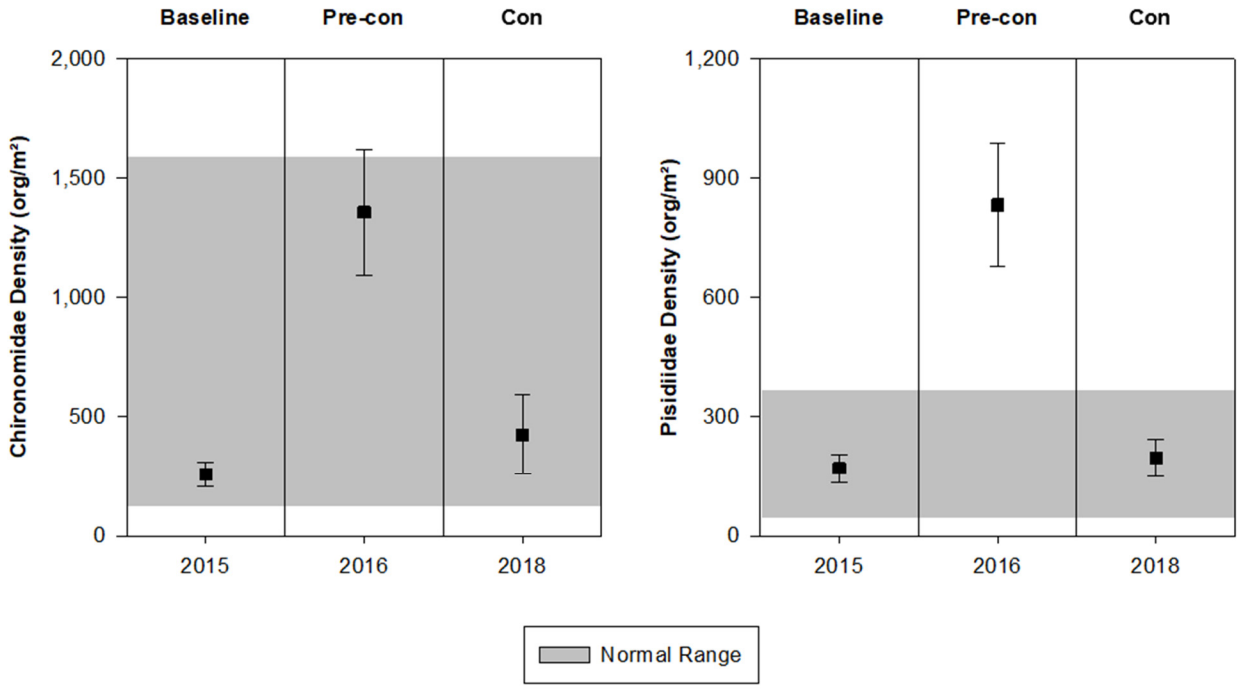
(*) Station removed from the dataset due to insufficient sample volume.

Figure 9.4-10: Relative Densities of Major Benthic Invertebrate Groups in the Near-field Area, 2015, 2016, 2018



NF = Near-field; MF = Mid-field RA-1 = Reference Area 1; RA-3 = Reference Area 3. Error bars represent 1 standard error.

Figure 9.4-11: Mean Total Chironomidae Density and Total Pisidiidae Density in Meliadine Lake, 2018



Pre-con = Preconstruction; Con = Construction. Error bars represent 1 standard error.

Figure 9.4-12: Mean Total Chironomidae Density and Total Pisidiidae Density in the Near-field Area, 2015, 2016, 2018

9.4.2.2.4 Multivariate Analysis

The nMDS run on the 2018 BIC dataset produced a two-dimensional configuration with an overall stress value of 0.12, indicating a good level of fit to the original dataset (Figure 9.4-13). Community structure within all areas was moderately similar (i.e., within the 60% similarity ellipse), although some separation was observed between the Near-field area (MEL01) and the other sampling areas. The similarity was higher (i.e., within the 70% similarity ellipse) between the Mid-field area (MEL02) and the reference areas (MEL03 and MEL05). Similar to the univariate results, the Near-field area showed significant differences from the Mid-field area (i.e., $P = 0.032$) and Reference Area 1 (i.e., $P = 0.024$) (Table 9.4-4). No other significant differences were observed.

The configuration for the Near-field area BIC ordination run on 2015 and 2018 data had an overall stress value of 0.06, indicating a good level of fit to the original dataset (Figure 9.4-14). Community structure within the Near-field area showed separation of the 2016 Near-field area stations from the 2015 and 2018 Near-field area stations, reflective of the univariate results. Although all years were within low to moderate similarity ellipses (i.e. 40% and 50%) the pair-wise ANOSIM results comparing years were significantly different (i.e., R>0.5, $P = 0.08$) for all pairwise comparisons of years (Table 9.4-5). These results suggest a potentially high degree of variation in BIC structure among years in Meliadine Lake.

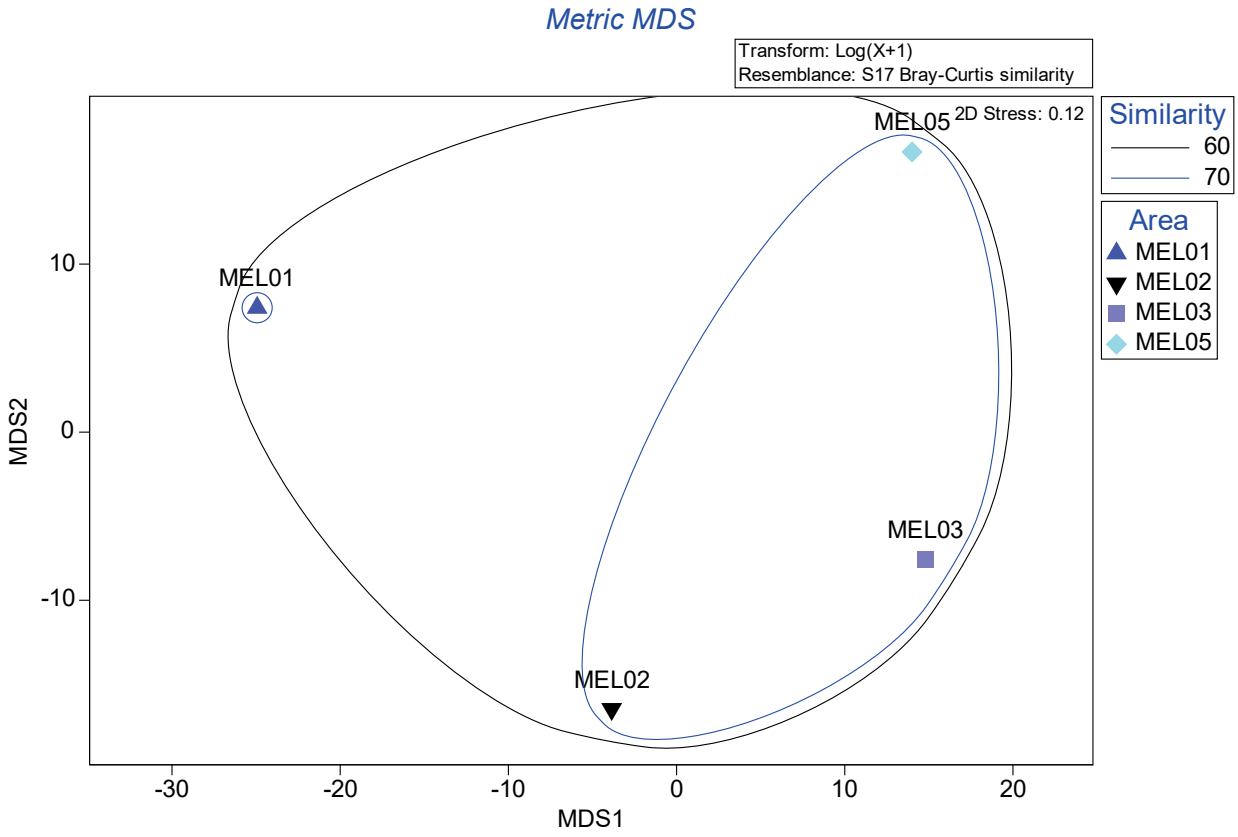


Figure 9.4-13: Ordination Plot of the Benthic Invertebrate Community for Meliadine Lake, 2018

Table 9.4-4: Benthic Invertebrate Community ANOSIM Results, 2018

Area	Area Comparisons	
	R statistic	*P*-value
Near-field Area (MEL01) vs Mid-field Area (MEL-02)	0.488	**0.032**
Near-field Area (MEL01) vs Reference Area 1 (MEL-03)	0.381	**0.024**
Near-field Area (MEL01) vs Reference Area 3 (MEL-05)	0.325	0.063
Mid-field Area (MEL-02) vs Reference Area 1 (MEL-03)	0	0.714
Mid-field Area (MEL-02) vs Reference Area 3 (MEL-05)	0.284	0.056
Reference Area 1 (MEL-03) vs Reference Area 3 (MEL-05)	0.036	0.349

Note: Comparisons are significant at $P < 0.05$. **Bolded** values indicate significance.
P = probability.

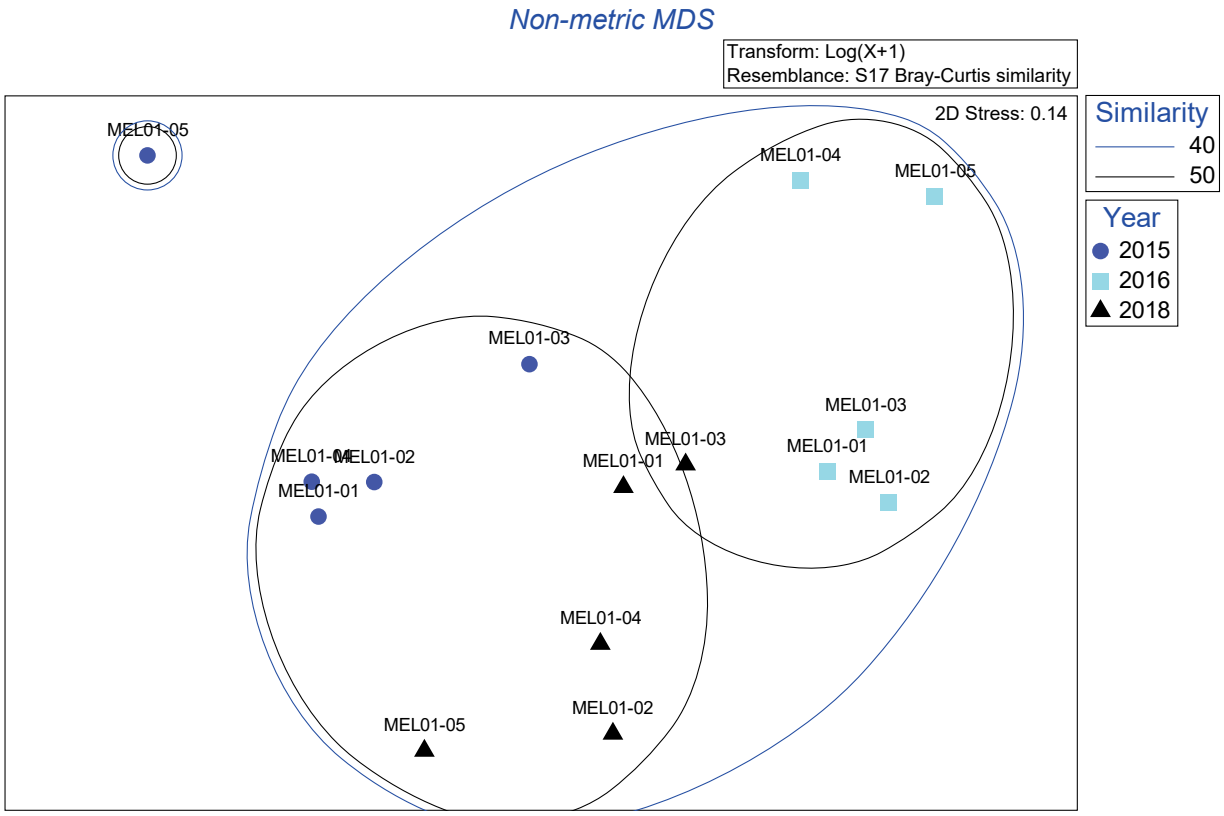


Figure 9.4-14: Ordination Plot of the Benthic Invertebrate Community for Near-Field Stations in Meliadine Lake, 2015, 2016, 2018

Table 9.4-5: Benthic Invertebrate Community ANOSIM Results, 2015, 2016 and 2018

Years	Near-field Comparisons	
	R statistic	*P*-value
2015 vs 2016	0.848	**0.008**
2015 vs 2018	0.640	**0.008**
2016 vs 2018	0.594	**0.008**

Significant differences are **bolded**. Significance was evaluated at $P<0.05$.

9.4.2.2.5 Effect of Variation in Habitat, and Sediment and Water Quality on the Benthic Invertebrate Community

The potential for variation in physical habitat, sediment quality and water quality parameters to contribute to spatial and temporal variability in community structure among stations in Meliadine Lake was evaluated using Spearman rank correlation analysis. Variables included in the correlation analysis were sediment particle size parameters, sediment TOC, concentrations of metals present in Meliadine Lake sediments above CCME sediment quality guidelines (i.e., arsenic, chromium, copper), waterborne concentrations of total phosphorus and nitrogen, and water depth.

Results of the Spearman correlations are provided in Table 9.4-6. Scatter-plots of habitat and community variables were not completed for 2018 because the significant relationships identified were below the moderate to high significance criterion, where further interpretation beyond the analysis presented here would be warranted.

The following significant correlations were identified from the results of the correlation analysis summarized in Table 9.4-6.

- Total invertebrate and Chironomidae densities were significantly negatively correlated with total phosphorus in water. However, these relationships were weak and inconsistent with a nutrient enrichment response (i.e., densities decreased with increased waterborne phosphorus).
- LTL richness was positively correlated with sand and negatively correlated with silt, clay, and sediment arsenic and chromium concentrations. Sediment metal concentrations were shown to increase with decreasing grain size in Section 8.0, with higher metal concentrations reported in finer sediments. This association was observed under baseline conditions; therefore, it is possible that resident biota in finer sediments have adapted to metal concentrations in those sediments.
- LTL evenness was negatively correlated with depth, suggesting that deeper stations had a less even distribution of taxa. This relationship is not unexpected in lakes under background conditions.

Overall, results of this analysis do not indicate that habitat variation, or variation in sediment or water quality, have an overriding influence on the BIC in Meliadine Lake. However, this is a coarse-level analysis, and due to high variation in data close to the analytical DL for TP (i.e., the most likely limiting nutrient in Meliadine Lake), correlation results for nutrient relationships may not be representative. Potential biological effects related to Mine-related variation in nutrient concentrations in Meliadine Lake are discussed further in Section 11.0 (Plankton Targeted Study).

Table 9.4-6: Spearman Rank Correlations between Benthic Invertebrate Community Variables and Selected Habitat Variables for Meliadine Lake, 2018

Benthic Community Variable	Spearman Correlation Coefficient									
	TOC	Sand	Silt	Clay	As in Sediment	Cr in Sediment	Cu in Sediment	TP in Water	TN in Water	Water Depth
Total density	-0.063	0.347	-0.386	-0.300	-0.439	-0.318	-0.296	**-0.544***	-0.022	0.395
Richness, FL	-0.386	0.267	-0.232	-0.402	-0.256	-0.149	-0.256	-0.154	-0.076	0.124
Richness, LTL	-0.296	**0.545***	**-0.566***	**-0.468***	**-0.502***	**-0.520***	-0.449	-0.407	-0.227	0.220
SDI, LTL	-0.384	0.321	-0.363	-0.210	-0.262	-0.170	-0.373	0.059	-0.037	-0.194
SEI, LTL	-0.126	-0.123	0.116	0.201	0.154	0.219	0.010	0.358	0.280	**-0.568***
Chironomidae density	0.109	0.310	-0.363	-0.216	-0.425	-0.248	-0.210	**-0.481***	-0.033	0.431
Pisidiidae density	-0.276	0.043	-0.083	-0.078	-0.105	-0.007	-0.075	0.308	-0.065	0.237

Note: Significant correlation coefficients are **bolded.**

TP = total phosphorus; TN = total nitrogen; FL = family level; LTL = lowest taxonomic level; * = $P<0.05$, ** = $P<0.01$, *** = $P<0.001$, $n = 19$.

9.4.2.2.6 Characterization of Within-Station Variability

The results of the characterization of within-station variability are presented in Appendix 9C, Table 9C-1 and Figure 9C-1.

The %SE value for richness was <20% for subsamples taken at station MEL-05-04, which indicates that the observed within-station variability was within the range expected for benthic invertebrate communities due to natural variability (Elliott 1971). As expected, total abundance was more variable than richness. The %SE for abundance at MEL-05-04 (24.7%) was slightly above 20% but was comparable or lower than within-station variability reported for other subarctic lakes in Northern Canada (e.g., DDMI 2007), including those previously reported for Meliadine Lake (Golder 2018c) and the level of within-station variability is considered acceptable. The assessment of 2018 within-station variability at station MEL-05-04 supports the continued compositing of five grab samples per replicate station for the EEM and AEMP programs at the Meliadine Mine. As per the AEMP Design Plan (Golder 2016a), samples for BIC analysis will therefore continue to be collected as a combination of composite samples (five grabs per station), along with individual subsamples (i.e., discrete samples) at one station to continue to evaluate within-station variation.

9.5 Summary

9.5.1 EEM

The BIC survey for the Cycle 1 EEM study was undertaken in August 2018 to evaluate if the Mine effluent discharge had an effect on benthic communities in Meliadine Lake. Benthic invertebrate community structure in the Near-field area exposed to the MEL-14 effluent discharge was compared to community structure in Reference Area 1 located within Meliadine Lake. Determination of an effect was based on statistical analysis of family-level benthic community effect endpoints and review of supporting endpoints, as recommended by EC (2012). Sediment physical characteristics and in situ water quality were evaluated to facilitate interpretation of benthic invertebrate data collected in fall 2018. The main findings of the 2018 EEM benthic survey are summarized below:

- No statistically significant differences were identified between the Near-field area and Reference Area 1 for the EEM effect endpoints and supporting endpoints evaluated in the Cycle 1 EEM study. The CESs for these endpoints were not exceeded.
- Total density was lower in the Near-field area compared to Reference Area 1, but both areas had similar family level taxa richness. Comparisons between the Near-field area and Reference Area 1 showed higher diversity, evenness, and Bray-Curtis dissimilarity in the Near-field area. Differences in these endpoints between the two sampling areas likely reflect pre-discharge differences in habitat, particularly differences in sediment substrate composition identified in Section 8.

Meliadine Lake benthic invertebrate communities were reflective of typical subarctic communities and were characterized by low densities and low to moderate family-level richness. Communities were dominated by the family Chironomidae, with Pisidiidae being subdominant. Gastropods were observed in the Near-field area at higher proportions compared to other areas, and amphipods were only present outside of the Near-field area, which likely reflects differences in habitat between the Near-field area and other sampling areas, reflecting taxon-specific habitat preferences.

9.5.2 AEMP

The objective of the BIC component of the AEMP was to evaluate whether treated Mine effluent has the potential to cause short or long-term effects on benthic invertebrate communities, due to changes in water or sediment quality in Meliadine Lake. This objective was addressed by comparing 2018 benthic invertebrate communities sampled in Near-field and Mid-field areas to two within-lake Reference areas. Benthic invertebrate AEMP variables were calculated at the LTL for all areas, and then compared among areas. In addition, the AEMP assessment also evaluated temporal changes in benthic community variables within the Near-field area for the monitoring years 2015, 2016 and 2018. This time period extended from the AEMP baseline into the first year of the Mine effluent discharge. Multivariate analysis was also run to investigate differences in community structure among sampling areas.

The main findings of the 2018 AEMP benthic invertebrate component are summarized below in point form to support the subsequent response to the AEMP key question:

- Significant differences were detected between the Near-field area and the pooled reference areas in 2018 for total invertebrate density and BCI (EEM method relative to Reference 3 median), in that the Near-field area had significantly lower density and BCI values compared to the pooled reference areas. There were no significant differences in richness, SDI, SEI or BCI (pairwise method or EEM method relative to Reference 1 median) between benthic communities from exposure and reference areas in 2018 based on LTL data.
- Multivariate analysis also found the Near-field area to be significantly different from the Mid-field area and the two Reference areas in 2018, although the benthic communities in these areas did show some overlap (60% similarity in community composition).
- In general, a limited number of significant correlations were identified between benthic community and habitat variables and they were generally weak. Despite some differences in sediment substrate type and chemistry among sampling areas, a significant correlation between total density and sediment parameters was not identified in 2018. Richness was significantly positively correlated with sand content and negatively correlated with silt, clay, and sediment arsenic and chromium concentrations. However, richness was not significantly different between the AEMP sampling areas.
- Normal ranges were developed for BIC variables using representative data from the 2015, 2016 and 2018 AEMP sampling programs. All mean 2018 AEMP variables for both exposure and reference areas sampled in Meliadine Lake were within their respective normal ranges, with the exception of BCI calculated using the pairwise method, where the Mid-field area mean was below the normal range lower boundary.
- In the Near-field area, 2018 mean values were similar to the corresponding 2015 values for all AEMP benthic variables. For all years, mean values for the AEMP variables were within their respective normal ranges, with the exception of mean density in 2016 that may be attributed to the influence of the STP discharge and the subsequent increase in phosphorus loadings to the Near-field area in 2016.

Key Question: Is the benthic invertebrate community affected by potential Mine-related changes in water and sediment quality in Meliadine Lake?

During the first year of the Mine effluent discharge, the Near-field area was found to have significantly lower density and BCI values compared to the pooled reference areas. There were no significant differences in LTL richness, SDI, SEI or BCI (pairwise method or EEM method relative to Reference 1 median) between benthic communities in exposure and reference areas. These findings were supported by multivariate analysis, which also found the Near-field area to be significantly different from the Mid-field area and the two Reference areas in 2018, although the benthic communities in these areas did show some overlap.

The observed difference in density between the Near-field and the pooled reference area could, at least in part, be due to documented pre-discharge differences in sediment composition between the Near-field area and the reference areas. As part of the 2018 AEMP, normal ranges were developed that considered pre-discharge and reference area variability in Melidaine Lake benthic community structure. Even though 2018 Near-field mean density was lower than in other areas, and was similar to that reported in 2015 under pre-construction conditions, it was within the normal range. All other AEMP variables also had mean values within normal ranges in all sampling areas.

Overall, the 2018 AEMP results indicate that benthic community has not been measurably affected by potential Mine-related changes in water and sediment quality in Meliadine Lake. Benthic invertebrate variables in the Near-field area were within their respective normal ranges. Statistical comparisons between areas did identify some significant differences between Near-field and reference areas, but these appeared to reflect pre-discharge differences in sediment composition among areas.

The 2018 data indicate that the current AEMP Design Plan is able to detect Mine-related differences in benthic invertebrate communities between exposure and reference areas in Meliadine Lake. As more benthic invertebrate data are collected through the AEMP and EEM programs, spatial trends and temporal trends relative to the normal range will be further evaluated.

9.6 Recommendations

No recommendations are provided for changes to benthic invertebrate monitoring under the EEM or AEMP.

9.7 List of Appendices

- Appendix 9A-Sediment Reconnaissance Program
- Appendix 9B-Laboratory Methods and Reference Collection
- Appendix 9C-QC Results for Variability and Outlier Detection
  - Table 9C-1: Within-Station Variation in Benthic Community Variables in Meliadine Lake, 2018
  - Figure 9C-1: Within-station Variability for Abundance and Richness in Meliadine Lake, August 2018
  - Figure 9C-2 Temporal Variability per Station for Total Benthic Invertebrate Density, Richness, Simpson’s Diversity Index, Meliadine Lake 2015, 2016 and 2018
  - Figure 9C-3: Temporal Variability per Station for Total Benthic Invertebrate Simpson’s Evenness Index, Bray Curtis Index (EEM Reference Median 1) and Bray Curtis Index (EEM Reference Median), Meliadine Lake 2015, 2016 and 2018

- Figure 9C-4: Temporal Variability per Station for Bray Curtis Index (PW), Chironomidae density and Pisidiidae density, Meliadine Lake 2015, 2016 and 2018
- Figure 9C-4: Box and Whisker plots for Benthic Invertebrate Endpoints in Meliadine Lake, August 2018

- Appendix 9D: Supporting Habitat Variables and Benthic Invertebrate Community Data Analysis Results
  - Table 9D-1: Summary of Habitat Variables for Meliadine Lake, 2018
  - Table 9D-2: Benthic Invertebrate Abundance Data (numbers per five Ponar grabs), Meliadine Mine EEM and AEMP, Fall 2018
  - Table 9D-3: Presence/Absence of Benthic Invertebrate Taxa in Meliadine Lake, 2018.
  - Table 9D-4: Summary Statistics for Benthic Invertebrate Community Variables, Meliadine Lake, 2018

9.8 References

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10.0 FISH HEALTH

10.1 Introduction

Agnico Eagle's Mine triggered into an EEM in 2017 due to dewatering activities which resulted in a discharge to Meliadine Lake. The fish health component of the EEM evaluates potential differences in indicators of fish health (e.g., energy storage, energy usage, and survival) between the exposure area of Meliadine Lake (i.e., the Near-field area) and one reference area (i.e., Reference Area 1), resulting from the development and operations of the Mine.

The objectives of the fish health component are to:

- determine whether effluent from the Mine has an effect on the growth, reproduction, survival, or condition of fish in Meliadine Lake
- meet the requirements of Part 2, Schedule 5 of the MDMER regulations (Government of Canada 2018)
- provide data to inform adaptive management intended to reduce or eliminate Mine-related effects to fish health in Meliadine Lake

The 2018 fish health survey was implemented to meet EEM sampling requirements and was not intended to meet the specific requirements of the Mine's AEMP fish health component. Specifically, the 2018 fish health survey did not include: a second reference area, a large-bodied sentinel species, or a fish tissue chemistry component (as neither mercury or selenium concentrations in the effluent triggered a fish tissue study under the MDMER [Government of Canada 2018]). Fish health and tissue chemistry sampling for the AEMP is currently scheduled for 2021.

10.2 Methods

A fish health survey was conducted at the Near-field area and Reference Area 1 of Meliadine Lake from 7 to 20 August 2018. The Near-field area is the same as defined for the AEMP, and was selected as the exposure sampling area at the request of the EEM TAP, instead of the H17 discharge location proposed in the Cycle 1 EEM Study Design (Figure 10.2-1; Golder 2017a). Threespine Stickleback (*Gasterosteus aculeatus*) were targeted for the fish health survey based on their relative abundance in Meliadine Lake (Golder 2018c). A second sentinel species was not included in the fish health assessment as no other small-bodied fish species have been captured historically in sufficient abundance to meet EEM sample size requirements, as discussed in the Cycle 1 EEM Study Design (Golder 2017a). Therefore, both a population (i.e., lethal and non-lethal) and a lethal survey were completed with Threespine Stickleback. A brief description of the fish sampling methods are provided in Sections 10.2.1 to 10.2.3. A more detailed description of fish sampling methods is provided in the Cycle 1 EEM Study Design (Golder 2017a).

10.2.1 Field Methods

Fishing methods suitable for nearshore habitats were used to collect Threespine Stickleback from Meliadine Lake, including minnow traps and dip nets. An overview of the sampling area is provided in Figure 10.2-1. Sampling effort details for the Near-field area and Reference Area 1 are provided in Figure 10.2-2 and Figure 10.2-3, respectively. Water quality variables (i.e., water temperature, DO, conductivity, and pH) were measured daily during sampling. Detailed water quality and sediment quality data are provided for Meliadine Lake in Sections 6 and 8, respectively. Benthic invertebrate data are provided in Section 9.

The target sample sizes for the lethal fish health survey were 20 male, 20 female, and 20 juvenile Threespine Stickleback from each of the sampling areas. Non-lethal data were collected from at least 100 additional Threespine Stickleback in each area to supplement the population survey. Non-target species captured during sampling were enumerated, measured, weighed, and assessed for external abnormalities prior to live release near the location of capture. Each fish processed was assigned a unique fish identification number.

The following information was recorded for each sampling effort:

- time (in hours) for each fishing effort and gear type
- gear specific parameters (e.g., trap dimensions)
- water depth of each gear-type set
- latitude and longitude coordinates of each fishing effort
- substrate type (e.g., mud, sand, gravel, cobble) at each fishing location
- water quality field measurements (e.g., DO, water temperature, pH, and conductivity), once daily from the area sampled
- weather (e.g., air and water temperature, precipitation, wind velocity and direction)
- fishing effort identification number (i.e., a unique number for each sampling effort)
- number and species of fish captured
- photographs of representative habitat types and fish species captured

530000
535000
540000
545000
7000000
6995000
6990000
6985000

Meliadine Lake

REFERENCE AREA 1 (Mel-03)

Meliadine Lake

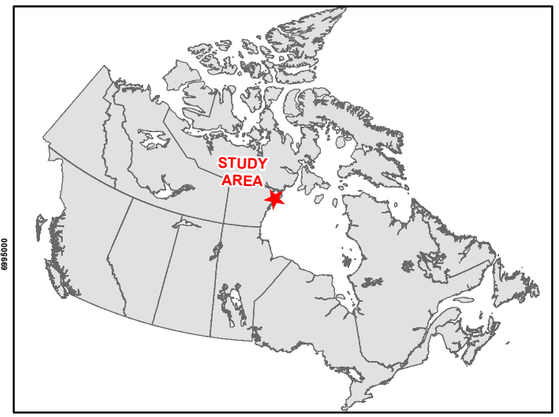
LAKE H17 EFFLUENT DIFFUSER (INACTIVE)

STP EFFLUENT DISCHARGE (INACTIVE)
CP1 DIFFUSER

NEAR-FIELD EXPOSURE AREA (Mel-01)

LEGEND

- MELIADINE LAKE FISH HEALTH SAMPLING AREA
- CP1 DIFFUSER
- LAKE H17 EFFLUENT DIFFUSER (INACTIVE)
- STP EFFLUENT DISCHARGE (INACTIVE)
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- WATERCOURSE
- WATERBODY



0 1.5 3
1:75,000 KILOMETRES

REFERENCE(S)
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT
AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT
CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE
MELIADINE LAKE FISH HEALTH SAMPLING STATIONS - OVERVIEW MAP

CONSULTANT
GOLDER

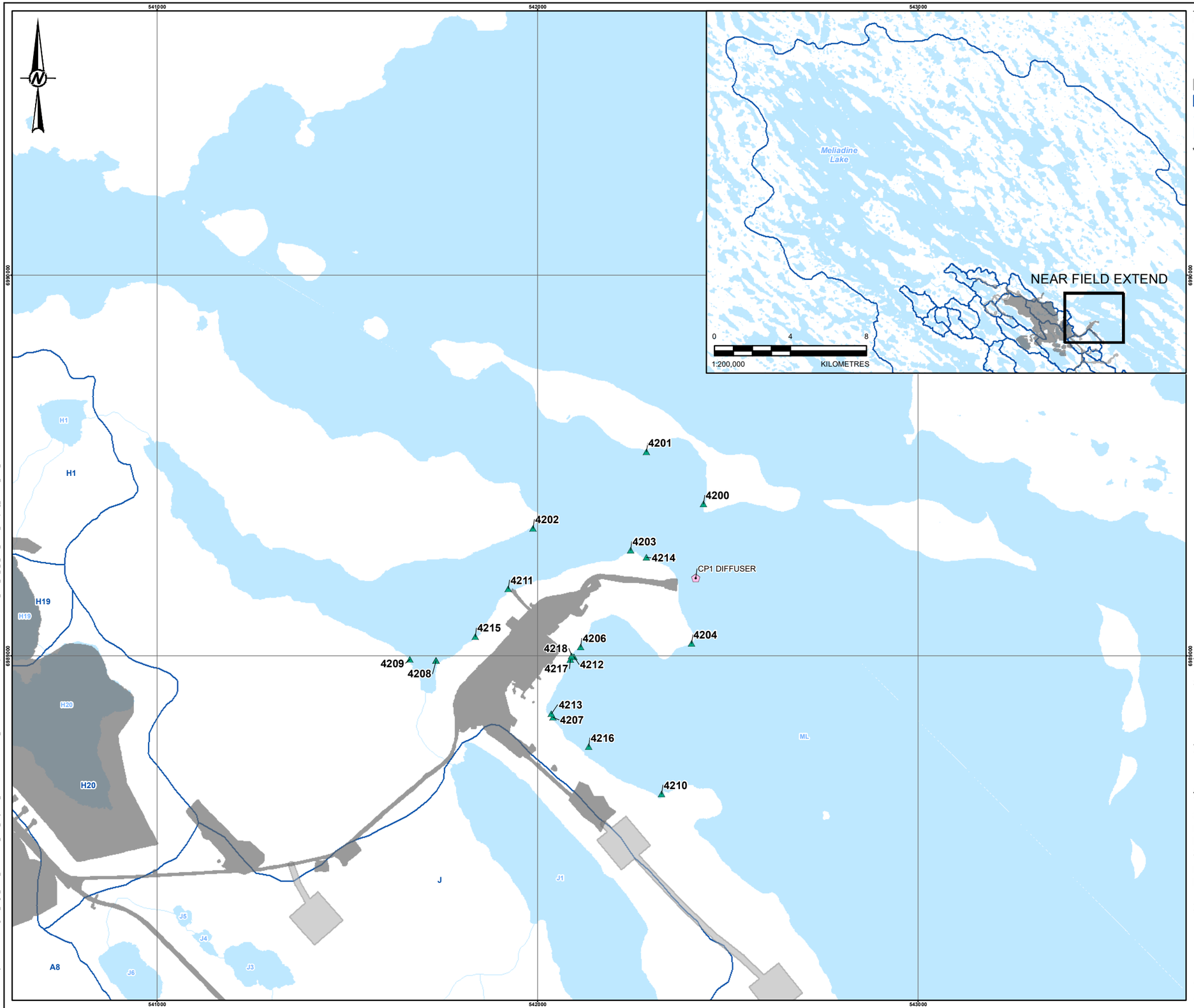
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PREPARED	MH
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
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LEGEND

FISH HEALTH SAMPLING STATION*

- MINNOW TRAPS
- CP1 DIFFUSER
- MINE FOOTPRINT
- SUB-WATERSHED BOUNDARY
- WATERCOURSE
- WATERBODY

*FISHING EFFORT NUMBER INDICATES START LOCATION



0 200 400
1:10,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

MELIADINE LAKE FISH HEALTH SAMPLING STATIONS - NEAR FIELD

CONSULTANT

GOLDER

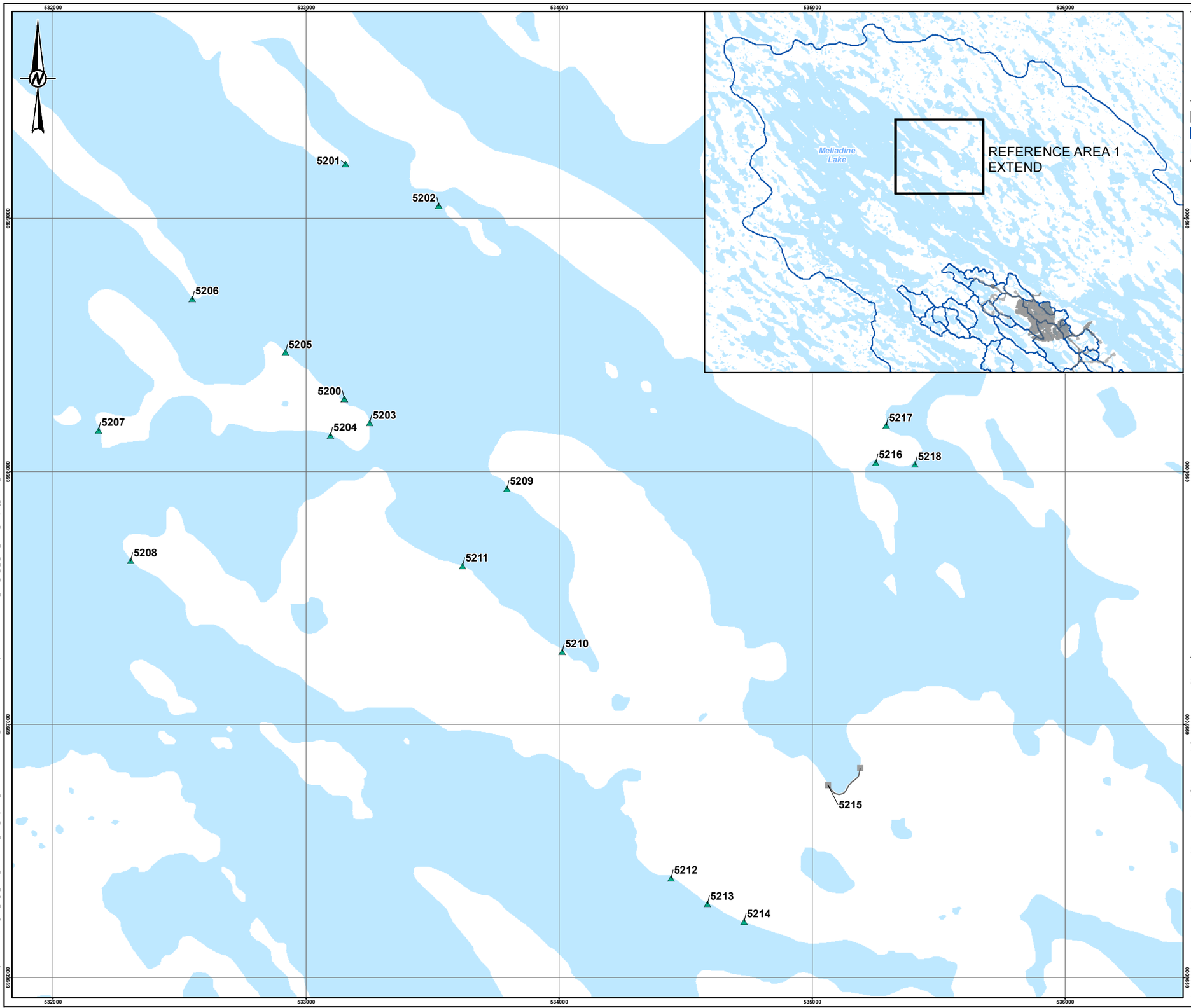
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DESIGNED	CZ
PREPARED	MH
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
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LEGEND

FISH HEALTH SAMPLING STATION*

- DIP NET
- MINNOW TRAP

PATH OF TRAVEL

- DIP NET
- MINE FOOTPRINT
- SUB-WATERSHED BOUNDARY
- WATERBODY

*FISHING EFFORT NUMBER INDICATES START LOCATION



0 300 600

1:15,000 METRES

REFERENCE(S)

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT

AGNICO EAGLE MINES LIMITED

AGNICO EAGLE

PROJECT

CYCLE 1 EEM REPORT AND 2018 AEMP ANNUAL REPORT FOR MELIADINE GOLD MINE
NUNAVUT

TITLE

MELIADINE LAKE FISH HEALTH SAMPLING STATIONS - REFERENCE AREA 1

CONSULTANT

GOLDER

YYYY-MM-DD	2019-03-01
DESIGNED	CZ
PREPARED	MH
REVIEWED	RS
APPROVED	RS

PROJECT NO.	CONTROL	REV.	FIGURE
18110868	2100	0	10.2-3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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10.2.2 Population Survey

Threespine Stickleback included in the population survey were sampled using a combination of lethal and non-lethal methods. All fish included in the population survey underwent an external examination and total length (±1 mm) and total body weight (±0.001 g) were recorded. Any features that did not appear normal (i.e., deformities, erosions, lesions, tumours, or external parasites) were documented. Fish that were sampled using non-lethal methods were released near the capture location after processing.

10.2.3 Lethal Survey

Fish processed during the lethal survey were each assigned a fish identification number and underwent an external examination as described in the EEM TGD (Environment Canada 2012). Features of the fish that did not appear normal were documented (e.g., occurrence of deformities, erosion, lesions, tumours, or external parasites). Total length (±0.1 mm) and total body weight (±0.001 g) were recorded. Following the external examination, fish were sacrificed by a concussive blow to the head followed by cervical dislocation (i.e., cutting the spinal cord immediately behind the head). The internal organs were immediately assessed and any abnormalities in size, shape or colouration were documented. The liver and gonads were removed and weighed (±0.001 g). Sex and reproductive stage were assigned for each fish based on a visual examination of the gonads at the time of sampling using macroscopic features described in Table 10.2-1. Gonads were transferred to clean sample containers, preserved in 10% buffered formalin, and labelled with the fish identification number. Gonad histology and fecundity samples were submitted for respective analyses as described in Section 10.2.3.1 and Section 10.2.3.2. Carcasses were labeled with the fish identification number, frozen at -20°C and archived at the Golder Edmonton office for possible future chemistry analyses. Otoliths were extracted from frozen carcasses, dried, and submitted for aging analyses (Section 10.2.3.3).

10.2.3.1 Histology

Gonad samples from Threespine Stickleback were submitted to Dr. Dave Groman at the University of Prince Edward Island, Atlantic Veterinary College to confirm sex and maturity of lethally sampled fish. Sex and maturity were determined based on a histological assessment of gonad tissues with the aid of a light microscope, as per histological features listed in Table 10.2-1. Prior to interpretation, samples were prepared for histology by fixation, dehydration, clearing, embedding, sectioning, and staining.

To verify that data quality objectives were met, histology results were cross-referenced with field designated sex and maturity stages, external and internal photographs, as well as biological data (e.g., gonad weight, and fish length). Outliers and fish identified near the size-at-maturity were selected for reassessment by the lab to confirm the accuracy of their sex and/or reproductive staging assignments. The separation of adults and juveniles was determined after consideration of field assessments, gonad weight and histology results. If there were inconsistencies between field assessments and histology results, gonad histology results were weighed more heavily, with consideration of all available data to assign the final gonad maturity categories and sex determination.

10.2.3.2 Fecundity

Threespine Stickleback fecundity samples were processed by qualified biologists at the Golder Saskatoon office. Fecundity (i.e., the number of ripening eggs contained within the ovaries) was estimated by counting the number of ripening eggs present in a subsample of Threespine Stickleback ovarian tissue. Fecundity was then calculated using the following formula:

$$Fecundity = Subsample\ Egg\ Count * \frac{Ovary\ Weight\ (g)}{Subsample\ Weight\ (g)}$$

Mean egg size was determined by measuring the diameter of 30 eggs. To verify that data quality objectives were met, 10% of samples were independently verified by a second qualified biologist.

10.2.3.3 Aging

Otoliths collected from Threespine Stickleback were submitted to North/South Consultants Inc. (Winnipeg, Manitoba) for fish aging analysis. Whole otoliths from individual fish were mounted on slides to estimate age based on the number of annuli observed under a dissection microscope. To verify that data quality objectives were met, 10% of age estimates were independently verified by a second qualified biologist.

Table 10.2-1: Gonad Maturity Stages Used During the Meliadine Lake Fish Health Assessment, August 2018

Sex	Stage	Code	Macroscopic Features	Histological Features
Female	Unknown stage	10	Unable to determine stage.	Unable to determine stage.
	Immature	11	Small ovaries, often clear, blood vessels indistinct.	Only oogonia and PG oocytes present. No atresia or muscle bundles. Thin ovarian wall and little space between oocytes.
	Early Stage Development	12	Enlarging ovaries, blood vessels more distinct. Granular in appearance.	PG, CA, Vtg1, and Vtg2 oocytes present. No evidence of POFs or Vtg3 oocytes. Some atresia can be present.
	Late Stage Development	13	Large ovaries filling the body cavity, prominent blood vessels. Individual oocytes visible.	Vtg3 oocytes present or POFs in batch spawners. Atresia of vitellogenic and/or hydrated oocytes may be present. Early stages of OM can be present.
	Ripe	14	Eggs released with gentle pressure on abdomen.	Oocytes undergoing late OM including GVM, GVBD and hydration, or ovulation.
	Spent	15	Deflated ovaries, blood vessels prominent.	Presence of oocyte atresia and, in some species, POFs. Few if any Vtg2 or Vtg3 oocytes.
	Reabsorbing	16	Small atretic oocytes throughout the ovaries, which are hard and white.	Advanced stage oocytes are atretic and no POFs are present.
	Resting	17	Small ovaries, blood vessels reduced but present.	Only oogonia and PG oocytes present. Muscle bundles, enlarged blood vessels, thick ovarian wall, atresia and degenerating POFs may be present.

Table 10.2-1: Gonad Maturity Stages Used During the Meliadine Lake Fish Health Assessment, August 2018

Sex	Stage	Code	Macroscopic Features	Histological Features
Male	Unknown stage	20	Unable to determine stage.	Unable to determine stage.
	Immature	21	Small testes, often clear and threadlike.	Sg1 only; no lumen in lobules.
	Early Stage Development	22	Small testes, semi-translucent, but easily identified.	Spermatocysts evident along lobules. Sg2, Sc1, Sc2, St and Sz can be present in spermatocysts. Sz not present in lumen of lobules or in sperm ducts. GE continuous throughout.
	Late Stage Development	23	Testes large, firm and lobate. White to purplish in colour. Granular appearance.	Sz in lumen of lobules and/or sperm ducts. All stages of spermatogenesis (Sg2, Sc, St, Sz) can be present. Spermatocysts throughout the testis, active spermatogenesis. GE may be continuous or discontinuous.
	Ripe	24	Milt released with gentle pressure on abdomen.	Based on macroscopic observation only.
	Spent	25	Small and deflated testes. Blood vessels obvious. Violet-pink in colour.	Residual Sz present in lumen of lobules and in sperm ducts. Widely scattered spermatocysts near periphery containing Sc2, St, Sz. Little to no active spermatogenesis. Spermatogonial proliferation and regeneration of GE common in periphery of testes.
	Reabsorbing	26	Not typically observed in males.	Not typically observed in males.
	Resting	27	Small testes, often threadlike.	No spermatocysts. Lumen of lobule often nonexistent. Proliferation of spermatogonia throughout testes. GE continuous throughout. Small amount of residual Sz occasionally present in lumen of lobules and in sperm duct.

Note: Modified from Brown-Peterson et al. (2011).

CA = cortical alveolar; GVBD = germinal vesicle breakdown, GVM = germinal vesicle migration, OM = oocyte maturation, PG = primary growth, POF = postovulatory follicle complex, Vtg1 = primary vitellogenic, Vtg2 = secondary vitellogenic, Vtg3 = tertiary vitellogenic, GE = germinal epithelium, Sc1 = primary spermatocyte, Sc2 = secondary spermatocyte, Sg1 = primary spermatogonia, Sg2 = secondary spermatogonia, St = spermatid, Sz = spermatozoa.

10.2.4 Data Analysis

Data screening was performed prior to statistical analyses. Fish health data were screened for potential data entry errors or unusual data using box plots and scatterplots to visually examine data. Plots included total length versus carcass weight, carcass weight versus gonad weight, standard length versus total length, total length versus total body weight, carcass weight versus liver weight, total body weight versus carcass weight, age versus total length, age versus total body weight, age versus carcass weight, and age versus gonad weight. Outliers, as detected by the qualitative screening, were removed from the dataset only if they were determined to be the result of human error (i.e., sampling or measurement error). All outliers were checked with field data sheets and field photos as part of the screening process prior to removal from the dataset.

Data collected during the fish health program were compared among sampling areas to identify and quantify potential differences in effect endpoints between the Near-field and Reference Area 1. Endpoints were considered as either “effect” or “supporting” endpoints. Effect endpoints included specific parameters measured to determine whether there were any effects on indicators of survival, energy use, and energy storage among fish populations (Environment Canada 2012). Supporting endpoints included parameters measured to support the interpretation of potential differences in effect endpoints. A list of measured effect and supporting endpoints for the population

survey and the lethal survey are provided in Table 10.2-2 and Table 10.2-3, respectively. The magnitude of differences in effect endpoints were compared to CES as defined in the MDMER (Government of Canada 2018), which establish effects thresholds indicative of a potential risk to the environment (e.g., greater than 10% for relative body weight and greater than 25% for relative liver size and relative gonad size). In cases where sexes were compared separately (i.e., the lethal survey), only fish with sexes confirmed through histology were included in the statistical analysis.

Table 10.2-2: Statistical Procedures Used in the Population Survey

Indicator	Parameter	Endpoint	CES	Response Variable (Y)	Covariate (X)	Statistical Procedure
Survival	Length-frequency	Effect[a]	-	-	-	K-S test
Growth (energy use)	Length (immature fish)	Effect	25%[b]	Total length	-	ANOVA
	Body weight (immature fish)	Effect	25%[b]	Body weight	-	ANOVA
Reproduction (energy use)	YOY relative abundance	Effect	-	YOY relative abundance	-	Fisher's Exact Test
Condition (energy storage)	Relative body weight	Effect	10%	Body weight	Length	ANCOVA

a) Length-frequency is an effect endpoint for non-lethal sampling in the EEM program; however, because effect sizes are not expressed as a magnitude, but rather a maximum percent difference, there are no defined CES.

b) Critical effect size is applied herein but is not defined for the specific endpoint in the MDMER.

CES = critical effect size ; % = percent; K-S = Kolmogrov-Smirnov test; ANOVA = analysis of variance; ANCOVA = analysis of covariance; YOY = young-of-the-year; - = not applicable.

Table 10.2-3: Statistical Procedures Used in the Lethal Survey

Indicator	Parameter	Endpoint	CES	Response Variable (Y)	Covariate (X)	Statistical Procedure
Survival	Length	Effect[a]	25%	Total length	-	ANOVA
Growth (energy use)	Weight-at-age	Effect	25%	Body weight	Age	ANCOVA
Reproduction (energy use)	Relative gonad size	Effect	25%	Gonad weight	Body weight	ANCOVA
Condition (energy storage)	Relative body weight	Effect	10%	Body weight	Total length	ANCOVA
	Relative liver weight	Effect	25%	Liver weight	Body weight	ANCOVA
		Supporting	-	Liver weight	Total length	ANCOVA
	Relative egg size	Supporting	-	Egg size	Body weight	ANCOVA

a) Threespine Stickleback are short-lived in freshwater, so length was used as a surrogate for age (Environment Canada 2012).

CES = critical effect size ; % = percent; # = number; K-W = Kruskal-Wallis test; ANOVA = analysis of variance; ANCOVA = analysis of covariance; - = not applicable.

10.2.5 Descriptive Statistics

Catch-per-unit effort (CPUE) was calculated to provide an estimate of abundance by standardizing catch data to fishing effort. The CPUE was calculated separately for each species and was summarized by sampling area and gear type. For minnow traps, CPUE was calculated as the number of fish captured per trap per hour. For dip nets, CPUE was calculated as the number of fish captured per 100 seconds of sampling effort.

Descriptive statistics were calculated for individual fish health parameters, separated by sex, life stage (i.e., adult or juvenile), and sampling area. Descriptive statistics included sample size, median, arithmetic mean, standard deviation (SD), standard error (SE), and minimum and maximum values. Fish health indices were calculated as follows:

$$Condition\ Factor\ = \left(\frac{body\ weight}{length^3}\right) \times\ 100{,}000$$

$$Gonadosomatic\ index\ = \left(\frac{gonad\ weight}{body\ weight}\right) \times 100$$

$$Liver\ somatic\ index = \left(\frac{liver\ weight}{body\ weight}\right) \times 100$$

Weight and length measurements were reported in units of grams (g) and millimetres (mm), respectively.

Visual comparisons for fish health data were made using censored box plots as outlined in Barrett et al. (2014). The censored boxplots were defined using the minimum values, the quartiles, and the maximum values. Values that were 1.5 times the interquartile range beyond the quartiles were considered extreme and plotted individually. When extreme values were present, the whiskers were truncated to the next value in the dataset that was within 1.5 times the interquartile range beyond the quartiles (i.e., the whiskers may not always extend to the full 1.5 times the interquartile range if the next value in the dataset is closer to the quartile than the full 1.5 times the interquartile range).

10.2.6 Inferential Statistics

Statistical comparisons were conducted among sampling areas for fish health endpoints presented in Table 10.2-2 and Table 10.2-3. Differences in the length and body weight were compared among sampling areas using ANOVA. Differences in weight-at-age, relative gonad size, relative body weight, relative liver size, and relative egg weight were compared among sampling areas using analysis of covariance (ANCOVA). Significant differences between sampling areas were determined using an α of 0.1. As tapeworms were frequently observed in Threespine Stickleback captured from the Near-field area and Reference Area 1, inferential statistics were completed both with and without parasitized fish included (Golder 2017a).

The assumptions of ANOVA and ANCOVA are that the residuals of the data, after being fit to the model, are normally distributed and have equal variance between groups. The assumption of normality was assessed using the Shapiro-Wilk test, while Levene's test was used to assess equality of variances. Significant differences in assumptions were evaluated using an α of 0.05. If the assumptions of normality and equality of variance were not met, the data were $\log_{10}$-transformed and the assumptions were re-tested. When the assumptions could not be met using a $\log_{10}$ transformation, the non-parametric K-W test was used instead of ANOVA, while ANCOVA data were rank transformed. In addition to the assumptions of normality and equality of variance, ANCOVA has the additional assumption that the parameter regression slopes are parallel among sampling areas. To test this

assumption, the ANCOVA was conducted by first fitting separate regression models for each sampling area using a general linear model that included an interaction term between the sampling area and covariate:

Full ANCOVA model: $y = \beta_0 + \beta_1(x) + \beta_2(Area) + \beta_3(x) \times (Area) + \varepsilon$

where y is the response variable, x is the covariate, $Area$ is the sampling area indicator variable, and ε is the error term. If the coefficient β_3 of the $(x) \times (Area)$ interaction term was not significant (i.e., p>0.05), then the slopes were considered parallel and the ANCOVA proceeded by testing the significance of the coefficient β_2 of the $(Area)$ term in the reduced ANCOVA model that fits separate regressions for each area, but with a common regression slope:

Reduced ANCOVA model: $y = \beta_0 + \beta_1(x) + \beta_2(Area) + \varepsilon.$

When a significant interaction was observed, the regression slopes were considered significantly different. When the covariate was a strong predictor of the response variable and the ANCOVA had a high coefficient of determination (R^2 >0.8), the test for parallel slopes had high power to detect a difference that may not be practically significant. In this case, when the interaction term in the full ANCOVA model was significant, the slopes were fixed as parallel by fitting the reduced ANCOVA model because the reduced model explained almost as much (within 2%) of the variability in the response variable as the full model. In this case, the ANCOVA proceeded under the assumption that the regression slopes between groups were practically similar (Barrett et al. 2010).

Statistical outliers were evaluated using SRs from the ANOVA and ANCOVA models. Statistical outliers were identified with a SR value of plus or minus (±) 4.0 (Golder 2017a). When an outlier was detected, the validity of the data point was examined. If the outlier was determined to be the result of a data entry error, it was corrected; if the outlier was not the result of data entry error and could not be resolved otherwise, the analysis was completed with and without outliers included.

When significant differences in fish health parameters were observed between sampling areas, the magnitude of difference between the Near-field area and Reference Area 1 was calculated by expressing the difference as a percentage of the mean as follows:

Magnitude: $Magnitude = \frac{\bar{x}_{NF} - \bar{x}_{RA1}}{\bar{x}_{RA1}} * 100$

where $\bar{x}_{NF}$ is the mean or median value for the effect endpoint at the Near-field area, and $\bar{x}_{RA1}$ is the mean or median value for the effect endpoint at Reference Area 1. A positive magnitude of difference indicated that values were greater in the Near-field area than Reference Area 1, while a negative magnitude of difference indicated that values were greater in Reference Area 1 than the Near-field area.

If the statistical comparison was conducted on $\log_{10}$-transformed data, then the magnitude was calculated using geometric means. If the statistical comparison between sampling areas was conducted using the K-W test, the data were not considered to be normally distributed and the magnitude was calculated using medians. As the K-W test is a non-parametric method for testing whether samples originate from the same distribution (i.e., it is not a comparison of sample medians), there was the potential for the K-W test to be significant, but no differences in medians observed. For effect endpoints analyzed using ANCOVA, magnitudes were calculated from the least squares means.

Length-frequency distributions were compared among sampling areas using the non-parametric, two-sample Kolmogorov-Smirnov (K-S) test. The K-S test compares the cumulative relative distributions of total length between sampling areas by comparing the maximum difference between the two cumulative relative frequency distributions to a critical value, which is determined based on sample size, to assess whether the difference is large enough to indicate that the two distributions came from different populations. Differences in the length of Threespine Stickleback were compared among gear types using the K-W test. The prevalence of abnormalities were compared among sampling areas using the chi-square test.

10.2.7 Power Analysis

Power analyses were performed to determine the statistical power and sample size requirements to detect a magnitude of change that was equivalent to CESs defined in the MDMER as presented in Table 10.2-2 and Table 10.2-3 (Government of Canada 2018). Type I (α) and Type II (β) error rates were set to 0.1 (Environment Canada 2012); therefore, sufficient power was considered to be 0.9 (i.e., 1- β). Power analyses were conducted using the power and sample size function in G*Power 3.1 (Faul et al. 2007). Power analyses were only completed for endpoints with defined CES (Government of Canada 2018).

10.3 Quality Assurance and Quality Control

QA and QC procedures were applied to field sampling, laboratory analyses, data entry, data analyses, and report preparation. Pre-field meetings were held with the field crew prior to the start of the program to review specific work instructions for the field data collection, and to confirm that the field crew were familiar with the expectations of the sampling plan. Field equipment were calibrated throughout the field program following manufacturer specifications and all samples were collected by experienced personnel. Samples were labelled, preserved, and shipped according to standard protocols. Detailed field notes were recorded in waterproof field books and on pre-printed waterproof field data sheets in either pencil or indelible ink. Data sheets and sample labels were checked at the end of each field day for completeness and accuracy and were scanned into electronic copies at the completion of the field program. Chain-of-custody forms were used to track shipment and receipt of samples.

10.4 Results and Discussion

10.4.1 Catch Data Summaries

A total of 1,226 fish from four species were captured during the August 2018 small-bodied fish health survey at Meliadine Lake (Table 10.4-1). Fish were captured using a combination of minnow traps and dip netting. The spatial extent of sampling was indicated for the Near-field area in Figure 10.2-2, and Reference Area 1 in Figure 10.2-3. Species richness varied among sampling areas, with two species captured from the Near-field area and four species from Reference Area 1. Catch varied among sampling areas, with 905 fish captured at the Near-field area and 321 fish captured at Reference Area 1. Catches at each sampling area were dominated by Threespine Stickleback, accounting for 99% of the total catch at the Near-field area and 94% of the catch at Reference Area 1. Threespine Stickleback CPUE varied among sampling areas, with the majority of Threespine Stickleback captured using minnow traps in Meliadine Lake (Table 10.4-2). The CPUE of Threespine Stickleback captured using minnow traps was 0.44 fish per hour at the Near-field area and 0.11 fish per hour at Reference Area 1.

Table 10.4-1: Species Richness and Abundance of Fish Captured at Meliadine Lake, 2018

Species	Near-field Area	Reference Area 1	Total
Threespine Stickleback (*Gasterosteus aculeatus*)	899	301	1,200
Ninespine Stickleback (*Pungitius pungitius*)	6	18	24
Slimy Sculpin (*Cottus cognatus*)	0	1	1
Burbot (*Lota lota*)	0	1	1
Species Richness	2	4	4
Abundance	905	321	1,226

Table 10.4-2: Catch-Per-Unit Effort for Fish Captured from Meliadine Lake, 2018

Area	Sampling Method	Sampling Effort		THST	NNST	SLSC	BURB	Total
NF	Minnow Trap	2049 h	Abundance	899	6	0	0	905
			CPUE #/h	0.44	<0.01	0.00	0.00	0.44
RA1	Minnow Trap	2692 h	Abundance	298	18	1	1	318
			CPUE #/h	0.11	<0.01	<0.01	<0.01	0.12
	Dip Net	3600 s	Abundance	3	0	0	0	3
			CPUE #/100 s	0.08	0.00	0.00	0.00	0.08

NF = Near-field Area; RA1 = Reference Area 1; THST = Threespine Stickleback; NNST = Ninespine Stickleback; SLSC = Slimy Sculpin; BURB = Burbot; CPUE = catch-per-unit-effort; # = number of fish; h = hour; s = second; <= less than.

Water quality measurements were comparable among the Near-field area and Reference Area 1 in 2018. Water temperatures ranged from 10.2 to 12.7°C at the Near-field area and 9.0 to 12.6°C at Reference Area 1. At the Near-field area, pH ranged from 5.9 to 7.4 versus 6.1 to 7.3 at Reference Area 1. DO concentrations ranged from 9.8 to 11.3 mg/L at the Near-field area and 9.2 to 12 mg/L at Reference Area 1. Specific conductivity ranged from 86 to 106 µS/cm at the Near-field area and 71 to 79 µS/cm at Reference Area 1. Fish sampling effort and supporting environmental data are provided for each sampling area in Appendix 10A. Detailed water quality and sediment quality data are provided for Meliadine Lake in Sections 6 and 8, respectively.

10.4.2 Population Survey

A total of 1,200 Threespine Stickleback were captured during the Meliadine Lake fish health program (Table 10.4-1). Of these, 216 were sampled during the lethal survey and an additional 654 Threespine Stickleback were processed using non-lethal methods (Appendix 10B). A combined total of 870 Threespine Stickleback were included in the population survey; 570 fish were collected in the Near-field Area and 300 fish were collected in Reference Area 1. An additional 330 individuals were released without processing to minimize hold times and reduce the risk of incidental mortalities.

Threespine Stickleback sample size targets for the population survey were met at each of the sampling areas. Descriptive statistics for the Threespine Stickleback population survey are provided in Table 10.4-3, with the results of statistical comparisons presented in Table 10.4-4. Data are provided in Appendix 10B, spatial comparisons are presented in Appendix 10C, and temporal comparisons for the Near-field area between 2018 and 2015 are provided in Appendix 10D.

Table 10.4-3: Descriptive Statistics for Threespine Stickleback Collected from Meliadine Lake, 2018

Stage	Parameter	Near-field Area							Reference Area 1						
		n	Mean	Median	Min	Max	SD	SE	n	Mean	Median	Min	Max	SD	SE
Adult	Age (y)	38	2.9	3.0	1.0	5.0	1.0	0.2	42	2.7	2.0	1.0	4.0	1.0	0.2
	Total length (mm)	472	57.0	57.0	42.5	75.0	7.9	0.4	237	53.6	51.0	39.9	79.0	8.0	0.5
	Body weight (g)	466	1.760	1.700	0.565	4.909	0.774	0.036	194	1.435	1.131	0.433	4.222	0.697	0.050
	Condition Factor	466	0.89	0.88	0.59	1.29	0.11	0.01	194	0.87	0.86	0.54	1.19	0.11	0.01
Juvenile	Age (y)	28	1.8	2.0	1.0	2.0	0.4	0.1	19	1.8	2.0	1.0	2.0	0.4	0.10
	Total length (mm)	98	41.2	41.3	35.4	45.5	2.4	0.2	63	41.7	42.0	33.0	47.4	2.4	0.3
	Body weight (g)	97	0.646	0.660	0.361	1.027	0.128	0.013	63	0.687	0.677	0.316	1.092	0.136	0.017
	Condition Factor	97	0.92	0.93	0.65	1.28	0.12	0.01	63	0.94	0.92	0.73	1.28	0.10	0.01

Note: descriptive statistics include parasitized fish.

n = sample size; Min = minimum; Max = maximum; SD = standard deviation; SE = standard error; y = year; mm = millimetre; g = gram.

Table 10.4-4: Statistical Comparison of Fish Population Survey Parameters among Meliadine Lake Sampling Areas, 2018

Parameter	Dependant Variable	Covariate	Endpoint	Statistical Test	Outliers	n		Interaction P-value	Model P-value	MSE	Least Squares Mean		Assumptions		SSD	Magnitude (%)	CES	Power Analysis (↑ / ↓)	
						NF	RA1				NF	RA1	Variance	Normality				Power	n
Length-frequency	-	-	Effect	K-S test	None	570	300	n/a	**<0.001**	n/a	n/a	n/a	n/a	n/a	Yes	20[(d)]	n/a	n/a	n/a
Size-at-age[(a)]	Body weight	n/a	Effect	K-W Test	None	99	65	n/a	0.347	0.017	0.648	0.676	n/a	n/a	No	-1	25%	1.000	12
	Total length	n/a	Effect	K-W Test	None	100	65	n/a	0.203	5.19	41.2	41.6	n/a	n/a	No	-1	25%	1.000	3
Abundance of YOY[(b)]	-	-	Effect	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Relative body weight	Body weight	Total length	Effect	$ANCOVA_{rank}$	Included	563	257	0.007[(c)]	0.460	3352	412	408	0.003	<0.001	No	1	10%	1.000	43
				$ANCOVA_{rank}$	Excluded	563	256	0.012[(c)]	0.349	3286	412	408	0.004	<0.001	No	1		1.000	42

a) Analysis conducted using juvenile fish, defined as individuals below than the size-at-maturity of 44.5 mm.

b) Not tested. No young-of-the-year were captured from either area.

c) Slopes are considered practically similar (Barrett et al. 2010).

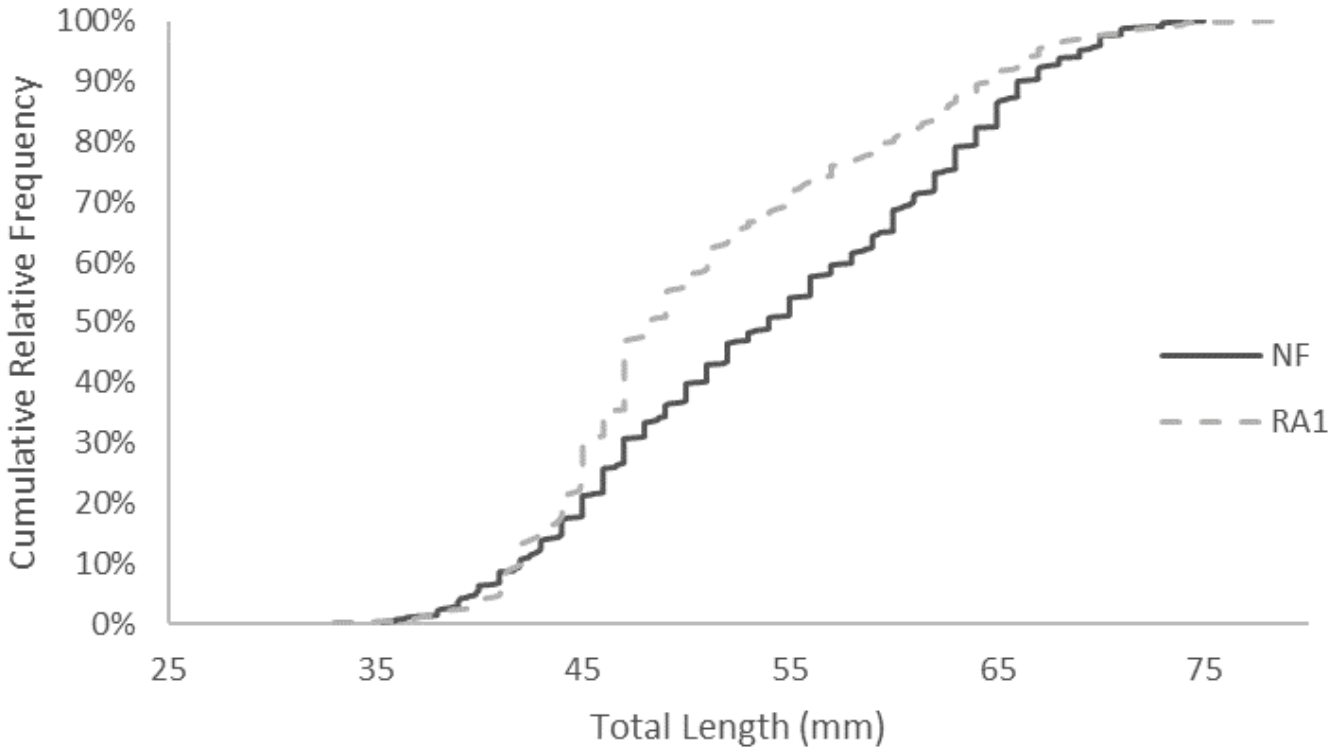
d) Magnitude based on maximum percent difference between groups in cumulative frequency distribution.

n = sample size; ; NF = Near-field Area; RA1 = Reference Area 1; *P*-value = probability value; MSE = mean squared error; SSD = statistically significant difference (α= 0.1) ; % = percent; CES = critical effect size; K-W = Kruskal-Wallis; ANCOVA = analysis of covariance; K-S = Kolmogorov-Smirnov; rank = rank transformed data; <= less than; n/a or - = not applicable.

10.4.2.1 Survival

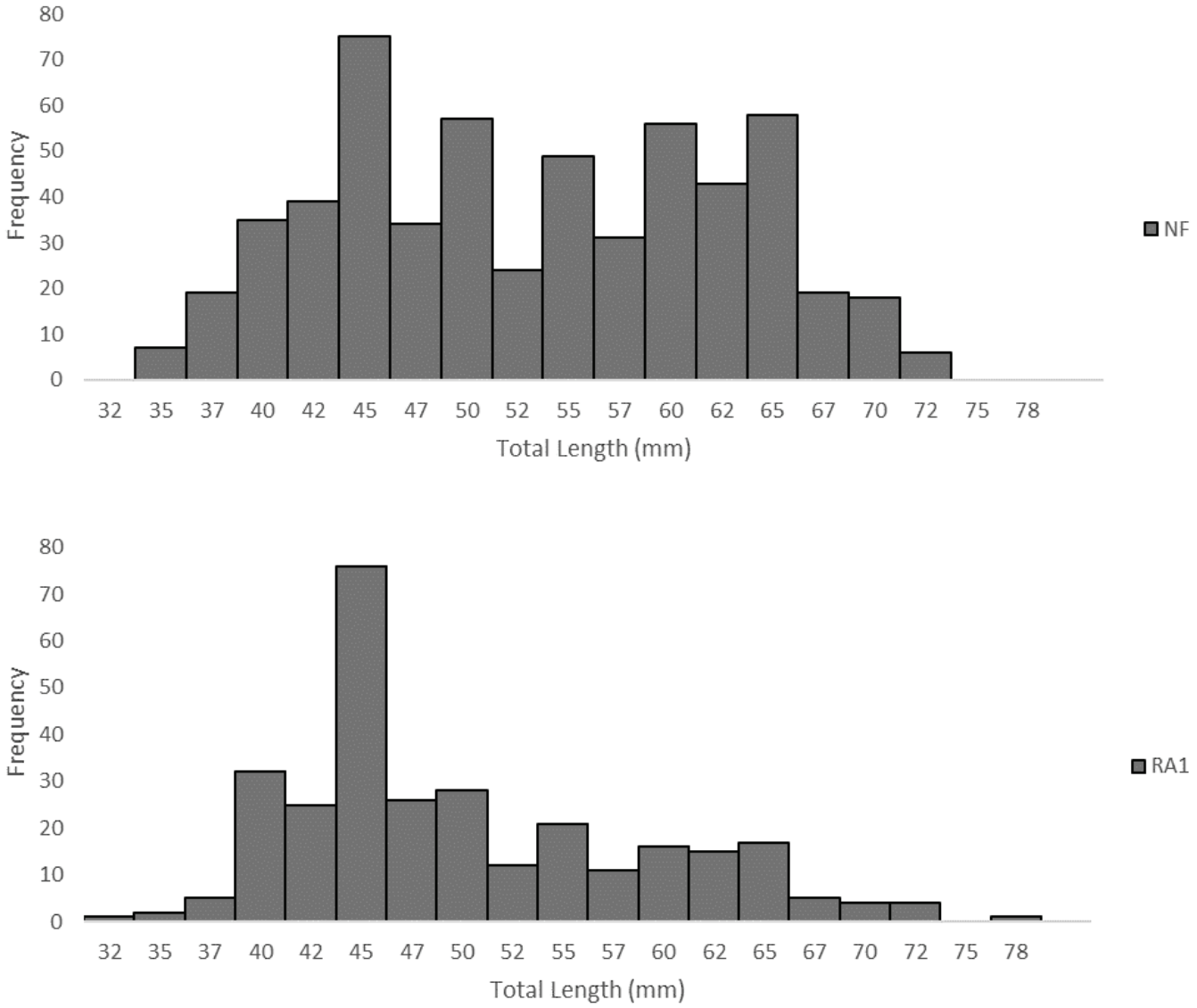
10.4.2.1.1 Length-Frequency

Length-frequency distributions of Threespine Stickleback were significantly different among sampling areas, with a maximum percent difference in cumulative relative frequency of 20% (Table 10.4-4 and Figure 10.4-1). Differences between areas resulted from a greater proportion of larger individuals (i.e., >55 mm) captured from the Near-field area when compared to Reference Area 1 (Figure 10.4-2).



NF = Near-field area; RA1 = Reference Area 1 ; % = percent; mm = millimetre.

Figure 10.4-1: Cumulative Length-Frequency Distribution of Threespine Stickleback Collected from Meliadine Lake, 2018



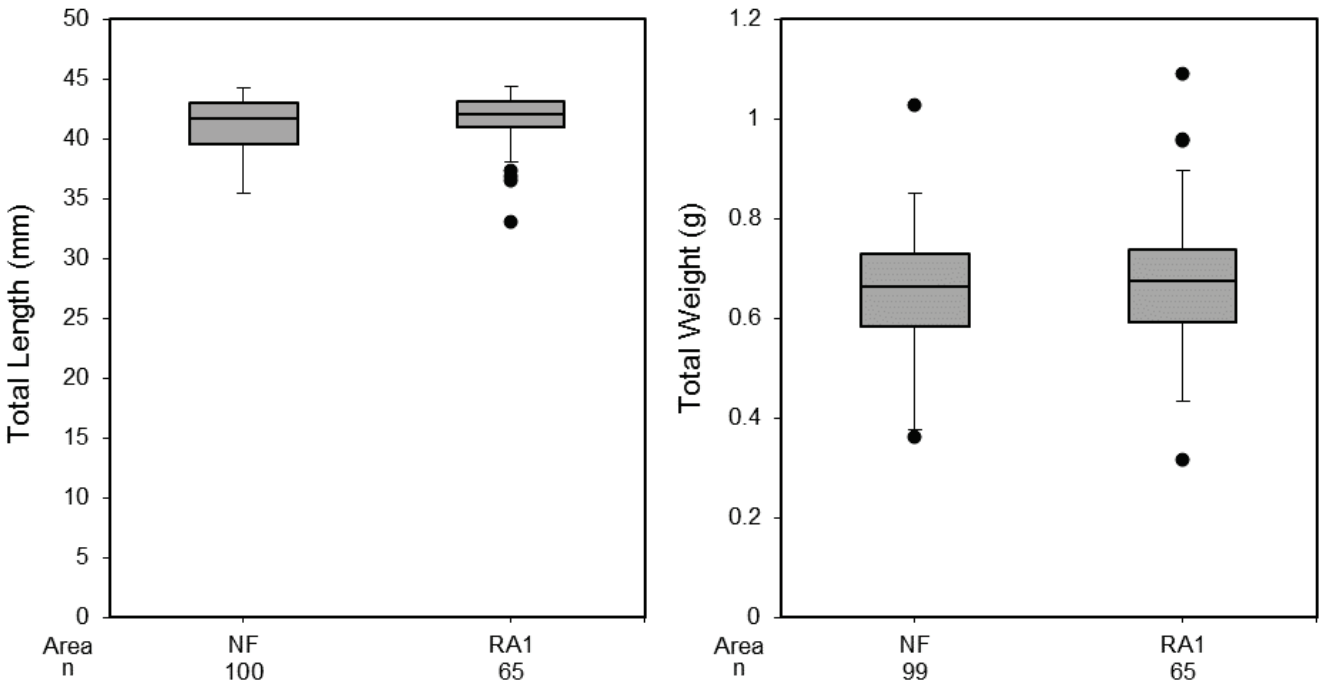
NF= Near-field Area; RA1 = Reference Area 1; mm = millimetre.

Figure 10.4-2: Length-Frequency Distributions for Threespine Stickleback Collected from Meliadine Lake, 2018

10.4.2.2 Growth

10.4.2.2.1 Size-at-Age

Threespine Stickleback ranged in size from 33.0 to 79.0 mm, and 0.316 to 4.909 g (Table 10.4-3, Figure 10.4-3). There were no significant differences observed for total length and body weight of immature Threespine Stickleback (i.e., individuals smaller than the calculated size-at-maturity of 44.5 mm, Section 10.4.3.2.2) captured from the sampling areas (Table 10.4-4). Statistical power was sufficient to detect a CES of 25% for both total length and body weight. Spatial comparisons of total length and body weight for all fish sampled (i.e., juveniles and adults) are provided in Figures 10C-1 and 10C-2, respectively.



NF = Near-field Area; RA1 = Reference Area 1; n = sample size; mm = millimetre; g = gram.

Figure 10.4-3: Length and Weight of Immature Threespine Stickleback Captured from Meliadine Lake During the Population Survey, 2018

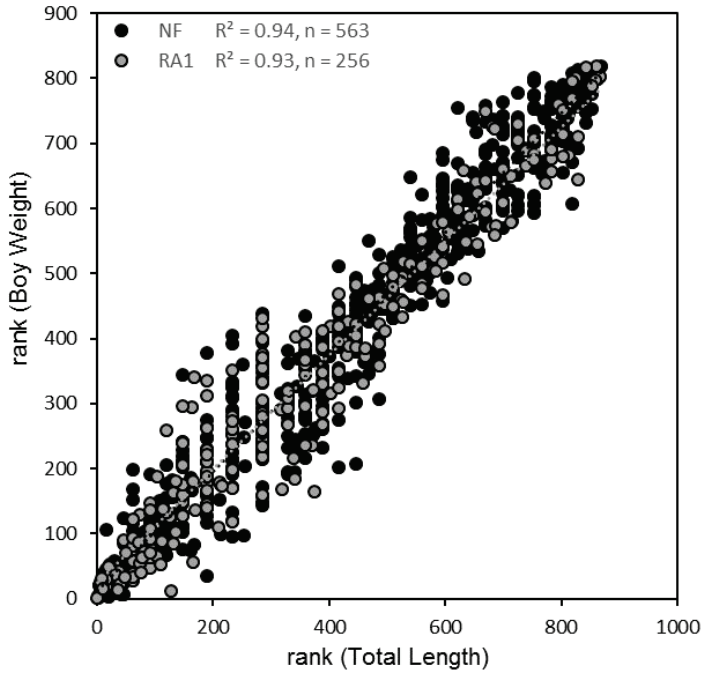
10.4.2.3 Reproduction

No young-of-the-year (YOY) were captured in the Near-field area or Reference Area 1 during the fish heath survey. Therefore, the relative abundance of YOY was not compared between areas. The low catchability of YOY may have been a consequence of the timing and location of sampling effort. Threespine Stickleback were determined to be spawning in Meliadine Lake during the August 2015 and August 2017 sampling periods (Golder 2016c and 2018), based on the presence of male secondary sex characteristics and the occurrence of ripe and spent individuals of both sexes. Similar observations were made in August 2018. Threespine Stickleback are typically a spring spawning species; however, extended spawning seasons have been observed for some populations (Wooton et al. 1978; Chellappa et al. 1989). Based on this information and our observations, Threespine Stickleback likely spawn from June through to August in Meliadine Lake. As a consequence, YOY may have been too small at the time of sampling to be effectively captured, or occupied habitats that were not effectively targeted by the sampling methods employed (e.g., residing within interstitial spaces of the rocky substrate, or at depths greater than 3 m). These results were consistent with previous fish health surveys conducted in Meliadine Lake (i.e., August 2015 and August 2017), that employed a variety of alternative gear types, including beach seines, hoop nets, and backpack electrofishing (Golder 2016c and 2018).

10.4.2.4 Condition

10.4.2.4.1 Condition Factor

Condition factor of Threespine Stickleback collected from Meliadine Lake ranged from 0.54 to 1.29 (Table 10.4-3). Relative body weights were not significantly different among sampling areas (Table 10.4-4), and statistical power was sufficient to detect a CES of 10% for relative body weight.



Note: Data transformations consistent with those used in the statistical analysis (Table 10.4-4). Statistical outliers were excluded.
NF = Near-field Area; RA1 = Reference Area 1; g = gram; mm = millimetre; R^2 = coefficient of determination; n = sample size; rank = rank transformed data.

Figure 10.4-4: Body Weight Relative to Total Length for Threespine Stickleback Collected During the Population Survey from Meliadine Lake, 2018

10.4.3 Lethal Survey

A total of 216 Threespine Stickleback were lethally sampled from Meliadine Lake during the fish health assessment. Target sample sizes were achieved at each sampling area (Table 10.4-5). Descriptive statistics for lethally sampled Threespine Stickleback are provided in Table 10.4-6, with the results of statistical comparisons among sampling areas presented in Table 10.4-7, and statistical comparisons excluding fish parasitized by tapeworms in Table 10.4-8. As sample sizes for unparasitized fish were small (i.e., sample sizes ranged from 13 to 19), results of the lethal survey focused on all Threespine Stickleback sampled. Fish health data and statistical outliers removed from the analyses are provided in Appendix 10B, spatial comparisons for fish health parameters between the Near-field area and Reference Area 1 are presented in Appendix 10C, and temporal comparisons for the Near-field area between 2018 and 2015 are provided in Appendix 10D.

Table 10.4-5: Sample Sizes for Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

Life Stage	Sex	Target Sample Size	Achieved Sample Size		
			Near-field	Reference Area 1	Total
Adult	Female	20	31	25	56
	Male	20	21	23	43
Juvenile		20	46	26	72

Table 10.4-6: Descriptive Statistics for Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

Sex	Parameter	Near-field							Reference Area 1						
		n	Mean	Median	Min	Max	SD	SE	n	Mean	Median	Min	Max	SD	SE
Female	Age (y)	17	2.3	2.0	1.0	4.0	1.0	0.2	19	2.6	2.0	2.0	4.0	0.9	0.2
	Total Length (mm)	31	59.3	60.4	45.4	73.7	9.0	1.6	25	57.9	58.6	43.1	74.1	8.7	1.7
	Body Weight (g)	31	1.982	2.050	0.750	3.649	0.951	0.171	25	1.756	1.799	0.433	4.222	0.935	0.187
	Carcass Weight (g)	31	1.435	1.342	0.620	2.611	0.624	0.112	25	1.223	1.203	0.395	2.383	0.531	0.106
	Condition Factor	31	0.87	0.90	0.73	1.01	0.09	0.02	25	0.82	0.80	0.54	1.09	0.12	0.02
	Liver Weight (g)	31	0.058	0.052	0.023	0.129	0.028	0.005	25	0.049	0.044	0.006	0.108	0.025	0.005
	LSI	31	3.10	2.82	1.84	4.85	0.82	0.15	25	2.87	2.75	1.41	4.62	0.81	0.16
	Gonad Weight (g)	30	0.074	0.046	0.007	0.242	0.066	0.012	25	0.080	0.030	0.003	0.616	0.140	0.028
	GSI	30	3.00	2.44	0.96	7.83	1.89	0.35	25	3.20	1.66	0.78	19.20	3.89	0.78
	Fecundity	21	2388	2592	709	3845	861	188	13	1295	1378	431	1785	447	124
	Mean Egg Weight (mg)	21	0.042	0.033	0.011	0.103	0.026	0.006	13	0.093	0.067	0.010	0.387	0.111	0.031
Male	Age (y)	20	3.5	3.5	2.0	5.0	0.8	0.2	21	2.9	3.0	1.0	4.0	1.0	0.2
	Total Length (mm)	21	57.8	58.9	45.0	65.1	4.6	1.0	23	57.1	60.1	44.9	65.8	6.4	1.3
	Body Weight (g)	21	1.596	1.661	0.738	2.234	0.326	0.071	23	1.634	1.558	0.706	2.596	0.593	0.124
	Carcass Weight (g)	21	1.358	1.431	0.557	1.998	0.311	0.068	23	1.274	1.296	0.584	1.915	0.434	0.090
	Condition Factor	21	0.82	0.81	0.72	0.91	0.05	0.01	23	0.84	0.78	0.69	1.13	0.13	0.03
	Liver Weight (g)	21	0.044	0.044	0.014	0.069	0.018	0.004	23	0.041	0.039	0.014	0.069	0.016	0.003
	LSI	21	2.70	2.77	1.42	4.44	0.90	0.20	23	2.54	2.65	1.25	3.83	0.64	0.13
	Gonad Weight (g)	19	0.014	0.012	0.006	0.035	0.007	0.002	22	0.014	0.012	0.005	0.029	0.007	0.001
	GSI	19	0.83	0.75	0.32	1.91	0.42	0.10	22	0.95	0.69	0.30	2.15	0.60	0.13
Juvenile	Age (y)	28	1.8	2.0	1.0	2.0	0.4	0.1	19	1.8	2.0	1.0	2.0	0.4	0.1
	Total Length (mm)	46	40.7	40.7	35.4	45.5	2.6	0.4	26	41.5	41.5	36.6	47.4	2.6	0.5
	Body Weight (g)	46	0.587	0.621	0.361	0.803	0.128	0.019	26	0.661	0.644	0.459	0.956	0.127	0.025
	Carcass Weight (g)	45	0.405	0.394	0.275	0.582	0.080	0.012	26	0.414	0.415	0.292	0.530	0.073	0.014
	Condition Factor	46	0.86	0.87	0.65	1.07	0.11	0.02	26	0.92	0.90	0.73	1.10	0.10	0.02
	Liver Weight (g)	46	0.014	0.014	0.006	0.032	0.004	0.001	25	0.014	0.014	0.006	0.024	0.004	0.001
	LSI	46	2.48	2.32	1.33	4.84	0.74	0.11	25	2.08	1.95	0.99	3.27	0.57	0.11

Note: descriptive statistics include parasitized fish.

GSI = gonadosomatic index; LSI = liver somatic index; n = sample size; Min = minimum; Max = maximum; SD = standard deviation; SE = standard error; y = year; mm = millimetre; g = gram; mg = milligram.

Table 10.4-7: Statistical Comparisons for Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

Sex	Parameter	Dependent Variable	Covariate	Endpoint	Statistical Test	Outliers	n		Interaction P-value	Model P-value	MSE	Least Squares Mean		Assumptions		SSD	Magnitude (%)	CES	Power Analysis (↑ / ↓)	
							NF	RA1				NF	RA1	Variance	Normality				Power	n
Female	Total length[(a)]	Total length	n/a	Effect	K-W Test	None	31	25	n/a	0.564	79.0	59.3	57.9	n/a	n/a	No	0	25%	1.000	8
	Weight-at-age	Body weight	Age	Effect	$ANCOVA_{log}$	None	17	19	0.338	0.394	0.042	0.149	0.088	0.741	0.363	No	15	25%	0.397 / 0.554	79 / 48
	Relative gonad size	Gonad weight	Body weight	Effect	$ANCOVA_{log}$	Included	30	25	0.736	0.794	0.032	-1.415	-1.402	0.814	0.072	No	-3	25%	0.628 / 0.815	60 / 37
					$ANCOVA_{log}$	Excluded	30	24	0.662	0.683	0.025	-1.423	-1.441	0.367	0.675	No	4		0.715 / 0.886	47 / 29
	Condition	Body weight	Total length	Effect	$ANCOVA_{log}$	None	31	25	0.259	**0.039**	0.002	0.226	0.202	0.721	0.786	Yes	6	10%	0.975 / 0.991	19 / 16
	Relative liver size	Liver weight	Body weight	Effect	$ANCOVA_{log}$	None	31	25	0.125	0.181	0.014	-1.305	-1.347	0.419	0.169	No	10	25%	0.921 / 0.989	26 / 16
			Total length	Supporting	$ANCOVA_{log}$	Included	31	25	0.086	**0.063**	0.016	-1.295	-1.359	0.419	0.023	Yes	16	n/a	n/a	n/a
					$ANCOVA_{log}$	Excluded	31	24	0.516	0.119	0.012	-1.287	-1.334	0.894	0.319	No	11		n/a	n/a
	Relative egg weight	Egg weight	Body weight	Supporting	$ANCOVA_{log}$	None	21	13	0.249	**<0.001**	0.052	-1.509	-1.175	0.078	0.937	Yes	-54	n/a	n/a	n/a
Male	Total length[(a)]	Total length	n/a	Effect	K-W test	None	21	23	n/a	0.860	31.3	57.8	57.1	n/a	n/a	No	7	25%	1.000	4
	Weight-at-age	Body weight	Age	Effect	$ANCOVA_{rank}$	None	20	21	0.148	0.239	118	18.8	23.1	<0.001	0.248	No	-18	25%	0.511	62
	Relative gonad size	Gonad weight	Body weight	Effect	$ANCOVA_{log}$	None	19	22	0.401	0.949	0.046	-1.913	-1.908	0.986	0.690	No	-1	25%	0.412 / 0.574	85 / 52
	Condition	Body weight	Total length	Effect	$ANCOVA_{rank}$	Included	21	23	0.155	0.955	25.6	22.5	22.5	<0.001	0.132	No	0	10%	0.424	88
					$ANCOVA_{log}$	Excluded	21	22	0.019[(b)]	0.742	0.002	0.189	0.194	0.007	0.064	No	-2		0.903 / 0.946	22 / 18
	Relative liver size	Liver weight	Body weight	Effect	ANCOVA	None	21	23	0.346	0.319	<0.001	0.044	0.040	0.565	0.494	No	9	25%	0.872	25

Note: Statistically significant differences indicated in **bold**. Exact power cannot be calculated for the KW test and was estimated based on ANOVA.

a) Threespine Stickleback are short-lived in freshwater, so length was used as a surrogate for age (Environment Canada 2012).

b) Slopes were considered practically similar (Barrett et al. 2010).

n = sample size; *P*-value = probability value; MSE = mean squared error; NF = Near-field Area; RA1 = Reference Area 1; CES = critical effect size ; % = percent; K-W = Kruskal-Wallis; ANOVA = analysis of variance; ANCOVA = analysis of covariance; log = log_{10} transformed data; rank = rank transformed data; <= less than; n/a = not applicable.

Table 10.4-8: Statistical Comparisons for Threespine Stickleback Lethally Sampled from Meliadine Lake Excluding Fish Parasitized by Tapeworms, 2018

Sex	Parameter	Dependent Variable	Covariate	Endpoint	Statistical Test	Outliers	n		Interaction P-value	Model P-value	MSE	Least Squares Mean		Assumptions		SSD	Magnitude (%)	CES	Power Analysis (↑ / ↓)	
							NF	RA1				NF	RA1	Variance	Normality				Power	n
Female	Total length[(a)]	Total length	n/a	Effect	K-W Test	None	13	10	n/a	0.664	27.3	51.1	51.6	n/a	n/a	No	-2	25%	1.000	4
	Weight-at-age	Body weight	Age	Effect	$ANCOVA_{rank}$	Included	12	10	0.115	0.290	38.0	4.56	7.43	<0.001	<0.001	No	-39	25%	0.177	191
					ANCOVA	Excluded	11	10	0.433	0.701	0.053	0.980	0.939	0.400	0.482	No	4		0.721	18
	Relative gonad size	Gonad weight	Body weight	Effect	ANCOVA	None	12	10	0.662	0.506	<0.001	0.024	0.028	0.981	0.643	No	-14	25%	0.326	63
	Condition	Body weight	Total length	Effect	ANCOVA	None	13	10	0.224	**0.058**	0.012	1.139	1.047	0.900	0.359	Yes	9	10%	0.715	20
	Relative liver size	Liver weight	Body weight	Effect	ANCOVA	None	13	10	0.860	0.381	<0.001	0.042	0.041	0.954	0.779	No	5	25%	1.000	5
			Total length	Supporting	$ANCOVA_{log}$	Included	13	10	0.063	**0.024**	0.012	-1.403	-1.517	0.260	0.904	Yes	30	n/a	n/a	n/a
					$ANCOVA_{log}$	Excluded	13	9	0.439	**0.069**	0.008	-1.388	-1.461	0.953	0.659	Yes	18		n/a	n/a
	Relative egg weight	Egg weight	Body weight	Supporting	ANCOVA	None	4	5	0.498	0.390	<0.001	0.031	0.039	0.353	0.883	No	-21	n/a	n/a	n/a
Male	Total length[(a)]	Total length	n/a	Effect	K-W test	None	19	14	n/a	0.126	21.3	58.9	55.5	n/a	n/a	No	6	25%	1.000	3
	Weight-at-age	Body weight	Age	Effect	$ANCOVA_{rank}$	None	18	13	0.266	0.389	77.5	17.4	14.1	0.026	0.083	No	24	25%	0.287	111
	Relative gonad size	Gonad weight	Body weight	Effect	$ANCOVA_{log}$	None	19	13	0.349	0.713	0.049	-1.912	-1.880	0.801	0.777	No	-7	25%	0.326 / 0.455	94 / 57
	Condition	Body weight	Total length	Effect	$ANCOVA_{rank}$	None	19	14	0.370	0.133	14.7	17.9	15.8	0.037	0.227	No	14	10%	0.309	105
	Relative liver size	Liver weight	Body weight	Effect	ANCOVA	None	19	14	0.489	0.663	<0.001	0.043	0.041	0.182	0.398	No	5	25%	0.670	30

Note: Statistically significant differences indicated in **bold**. Exact power cannot be calculated for the KW test and was estimated based on ANOVA.

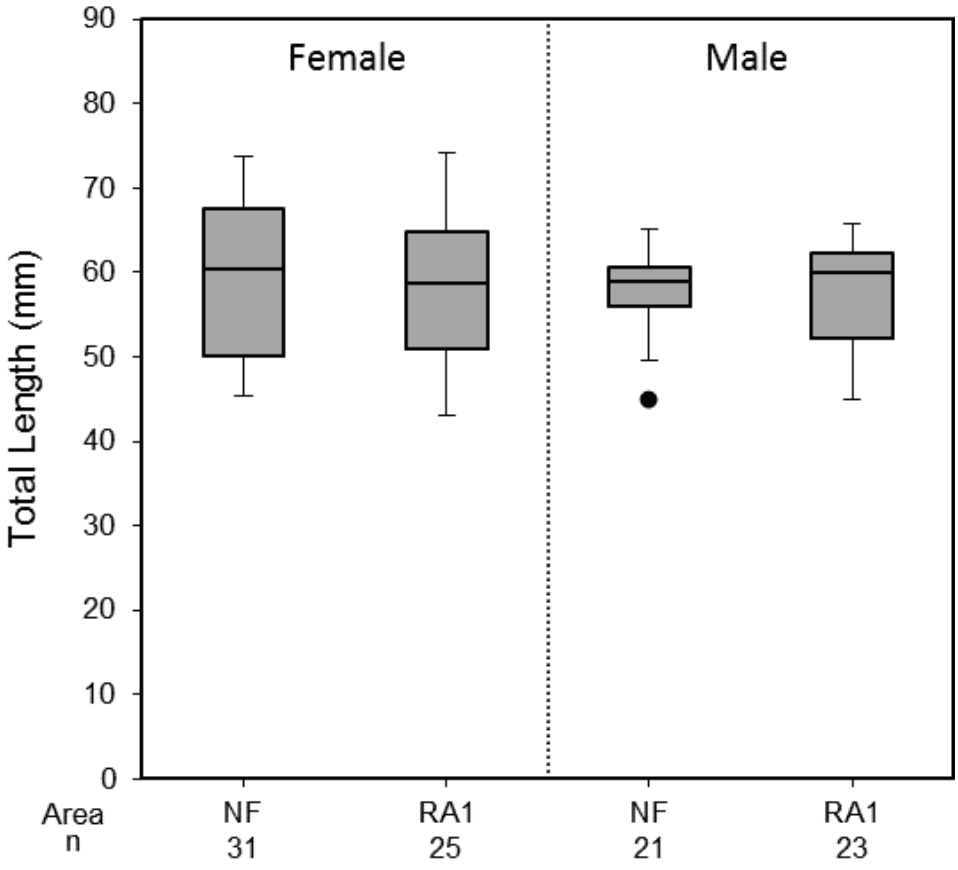
a) Threespine Stickleback are short-lived in freshwater, so length was used as a surrogate for age (Environment Canada 2012).

n = sample size; *P*-value = probability value; MSE = mean squared error; NF = Near-field Area; RA1 = Reference Area 1; CES = critical effect size ; % = percent; K-W = Kruskal-Wallis; ANOVA = analysis of variance; ANCOVA = analysis of covariance; log = log_{10} transformed data; rank = rank transformed data; <= less than; n/a = not applicable.

10.4.3.1 Survival

10.4.3.1.1 Age

Age of Threespine Stickleback sampled from Meliadine Lake[10] during the lethal survey ranged from 1 to 5 years (Table 10.4-6), with the majority of fish sampled reaching sexual maturity between the ages of 1 and 2 (see Figure 10.4-7). As Threespine Stickleback are short-lived, and it can be difficult to detect a 25% difference in age, fish length was used as a surrogate effect endpoint for age (Environment Canada 2012). Lethally sampled female and male Threespine Stickleback ranged in length from 43.1 to 74.1 mm and 44.9 to 65.8 mm, respectively (Table 10.4-6, Figure 10.4-5). No significant differences in length were observed between the Near-field area and Reference Area 1 for female or male Threespine Stickleback. Statistical power was sufficient to detect a CES of 25% for both sexes (Government of Canada 2018).



+

NF = Near-field Area; RA1 = Reference Area 1; n = sample size; mm = millimetre.

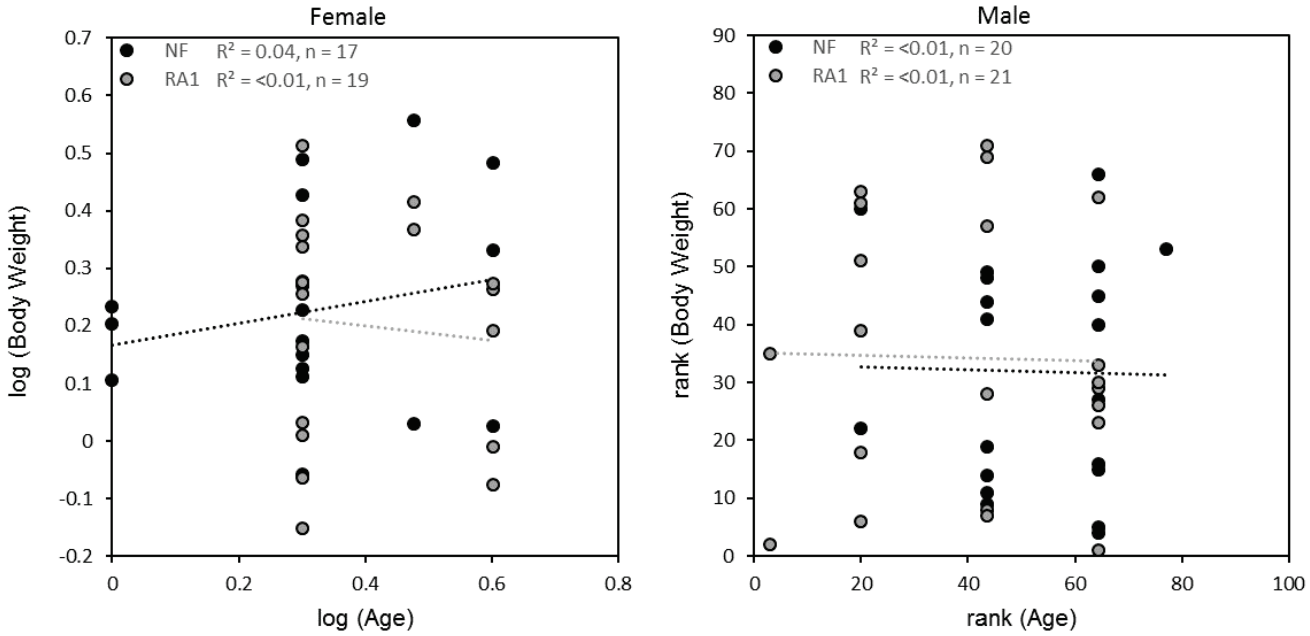
Figure 10.4-5: Length of Female and Male Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

[10] Ages were not assigned based on length-frequency distributions in 2018 as individual modes could not be reconciled with laboratory data. Laboratory assigned ages of Threespine Stickleback ranged from 1 to 5 years; however, only two modes could be distinguished from the length frequency-distribution ranging from 35 mm to 52 mm, and 52 mm to 72 mm (Figure 10.4-5).

10.4.3.2 Growth

10.4.3.2.1 Weight-at-Age

Lethally sampled female and male Threespine Stickleback ranged in total body weight from 0.433 to 4.222 g and 0.706 to 2.596 g, respectively (Table 10.4-3). Using total body weight and laboratory assigned ages, no significant differences in weight-at-age for females or males were observed between the Near-field area and Reference Area 1 (Table 10.4-6, Figure 10.4-6). Laboratory assigned ages were not a strong predictor of body weight (females $R^2 = 0.242$; males $R^2 = 0.198$), resulting in a high degree of variation in the data and a subsequent reduction in statistical power. While statistical power was low for weight-at-age comparisons (i.e., ranging from 0.397 to 0.554 for females and 0.511 for males [Table 10.4-7]), the magnitudes of difference were below the CES of 25%.

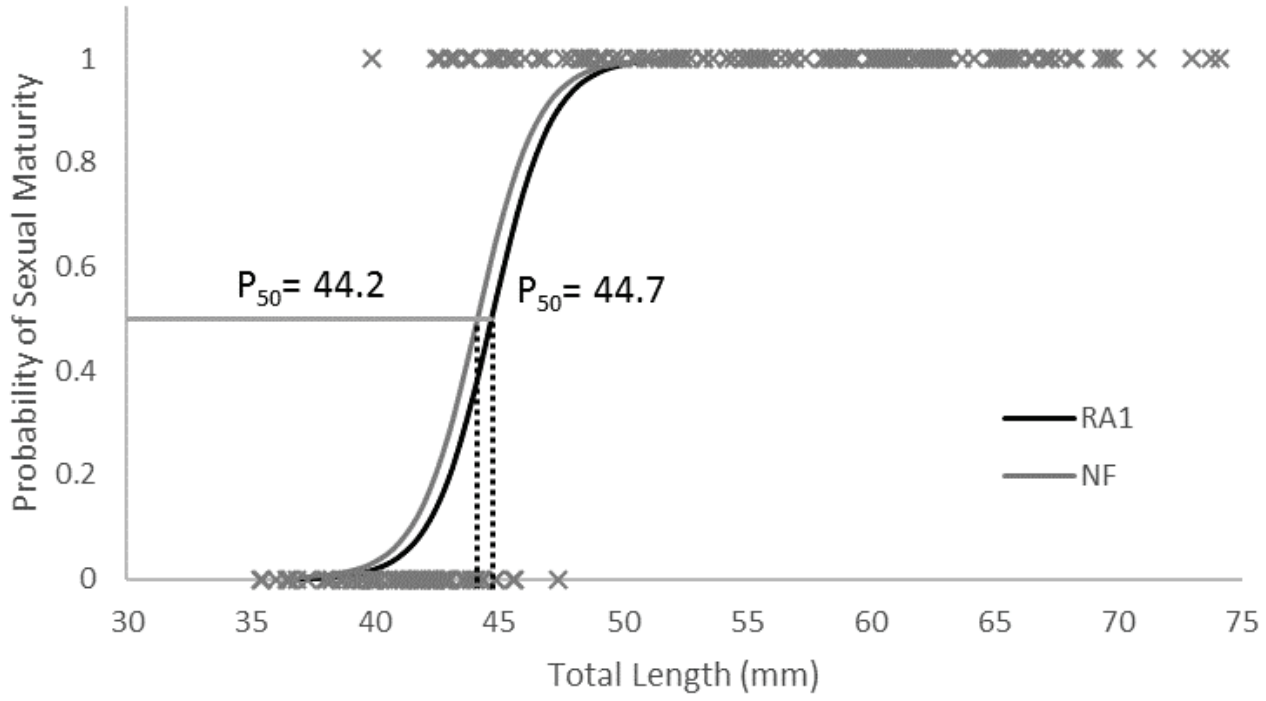


Note: Data transformations consistent with those used in the statistical analysis (Table 10.4-7).
NF = Near-field Area; RA1 = Reference Area 1; g = gram; y = year; R^2 = coefficient of determination; n = sample size; log = $\log_{10}$ transformed data; rank = rank transformed data.

Figure 10.4-6: Body Weight Relative to Age for Female and Male Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

10.4.3.2.2 Size-at-Maturity

Fish length was a significant predictor of maturity in Threespine Stickleback, based on a binary logistic regression (P<0.001). Size-at-maturity (i.e., the total length at which 50% of the population reaches sexual maturity, or P_{50}) was similar between Near-field area and Reference Area 1 (P = 0.446), with fish maturing at 44.2 and 44.7 mm, respectively (Figure 10.4-7). Size-at-maturity was also similar among fish parasitized and unparasitized by tapeworms (P = 0.784), maturing at 44.4 and 44.7 mm, respectively.



Note: Plotted curve represents the modelled size at maturity. Actual data used in the analysis are represented by the symbol x.
NF = Near-field Area; RA1 = Reference Area 1; P_{50} = the total length at which 50% of the population reach sexual maturity; mm = millimetre.

Figure 10.4-7: Size-at-Maturity of Threespine Stickleback at Near-field Area and Reference Area 1, 2018

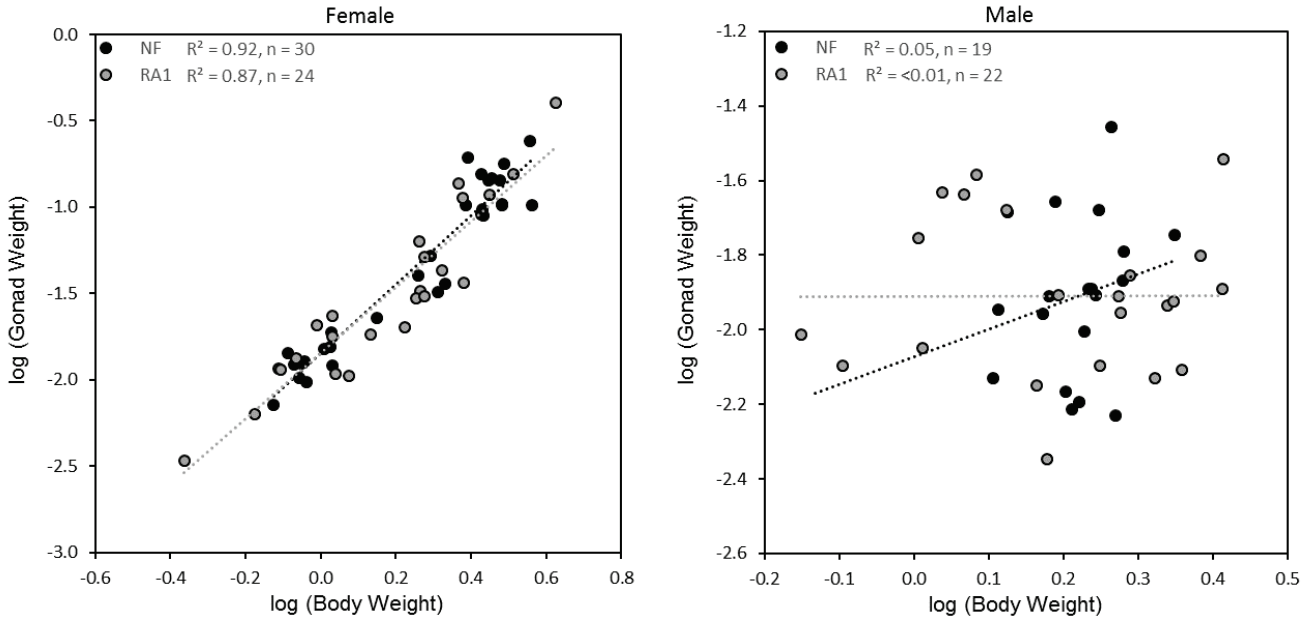
10.4.3.3 Reproduction

10.4.3.3.1 Relative Gonad Size and Fecundity

The gonadosomatic index for female and male Threespine Stickleback ranged from 0.78 to 19.20 and 0.30 to 2.15, respectively. No significant differences were observed in relative gonad weight for female or male Threespine Stickleback, among sampling areas (Table 10.4-7, Figure 10.4-8). Although statistical power for relative gonad weight was low (i.e., ranging from 0.715 to 0.886 for females and 0.412 to 0.574 for males), the magnitudes of difference observed were below the CES of 25%.

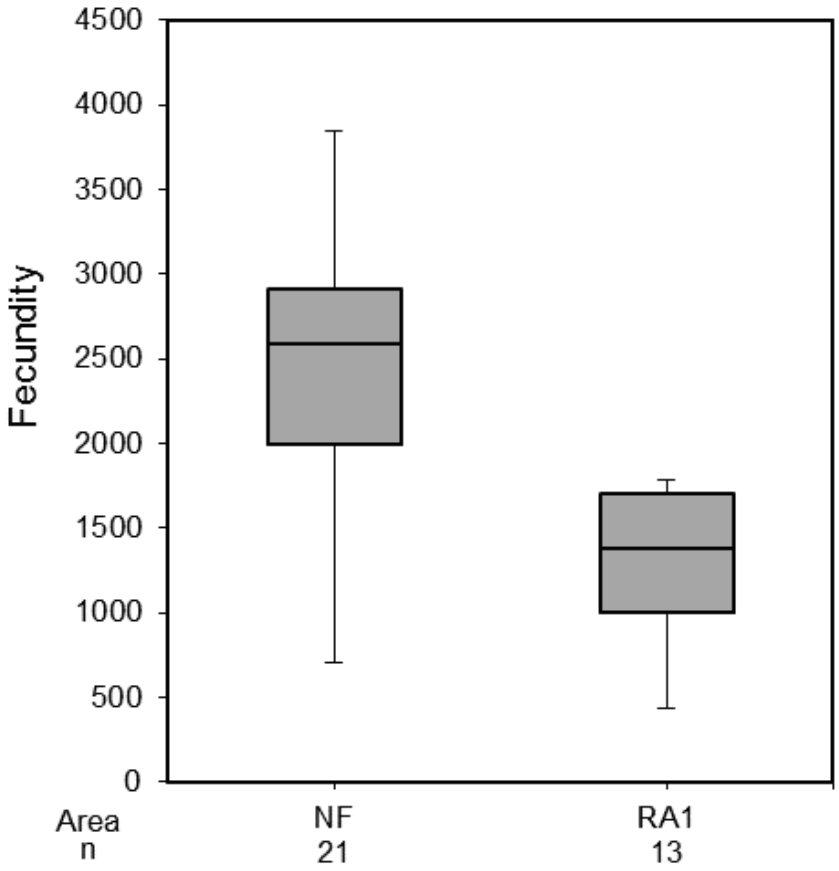
Threespine Stickleback are multiple spawners (Environment Canada 2012), and fish collected in August 2018 included a range of reproductive stages, including early stage development, late stage development, ripe, spent and resting (Table 10.2-1; Appendix 10B). The variability in reproductive stages likely contributed to increased variation in relative gonad size, contributing to the low statistical power observed.

Fecundity of female Threespine Stickleback sampled from Meliadine Lake ranged from 431 to 3845 eggs per female (Table 10.4-6, Figure 10.4-9).



Note: Data transformations consistent with those used in the statistical analysis (Table 10.4-7). Statistical outliers were excluded.
NF = Near-field Area; RA1 = Reference Area 1; g = gram; R^2 = coefficient of determination; n = sample size; log = log10 transformed data.

Figure 10.4-8: Gonad Weight Relative to Body Weight for Female and Male Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018



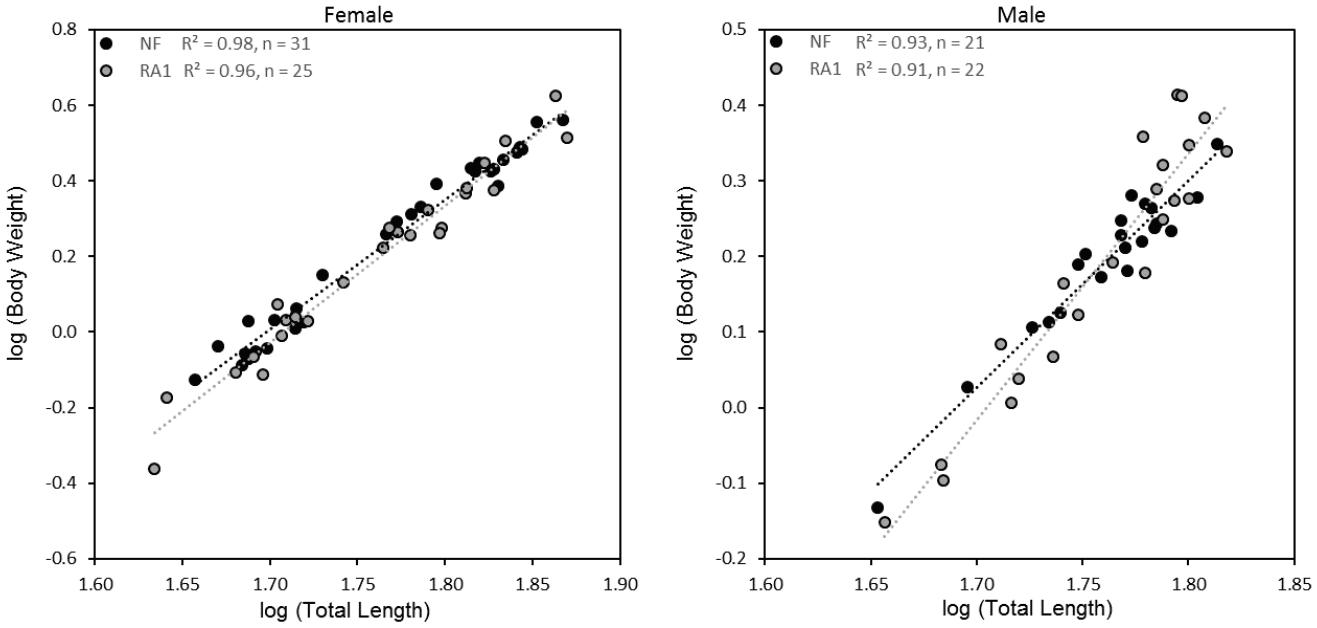
NF = Near-field Area; RA1 = Reference Area 1; n = sample size.

Figure 10.4-9: Fecundity of Female Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

10.4.3.4 Condition

10.4.3.4.1 Condition Factor

Condition factor for lethally sampled female and male Threespine Stickleback from Meliadine Lake ranged from 0.54 to 1.09 and 0.69 to 1.13, respectively (Table 10.4-6). Relative body weight was significantly greater at the Near-field area relative to the Reference Area 1 for lethally sampled female fish (i.e., 6%; Table 10.4-7, Figure 10.4-10), but was not different for male fish. The magnitude of differences between the Near-field area and Reference Area 1 were below the CES of 10% for both female and male fish (Government of Canada 2018). Statistical power was sufficient to detect a 10% difference in relative body weight for both female and male Threespine Stickleback.

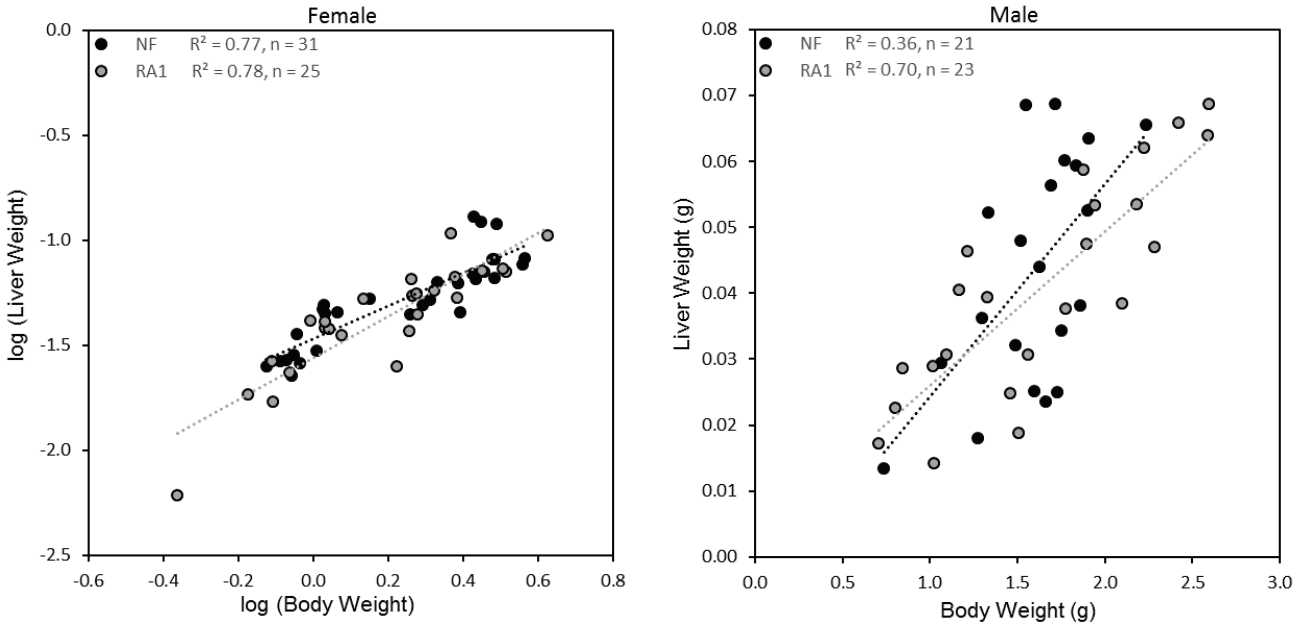


Note: Data transformations consistent with those used in the statistical analysis (Table 10.4-7). Statistical outliers were excluded.
NF = Near-field Area; RA1 = Reference Area 1; g = gram; mm = millimetre; R^2 = coefficient of determination; n = sample size; log = log10 transformed data.

Figure 10.4-10: Body Weight Relative to Total Length for Female and Male Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

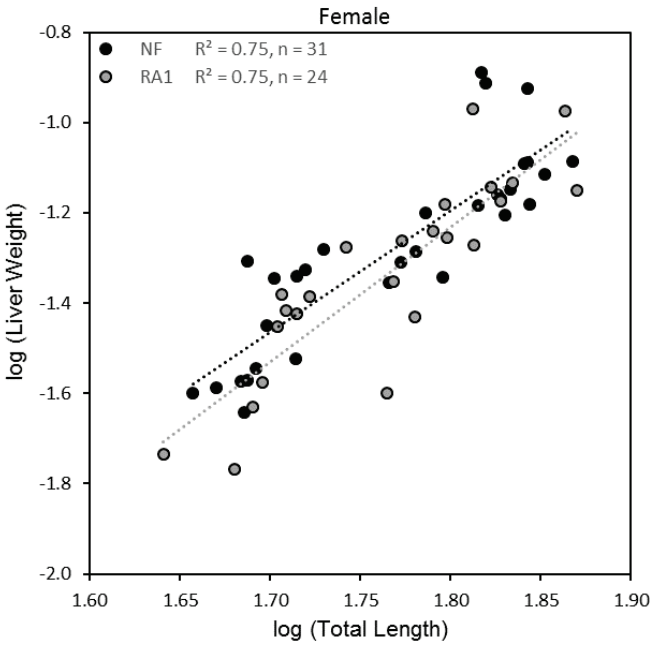
10.4.3.4.2 Relative Liver Size

The liver somatic index ranged from 1.41 to 4.85 for female Threespine Stickleback, and from 1.25 to 4.44 for males (Table 10.4-6). No significant differences were observed among sampling areas in relative liver size with body weight as a covariate for female or male fish (Table 10.4-7, Figure 10.4-11). Statistical power was sufficient to detect a difference of 25% for female relative liver size, while statistical power for male fish was 0.872. Relative liver size with total body length as the covariate was also examined as a supporting endpoint for energy storage in females, with no significant differences found between the two areas (Table 10.4-7, Figure 10.4-12).



Note: Data transformations consistent with those used in the statistical analysis (Table 10.4-7).
NF = Near-field Area; RA1 = Reference Area 1; g = gram; R^2 = coefficient of determination; n = sample size; log = log10 transformed data.

Figure 10.4-11: Liver Weight Relative to Body Weight for Female and Male Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

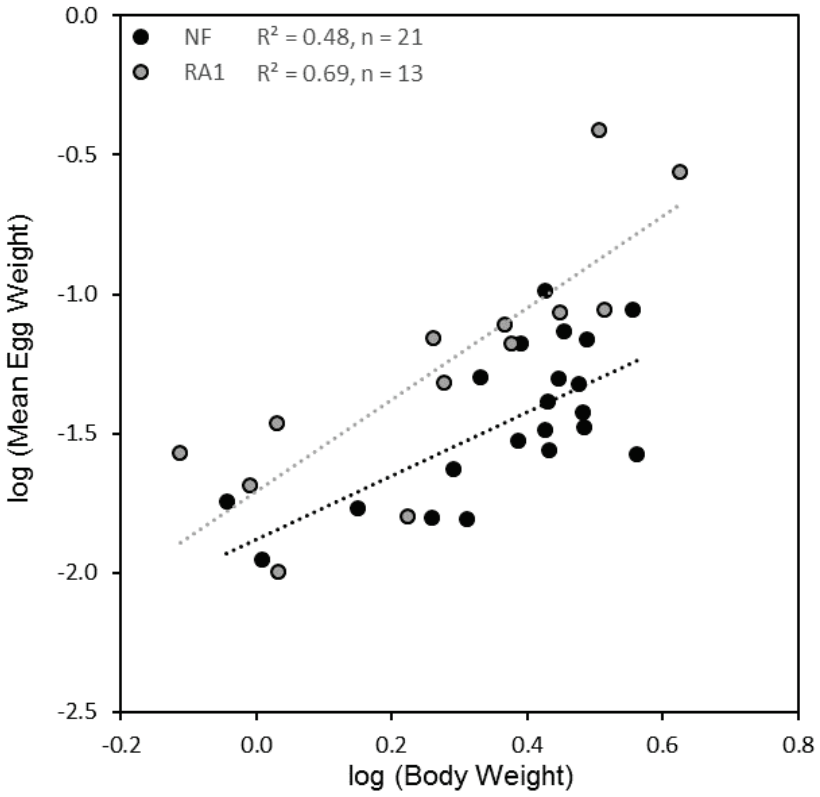


Note: Data transformations consistent with those used in the statistical analysis (Table 10.4-7). Statistical outliers were excluded.
NF = Near-field Area; RA1 = Reference Area 1; g = gram; mm = millimetre; R^2 = coefficient of determination; n = sample size; log = log10 transformed data.

Figure 10.4-12: Liver Weight Relative to Total Length for Female Threespine Stickleback Lethally Sampled from Meliadine Lake, 2018

10.4.3.4.3 Relative Egg Size

Mean egg weight for female Threespine Stickleback sampled from Meliadine Lake ranged from 0.010 to 0.387 mg (Table 10.4-6, Figure 10.4-13). Relative egg size was examined as a supporting endpoint for energy storage in female fish and was 54% less in the Near-field area when compared to Reference Area 1 (Table 10.4-7).



Note: Data transformations consistent with those used in the statistical analysis (Table 10.4-7).
NF = Near-field Area; RA1 = Reference Area 1; g = gram; R^2 = coefficient of determination; n = sample size; log = log10 transformed data.

Figure 10.4-13: Egg Weight Relative to Body Weight for Female Threespine Stickleback Sampled from Meliadine Lake, 2018

10.4.3.5 Pathology

External abnormalities observed in Threespine Stickleback sampled from Meliadine Lake included frayed, clubbed, or marginated gills (i.e., gills with light, discoloured margin along tips of lamellae) and mild fin erosion (Table 10.4-9). The prevalence of external abnormalities was low, affecting 11% of the fish lethally sampled in Meliadine Lake, with a similar prevalence among sampling areas (Table 10.4-9). No body deformities or abnormalities of the eyes, skin, thymus, pseudobranchs, opercula or vent were observed.

Internal abnormalities observed in Threespine Stickleback sampled from Meliadine Lake included liver discoloration (i.e., “fatty” livers with a coffee cream colour) and a low incidence of swollen, mottled or granular kidneys (Table 10.4-11). Fatty livers are commonly observed in fish populations with an abundant food sources and are generally not indicative of disease (Kandemir and Polat 2007). Mesenteric fat content did not vary significantly among sampling areas (*P*=0.186; Table 10.4-10).

Table 10.4-9: Number of Lethally Sampled Threespine Stickleback with External and Internal Abnormalities, 2018

Assessment Type	Category	Near-field Area	Reference Area 1	Chi Square P-value
External	Body Deformities	0	0	1.000
	Eyes	0	0	1.000
	Gills	14	8	0.594
	Pseudobranchs	0	0	1.000
	Thymus	0	0	1.000
	Skin	0	0	1.000
	Fins	2	0	0.230
	Opercula	0	0	1.000
	Vent	0	0	1.000
Internal	Liver	111	78	0.754
	Spleen	0	0	1.000
	Gall Bladder	0	0	1.000
	Kidney	5	2	0.469
Fish with Abnormalities		90%	87%	
Total Number of Fish Surveyed		126	90	

P-value = probability value ; % = percent; <= less than.

Table 10.4-10: Relative Mesenteric Fat Content of Lethally Sampled Threespine Stickleback, 2018

Mesenteric Fat	Near-field Area	Reference Area 1
0	24	24
1	82	60
2	15	5
3	5	1

0 = None; 1 = <50%; 2 = 50%; 3 = >50%.

10.4.3.6 Parasites

Internal parasites were frequently observed in Threespine Stickleback sampled from Meliadine Lake and occurred in 61.9% of fish from the Near-field area and 71.1% of fish from Reference Area 1 (Table 10.4-11). Among lethally sampled fish, no Threespine Stickleback exhibited a low severity of parasitism (e.g., cysts), 62.5% of fish exhibited a moderate severity of parasitism in (e.g., tapeworms), and less than 0.1% exhibited a high severity of parasitism (e.g., multiple tapeworms). A significant difference was observed in the prevalence of parasites between adults and juveniles (P=0.016), with 60% of adults parasitized and 71% of juveniles parasitized. No significant differences were observed in the prevalence of parasites among sampling areas (P=0.248) or between males and females (P=0.129). Only one external parasite was observed in 2018, on a fish from the Near-field area.

A large tapeworm, suspected to be *Schistocephalus solidus,* was the most prevalent parasite among Threespine Stickleback captured in Meliadine Lake. The tapeworm infected 141 of the 216 fish sampled. The tapeworm *S. solidus* parasitizes small-bodied fish and fish-eating birds. Small-bodied fish, such as the Threespine Stickleback, become infected after consuming infected copepods and serve as an intermediate host for the parasite. The parasite develops in the body cavity of the fish until it is consumed by a fish-eating bird and is transmitted to its definitive host (Barber and Huntingford 1995). Potential definitive hosts for *S. solidus* in the Near-field area of Meliadine Lake are Sandhill crane (*Grus canadensis*), which were observed in the area during the time of sampling. On average, tapeworms accounted for 19.0% of body weight in infected fish.

The results of the statistical analysis for the lethal survey are presented for all fish (i.e., with and without parasites; Table 10.4-7) and non-parasitized fish only (Table 10.4-8). The results of the effect endpoint comparisons were similar with parasitized fish included and excluded from the analysis, with significant differences in female condition observed in both comparisons, and the magnitude of difference ranging from 6% to 9%, respectively (Table 10.4-7 and Table 10.4-8). When parasitized fish were excluded from the analysis, mean squared errors were typically smaller, due to reduced model variation; however, statistical power was also lower, due to a decreased sample sizes.

Table 10.4-11: Number of Parasitic Infections and Relative Severity Observed in Threespine Stickleback Collected from Meliadine Lake, 2018

Parasites	Severity	Near-field Area	Reference Area 1
External	0	569	300
	1	1	0
	2	0	0
	3	0	0
Internal	0	48	26
	1	0	0
	2	75	60
	3	3	4

Note: Values represent counts.

0 = no parasites; 1 = few parasites; 2 = moderate parasite infestation; 3 = numerous parasites.

10.5 Summary and Conclusions

Threespine Stickleback were the only species captured in sufficient numbers from the Near-field area and Reference Area 1 of Meliadine Lake to meet sample size requirements for the fish health component of the EEM program. Adult and juvenile Threespine Stickleback were abundant throughout shallow areas of Meliadine Lake (i.e., less than 3 m), and were susceptible to capture using minnow traps and dipnets. Young-of-the-year, however, were not captured or observed during sampling. This may have been due to YOY occupying habitats that were not effectively targeted by the sampling methods employed (e.g., residing within interstitial spaces of the rocky substrate, or at depths greater than 3 m), or YOY may not have been present due to the timing of sampling (i.e., during the spawning period).

Threespine Stickleback were spawning in Meliadine Lake during the August 2018 sampling period, based on the presence of male secondary sex characteristics and the occurrence of ripe and spent individuals of both sexes. Threespine Stickleback undergo multiple spawning events throughout the spring and summer months (Barrett and Munkittrick 2010); and exhibit extended spawning seasons for some populations (Wooton et al. 1978; Chellappa et al. 1989). Based on this information and observations herein, Threespine Stickleback likely spawn throughout the open-water period in Meliadine Lake. The extended spawning period likely contributed to the variability in reproductive endpoints observed during the 2018 sampling, with Threespine Stickleback documented at a variety of maturity stages within the dataset. However, because Threespine Stickleback likely spawn through the open-water period, it is unlikely the sensitivity of reproductive endpoints could be improved by altering sample timing. The current sample timing (i.e., August) conforms with EEM guidance when using Threespine Stickleback as a sentinel species (Barrett and Munkittrick 2010).

The majority of Threespine Stickleback captured were infected by a tapeworm that competes with the host for available resources and has been found to decrease the energy allocated to storage and spawning in Threespine Stickleback (Schultz et al. 2006; Rushbrook et al. 2007). The parasite was abundant at each of the areas sampled and, therefore, has the potential to confound the detection of changes in energy storage and reproductive endpoints that may result from the Mine. To evaluate the effect of parasitism on fish health endpoints, statistical analyses were completed with and without parasitized included (Table 10.4-7 and Table 10.4-8). The results of the two approaches were similar, and the emphasis of the analytical results were focused on analyses with parasitized fish included, due to better sample sizes and statistical power. The August 2018 sampling results also indicated that Threespine Stickleback infected with tapeworms reached sexual maturity at a similar size as uninfected fish.

Population structure for Threespine Stickleback varied among sampling areas, with larger individuals collected from the Near-field area when compared to Reference Area 1 (Table 10.5-1). Female Threespine Stickleback sampled from the Near-field area had greater relative body weight than individuals sampled from Reference Area 1, suggesting increased energy storage at the Near-field area; however, the magnitude of difference (i.e., 6%) was below the CES of 10% (Table 10.5-2). Supporting fish health endpoints for energy storage did not indicate the same; there were no significant differences observed in relative liver size, and relative egg size was significantly greater at Reference Area 1. Fish health endpoints were similar for male Threespine Stickleback among sampling areas (Table 10.5-2).

Power analyses of fish health endpoints indicated that sample sizes were sufficient to reliably detect differences that met or exceeded CESs for the majority of effect endpoints (i.e., power >0.9). However, a large degree of variability in age and gonad weights resulted in low statistical power for weight-at-age and relative gonad size comparisons for both sexes. Despite low power in these instances, the magnitudes of difference observed were below CES (Table 10.4-7).

In conclusion, Threespine Stickleback was the only species captured in sufficient abundance from Meliadine Lake to support sample sizes requirements of the EEM fish population survey. An effect was observed in the Near-field area for female condition, however the effect size of 6% was less than the CES of 10%. A similar response was not observed in supporting energy storage endpoints (i.e., relative liver weight and relative egg weight). Statistical analyses were confounded by a lack of a predictive relationship between age and body weight, and Threespine Stickleback being at a variety of reproductive stages at the time of sampling. These factors contributed to low statistical power for some endpoints. Threespine Stickleback were also commonly parasitized by tapeworms, which increased variability in the dataset; however, when infected fish were included in the statistical analysis, increased variability was offset by increased samples sizes resulting in a net increase in statistical power.

Table 10.5-1: Summary of Effect Endpoints for Threespine Stickleback Collected During the Population Survey, 2018

Parameter	CES	Magnitude of Difference	Comparison to Reference
Length-frequency distribution	(a)	20%(b)	↑
Weight-at-age	25%	-1%	-
Length-at-age	25%	-1%	-
Relative body weight	10%	1%	-

a) Length-frequency is an effect endpoint for non-lethal sampling in the EEM program; however, a CES has not been defined (Government of Canada 2018).

b) Magnitude based on maximum percent difference between groups in cumulative frequency distribution.

CES = critical effect size; NF = Near-field area; RA1 = Reference Area 1; ↑ = endpoint significantly greater at Near-field area compared to Reference Area 1; - = not significantly different.

Table 10.5-2: Summary of Effect Endpoints for Threespine Stickleback Sampled During the Lethal Survey, 2018

Sex	Parameter	CES	Magnitude of Difference	Comparison to Reference
Female	Age(a)	25%	0%	-
	Weight-at-age	25%	15%	-
	Relative gonad size	25%	4%	-
	Relative body weight	10%	6%	↑
	Relative liver size	25%	10%	-
Male	Age(a)	25%	7%	-
	Weight-at-age	25%	-18%	-
	Relative gonad size	25%	-1%	-
	Relative body weight	10%	-2%	-
	Relative liver size	25%	9%	-

a) Length was used as a surrogate for age (Environment Canada 2012).

CES = critical effect size; NF = Near-field area; RA1 = Reference Area 1 ; % = percent; ↑ = endpoint significantly greater at Near-field area compared to Reference Area 1; - = not significantly different.

10.6 Recommendations

No recommendations are provided for changes to fish health monitoring under the EEM.

10.7 List of Appendices

Appendix 10A – Fishing Effort

Appendix 10B – Survey Data

Appendix 10C – Spatial Comparisons

Appendix 10D – Temporal Comparisons

10.8 References

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11.0 PLANKTON TARGETED STUDY

Plankton monitoring was conducted as a targeted study to evaluate if plankton will be a useful long-term monitoring tool for the Mine. Prior to the 2018 sampling program, the plankton study included sampling and analysis of depth-integrated nutrients, chlorophyll *a*, phytoplankton, and zooplankton over three years in Meliadine Lake (2015, 2016, and 2017) and two years in the Peninsula Lakes[11] (2015 and 2016). Based on the data collected, it was determined that the phytoplankton dataset (i.e., chlorophyll *a*, phytoplankton abundance, biomass, and composition of major taxonomic groups, along with supporting nutrient data collection) should be carried forward to future years for Meliadine Lake to further evaluate its usefulness as a monitoring tool (Golder 2018c). Due to high variability between seasonal sampling events, it was recommended that phytoplankton sampling during only a single season be carried forward for future monitoring years. August (summer) was chosen as the most useful target month for analysis of spatial trends due to lower variability in phytoplankton monitoring endpoints among years in August (Golder 2018c). Additionally, due to high variability in the zooplankton dataset as a whole, it was recommended that zooplankton not be carried forward as a monitoring tool for Meliadine Lake. As a result, only phytoplankton sampling during the summer season was carried forward for 2018 to evaluate potential changes in key monitoring endpoints (abundance, biomass, community composition) and to provide an indication of potential changes to trophic status in the lake.

This report section provides a summary of data collected during the summer 2018 phytoplankton sampling program in Meliadine Lake, with a comparison against data collected during summer sampling events during the pre-construction and construction phase of the Mine (2015 through 2017). Data collected during spring and fall sampling events during the pre-construction and construction phase is not reported herein, because seasonal variability in plankton community characteristics does not allow valid year-to-year comparisons of data collected in different months during the open-water season. Data are also provided for the Peninsula Lakes for chlorophyll *a* samples collected in 2018 and compared against data collected during previous monitoring years. Statistical analyses of spatial variability in the phytoplankton community of Meliadine Lake are presented, along with analysis of nutrient concentrations in relation to effluent discharges in the Near-field area, and analysis of potential effects on plankton abundance, distribution and community composition.

11.1 Methods

11.1.1 Sampling Design

The plankton sampling program in 2018 was based on the AEMP Design Plan (Golder 2016a). The sampling program consisted of a single sampling event during open-water conditions in August (summer) targeting the exposure and reference areas of Meliadine Lake, with additional sampling for chlorophyll *a* in the Peninsula Lakes. The 2015 program specifically targeted the exposure areas of Meliadine Lake, with seasonal sampling during three sampling events, July (spring), August (summer), and September (fall), and additional sampling in the Peninsula Lakes. The 2016 program targeted both exposure and reference areas of Meliadine Lake, with sampling during all three seasons and additional sampling in the Peninsula Lakes. The 2017 program targeted the exposure and reference areas of Meliadine Lake during all three seasons and included only chlorophyll *a* sampling in the Peninsula Lakes.

Sampling was conducted in conjunction with the water quality sampling program in August (summer) in 2015 through 2018 (Table 11.1-1; Figure 1-3). A total of five stations were sampled in each of the Near-field (NF) and Mid-field (MF) exposure areas of Meliadine Lake in all years, and in three reference areas of Meliadine Lake

[11] Chlorophyll *a* was also sampled at the peninsula lakes in 2017.

in 2016, 2017 and 2018. New stations were added to replace historical stations in the Near-field and Mid-field exposure areas in 2018 as described in Section 6.2.1. Plankton samples in Meliadine Lake in all years were collected from a target water depth of 8 to 10 m.

Three stations in each of the Peninsula Lakes (A8, B7, and D7) were sampled in 2015 to 2018 from a target water depth of 1.5 to 2.5 m (Figure 1-3). Not all stations were consistently sampled during each field program due to delays caused by inclement weather conditions (e.g., fog, high winds).

The plankton sampling program consisted of the following components:

- measurements of total water depth (m) and Secchi depth (m)
- collection of depth-integrated water samples for nutrient analysis (soluble reactive silica [SRSi], TN, and TP) from the euphotic zone (Meliadine Lake only)
- collection of chlorophyll *a* samples
- collection of phytoplankton samples

Table 11.1-1: Summary of Summer Plankton Sampling Events in Meliadine Lake, 2015 to 2018.

Area	Station	Depth (m)	NAD83, 15V		2015	2016	2017	2018
			Easting (m)	Northing (m)	Summer	Summer	Summer	Summer
Near-field Exposure (MEL-01)	MEL-01-01	10.0	542690	6989132	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P
	MEL-01-02	7.9	542665	6989282	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	-
	MEL-01-03	9.5	542638	6988979	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	-
	MEL-01-04	8.8	543145	6989086	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	-
	MEL-01-05	9.0	542140	6989358	DIN, Chl, P, QC-dup[a,b]	DIN, Chl, P	DIN, Chl, P	-
	MEL-01-06	8.4	542952	6988993	-	-	-	DIN, Chl, P
	MEL-01-07	8.1	542873	6989218	-	-	-	DIN, Chl, P
	MEL-01-08	7.8	543044	6989067	-	-	-	DIN, Chl, P
	MEL-01-09	7.4	542555	6989188	-	-	-	DIN, Chl, P, QC-dup[a]
Mid-field Exposure (MEL-02)	MEL-02-01	8.6	537511	6992932	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	-
	MEL-02-02	8.0	537093	6992642	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P, QC-dup[b]	DIN, Chl, P, QC-dup[b]
	MEL-02-03	9.1	537497	6992332	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P
	MEL-02-04	7.7	537961	6992341	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	-
	MEL-02-05	9.2	537831	6992692	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P
	MEL-02-06	7.3	536922	6992853	-	-	-	DIN, Chl, P
	MEL-02-08	8.0	538342	6991952	-	-	-	DIN, Chl, P

Table 11.1-1: Summary of Summer Plankton Sampling Events in Meliadine Lake, 2015 to 2018.

Area	Station	Depth (m)	NAD83, 15V		2015	2016	2017	2018
			Easting (m)	Northing (m)	Summer	Summer	Summer	Summer
Reference Area 1 (MEL-03)	MEL-03-01	7.2	533317	6998541	-	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P, QC-dup[a]
	MEL-03-02	18.8	533256	6998671	-	DIN, Chl, P	DIN, Chl, P, QC-dup[b]	DIN, Chl, P
	MEL-03-03	10.2	532962	6998844	-	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P
	MEL-03-04	8.2	533628	6998672	-	DIN, Chl, P	DIN, Chl, P, QC-dup[a]	DIN, Chl, P
	MEL-03-05	8.7	534001	6998272	-	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P
Reference Area 2 (MEL-04)	MEL-04-01	8.2	525647	7000878	-	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P
	MEL-04-02	10.5	526149	7001519	-	DIN, Chl, P, QC-dup[a,b]	DIN, Chl, P	DIN, Chl, P
	MEL-04-03	9.7	525351	7001359	-	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P
	MEL-04-04	9.1	525401	7001085	-	DIN, Chl, P	DIN, Chl, P	-
	MEL-04-05	7.4	525735	7001129	-	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P, QC-dup[b]
Reference Area 3 (MEL-05)	MEL-05-01	9.3	530926	6990858	-	DIN, Chl, P, QC-dup	DIN, Chl, P	DIN, Chl, P, QC-dup[b]
	MEL-05-02	9.4	530669	6990884	-	DIN, Chl, P, QC-dup[a,b]	DIN, Chl, P, QC-dup[b]	DIN, Chl, P
	MEL-05-03	8.5	530735	6991374	-	DIN, Chl, P, QC-dup	DIN, Chl, P	DIN, Chl, P
	MEL-05-04	10.2	530570	6991223	-	DIN, Chl, P, QC-dup[b]	DIN, Chl, P, QC-dup[a]	DIN, Chl, P
	MEL-05-05	8.6	530240	6991162	-	DIN, Chl, P	DIN, Chl, P	DIN, Chl, P

NAD = North American Datum; Chl = indicates that chlorophyll *a* samples were collected; DIN = indicates that depth-integrated nutrient samples were collected; P = phytoplankton samples were collected; - = the site was not included in the sampling plan for a particular field program, or was not sampled due to weather, environment, or schedule limitations; QC-dup = indicates that a quality control duplicate sample was collected. (a) DIN QC-dup samples. (b) Phytoplankton QC-dup samples.

11.1.2 Field Methods

11.1.2.1 Supporting Environmental Variables, Nutrients, and Chlorophyll a

During the time of sampling, local weather data (i.e., air temperature, wind conditions, and rainfall) were collected. At each sampling station, water depth and physicochemical measurements were recorded. Total depth of the water column was measured either by using a sounding line or a boat-mounted sonar unit. In situ physicochemical measurements of specific conductivity, DO, pH, and water temperature were collected at each lake station using a submersible multi-sensor probe system (Hanna HI-9828 multiprobe). In situ physicochemical measurements were taken just below the surface and every 1 m thereafter throughout the water column, ending at 1 m above the lake bed. Secchi depth was measured using a 20 cm diameter Secchi disk at each station; this information was used to estimate the euphotic zone depth for depth-integrated sample collection.

Depth-integrated composite samples were collected at all Meliadine Lake stations for analysis of chlorophyll *a* and nutrient concentrations. Given the shallow nature of the Peninsula Lakes, depth-integrated samples were not collected at these locations. Instead, discrete samples at mid-column depths were collected for analysis of chlorophyll *a* and nutrients.

The euphotic zone is defined as the extent of the water column that is exposed to sufficient sunlight for photosynthesis to occur (typically to a depth in the water column where 1% of the surface irradiance is measured). While in the field, the euphotic zone was calculated as two times the Secchi depth (Koenings and Edmundson 1991; Alberta Environment [AENV 2006]).

Once the euphotic zone depth was determined, a Kemmerer sampler was used to collect discrete water samples starting at the surface, and continuing every 2 m through the extent of the euphotic zone. If the total water column depth was less than two times the Secchi depth, a water sample was collected every 2 m from the surface to 2 m above the lake bed.

Equal volumes of water from each discrete depth were combined into a large, clean bucket to create a composite, depth-integrated sample. From this composite sample, single subsamples were collected for nutrient analysis, triplicate subsamples were collected for chlorophyll *a* analysis, and a single subsample was taken for phytoplankton community analysis as described in Section 11.1.2.2.

Sample bottles for nutrient analysis were provided by ALS (Edmonton), which is an analytical laboratory accredited by CALA. Water samples were processed (i.e., filtered and/or preserved as required, and refrigerated) at site according to the instructions provided by ALS. Water samples requiring filtration were filtered through a 0.45-µm Millipore filter in a Nalgene filter tower, using a vacuum pump, before being preserved with laboratory-provided preservative based on the required analysis. Water samples were kept cool through refrigeration before shipping, and during shipping by adding ice-packs to the coolers. Samples were shipped to ALS as soon as possible after sample collection and processing. Samples were analyzed for TN, dissolved nitrogen, total Kjeldahl nitrogen (TKN), dissolved Kjeldahl nitrogen, total ammonia, nitrate, nitrite, TP, dissolved phosphorus, dissolved orthophosphate, and SRSi.

Water samples for chlorophyll *a* analysis were collected at each station during all field programs. Measurement of chlorophyll *a* concentration in water is a standard method to estimate phytoplankton biomass. Chlorophyll *a* is the primary photosynthetic pigment in phytoplankton and is frequently used as an indicator of phytoplankton biomass and primary production. Triplicate water samples for chlorophyll *a* analysis were filtered through a 47 mm diameter Whatman glass fiber type-C filter (nominal pore size: 1.2 µm) in a glass filter tower, using a vacuum pump under low light conditions to prevent photo-shock in the algal cells. A volume of 300 to 500 millilitres (mL) of water was filtered for each chlorophyll *a* sample. The filters were folded in half, placed in a pre-labelled Petri dish, wrapped with aluminum foil, and frozen. Frozen filters were submitted to the Biogeochemical Analytical Service Laboratory at the University of Alberta, Edmonton, Alberta, for spectrophotometric analysis of chlorophyll *a*.

11.1.2.2 Phytoplankton Collection

A single water sample for phytoplankton analysis (either depth-integrated [Meliadine Lake stations] or discrete samples [peninsula lake stations]) was used to fill a 250-mL amber Nalgene bottle. Phytoplankton samples were preserved with approximately 4 mL of Lugol's solution. Samples were sealed, labelled, and stored in the dark (inside coolers) for transportation to Plankton R Us, Winnipeg, Manitoba, for taxonomic identification to the lowest practical taxonomic level, and abundance and biomass estimates.

11.1.3 Laboratory Methods

Laboratory methods for nutrient analysis, including the laboratory test code, laboratory test description and analytical method references are further described in the laboratory certificate of analysis (Attachment A). Laboratory procedures for chlorophyll *a* analysis include extraction, filtration and spectrophotometric analysis. Chlorophyll concentrations were calculated using the absorbencies at specified wavelengths and the original extraction and filtration volumes. Laboratory methods for phytoplankton enumeration, identification, and QA/QC procedures are further described in Appendix 11A.

11.1.4 Data Analysis

11.1.4.1 Depth-Integrated Samples

Descriptive statistics (i.e., minimum, median, maximum, mean, standard error, standard deviation) for depth-integrated nutrients and chlorophyll *a* were calculated to evaluate spatial and temporal data collected in Meliadine Lake. Where concentrations were below the DL, the concentration was set to half the value of the DL for calculating summary statistics. The percentage of non-detect samples in the data set was reported for each parameter.

11.1.4.2 Trophic Status

Trophic status is a useful means of classifying lakes and can be used as an indicator to describe the productivity of a system. Trophic status of a waterbody can be evaluated by examining the concentrations of chlorophyll *a*, nutrients, and water transparency. Chlorophyll *a* is the primary photosynthetic pigment in phytoplankton, and is often used as a surrogate measure of phytoplankton biomass and production in lakes (Franklin et al. 2012). The essential nutrients necessary for phytoplankton growth are nitrogen, phosphorus, carbon, and for some groups (e.g., diatoms), silica. The primary nutrient that often limits phytoplankton growth in lakes is phosphorus (Schindler 1974); therefore, phosphorus is often used to establish the trophic status of lakes. Secchi depth (a measure of water transparency) can be used as a coarse surrogate of phytoplankton biomass, because in many waterbodies, Secchi depth is inversely related to phytoplankton biomass (Dodds and Whiles 2010); therefore, Secchi depth is also considered when evaluating trophic status.

The three main classes of trophic status are the following:

- oligotrophic (nutrient-poor, unproductive systems)
- mesotrophic (moderately productive systems)
- eutrophic (nutrient-rich, highly productive systems)

The trophic status of Meliadine Lake was evaluated by examining the nutrient data (TP), chlorophyll *a* concentrations, and water transparency (Secchi depth). The trophic status was determined using the Vollenweider (1968) trophic classification scheme for lakes (Table 11.1-2), the CCME (2004) trigger ranges (Table 11.1-3), and the Carlson (1977) Trophic State Index (TSI; Table 11.1-4). Of the three commonly used variables to calculate TSI, chlorophyll *a* is considered the best predictor of the overall trophic status of lakes (Carlson and Simpson 1996). As a result, the overall trophic status of Meliadine Lake was determined using the TSI value calculated based on chlorophyll *a* concentrations, and this classification was supported by TSI values calculated based on nutrient availability (TP) and water transparency.

Table 11.1-2: General Trophic Classification of Lakes

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

Source: Vollenweider 1968.

mg/L = milligrams per litre; µg/L = micrograms per litre.

Table 11.1-3: Trophic Classification of Canadian 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

Sources: CCME 2004; Environment Canada 2004.

mg/L = milligrams per litre; <= less than; >= greater than.

The TSI is a numerical trophic state index for lakes that classifies lakes on a scale of 0 to 100 (Carlson 1977). The index number is calculated from Secchi depth, chlorophyll *a*, and TP using the following equations (Carlson 1977):

$$TSI\ (TP) = 10\left(6 - \frac{\ln {}^{48}/_{TP}}{\ln 2}\right) \quad \text{Equation 1}$$

$$TSI\ (Chl) = 10\left(6 - \frac{2.04 - 0.68 \ln Chl}{\ln 2}\right) \quad \text{Equation 2}$$

$$TSI\ (Secchi) = 10\left(6 - \frac{\ln Secchi}{\ln 2}\right) \quad \text{Equation 3}$$

where:

- TSI = trophic state index
- TP = total phosphorus
- ln = the natural log
- Chl = chlorophyll *a*
- Secchi = Secchi depth

Values calculated using these equations are multiplied by 10 to give the scale a range of 0 to 100. The numerical scales for each of the three TSIs are presented in Table 11.1-4.

Table 11.1-4: Comparison of Trophic State Index Classification and General Trophic Classification of 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

Source: Carlson 1977.

mg/L = milligrams per litre; µg/L = micrograms per litre; <= less than; >= greater than.

11.1.4.3 Phytoplankton

Phytoplankton data were analyzed separately, but the same approach was used for both datasets. The following variables were calculated for each sample:

- total abundance (abundance by cell density as cells per litre [cells/L])
- total biomass (biomass as milligrams per cubic metre [mg/m^3])
- total taxonomic richness (richness as number of taxa [no. of taxa] at a station)
- relative abundances (as percentages) of major taxonomic groups
- relative biomass (as percentages) of major taxonomic groups

Abundance and biomass data were divided into major taxonomic groups. Phytoplankton groups were Cyanobacteria, Chlorophyceae (chlorophytes), Chrysophyceae (chrysophytes), Cryptophyceae (cryptophytes), Dinophyceae (dinoflagellates), Bacillariophyceae (diatoms), and Euglenophyceae (euglenoids).

Mean total abundance and mean total biomass were calculated for each sampling area (e.g., Near-field area) and plotted as bar graphs showing the mean and standard error (SE). Mean taxonomic richness at the species level was summarized for each area and plotted as a bar graph. Taxonomic richness provides an indication of the diversity at a station; higher richness values typically indicate more healthy and balanced communities. For stations where duplicate QC samples were collected, total taxonomic richness was calculated as the average richness of the two duplicate samples.

11.1.4.4 Spatial and Temporal Trends

Nutrient concentrations, chlorophyll *a,* and plankton community variables were compared visually among areas and years to explore inter-annual and spatial trends. The following variables were plotted for each area and sampling event:

- mean total nitrogen and total phosphorus concentrations
- mean chlorophyll *a* concentration
- mean total phytoplankton abundance and biomass
- total nitrogen, total phosphorus, chlorophyll a concentrations, and total phytoplankton biomass plotted for each station in the Near-field area

- mean total phytoplankton richness
- mean relative proportion accounted for by each major taxonomic group, based on abundance and biomass, plotted as stacked bars (for phytoplankton)

Scatter plots were used to evaluate the strength of the relationship between chlorophyll *a* concentrations and phytoplankton biomass, and to evaluate the spatial variability of each variable against concentrations of depth-integrated nutrients.

11.1.4.5 Statistical Analysis

The objective of the statistical comparisons of plankton data collected in Meliadine Lake was to compare data collected from the Near-field area (MEL-01) with the Mid-field exposure area (MEL-02) and the three reference areas (MEL-03, MEL-04, and MEL-05). Descriptive statistics (i.e., minimum, maximum, median, mean, standard deviation, standard error) were calculated to compare and evaluate spatial and temporal data collected in Meliadine Lake. One-way ANOVA or the Kruskal-Wallis test was used to compare plankton endpoints (e.g., abundance, biomass, richness) and nutrient and chlorophyll *a* concentrations among sampling areas. Multivariate analysis (nMDS) was also used to investigate differences in community structure among areas. Statistical tests were performed using SYSTAT 13.1 for Windows (Systat Software 2009) or PRIMER version 7.0.13 software (Quest Research 2017).

Statistical Analysis

Univariate statistical comparisons were used to identify differences in plankton community endpoints among areas. A significance level (α) of 0.1 was used for ANOVA models, and an α of 0.05 was used for testing statistical assumptions (i.e., normality and homogeneity of variances). Prior to conducting ANOVAs, the assumptions of parametric statistical tests were verified using the Shapiro-Wilk test for normality and Levene's test for homogeneity of variances on untransformed and log-transformed data. Data that violated assumptions of normality or equality of variances were transformed and the effectiveness of the transformations was verified. If the assumptions of the ANOVA were not met, the non-parametric equivalent of ANOVA (i.e., Kruskal-Wallis test) was used.

Mean values for each parameter from the exposure and reference areas were initially compared to one another in an overall ANOVA. Tukey's honestly significant difference (HSD) method was used for multiple unplanned (i.e., *a posteriori*) comparisons following the overall ANOVA. This test adopts a conservative approach by employing experiment-wise error rates for the Type I error (Day and Quinn 1989). Therefore, a *P* value of 0.1 was used for these tests.

For variables that did not meet parametric test assumptions (e.g., chlorophyll *a*), the Kruskal-Wallis test was used to test for differences among sampling areas. Kruskal-Wallis tests were considered significant at $P < 0.1$. The multiple-comparison procedure controls the experiment wise error rates for the Type I error and, therefore, holds the probability of correctly finding no difference at 1–α. However, under this scenario, the task of correctly detecting differences that are significant is more difficult (Daniel 1990). To maintain a sufficiently small Type II error (β) with the multiple comparisons, a larger α (or *P*-value) was used. The contrasts were tested at $P = 0.1$, and the multiple comparisons were conducted with $P = 0.15$.

Multivariate Analysis

Non-metric multidimensional scaling (nMDS), a multivariate ordination technique, was used to investigate differences in plankton community structure among areas in August 2016, 2017 and 2018. nMDS takes a pair-wise matrix of similarities among cases calculated from the original taxonomic data (biomass by station-year),

and then reduces it to a small number (typically two) of underlying dimensions of variation among cases. In this way, nMDS can visually simplify a multidimensional taxonomic data-set in two or three dimensions that capture the major patterns of variation in community composition.

The plankton taxonomic data were analyzed at the LTL. A square root transformation was applied to improve the separation of the data among stations on the nMDS plots. Transforming the data also reduced weighting of the analysis by the most abundant taxa. The appropriate data transformation was determined by examining “shade plots” created in PRIMER. Alternative data transformations were also explored; however, stronger transformations (i.e., fourth-root and Log x+1 transformations), heavily down-weighted the data, and were deemed unsuitable for this analysis.

Following the data transformation, a Bray-Curtis resemblance matrix was generated, and the nMDS procedure was applied to this matrix. Using rank order information, nMDS determined the relative positions of stations in two dimensions based on community composition. Goodness-of-fit was determined by examining the Shepard diagrams as well as the stress values, which were calculated from the deviations in the Shepard diagrams. Two dimensions were selected for each nMDS after confirming that the final stress value of the two-dimensional configuration was sufficiently low (less than 0.2; Clarke 1993). Points that fall close together on the nMDS ordination plot represent samples with similar community composition; points that are far apart from each other represent samples with dissimilar community composition.

11.1.4.6 Normal Range

The methods for defining the normal range for the Plankton Targeted Study followed the methods described in Section 6.2.4.2. Provisional normal ranges for plankton were calculated for Meliadine Lake from pooled reference area (MEL-03, MEL-04, and MEL-05) data collected during the AEMP between 2016 and 2018. Near-field and Mid-field data collected between 2015 and 2017 were not included in the normal range calculation, because water quality and chlorophyll *a* data collected during these years suggested a slight effect on primary productivity in the exposure areas in Meliadine Lake, potentially as a result of treated sewage discharges from the exploration camp.

The normal ranges provided in this report are considered provisional due to the limited sample sizes used in the calculations. The normal range is intended to estimate the range of natural spatial and temporal variability, and the more reference data incorporated into the calculation, the more accurate the estimate becomes. These normal ranges may be re-defined in future reports to allow for the inclusion of additional monitoring data in the reference areas.

11.2 Quality Assurance/Quality Assurance

11.2.1 Methods

QA components of the program included the use of trained personnel and an accredited analytical laboratory; QC components included assessments of duplicate samples for DIN and phytoplankton. Phytoplankton samples were collected from each sampling station using consistent sampling techniques for each sample. Replicates were collected immediately after one another and were preserved using approximately the same concentration of Lugol's solution. The taxonomic laboratory identified organisms down to the lowest practical taxonomic level.

Chlorophyll *a* samples were collected from each sampling station using consistent sampling techniques for each sample. Replicates were collected immediately after one another and were kept cool and dark until filtered and frozen prior to sample shipment.

Further details regarding the QA/QC practices applied during this study and detailed results of the QA/QC measures implemented by the taxonomic and analytical laboratories are reported in Appendix 11A. A summary of the key QC findings is provided in Section 11.2.2 below.

11.2.2 Results

Key QC findings for the 2018 plankton monitoring programs are as follows:

- Nutrients and Chlorophyll *a*:
  - A total of 12% of paired concentrations in duplicate DIN samples had a RPD greater than 20%. Each of the three RPD exceedances came from duplicate samples collected at MEL-01-09 in August 2018, where RPDs for concentrations of TKN, TN and TP exceeded 20%. All RPDs for the other set of DIN duplicate samples collected at MEL-02-01 in 2018 were below 20%.
  - Concentrations of dissolved parameters were generally lower than corresponding total concentrations for the DIN samples. Dissolved concentrations were higher than total concentrations for 4.4% of comparisons.
  - RPDs for total phosphorus concentrations in 2018 were below 20% in all samples.
- Phytoplankton:
  - The dominant taxon was consistent between duplicate samples for phytoplankton biomass and abundance.
  - RPDs for total phytoplankton biomass and abundance were below 50% for all duplicates.
  - RPDs above 50% were observed in the majority of duplicates for major phytoplankton taxonomic groups; however, graphical presentation of the relative abundances of major phytoplankton groups showed that variation between duplicates was actually low and that the proportions of major groups were similar between duplicates.

Differences between original and QC samples were deemed minor, and within the range of variability expected in plankton data. Based on this assessment, the plankton monitoring data are considered adequate to meet the needs of the AEMP for the Mine.

11.3 Results and Discussion

The results of the phytoplankton sampling programs completed in Meliadine Lake in 2015 to 2018 are summarized in Sections 11.3.1 to 11.3.3. Chlorophyll *a* sampling results in the peninsula lake are summarized in Section 11.4. Results from previous sampling programs in the Peninsula Lakes in 2015 through 2017 were presented in 2017 AEMP Annual Report (Golder 2018c). Detailed results are provided in the following appendices:

- Appendix 11B: Depth-Integrated Nutrients and Chlorophyll *a*
- Appendix 11C: Trophic Status
- Appendix 11D: Phytoplankton Community Results

11.3.1 Depth-Integrated Nutrients and Chlorophyll *a*

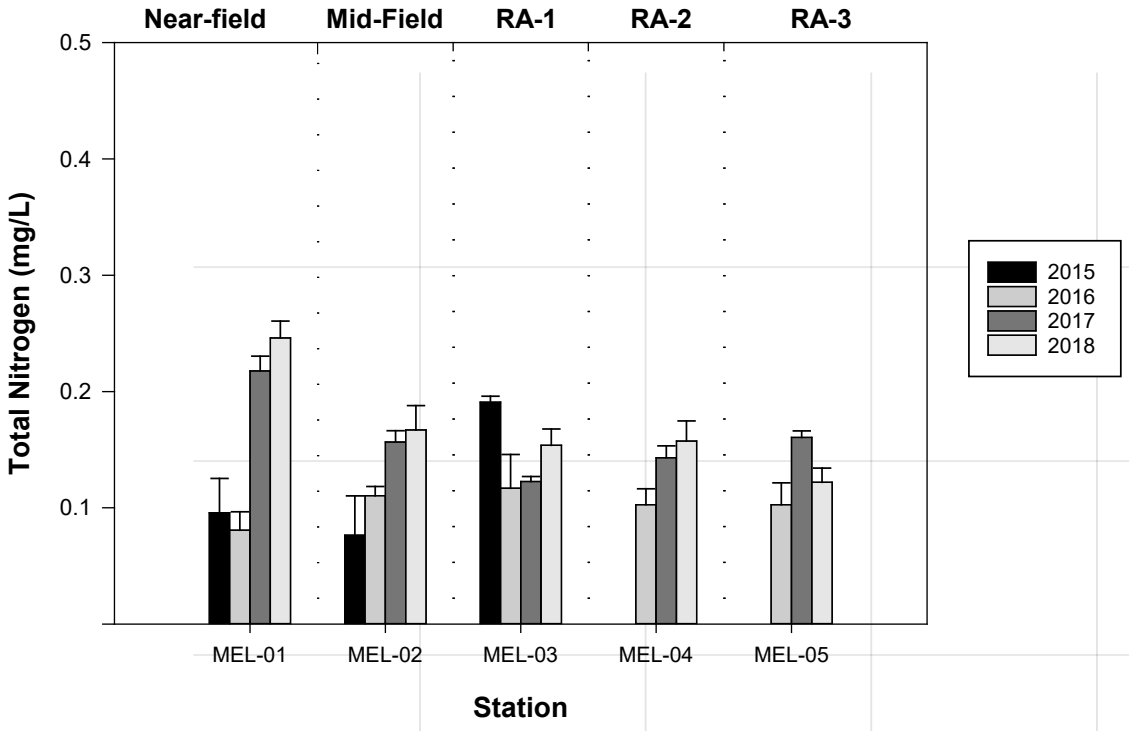
Depth-integrated nutrient and chlorophyll *a* results for samples collected from Meliadine Lake in 2015 to 2018 are provided in Appendix 11B. Summary statistics (count, minimum, median, mean, maximum, standard error, standard deviation) for depth-integrated nutrients are provided in Tables 11B-1 to 11B-3. Summary statistics for chlorophyll *a* are provided in Table 11B-4. Raw data for depth-integrated nutrients and chlorophyll *a* are provided in Tables 11B-5 and 11B-6 respectively.

Concentrations of most depth-integrated nutrients were generally low in 2018 and consistent with concentrations observed in previous years. The mean concentration of TN in the Near-field area was 0.25 mg-N/L in 2018, which is slightly higher than in previous years, when mean TN concentrations ranged between 0.08 and 0.22 mg-N/L (Figure 11.3-1). Concentrations of TN ranged between a mean concentration of 0.12 mg-N/L (MEL-05) and 0.17 mg-N/L (MEL-02) in the Mid-field and reference areas in 2018, compared with a range of 0.08 to 0.19 mg-N/L in previous years.

Concentrations of TP in 2018 were generally above DLs but were low and consistent with TP concentrations observed in 2015, 2016 and 2017 (Figure 11.3-2). Some variability in TP concentrations was observed across sampling areas in 2018, but no consistent trends were apparent. The mean concentration of TP in the Near-field area was 0.0049 mg-P/L which was consistent with TP concentrations in previous years, which ranged between 0.0051 and 0.0060 mg-P/L. Concentrations of TP in the Mid-field exposure and reference areas ranged from a mean concentration of 0.0039 mg-P/L (MEL-03) to 0.0073 mg-P/L (MEL-02) in 2018 compared with a range of 0.0036 to 0.0072 mg-P/L in previous years.

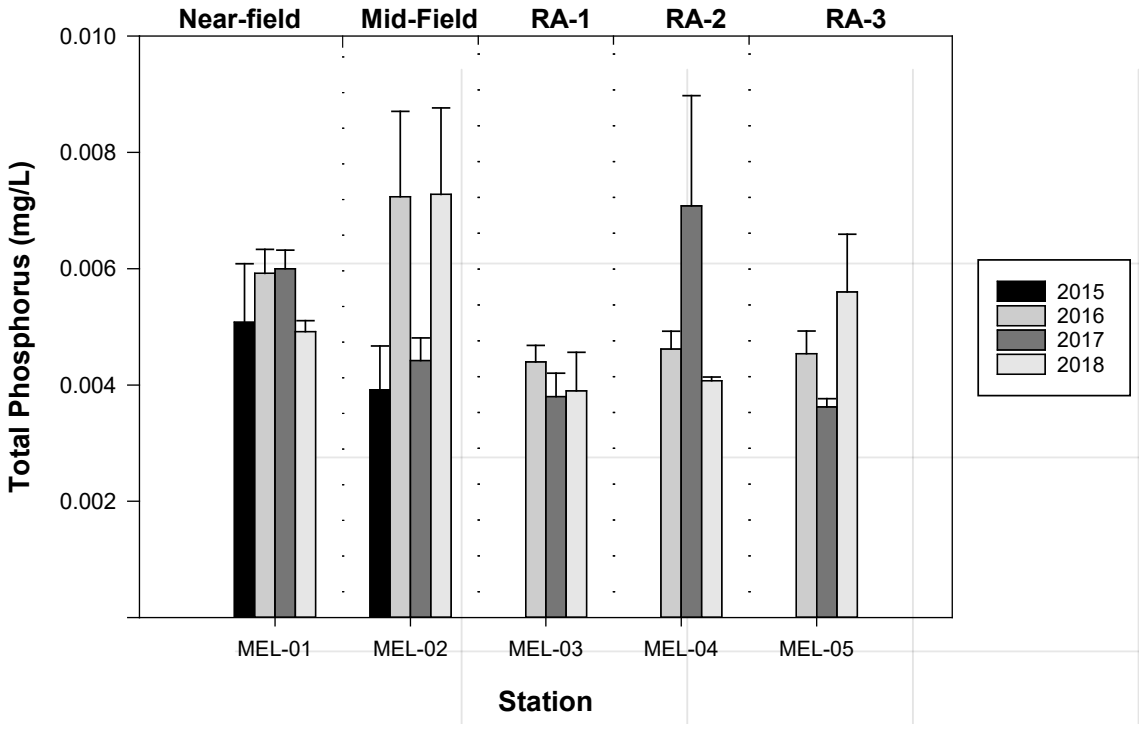
Concentrations of nitrate, nitrite, ammonia, and orthophosphate were below DLs in the majority of samples collected in 2018, consistent with previous years. Minor spatial differences were observed in silica concentrations in Meliadine Lake in 2018, with slightly higher mean concentration of silica in the Near-field area (0.36 mg/L) than in the Mid-field area (0.31 mg/L) and the reference areas (0.24 mg/L); however, the observed difference in silica concentrations was less pronounced than observed in 2017.

Chlorophyll *a* concentrations followed a similar spatial trend in 2018 as observed in previous years, with higher concentrations in the Near-field area than the Mid-field and reference areas (Figure 11.3-3). Mean chlorophyll *a* concentration in the Near-field area in 2018 was 1.9 ± 0.03 µg/L compared to 0.9 ± 0.05 µg/L in the Mid-field area, and 0.6 ± 0.03 µg/L in the reference areas. Chlorophyll *a* concentrations in the Near-field area were higher in 2018 than in 2017 (1.3 ± 0.2 µg/L) and 2015 (0.9 ± 0.2 µg/L) but consistent with concentrations observed in 2016 (1.9 ± 0.07 µg/L).



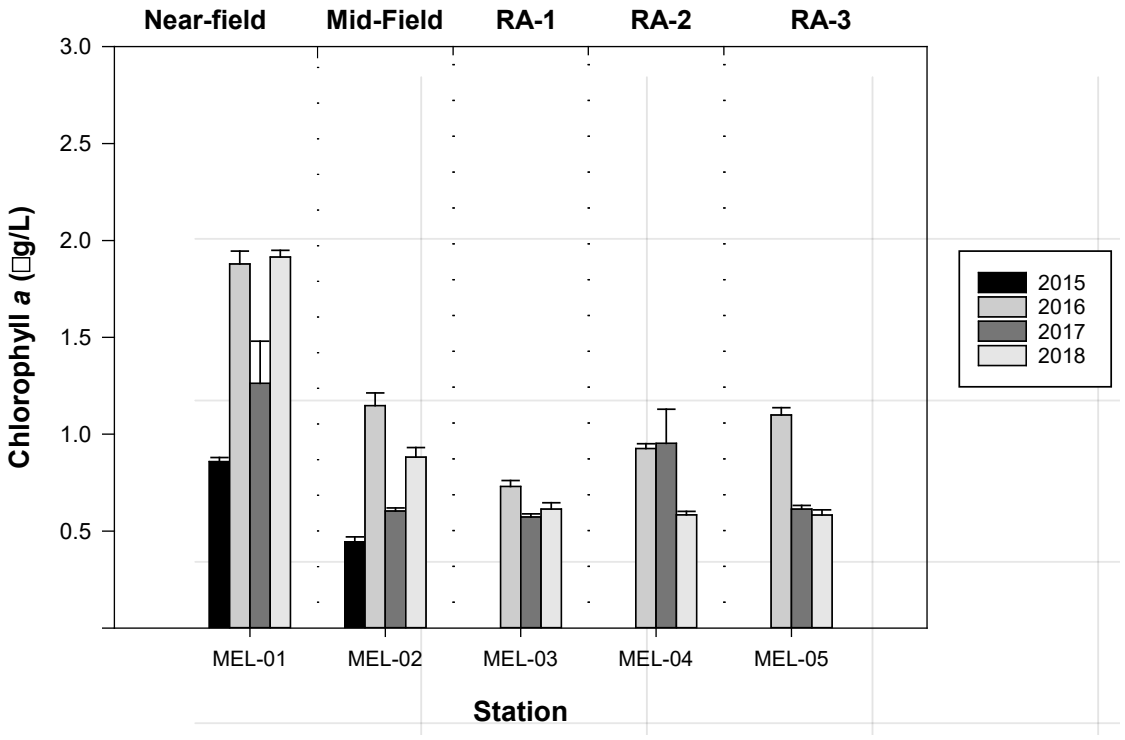
Notes: Mean values are presented for each area. Error bars represent standard error (SE). RA = Reference Area; mg/L = milligrams per litre.

Figure 11.3-1: Mean Total Nitrogen Concentrations in Meliadine Lake, 2015 to 2018



Notes: Mean values are presented for each area. Error bars represent standard error (SE). RA = Reference Area; mg/L = milligrams per litre.

Figure 11.3-2: Mean Total Phosphorus Concentrations in Meliadine Lake, 2015 to 2018



Notes: Mean values are presented for each area. Error bars represent standard error (SE). RA = Reference Area; µg/L = micrograms per litre.

Figure 11.3-3: Mean Chlorophyll *a* Concentrations in Meliadine Lake, 2015 – 2018

11.3.1.1 Statistical Comparisons of Nutrients and Chlorophyll a

Statistical comparisons of depth-integrated nutrient and chlorophyll *a* concentrations from samples collected in August 2016, 2017 and 2018 were made to evaluate spatial variability among the five areas of Meliadine Lake. Data collected in August 2015 was omitted from statistical comparisons due to lack of sampling in the reference areas. Differences observed in the concentrations of total nitrogen, total phosphorus, and chlorophyll *a* in August 2016, 2017 and 2018 in Meliadine Lake are summarized below:

- In 2016, total nitrogen concentrations were not significantly different among any of the five sampling areas ($P = 0.695$) (Table 11.3-1). In 2017, total nitrogen was significantly higher among the areas overall ($P < 0.001$), which was mostly attributed to significant differences between the Near-field and the Mid-field areas and reference areas. Significant differences in nitrogen concentrations were also observed between the Mid-field area and RA-1, and between RA-1 and RA-3 in 2017. In 2018, a similar trend was observed with significant differences in TN overall ($P = 0.041$) and between the Near-field area and all other areas.
- Total phosphorus concentrations varied significantly overall among areas in 2016 ($P = 0.051$), 2017 ($P = 0.054$) and 2018 ($P = 0.056$); however, few significant differences were observed in pairwise comparisons between areas, and there was no clear spatial trend of differences between the Near-field area and other areas (Table 11.3-1). Significant differences were observed between the Mid-field area and RA-1 in 2016, between RA-2 and RA-3 in 2017, and between the Near-field area and RA-2, the Mid-field area and RA-1, and the Mid-field area and RA-2 in 2018.

- Chlorophyll *a* concentrations were significantly different among areas in all years (P <0.001) (Table 11.3-1). Pairwise comparisons revealed that chlorophyll *a* concentrations were significantly different between the Near-field area and all other areas in 2016, 2017 and 2018 (P <0.001). In 2016, significant differences were observed among all other areas except one, while in 2017 there were no significant differences among the Mid-field area and reference areas. In 2018, there were significant differences in chlorophyll *a* concentrations between the Mid-field area and the reference areas but not among the reference areas.

Table 11.3-1: Results of Statistical Analysis and Pairwise Comparisons for Nutrients and Chlorophyll *a* Comparing Areas, August 2016-2018

Year	Variable	Transform[(a)]	Statistical Test	Overall Comparison	Near-field vs. Mid-field	Near-field vs. RA-1	Near-field vs. RA-2	Near-field vs. RA-3	Mid-field vs. RA-1	Mid-field vs. RA-2	Mid-field vs. RA-3	RA-1 vs. RA-2	RA-1 vs. RA-3	RA-2 vs. RA-3
				P-value	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*
2016	Total Nitrogen	log(x)	ANOVA /Tukey's	0.695	0.759	0.646	0.903	0.907	1	0.998	0.997	0.986	0.984	1
	Total Phosphorus	log(x)	ANOVA /Tukey's	**0.051**	0.705	0.585	0.713	0.667	**0.079**	0.119	0.103	0.999	1	1
	Chlorophyll *a*	none	ANOVA /Tukey's	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**0.016**	0.949	**0.040**	**<0.001**	**0.103**
2017	Total Nitrogen	log(x)	ANOVA /Tukey's	**<0.001**	**0.001**	**<0.001**	**<0.001**	**0.002**	**0.086**	0.817	0.997	0.488	**0.045**	0.634
	Total Phosphorus	log(x)	ANOVA /Tukey's	**0.054**	0.725	0.435	0.913	0.359	0.987	0.261	0.968	0.112	1	**0.085**
	Chlorophyll *a*	none	ANOVA /Tukey's	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.778	0.999	0.907	0.608	0.999	0.778
2018	Total Nitrogen	log(x)	ANOVA /Tukey's	**0.041**	**0.017**	**0.004**	**0.063**	**<0.001**	0.669	0.285	**0.097**	0.347	0.151	0.662
	Total Phosphorus	log(x)	ANOVA /Tukey's	**0.056**	0.160	0.115	**0.006**	0.638	**0.046**	**0.063**	0.381	0.607	0.140	0.181
	Chlorophyll *a*	none	ANOVA /Tukey's	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	**<0.001**	0.242	0.218	0.952

(a) Distributions of all variables violated the assumption of normality even after transformation; however, the results are considered reliable as the assumption of equal variances was not violated and ANOVA is robust against violations of the assumption of normality.

Note: *P*-values representing significant differences between areas (*P*<0.1) are **bolded**.

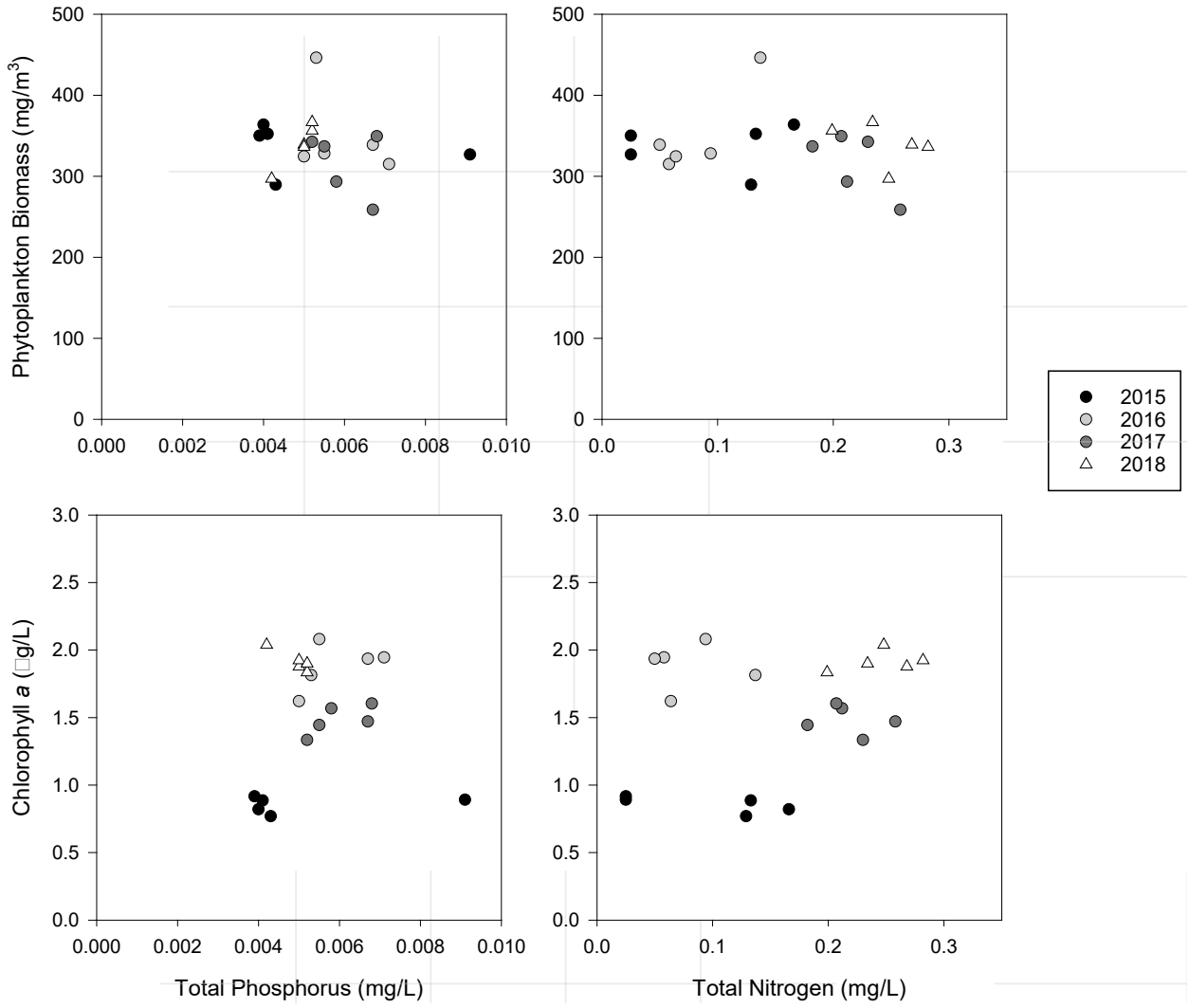
ANOVA= Analysis of Variance; Tukey's= Tukey's Honestly Significant Difference Test; *P*-value = probability value; <= less than; RA = Reference Area.

11.3.1.2 Evaluation of Variability in Phytoplankton Biomass and Chlorophyll a in the Near-field Area Relative to Nutrients

Scatter plots of nutrients, chlorophyll *a*, and phytoplankton biomass were prepared to assess variability of biomass and chlorophyll *a* in relation to variability in nutrient concentrations (i.e., TN and TP) in the Near-field area (Figure 11.3-4). Spatial variability in nutrient concentrations in the Near-field area during each sampling event was generally lower than the variability among years. Temporal variability in concentrations of TN was observed, but not for TP. There was no apparent relationship between nutrient concentrations and phytoplankton biomass or chlorophyll *a*, with the possible exception of TP versus chlorophyll a, where an outlier value for 2015 is inconsistent with a weak overall positive relationship.

The lack of apparent relationships in Figure 11.3-4 suggests that higher concentrations of total phosphorus and total nitrogen did not result in higher phytoplankton biomass or chlorophyll *a,* suggesting that nutrient inputs from treated sewage and Mine effluent in the Near-field area has not resulted in enhanced phytoplankton growth. However, other analyses have shown that chlorophyll *a* concentration and mean phytoplankton abundance and biomass were highest in the Near-field area compared to the Mid-field and reference areas during all years of monitoring, and Mid-field area results for each of these variables were also slightly elevated relative to the reference areas. In addition, TSI based on chlorophyll *a* concentration was highest in the Near-field area, followed by the Mid-field area, and lowest in the three reference areas. These results provide evidence of a gradient in primary productivity in Meliadine Lake, with the highest level in the Near-field area.

The apparent lack of relationships between nutrient concentrations and indicators of primary productivity do not necessarily indicate the lack of an effect on productivity. A relationship with TN is unlikely, because the limiting nutrient in Meliadine Lake is most likely phosphorus and possibly other micronutrients (e.g., silica). Detecting a relationship with TP may be difficult at this time, because the available sample size is small, TP results are near the DL where analytical variation is large, and there is limited variation in TP concentration to date. An increase in TP concentration of approximately 2 µg/L has resulted in a consistent, measurable effect on chlorophyll *a* concentration in parts of Lac de Gras as a result of the Diavik Diamond Mine effluent discharge, as shown by long-term monitoring by the Diavik AEMP (Golder 2017c). Continued monitoring of nutrients and productivity indicators, and periodic re-evaluation of nutrient-productivity relationships is recommended to better understand potential nutrient enrichment-related effects in Meliadine Lake.



Note: µg/L = micrograms per litre; mg/m^3 = milligrams per cubic metre; mg/L = milligrams per litre.

Figure 11.3-4: Nutrients versus Phytoplankton Biomass and Chlorophyll *a* Concentration in August in the Near-field Area, 2015 to 2018

11.3.2 Trophic Status Classification

Concentrations of TP and chlorophyll *a*, and Secchi depth were measured as part of the water quality sampling program and were used to characterize the trophic status of Meliadine Lake. Summary tables for these variables and TSI are provided in Appendix 11C, Tables 11C-1 and 11C-2 for samples collected in August, in 2015 through 2018.

Chlorophyll *a* concentration was within the oligotrophic range throughout Meliadine Lake in 2015 through 2018 according to the general trophic classification systems of lakes (Table 7.1-2; Vollenweider 1968). Mean chlorophyll *a* concentration in 2018 ranged from 0.58 ± 0.03 µg/L in Reference Area 3 to 1.91 ± 0.03 µg/L in the Near-field area. Chlorophyll *a* concentration was within the same range in 2018 as in previous years of sampling (Appendix 11C, Table 11C-1. Table 11C-2).

Concentrations of total phosphorus were also consistent with an oligotrophic (nutrient-poor) classification based on the CCME (2004) trigger ranges (i.e., between 0.004 and 0.010 mg/L) (Table 7.1-3). The mean concentration of total phosphorus in 2018 ranged from 0.0039 ± 0.0007 mg-P/L in Reference Area 1 to 0.0073 ± 0.0015 mg-P/L in the Mid-field area, which is consistent with concentrations of total phosphorus measured in Meliadine Lake in previous years (Appendix 11C, Table 11C-1, Table 11C-2).

Secchi depth measurements throughout Meliadine Lake were also consistent with an oligotrophic classification (Appendix 11C, Table 11C-1, Table 11C-2). During the 2018 sampling program, mean Secchi depth in Meliadine Lake ranged from 6.4 m in the Near-field area to 7.0 m in Reference Area 3. Secchi depths measured in 2018 were consistent with Secchi depths measured in previous years.

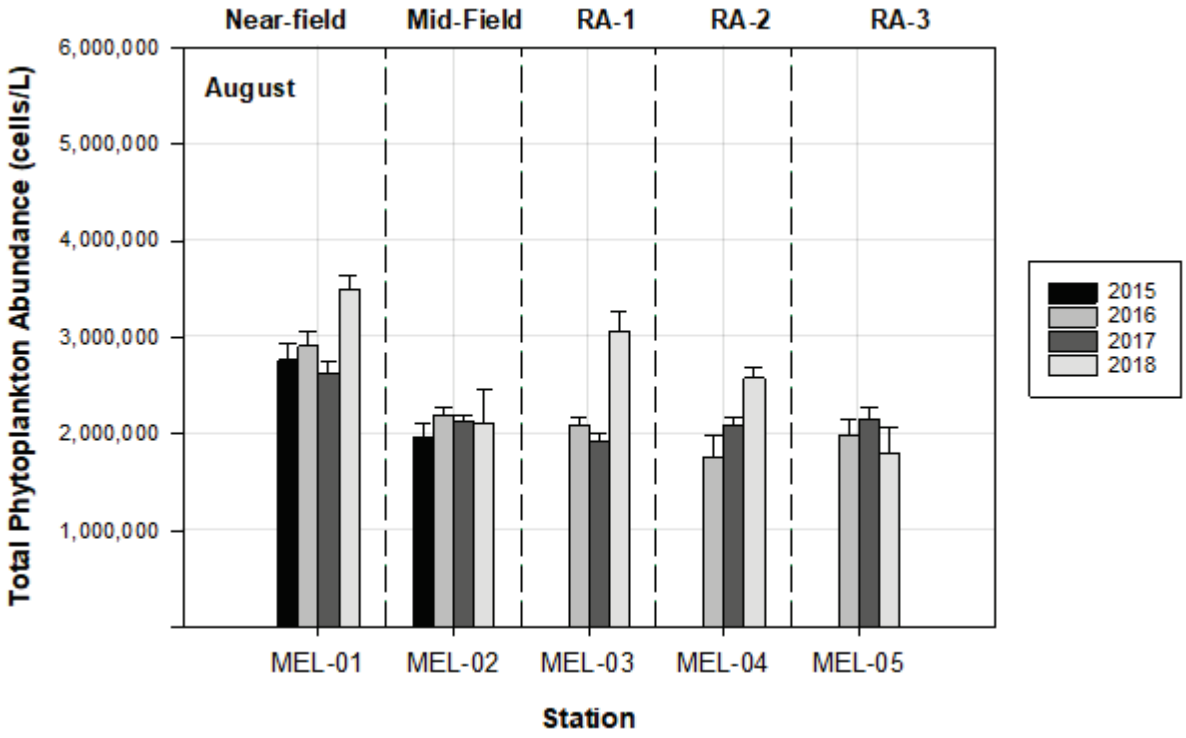
Based on the TSI calculations for chlorophyll *a* in August, the overall trophic status of Meliadine Lake was considered to be oligotrophic (Appendix 11C, Table 11C-2). TSI based on chlorophyll *a* concentration was highest in the Near-field area (37 ± 0.2), followed by the Mid-field area (29.3 ± 0.5), and lowest TSI was calculated at the three reference areas (ranging between 25.3 ± 0.5 and 25.7 ± 0.5). TSI values based on total phosphorus concentrations and Secchi depth were also low, and supported the oligotrophic classification based on the TSI for chlorophyll *a* in Meliadine Lake (Appendix 11C, Table 11C-2).

11.3.3 Phytoplankton

Descriptive statistics that summarize the phytoplankton abundance, biomass, and richness by season, year and area are provided in Appendix 11D, Table 11D-1. Relative abundance of major phytoplankton groups from samples collected in Meliadine Lake is provided in Appendix 11D, Table 11D-2. Raw phytoplankton taxonomic data for Meliadine Lake are provided in Appendix 11D, Tables 11D-3 to 11D-5.

11.3.3.1 Abundance

Phytoplankton abundance was higher in some exposure and reference areas in 2018 than in previous monitoring years but the spatial trend of abundance in 2018 was consistent with the trend observed during previous years (Figure 11.3-5). Mean phytoplankton abundance in the Near-field area in 2018 was 3,503,229 ± 137,000 cells/L, higher than the abundance observed in 2015 to 2017 which ranged between 2,637,110 ± 104,786 cells/L (2017) and 2,909,414 ± 154,628 cells/L (2016). Abundance in the Mid-field area was consistent with previous monitoring years and lower than in the Near-field area. Mean abundance was 2,101,478 ± 366,873 cells/L in the Mid-field area in 2018. Abundance in the reference areas was higher in 2018 than in 2016 or 2017 at Reference Areas 1 and 2, and slightly lower than abundance in previous years at Reference Area 3; mean phytoplankton abundance in the reference areas ranged between 1,803,459 ± 257,821 cells/L and 3,054,288 ± 212,971 cells/L in 2018. Abundance in each of the three reference areas was lower than in the Near-field area in 2018.

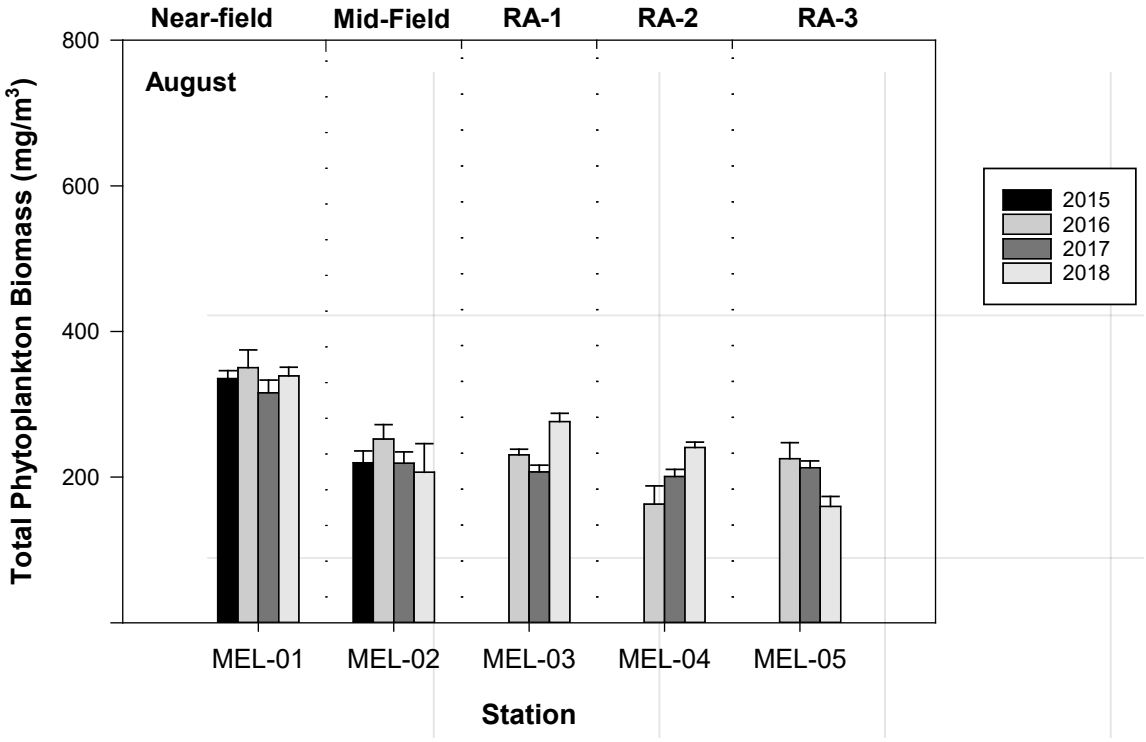


Notes: Mean values are presented for each area. Error bars represent standard error (SE). RA = Reference Area; cells/L = cells per litre.

Figure 11.3-5: Total Phytoplankton Abundance in Meliadine Lake in August, 2015 to 2018

11.3.3.2 Biomass

Phytoplankton biomass generally followed a similar spatial trend as abundance in 2018, while differences among years were less pronounced (Figure 11.3-6). In 2018, biomass was highest in the Near-field area, reaching 339.11 ± 11.93 mg/m^3 compared to 206.53 ± 39.33 mg/m^3 in the Mid-field area, and a range of 159.76 ± 13.52 mg/m^3 (MEL-05) to 276.08 ± 11.43 mg/m^3 (MEL-03) in the reference areas (Appendix 11D, Table 11D-1). Biomass in 2018 was generally consistent with previous years, with only slight increases observed in Reference areas 1 and 2, and a decrease in biomass observed in Reference Area 3 in 2018. The increase in phytoplankton abundance observed in the Near-field area in 2018 did not result in a corresponding increase in biomass, suggesting that the increase in abundance was likely a result of a larger number of smaller phytoplankton taxa in the Near-field area in 2018. Biomass in Reference Areas 1 and 2 was higher in 2018 than in 2016 and 2017, suggesting that the increase in abundance in these areas in 2018 can at least partially be attributed to a greater number of larger phytoplankton taxa.



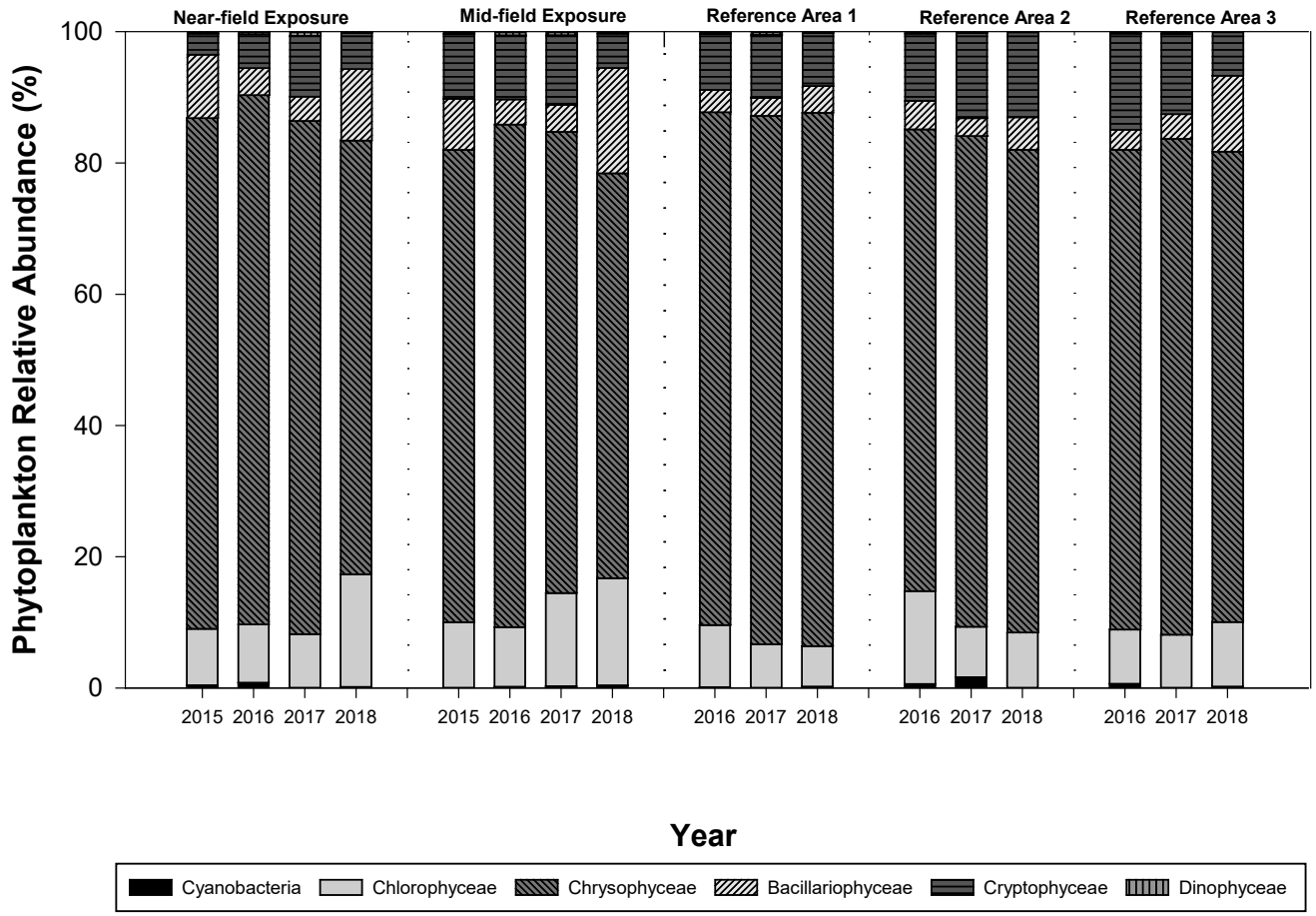
Notes: Mean values are presented for each area. Error bars represent standard error (SE). RA = Reference Area; mg/m^3 = milligrams per cubic metre.

Figure 11.3-6: Total Phytoplankton Biomass in Meliadine Lake in August, 2015 to 2018

11.3.3.3 Community Composition by Abundance

A total of 98 distinct phytoplankton taxa were identified in samples collected in Meliadine Lake in August 2015, 2016, 2017 and 2018. Overall, the relative abundance of major phytoplankton groups was similar throughout Meliadine Lake in 2018 to previous years. The most abundant, or dominant, taxa during each sampling program were golden algae of the group Chrysophyceae (Appendix 11D, Table 11D-2). Abundant taxa in the majority of samples collected included *Uroglena volvox*, *Chrysococcus sp.*, *Chrysochromulina* sp., and *Dinobryon* sp., all from the group Chrysophyceae (Appendix 7D, Tables 7D-3 and 7D-4). Chlorophytes (Chlorophyceae), diatoms (Bacillariophyceae) and cryptomonads (Cryptophyceae) were generally the next most abundant phytoplankton groups, with minor spatial and temporal variation in abundance observed for each group. Cyanobacteria and dinoflagellates (Dinophyceae) were largely absent from the phytoplankton community in Meliadine Lake, making up less than 1% the total relative abundance of phytoplankton in most samples.

The relative abundance of phytoplankton in August 2018 followed a similar spatial trend as in previous years with some minor changes in relative abundance in the exposure areas (Figure 11.3-7). Abundance was dominated by chrysophytes in all areas in 2018, which represented between 62% and 81% of total phytoplankton abundance (Appendix 11D, Table 11D-2). Diatoms contributed slightly more to overall abundance in the Near-field and Mid-field areas in 2018 (11% at MEL-01; 16% at MEL-02) than in previous years (4% to 10%). Chlorophytes also contributed more to overall abundance in 2018 in the exposure areas (17% at MEL-01; 16% at MEL-02) compared to previous years (4 to 14%). In general, higher variability in the relative abundance of chlorophytes, diatoms and dinophytes was observed in the exposure areas, higher relative abundance of chrysophytes was observed in the reference areas, and low relative abundance of cyanophytes was observed in all areas.

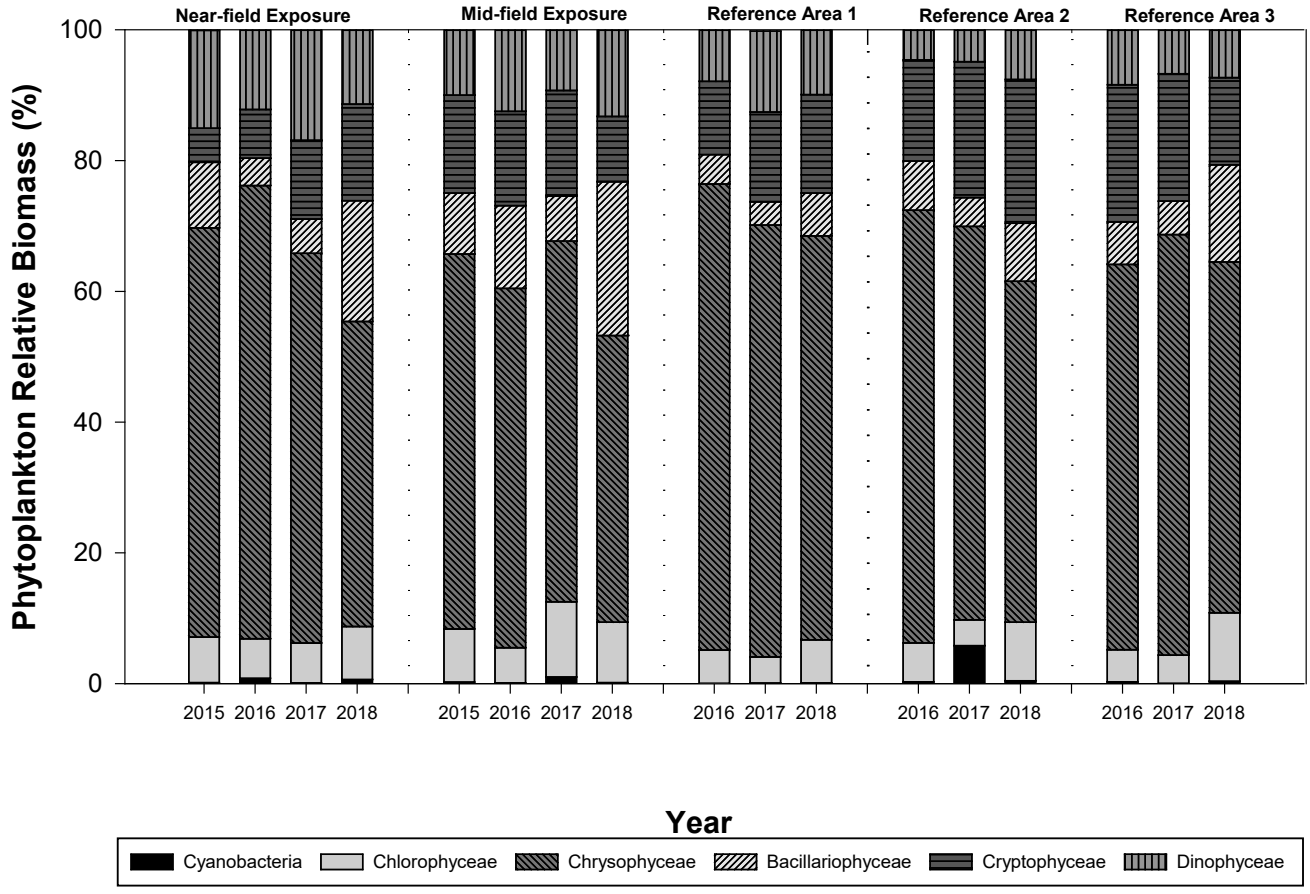


Note: Bars represent mean values for each area.

Figure 11.3-7: Relative Abundance of Major Phytoplankton Groups in Meliadine Lake, 2015 to 2018

11.3.3.4 Community Composition by Biomass

The relative biomass of major phytoplankton groups in Meliadine Lake followed a similar trend as relative abundance, with the only notable differences between 2018 and previous years observed in the exposure areas (Figure 11.3-8). As with abundance, chrysophytes contributed the most to relative biomass in all areas in Meliadine Lake; however, the relative abundance of chrysophytes was lower in the exposure areas (47% at MEL-01; 44% at MEL-02) than in the reference areas (52% to 62%) (Appendix 11D, Table 11D-2). The relative biomass of diatoms was higher in the exposure areas in 2018 (19% to 24%) than in the exposure areas in previous years (4% to 13%) or in the reference areas in all years (4 to 15%). The relative proportions of chlorophytes, cryptomonads and dinoflagellates by biomass showed no discernable trends between exposure and reference areas or among years. Dinoflagellates generally contributed more to relative biomass compared to relative abundance (i.e., larger cells but rare), while the relative biomass of other major groups was generally proportional to their relative abundance (i.e., smaller cells but common).

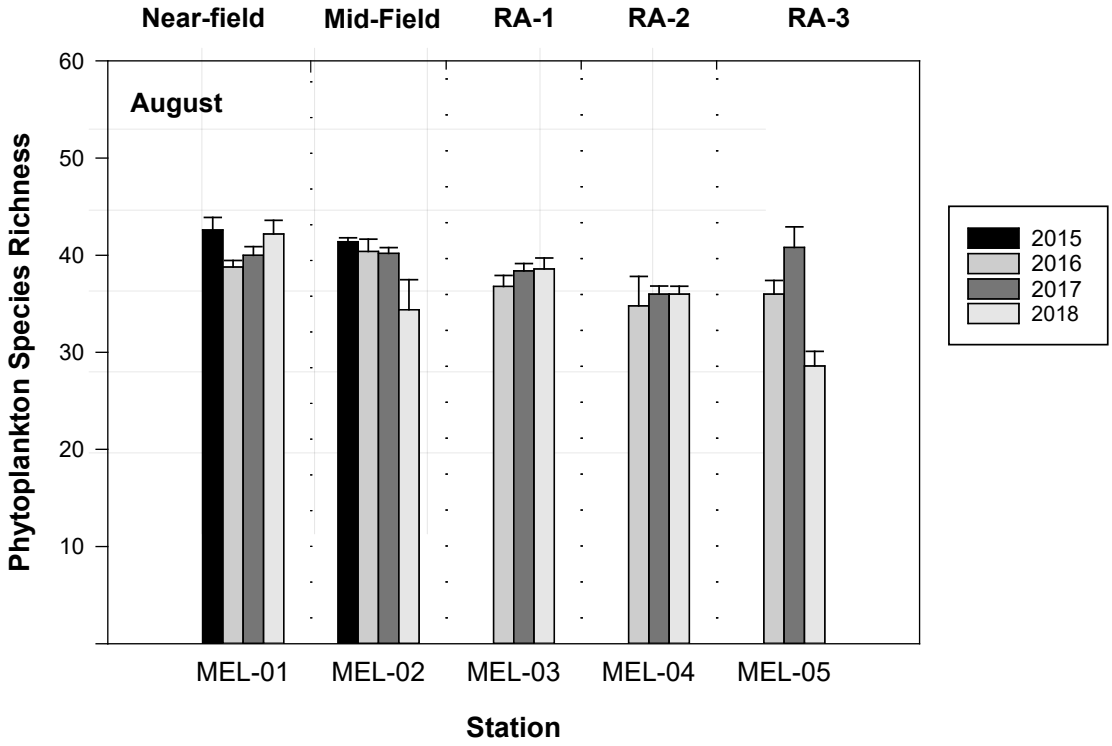


Notes: Bars represent mean values for each area (n=5).

Figure 11.3-8: Relative Biomass of Major Phytoplankton Groups in Meliadine Lake, 2015 to 2018

11.3.3.5 Species Richness

Species richness was relatively consistent throughout much of Meliadine Lake with few observable trends among years or stations (Figure 11.3-9). Richness varied little between the exposure areas and the reference areas in 2018 and among years in any area. In 2018, mean richness was highest in the Near-field area (42 ± 1 taxa) and lowest in Reference Area 3 (29 ± 2 taxa) (Appendix 11D, Table 11D-1). Richness in the Near-field area in 2018 was consistent with richness observed in previous years. Richness in the Mid-field area was lower in 2018 (34 ± 2 taxa) than in previous years, when mean richness ranged between 40 and 41 taxa. Species richness in Reference Area 3 was notably lower than in all other areas (29 ± 2 taxa) and in general was highly variable among years in this area.



Notes: Mean values are presented for each area. Error bars represent standard error (SE). RA=Reference Area.

Figure 11.3-9: Total Phytoplankton Species Richness in Meliadine Lake, 2015 to 2018

11.3.3.6 Statistical Comparisons of Phytoplankton Community Variables

Statistical comparisons of phytoplankton community variables from samples collected in August 2016, 2017 and 2018 were made to evaluate spatial variability among the five areas of Meliadine Lake. Data collected in August 2015 was omitted from statistical comparisons among areas in Meliadine Lake due to a lack of sampling in the reference areas. A summary of statistical comparisons of variables among Near-field and Mid-field areas and the three reference areas in August 2016, 2017 and 2018 is presented in Table 11.3-2.

Differences observed in the abundance, biomass, and richness of the phytoplankton community in August 2016 and August 2017 in Meliadine Lake are summarized below:

- Phytoplankton abundance was significantly different among the five sampling areas in 2016 (P <0.001), 2017 (P = 0.004) and 2018 (P <0.001) (Table 11.3-2). Pairwise comparisons showed that abundance in the Near-field area was significantly higher than in the Mid-field area and each of the three reference areas in 2016 and 2017. In 2018, the Near-field area was significantly different than the Mid-field area and two of the three reference areas, while significant differences were also observed between the Mid-field area and one of the reference areas (Reference Area 1) and among some of the reference areas. There was no significant difference in abundance between the Mid-field exposure area and the reference areas or among the reference areas in 2016 or 2017.
- Phytoplankton biomass was also significantly different (P <0.001) among sampling areas in all years (Table 11.3-2). Pairwise comparisons of biomass estimates showed a similar trend as abundance in all years with significant differences between the Near-field area and all other areas in each year. A significant difference was also observed between the Mid-field area and Reference Area 2 in 2016 (P = 0.068) and between each of the reference areas in 2018.
- Phytoplankton species richness was significantly different among areas overall in 2016 (P = 0.081), 2017 (P = 0.065) and 2018 (P = 0.006); however, comparatively fewer significant differences were observed in pairwise comparisons of exposure and reference areas in 2016 and 2017 (Table 11.3-2). In 2016, no significant differences were observed in pairwise comparisons between areas, while in 2017 the only significant difference observed was between the Mid-field area and Reference Area 2. In 2018, significant differences were observed between the Near-field area and the Mid-field area and reference areas, among the three reference areas, and between the Mid-field area and Reference Area 3.

Table 11.3-2: Results of Statistical Analysis and Pairwise Comparisons for Phytoplankton Community Variables Comparing Areas, August 2016 to 2018

Year	Variable	Transform	Statistical Test	Overall Comparison	Near-field vs. Mid-field	Near-field vs. RA-1	Near-field vs. RA-2	Near-field vs. RA-3	Mid-field vs. RA-1	Mid-field vs. RA-2	Mid-field vs. RA-3	RA-1 vs. RA-2	RA-1 vs. RA-3	RA-2 vs. RA-3
				P-value	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*	*P-value*
2016	Abundance	None	ANOVA /Tukey's	**<0.001****	**0.035****	**0.014****	**<0.001****	**0.008****	0.993	0.151	0.957	0.304	0.999	0.440
	Biomass	None	ANOVA /Tukey's	**<0.001****	**0.062****	**0.016****	**<0.001****	**0.013****	0.967	**0.068****	0.942	0.219	1.000	0.261
	Richness	None	KW / DSCF	**0.081****	0.866	0.554	0.647	0.500	0.259	0.322	0.211	1.000	1.000	1.000
2017	Abundance	None	ANOVA /Tukey's	**0.004****	**0.025****	**0.003****	**0.021****	**0.062****	0.838	1.000	0.992	0.874	0.593	0.984
	Biomass	None	ANOVA /Tukey's	**<0.001****	**0.001****	**<0.001****	**<0.001****	**0.001****	0.930	0.830	0.998	0.999	0.988	0.943
	Richness	None	KW / DSCF	**0.065****	0.993	0.946	0.170	0.880	0.768	**0.105***	0.878	0.219	0.718	0.516
2018	Abundance	None	ANOVA /Tukey's	**<0.001****	**0.007****	0.114	**0.001****	**<0.001****	**0.055****	0.297	0.525	0.111	**0.006****	**0.039****
	Biomass	None	ANOVA /Tukey's	**<0.001****	**0.012****	**0.005****	**<0.001****	**<0.001****	0.128	0.475	0.293	**0.044****	**<0.001****	**0.002****
	Richness	None	KW / DSCF	**0.006****	**0.076****	**0.113***	**0.014****	**0.009****	0.207	0.455	**0.142***	**0.138***	**0.009****	**0.019****

Note: Significant differences (**bold**) are denoted as: * = *P*<0.15, ** = *P*<0.1.

KW= Kruskal Wallis; DSCF= Dwass-Steel-Critchlow-Fligner Test for Pairwise Comparisons; ANOVA= Analysis of Variance; Tukey's= Tukey's Honestly Significant Difference Test; *P*-value = probability value; <= less than.

11.3.3.7 Multivariate Analysis

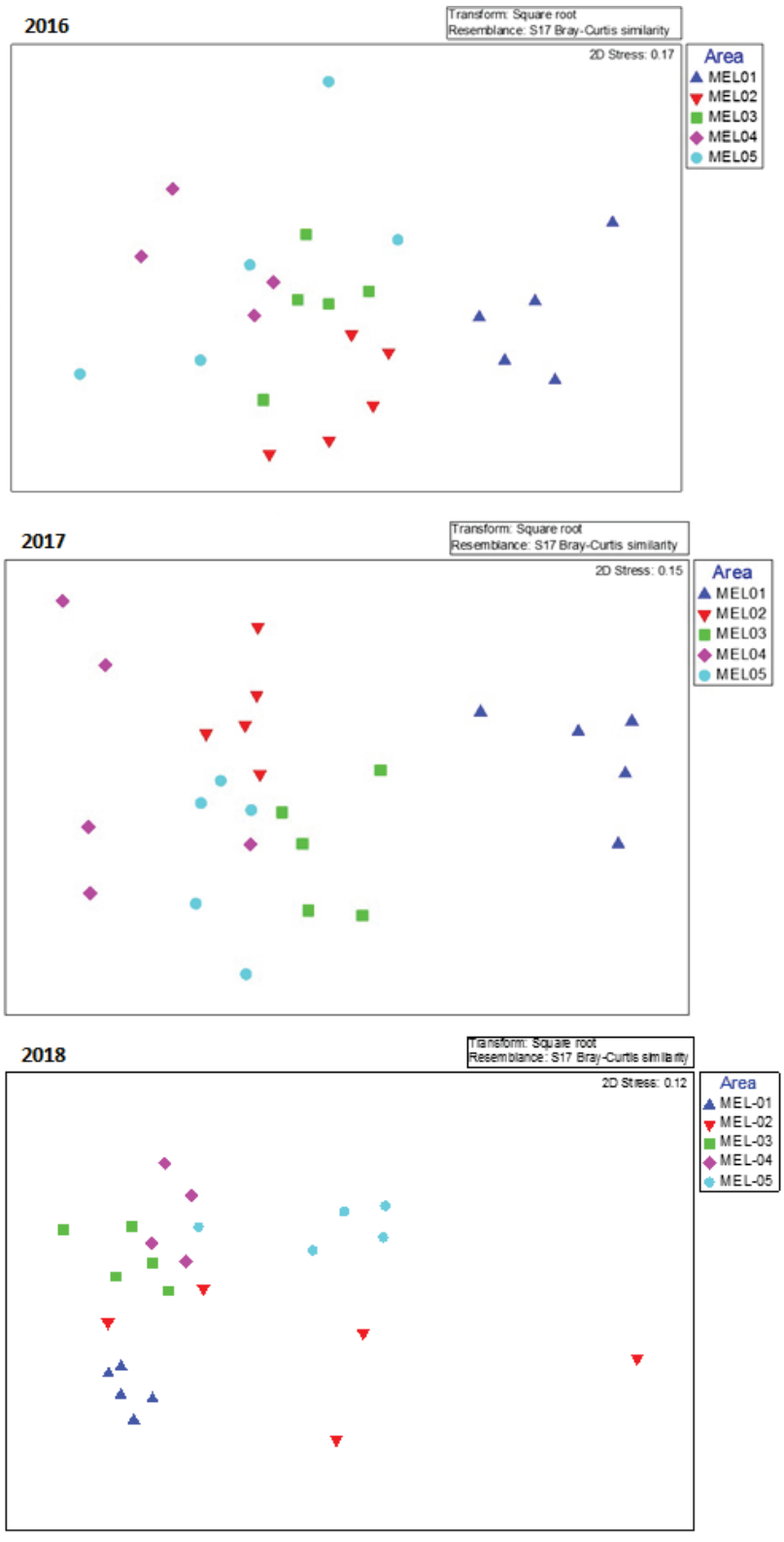
Two nMDS dimensions were derived from the phytoplankton biomass data collected in Meliadine Lake. Phytoplankton biomass in August 2016, 2017 and 2018 were analyzed separately to enable a good fit of the ordination results. The nMDS ordination of the samples by area illustrates the degree of similarity in community composition among stations in each area.

The stress value of the final configuration was 0.17 for August 2016, 0.15 for August 2017, and 0.12 for August 2018, which represent a “fair” fit (<0.2) of the ordination results to the input data in qualitative terms (Clarke 1993). According to the categories provided by Clarke (1993), some interference may be present, which could confound the interpretations made from the plots, so results should be interpreted with caution. One sample from August 2016 (MEL-04-03) was excluded from the analysis due to major differences in phytoplankton community compared to other locations.

The majority of stations in 2016 clustered together by area with more similarities present among the reference areas than among the exposure areas (Figure 11.3-10). Differences in taxonomic composition by biomass were especially apparent between the Near-field area (MEL-01) and all other areas in August 2016. The Mid-field area (MEL-02) more closely resembled the reference areas, and stations clustered relatively close together. Some variability in taxonomic composition was apparent in the reference areas, especially in Reference Area 3 (MEL-05), for which individual stations were not closely related.

In August 2017, most stations were also clustered together by area (Figure 11.3-10). Stations in the Near-field area (MEL-01) were again clustered separately from the Mid-field (MEL-02) and reference areas, indicating taxonomic composition by biomass was different in the Near-field area in 2017. Some variability in community composition was also evident in Reference Area 2 (MEL-04) in August 2017, when the majority of stations did not cluster together with the other reference areas.

In August 2018, generally similar results were observed as in 2016 and 2017, with stations in the Near-field area (MEL-01) clustering closely together despite the change in sampling locations in this area in 2018. In the Mid-field area (MEL-02) in 2018, notably higher variability between stations was observed in 2018 than in previous years, with three Mid-field stations clustering relatively far away from all other stations. The results suggest high variability in community composition in the Mid-field area was present in 2018. The observed differences can be partially explained by changes made to the sampling design in 2018, as two of the Mid-field stations which clustered away from the Near-field and reference stations were the stations which were added in 2018 (MEL-02-06 and MEL-02-08); however, the station clustering farthest from the other locations was MEL-02-02, which was sampled in 2016 and 2017, suggesting that a relatively large amount of natural variability may exist in the Mid-field area. As in previous years, all three reference areas clustered relatively close together in 2018.



Notes: MEL-04-03 in 2016 was excluded from analysis due to major differences in phytoplankton community relative to all other stations.

Figure 11.3-10: Ordination Plot of August Phytoplankton Biomass in Meliadine Lake in 2016 to 2018

11.3.3.8 Comparisons to Normal Ranges

Normal ranges for phytoplankton abundance, biomass, and richness along with concentrations of chlorophyll *a* were calculated using Mid-field area and reference area data collected during the 2015 to 2018 sampling programs. Data collected from Near-field area in all years was excluded from the normal range calculation due to suspected influences on phytoplankton monitoring variables from effluent inputs during these years. A comparison of mean and median values from 2018 was then compared against the normal ranges calculated for each parameter.

Mean and median values for some parameters in 2018 exceeded the upper bounds of the normal ranges (Table 11.3-3). Mean phytoplankton abundance and median phytoplankton biomass and chlorophyll *a* concentration in the Near-field area were higher than their respective normal range upper bounds in 2018. Mean species richness in 2018 fell within the normal range in the Near-field and Mid-field areas and the reference areas. Mean abundance, median biomass and median chlorophyll *a* concentration in the Mid-field area and the reference areas were within the normal range for each parameter.

Table 11.3-3: Normal Ranges for Selected Phytoplankton Parameters in Meliadine Lake, 2018

Parameter	Unit	n	Calculation Method[c]	Normal Range		Mean/Median[a]		
				Lower Bound	Upper Bound	Near-field	Mid-field	Reference Area[b]
Phytoplankton Abundance	cells/L	69	PI(λ)	1,510,476	3,045,764	**3,503,229**	2,101,478	2,479,844
Phytoplankton Biomass	mg/m^3	69	Percentile	161	305	**339**	209	221
Species Richness	No. of taxa	69	PI(λ)	32	43	42	34	34
Chlorophyll *a*	µg/L	139	Percentile	0.52	1.18	**1.94**	0.84	0.60

(a) Lake area means were calculated using the back-transformed mean when the normal range was defined as the prediction interval using Box-Cox transformed data. The median was used when the calculation method was Percentile.

(b) Reference area data were pooled from Reference Areas 1, 2, and 3.

(c) Percentile mean calculated from 30 iterations of Normal Range calculations

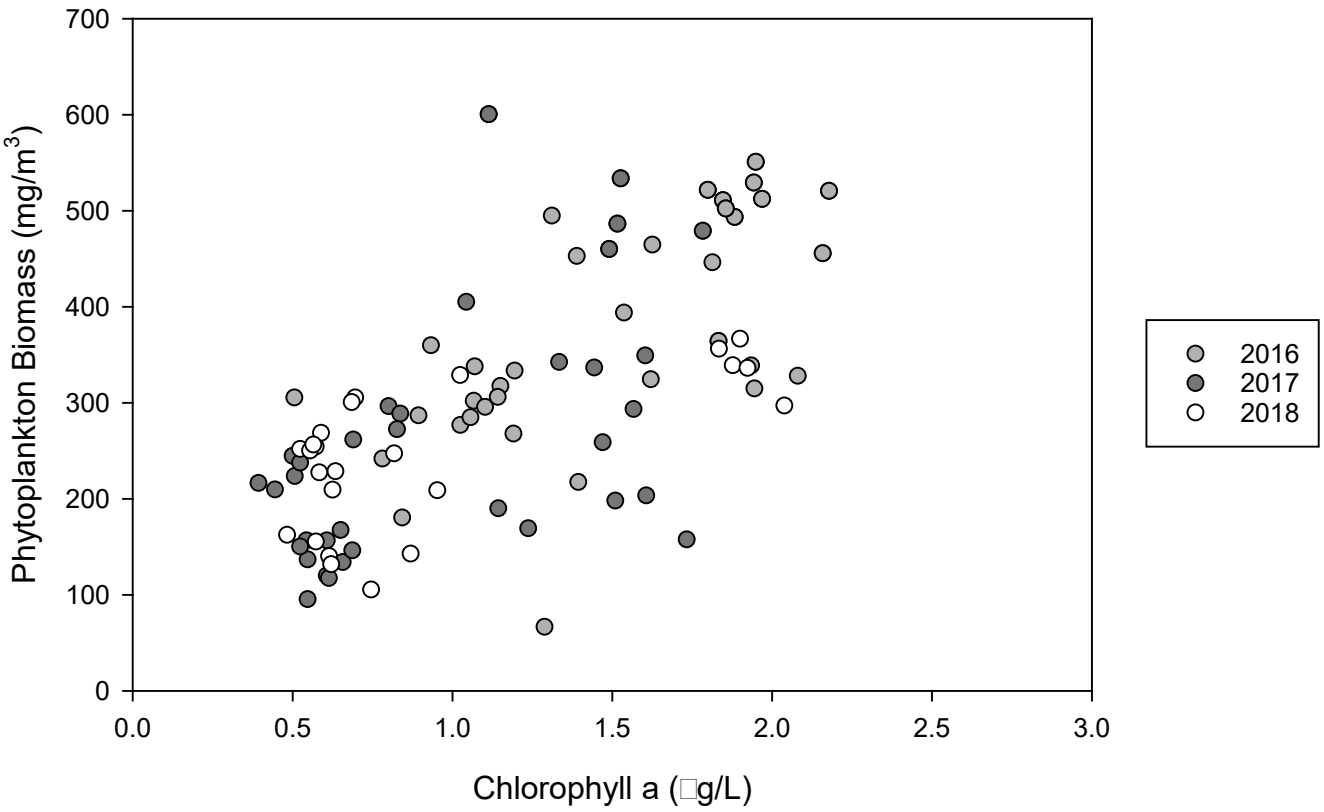
Bolded concentrations exceed the upper bound of the normal range.

Percentile = 2.5th and 97.5th percentiles; PI(λ) = 80% prediction interval on Box-Cox transformed data.

cells/L = cells per litre; mg/m^3 = milligrams per cubic metre; µg/L = micrograms per litre.

11.3.3.9 Relationship Between Phytoplankton Biomass and Chlorophyll a

The correlation between chlorophyll *a* concentration and total phytoplankton biomass calculated from phytoplankton taxonomy samples was examined to evaluate whether chlorophyll *a* can be used as an indicator of phytoplankton biomass. In order to provide the most robust dataset for the analysis with the largest range of potential biomass values, chlorophyll *a* and biomass data from July, August and September in 2016 and July and August in 2017 were included, along with data from August 2018. Data collected in 2015 and September 2017 were excluded from the regression analysis due to reliability concerns (Golder 2018c). Based on data from all years combined, there was a highly significant but weak to moderately strong linear relationship (*P*-value = <0.0001; R^2 = 0.50) between phytoplankton biomass and chlorophyll *a* concentration (Figure 7.3-16). Much of the unexplained variation between the two variables is likely explained by a disproportionate effect by certain phytoplankton groups on the proportion of chlorophyll *a* in phytoplankton wet weight (Kasprzak et al. 2008; Felip and Catalan 2000). For example, dinoflagellates generally have a disproportionately lower amount of chlorophyll *a* for their size when compared with phytoplankton of the groups Chlorophyta and cyanobacteria. Overall, a generally linear trend is apparent, which suggests that chlorophyll *a* is a suitable surrogate for taxonomic estimates of phytoplankton biomass in the future. Additional data points from future monitoring years will help to define the relationship between chlorophyll *a* and phytoplankton biomass in Meliadine Lake.



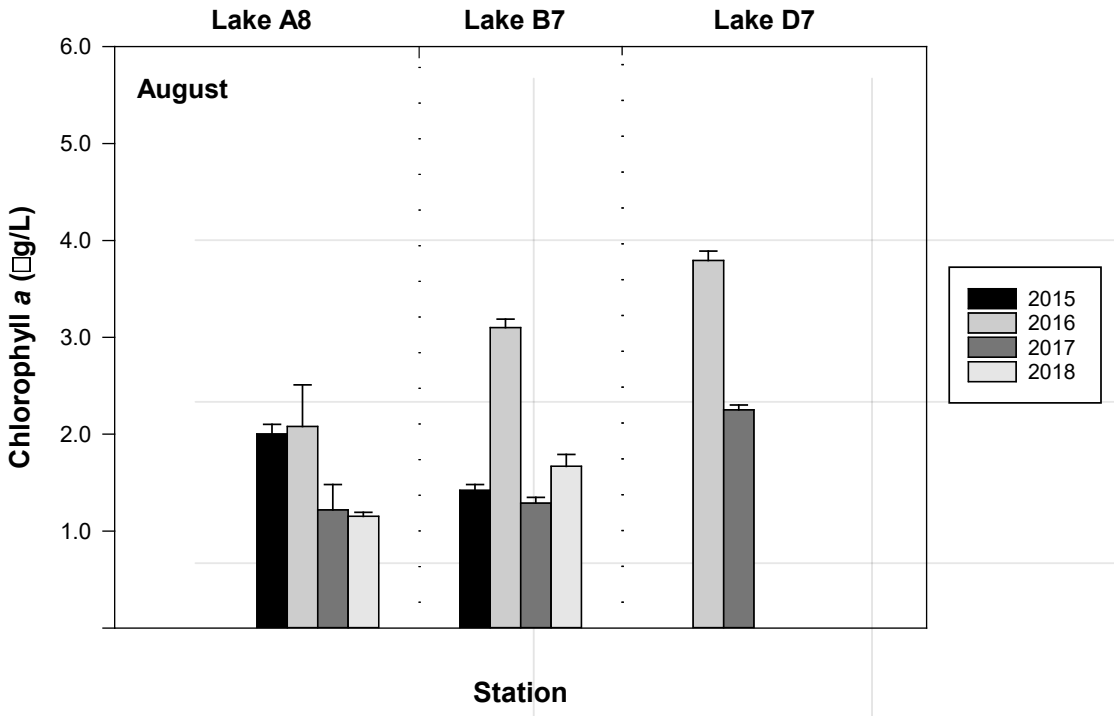
Note: Chlorophyll *a* and biomass data from September 2017 were excluded due to different filters used for field collection.
mg/m^3 = milligrams per cubic metre; µg/L = micrograms per litre.

Figure 11.3-11: Chlorophyll a vs. Phytoplankton Biomass in Meliadine Lake, 2015 to 2018

11.4 Peninsula Lakes

11.4.1 Chlorophyll *a*

Chlorophyll *a* concentrations in the peninsula in lakes A8 and B7 in 2018 were generally similar to concentrations observed in 2017. Overall, chlorophyll *a* concentrations varied by up to two-fold among years and were generally higher in Lake D7 compared to the other two lakes (Figure 11.4-1). Mean chlorophyll *a* concentration in Lake A8 was 1.2 ± 0.04 µg/L in 2018 compared to a mean of 1.2 ± 2.4 µg/L in 2017, 2.1 ± 0.4 µg/L in 2016, and 2.0 ± 0.1 µg/L in 2015. Mean chlorophyll *a* concentration in Lake B7 was 1.7 ± 0.1 µg/L in 2018 compared to a mean of 1.3 ± 0.06 µg/L in 2017, 3.1 ± 0.09 µg/L in 2016, and 1.4 ± 0.06 µg/L in 2015. Samples for chlorophyll *a* analysis were not collected from Lake D7 in 2015 or 2018.



Notes: Mean values are presented for each area. Error bars represent standard error (SE). µg/L = micrograms per litre.

Figure 11.4-1: Mean Chlorophyll *a* Concentrations in the Peninsula Lakes, 2015 to 2018

11.5 Summary

A summary of the key findings from the plankton study is provided below:

- Nutrient concentrations during plankton sampling events in Meliadine Lake were generally low, with variability observed among years and spatial variability observed in TN concentrations in August 2017 and 2018; no clear spatial trend was observed in TP concentration in any year. TN in August 2017 and 2018 was significantly higher in the Near-field area than in the reference areas; however, TP concentrations were not significantly different among areas.
- Chlorophyll *a* exhibited high annual variability and followed a clear spatial trend in 2018 with higher concentrations in the Near-field area than in the Mid-field area and the reference areas. Concentrations of chlorophyll *a* in 2018 were consistent with the highest concentrations observed during the pre-construction phase of the Mine (August 2016).
- Trophic status calculations indicated conditions were oligotrophic in all areas and years. TSI based on chlorophyll *a* concentration was highest in the Near-field area, followed by the Mid-field area, and lowest in the three reference areas.
- Higher phytoplankton abundance and biomass were observed in the Near-field area compared to other areas. Abundance, but not biomass, was higher in the Near-field area in 2018 than in previous years. Spatial trends were consistent with previous years; however, higher variability was observed among years in the reference areas with the inclusion of the 2018 data, which interfered with the evaluation of spatial trends in the phytoplankton community.
- Phytoplankton communities in Meliadine Lake were generally dominated by the Chrysophyceae (golden algae). Limited spatial variability was observed in relative abundance and biomass of major taxonomic groups. However, multivariate analysis indicated differences among areas in community composition at the species level.
- Chlorophyll *a* concentrations had a significant, weak to moderately strong linear relationship with phytoplankton biomass. Given this relationship, the current results suggest chlorophyll *a* is a potentially useful indicator of phytoplankton biomass in Meliadine Lake. The addition of data collected during future studies may help to further refine the relationship.
- Normal ranges were developed for the phytoplankton community using a combination of data obtained in 2015, 2016, 2017 and 2018. Phytoplankton abundance, phytoplankton biomass, and chloroplhyll *a* concentrations in the Near-field area were above the upper bound of the normal range in Meliadine Lake.
- Higher chlorophyll *a* concentration and phytoplankton biomass, and unique phytoplankton community structure (based on multivariate analysis) in the Near-field area indicate potential nutrient enrichment originating from the treated Mine effluent. Biomass and chlorophyll *a* in the Near-field area in 2018 were within the range of results observed during the pre-construction phase of the Mine suggesting that potential nutrient enrichment may have began prior to initiation of the construction phase of the Mine (i.e., from the exploration camp STP discharge).
- Based on the August phytoplankton dataset collected from Meliadine Lake since 2015, late-summer phytoplankton monitoring is considered a useful monitoring tool for Meliadine Lake to detect potential effects resulting from nutrient enrichment.

11.6 Recommendations

The findings of the phytoplankton targeted study suggest that monitoring phytoplankton abundance and biomass as well as chlorophyll *a* could be a useful addition to the AEMP, at least for one additional year in August during operational discharge. This component would assist in assessing nutrient enrichment effects under new discharge conditions (i.e., operational instead of construction). The relationship between phytoplankton biomass and chlorophyll *a* would also be strengthened with another year of monitoring.

11.7 List of Appendices

- Appendix 11A: QA/QC
- Appendix 11B: Depth-Integrated Nutrients and Chlorophyll *a*
- Appendix 11C: Trophic Status
- Appendix 11D: Phytoplankton Community Results

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12.0 OVERALL SUMMARY AND CONCLUSIONS

12.1 EEM

The revised objective of the Cycle 1 EEM study was to assess the effect of the treated mine effluent discharge from MEL-14 on BIC and fish population health in Meliadine Lake. This objective was achieved by evaluating effluent chemistry and toxicity, and by testing if statistical differences in indicators of fish health (e.g., energy storage, energy usage, and survival) and BIC (e.g., density, family-level taxonomic richness, evenness index, and BCI) between exposure and reference areas were present, and greater than CESs. In addition, the manner in which effluent mixes in the receiving environment was studied.

Effluent chemistry met MDMER effluent limits and effluent was not acutely toxic to Rainbow Trout or *Daphnia magna*. Sublethal toxicity was observed on *Lemna minor* growth and *Ceriodaphnia dubia* reproduction, but not on Fathead Minnow survival and growth or *Pseudokirchneriella subcapitata* growth. Further study would be required to extrapolate laboratory results to potential field effects. The results of the effluent plume delineation study indicated that the effluent mixes relatively quickly within the mixing zone, with the maximum effluent concentration observed at 100 m away from the diffuser as less than 2%, and at 250 m as 1%.

Concentrations of several nutrients and metals (i.e., nitrate, nitrate and nitrite, total aluminum, arsenic, lithium, magnesium, and titanium as well as dissolved aluminum, arsenic, cobalt and lithium) in lake water were two times higher in the Near-field area compared to the Reference Area 1. However, concentrations of all water quality parameters with available guidelines were below the CWQG-PAL.

Sediment quality was variable between the exposure and reference areas, which was also observed in 2015 and 2016. Sediments at Near-field area stations were mostly silt-dominated in comparison to sediments sampled at Reference Area 1, which had a higher percentage of sand. Several metals had concentrations that were more than two times higher in the Near-field area than in Reference Area 1. ISQG exceedances for arsenic, cadmium and chromium were identified in both exposure and reference areas. Near-field arsenic concentrations in sediments were also above the PEL, by less than a factor of 2. The arsenic concentration at one reference station was above the PEL, by a factor of 1.4. All other sediment metal concentrations reported in 2018 were below sediment quality guidelines. For metals above sediment quality guidelines in the Near-field area, concentrations in 2018 were lower than those reported under baseline conditions in 2015 and 2016. Higher concentrations of metals and finer sediments in the Near-Field area compared to reference areas was also observed under baseline conditions prior to the Mine effluent discharge; therefore, Near-field area concentrations are considered representative of pre-discharge conditions, and not indicative of a Mine-related effect.

Meliadine Lake benthic invertebrate communities were reflective of typical subarctic communities and were characterized by low densities and low to moderate family level richness. Communities were dominated by the midge family Chironomidae, with fingernail clams (Pisidiidae) subdominant. Snails (Gastropoda) were observed in the Near-field area at higher proportions than in other areas, and amphipods were only present outside of the Near-field area, which likely reflects differences in habitat between the Near-field area and other sampling areas, as a result of taxon-specific habitat preferences. No statistically significant differences in benthic effect and supporting endpoints were detected between Near-field area and Reference Area 1. Total density values were lower in the Near-field area compared to Reference Area 1, but both areas had similar family level richness. Comparisons between the Near-field area and Reference Area 1 showed higher diversity, evenness, and dissimilarity from the reference area median community in the Near-field area. The observed differences in these endpoints likely reflect differences in habitat, particularly differences in sediment composition, that were predent in the sampling areas prior to Mine discharge from MEL-14.

Threespine Stickleback was the only species captured in sufficient abundance from Meliadine Lake to support sample size requirements of the EEM fish population survey. A statistically significant difference between fish captured in the Near-field area and Reference Area 1 was observed for female condition; however, the effect size of 6% was less than the CES of 10%. A similar response was not observed in supporting energy storage endpoints (i.e., relative liver weight and relative egg weight). Statistical analyses were confounded by a lack of a predictive relationship between age and body weight, and Threespine Stickleback being at a variety of reproductive stages at the time of sampling. These factors contributed to low statistical power for some endpoints. Threespine Stickleback were also commonly parasitized by tapeworms, which increased variability in the dataset; however, when infected fish were included in the statistical analysis, increased variability was offset by increased sample sizes resulting in a net increase in statistical power.

In conclusion, there was no evidence of Mine-related effects on the BIC or Threespine Stickleback in the exposure area of Meliadine Lake. Future EEM study designs should continue to consider the influence of habitat variation on benthic invertebrate communities and of high incidence of parasitism on Threespine Stickleback.

12.2 AEMP

12.2.1 Updated Low Action Levels and Response Framework

The AEMP Response Framework links monitoring results to management actions, with the purpose of maintaining the assessment endpoints within acceptable ranges. It is a systematic approach for evaluating AEMP results and responding appropriately, such that potential unexpected effects are identified, and mitigation is undertaken to reduce or reverse them, thereby preventing the occurrence of a significant adverse effect (WLWB 2010). This is accomplished by continually evaluating monitoring data and implementing follow-up actions (e.g., confirmation, further study, mitigation) at pre-defined levels of change in measurement endpoints (i.e., Action Levels).

The low Action Levels are designed to provide an early-warning indication of potential adverse effects to plankton and benthos (i.e., food for fish), fish health, and maintenance of ecological function (including water and sediment quality). They are designed so that changes of sufficient magnitude to trigger a low Action Level are reported, documented, investigated, and ultimately addressed (i.e., mitigation measures or changes to the Mine operation are implemented) before Significance Thresholds would ever be reached. If a low Action Level is reached, then Medium and High Action Levels would be developed to further support adaptive management.

In response to comments made on the 2017 AEMP Annual Report, the Mine committed to updating the low Action Levels for Water Quality in anticipation of comparing the 2018 data to these Action Levels. These updates are described below.

12.2.1.1 Toxicological Impairment – End of Pipe Toxicity

The revised low Action Level for end of pipe toxicity is:

- A persistent sublethal toxic effect is observed on test organisms in end-of-pipe samples.

Persistent is defined as sublethal toxicity observed in the same test organisms in three consecutive end-of-pipe samples. A sublethal toxic effect is defined as an IC25 less than the highest test concentration.

If this low Action Level was reached, then additional investigation may include evaluating the potential extent of sublethal effects in the receiving environment, toxicity identification evaluation and/or toxicity testing at the edge of the mixing zone.

12.2.1.2 Toxicological Impairment – Aquatic Life

Toxicological impairment of aquatic life in the receiving environment will be evaluated using a combination of comparisons of concentrations between the Near-field and reference areas, comparisons to AEMP benchmarks and the normal range, and evaluation of differences temporal trends between reference and exposure areas.

The list of water quality parameters to be assessed for this type of effect is focused on parameters that can affect the suitability of water to support an aquatic ecosystem, namely those parameters that can exert toxicity. These parameters include pH, dissolved oxygen, TSS, TDS (calculated), chloride, fluoride, sulphate, total ammonia, nitrate, nitrite, and metals. A number of parameters were excluded from this list for the following reasons:

- Specific conductivity (field-measured and laboratory-measured) was excluded, because (1) it is not a measure of the concentration of substances in water, and (2) TDS is a more relevant parameter for evaluating effects related to increased dissolved ion concentrations, with extensive toxicological literature to support the assessment.
- Major ions other than those that have water quality guidelines for the protection of aquatic life (i.e., chloride, fluoride, nitrate, nitrite) were excluded, because these parameters are either included in the determination of TDS or are evaluated separately; however, if TDS triggers the low Action Level, then individual ions will be evaluated further.
- Carbonate was excluded because they are not detectable at the pH range encountered in Meliadine Lake.
- Hardness, which is integrated into the calculation of AEMP benchmarks for certain parameters (e.g., copper, lead, nickel), was excluded because it is not a parameter of toxicological concern.
- Total alkalinity and bicarbonate (which is redundant with total alkalinity) were excluded because they are not parameters of toxicological concern
- Nitrate + nitrite were excluded because these ions are evaluated separately as nitrate and nitrite.
- Nutrients that are generally not toxic to aquatic organisms (i.e., phosphorus and some forms of nitrogen) were excluded, but are evaluated under the Nutrient Enrichment hypothesis, with corresponding Action Levels.
- Most dissolved metals were excluded, because water quality guidelines for metals are typically evaluated in terms of the total concentrations, and evaluating total metals is the more conservative approach; dissolved zinc is the exception, because the new CWQG-PAL is for dissolved zinc.
- total cyanide and WAD cyanide, because the biologically important form of cyanide is free cyanide.

The water quality Low Action Level for evaluating toxicological impairment has three conditions:

- concentration in Near-field area is significantly greater compared to the reference areas, and greater than the normal range
- concentration in Near-field area exceeds 75% of the AEMP benchmark
- a divergence of trends in concentration is observed between the Near-field and reference areas

Each condition must be met for the low Action Level to be triggered.

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 1 and 3. In the event that a low Action Level trigger is determined for a parameter with no AEMP benchmark, one of the anticipated response actions will be to develop

a benchmark. However, because parameters with no available water quality guidelines or benchmarks are typically not of toxicological concern, a Low Action Level would only be triggered (and an AEMP benchmark developed as a follow-up action) if (1) the Near-field area concentration was greater than five times the analytical detection limit, and (2) the magnitude of difference relative to the reference area was greater than two-fold. Once the benchmark is developed, the low Action Level can be reassessed for these parameters based on all three criteria.

AEMP benchmarks were selected from site-specific surface water quality objectives (SSWQO) developed specifically for the Mine, federal water quality guidelines for the protection of aquatic life (i.e., CWQG-PAL and Federal Environmental Quality Guidelines [FEQG]), and benchmarks developed by other northern mines for tundra lakes (Table 12.2-1).

Table 12.2-1: AEMP Benchmarks for Evaluating the Potential for Toxicological Impairment of Aquatic Life

Parameter	Unit	SSWQO	CWQG-PAL	FEQG	Other Source	Selected AEMP Benchmark	Source
pH	-	-	6.5 - 9.0	-	-	6.5 to 9.0	CWQG-PAL
Dissolved oxygen	mg/L	-	6.5	-	-	6.5	CWQG-PAL
Total dissolved solids	mg/L	-	-	-	500	500	Alaska DEC 2012
Chloride	mg/L	-	120	-	-	120	CWQG-PAL
Sulphate	mg/L	-	-	-	123[(k)]	123[(k)]	BC ENV 2018
Cyanide (free)	mg/L	-	0.005	-	-	0.005	CWQG-PAL
Fluoride	mg/L	2.8	0.12	-	-	2.8	SSWQO
Nitrate	mg-N/L	-	2.93	-	-	2.93	CWQG-PAL
Nitrite	mg-N/L	-	0.06	-	-	0.06	CWQG-PAL
Total ammonia	mg-N/L	-	1.79[(a)]	-	-	1.79[(a)]	CWQG-PAL
Aluminum	µg/L	-	100[(b)]	-	-	100[(b)]	CWQG-PAL
Arsenic	µg/L	25	5	-	-	25	SSWQO
Barium	µg/L	-	-	-	1000	1000	BC ENV 2018
Boron	µg/L	-	1,500	-	-	1,500	CWQG-PAL
Cadmium	µg/L	-	0.04[(c)]	-	-	0.04[(c)]	CWQG-PAL
Chromium	µg/L	-	1.0[(d)]	-	-	1.0	CWQG-PAL
Cobalt	µg/L	-	-	0.78[(e)]	-	0.78[(e)]	FEQG
Copper	µg/L	-	2[(f)]	-	-	2[(f)]	CWQG-PAL
Iron	µg/L	1,060	300	-	-	1,060	SSWQO
Lead	µg/L	-	1[(g)]	-	-	1[(g)]	CWQG-PAL
Mercury	µg/L	-	0.026	-	-	0.026	CWQG-PAL
Molybdenum	µg/L	-	73	-	-	73	CWQG-PAL
Nickel	µg/L	-	25[(h)]	-	-	25[(h)]	CWQG-PAL
Selenium	µg/L	-	1	-	-	1	CWQG-PAL
Silver	µg/L	-	0.25	-	-	0.25	CWQG-PAL

Table 12.2-1: AEMP Benchmarks for Evaluating the Potential for Toxicological Impairment of Aquatic Life

Parameter	Unit	SSWQO	CWQG-PAL	FEQG	Other Source	Selected AEMP Benchmark	Source
Strontium	µg/L	-	-	-	30,000	30,000	Pacholski 2009
Thallium	µg/L	-	0.8	-	-	0.8	CWQG-PAL
Uranium	µg/L	-	15	-	-	15	CWQG-PAL
Vanadium	µg/L	-	-	120(i)	-	120	FEQG
Dissolved zinc	µg/L	-	5.6	-	-	5.6(j)	CWQG-PAL

(a) Total ammonia guideline is pH and temperature dependent. The guideline shown is based on median baseline pH and a water temperature of 11°C (median in 2018 Near-field area). Median/mean Near-field area pH and temperature will be used to derive the AEMP benchmark for Action Level assessment.

(b) Total aluminum guideline is pH dependent. The guideline shown is based on the median baseline pH (7.63). Median/mean Near-field area pH will be used to derive the AEMP benchmark for Action Level assessment.

(c) The cadmium guideline is hardness dependent and can be calculated using the equation: 10^(0.83*(log[hardness])-2.46). Value shown is based on a median baseline hardness (20.7 mg/L as $CaCO_3$). Median/mean Near-field area hardness will be used to derive the AEMP benchmark for Action Level Assessment.

(d) Guideline is for hexavalent chromium.

(e) The cobalt guideline is hardness dependent and can be calculated using the equation: exp{(0.414[ln(hardness)] – 1.887}. This equation is validated within a range of hardness values between 52 and 396 mg/L. The benchmark value shown in the table is based on a hardness of 52 mg/L as $CaCO_3$, because the median baseline hardness is lower than the validated range (i.e., 20.7 mg/L as $CaCO_3$). For Action Level assessment, the median/mean Near-field area hardness will be used to derive the AEMP benchmark. Source: Environment Canada. 2017. Canadian Environmental Protection Act, 1999, Federal Environmental Quality Guidelines, Cobalt. Environment Canada. May 2017.

(f) The copper guideline is hardness dependent; at hardness less than 82 mg/L as $CaCO_3$, the guideline is 2 µg/L. Median/mean Near-field area hardness will be used to derive the AEMP benchmark for Action Level assessment.

(g) The lead guideline is hardness dependent; at hardness less than or equal to 60 mg/L as $CaCO_3$, the guideline is 1 µg/L. Median/mean Near-field area hardness will be used to derive the AEMP benchmark for Action Level assessment.

(h) The nickel guideline is hardness dependent; at hardness less than or equal to 60 mg/L as $CaCO_3$, the guideline is 25 µg/L. Median/mean Near-field area hardness will be used to derive the AEMP benchmark for Action Level assessment.

(i) Source: Environment and Climate Change Canada (ECCC). 2016. Canadian Environmental Protection Act, 1999, Federal Environmental Quality Guidelines, Vanadium. Environment and Climate Change Canada. May 2016.

(j) The zinc guideline is pH, hardness and DOC dependent. The guideline shown is based on the median baseline field pH (7.63) and DOC (2.28 mg/L), and the lowest hardness in the validated range for the guideline (i.e., 23.4 mg/L as $CaCO_3$) because median baseline hardness was lower (i.e., 20.7 mg/L as $CaCO_3$). For Action Level assessment, the median/mean Near-field area hardness, pH, and DOC will be used to derive the AEMP benchmark.

(k) The sulphate guideline is hardness dependent. The guideline shown is based on the lowest hardness in the validated range for the guideline (i.e., 0 to 30 mg/L as $CaCO_3$) to match median baseline hardness in Meliadine Lake (i.e., 20.7 mg/L as $CaCO_3$). Source: BC ENV 2018.

SSWQO = Site-specific Water Quality Objective; CWQG-PAL = Canadian Water Quality Guideline for the Protection of Aquatic Life; FEQG = Federal Environmental Quality Guideline; AEMP = Aquatic Effects Monitoring Program.

12.2.1.3 Toxicological Impairment – Human Consumption

The revised low Action Level for human consumption of water is as follows, based on combination of comparisons of concentrations between the Near-field and reference areas, comparisons to AEMP benchmarks and the normal range, and evaluation of differences temporal trends between reference and exposure areas:

- concentration in Near-field area is significantly greater compared to the reference areas, and greater than the normal range
- concentration in Near-field area exceeds 75% of the AEMP benchmark of the Canadian drinking water quality guideline or aesthetic objective
- a divergence of trends in concentration is observed between the Near-field and reference areas

Each condition must be met for the low Action Level to be triggered. This evaluation is conducted for the parameters listed in Table 12.2-2, which lists available drinking water guidelines and objectives. If this low Action Level is reached, then it is expected that formal human health and/or ecological risk assessments may be needed to evaluate the safety of water for consumption.

Table 12.2-2: Drinking Water Benchmarks for Evaluating the Potential for Impairment of Water Quality for Human Consumption

Parameter[a]	Unit	Drinking Water Objectives and Guidelines[b]		Selected AEMP Benchmark
		Aesthetic Objectives	Water Quality Guidelines	
pH	-	7.0 to 11	-	7.0 to 11
Total dissolved solids	mg/L	500	-	500
Chloride	mg/L	250	-	250
Cyanide (free)	mg/L	-	0.2	0.2
Fluoride	mg/L	-	1.5	1.5
Sodium	mg/L	200	-	200
Sulphate	mg/L	500	-	500
Nitrate	mg-N/L	-	10	10
Nitrite	mg-N/L	-	1	1
Antimony	µg/L	-	6	6
Arsenic	µg/L	-	10	10
Barium	µg/L	-	1000	1000
Boron	µg/L	-	5000	5000
Cadmium	µg/L	-	5	5
Chromium	µg/L	-	50[c]	50
Copper	µg/L	1,000	-	1,000
Iron	µg/L	300	-	300
Lead	µg/L	-	10	10
Manganese	µg/L	50	-	50
Mercury	µg/L	-	1	1
Selenium	µg/L	-	50	50
Uranium	µg/L	-	20	20
Zinc	µg/L	5,000	-	5,000

(a) Water temperature has an aesthetic objective as per Health Canada (2017) but was excluded from this list.
(b) Source = Health Canada (2017) Canadian Drinking Water Quality Guidelines - Summary Table.
(c) Guideline is for hexavalent chromium.

12.2.1.4 Nutrient Enrichment – Water Quality

Nutrient enrichment in the receiving environment will be evaluated using a combination of comparisons of concentrations between the Near-field and reference areas, comparisons to AEMP benchmarks and the normal range, and evaluation of differences temporal trends between reference and exposure areas.

Water quality parameters to be assessed for this component are TP (i.e., the limiting nutrient in Meliadine Lake) and chlorophyll *a* (i.e., a direct indicator of primary productivity used in trophic status assessment).

The revised low Action Level for this component has three conditions:

- concentration in Near-field area is significantly greater compared to the reference areas, and greater than the normal range
- concentration in Near-field area exceeds 75% of the AEMP benchmark
- a divergence of trends in concentration is observed between the Near-field and reference areas

Each condition must be met for the low Action Level to be reached.

The AEMP benchmarks proposed 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 TP and chlorophyll *a*. For TP, the benchmark is 0.01 mg/L based on CCME (2004) trigger ranges for evaluating trophic status in lakes. For chlorophyll *a*, the benchmark is 4.5 µg/L, based on an evaluation of chlorophyll *a* concentration in relation to trophic status by DDMI (2013), which concluded that based on scientific literature on trophic boundaries for chlorophyll *a*, 4.5 µg/L represents a reasonable and conservative upper boundary for oligotrophic status for northern lakes, although aesthetic qualities are likely to be preserved at chlorophyll *a* concentrations up to 10 µg/L.

12.2.2 Action Level Assessment for the 2018 AEMP Results in Meliadine Lake

This section provides a summary of comparisons of the 2018 AEMP results to Low Action Levels specified above and in Section 8 of the AEMP Design Plan (Golder 2016a). Results of Action Level comparisons are organized in this section according to the two impact hypotheses: toxicological impairment and nutrient enrichment.

12.2.2.1 Toxicological Impairment

The following components of the aquatic environment were evaluated in 2018 to identify toxicological impairment:

- end of pipe toxicity (Section 2.4.2.2)
- water quality in Meliadine Lake (protection of aquatic life and human consumption; Section 6.0)
- benthic invertebrate community (Section 9.0)

Based on the 2018 AEMP results, Low Action Levels for toxicological impairment were not triggered for any components. Additional discussion of each component is provided below.

End of Pipe Toxicity

Persistent sublethal toxicity was not observed in the same test organisms in three consecutive end-of-pipe samples.

Water Quality in Meliadine Lake

The three Low Action Level criteria were not met for toxicologically relevant parameters. Therefore, the Low Action Level for toxicological impairment was not triggered.

All median and mean concentrations in the Near-field area of toxicologically relevant parameters with AEMP Benchmarks were less than 75% of AEMP benchmarks. Therefore, the second condition of the low Action Level was not met for parameters with available benchmarks.

Concentrations of two parameters with no aquatic life benchmarks (total lithium and manganese) in the Near-field area were significantly greater than in the reference areas, and greater than the normal range in 2018. The Near-field area concentration of lithium (1.5 µg/L) was less than five times the analytical DL (0.5 µg/L), which is within the range of analytical uncertainty. Therefore lithium was not considered further in the Action Level assessment. Total manganese concentration in the Near-field area (6 µg/L) was greater than five times the DL (0.05 µg/L) and the magnitude of difference relative to the reference area for manganese was slightly greater than two-fold (Near-field area: 6 µg/L; pooled reference areas: 2.7 µg/L). Because of the small difference between the Near-field and reference area concentrations, and the uncertainty of whether it represents a current effect of the Mine discharge or a persisting effect from the pre-construction period (see below), it is recommended that observed difference for this parameter in 2018 be confirmed during the 2019 AEMP before consideration in the Action Level Assessment.

The Mine has only been discharging for one year, and therefore a temporal trend due to mine effluent discharge cannot be determined. As demonstrated in Appendix 6B, specific conductivity and concentrations of several major ions have been increasing the Near-field area since 2015 (i.e., beginning prior to Mine discharge). The increasing ion concentrations may be related to the input of greywater and treated sewage to Meliadine Lake west of the Near-field area from 2007 to 2017 (see Section 2.6). Because of the monotonic increase observed in the Near-field area since 2015, data post-2015 were not included in the Normal Range calculations, and therefore, it is expected the Near-field area concentrations would be higher than Normal Range for these parameters. With the diversion of STP discharge to CP1, and subsequent treatment in the EWTP prior to discharge through the CP1 diffuser, it is anticipated that, if treated sewage was the source of the increased ions in the Near-field area, then the major ions concentrations will either stabilize or decline in future years. The 2019 AEMP will investigate this possibility.

Finally, as stated above, there is only one year of Mine discharge from CP1 diffuser to the Near-field area, so divergence of trends compared to the reference areas cannot be assessed. As stated in Appendix 6B, the increase in specific conductivity and major ion concentrations in the Near-field and possibly Mid-field area over the past three years has not been observed in the reference areas. Future AEMPs will evaluate whether Near-field area concentrations continue to increase relative to reference areas.

Benthic Invertebrate Community

As indicated in Section 9.6, the Low Action Level for toxicological impairment was not triggered by the 2018 AEMP benthic invertebrate results.

No decreases were observed in 2018 beyond the normal range in the Near-field area in density, richness or densities of dominant taxa. Some divergence of trends in density, richness and dominant taxa were observed compared to the reference area; however, differences in trends observed between the Near-field area and reference areas more likely reflect differences in habitat variation (primarily particle size) as discussed further in Section 9.4.3. That is, these differences among sampling areas were likely due to pre-discharge differences in sediment composition (i.e., not Mine-related) that are accounted for by the normal ranges developed for the AEMP.

12.2.2.2 Nutrient Enrichment

The following components of the aquatic environment were evaluated in 2018 to identify nutrient enrichment:

- water quality in Meliadine Lake (nutrients from Section 6.0 and chlorophyll *a* from Section 11.0)
- benthic invertebrate community (Section 9.0)

Based on the 2018 AEMP results, Low Action Levels for nutrient enrichment were not triggered for any components. Additional discussion of each component is provided below.

Water Quality in Meliadine Lake

The three Low Action Level criteria were not met for TP and chlorophyll *a*. Therefore, the Low Action Level for nutrient enrichment was not triggered.

Median chlorophyll *a* concentration in the Near-field area was higher than the normal range and significantly higher compared to the reference areas. Median TP concentration in the Near-field area was within the normal range and significantly higher only compared to the Reference Area 2. There is evidence of a gradient in primary productivity in Meliadine Lake, with the highest chlorophyll *a* level in the Near-field area. In addition, TSI based on chlorophyll *a* concentration was highest in the Near-field area, followed by the Mid-field area, and lowest in the three reference areas. The pattern in chlorophyll *a* concentrations among sampling areas in 2018 was similar to that observed in previous years.

Mean TP (based on depth-integrated samples) and chlorophyll *a* concentrations were 0.0049 mg/L and 1.91 µg/L in the Near-field area, respectively. These mean values are below the Action Level criterion of 75% of the applicable benchmark values (i.e., TP: 0.0075 mg/L; chlorophyll *a*: 3.38 µg/L).

Phytoplankton biomass and chlorophyll *a* in the Near-field area in 2018 were within the range of results observed in previous years, suggesting that potential nutrient enrichment may have began prior to initiation of Mine construction (i.e., from the exploration camp STP discharge). As stated above, it is anticipated that if treated sewage from the exploration camp was the source of nutrients to the Near-field area, then the diversion of STP discharge to CP1 and subsequent treatment in the EWTP prior to discharge through the CP1 diffuser may either stabilize or decline nutrient concentrations and effects on phytoplankton biomass and chlorophyll *a* in future years. In addition, the Mine has only been discharging for one year, and therefore a temporal trend due to Mine effluent discharge cannot be determined. Future AEMPs will evaluate whether Near-field area nutrient and chlorophyll *a* concentrations continue to increase relative to reference areas.

Benthic Invertebrate Community

As indicated in Section 9.6, the Low Action Level for nutrient enrichment was not triggered by the 2018 AEMP benthic invertebrate results.

No increases were observed in 2018 beyond the normal range in the Near-field area in density, richness or densities of dominant taxa. Some divergence of trends in density, richness and dominant taxa were observed compared to the reference area; however, differences in trends observed between the Near-field area and Reference areas may be influenced by differences in habitat variation (primarily particle size) as discussed further in Section 9.4.3. That is, these results among sampling areas were likely due to pre-discharge differences in sediment composition (i.e., not Mine-related) that are accounted for by the normal ranges developed for the AEMP.

12.2.3 Integrated Summary

Volume 7 of the FEIS for the Meliadine Gold Project (Mine) predicted inputs of nutrients, metals, and major ions to Meliadine and Peninsula Lakes. It was predicted that these inputs would result in minor changes to water and sediment quality in Meliadine Lake, and that any corresponding effects on fish and fish habitat would be negligible (Agnico Eagle 2014). The component sections of the annual AEMP report are designed to characterize changes in measures related to contaminant and nutrient input, and related responses in phytoplankton, benthos, and fish. The purpose of the integrated summary is to synthesize the results for each component to evaluate the overall direction of change to the aquatic ecosystem. The objective of the synthesis is to:

- integrate AEMP findings from all components
- determine the strength of support for each impact hypothesis and effects on the ecosystem
- support decision making for management responses

The integrated summary is part of the overall objective of the AEMP to assess potential mine-related effects on the aquatic ecosystem and to meet regulatory requirements outlined in the Type A Water License (2AM-MEL1631) and MDMER, while also meeting commitments made during the environmental permitting process. The specific objectives of the AEMP are to:

- determine the short- and long-term effects of the Project on the aquatic receiving environment
- evaluate the accuracy of predictions made in the FEIS, including the final significance statements regarding impact to the aquatic ecosystem
- assess the efficacy of planned mitigation incorporated into the Project design
- collect data required to identify the need for potential additional mitigation of Project effects within a management response framework

The 2018 AEMP program consisted of water quality, sediment quality, benthic invertebrate community, and a phytoplankton targeted study in Meliadine Lake, and water quality monitoring in selected peninsula lakes. The 2018 fish health survey was implemented to meet EEM sampling requirements and was not intended to meet the specific requirements of the Mine's AEMP fish health component (Section 10.1). However, the 2018 fish health results are discussed as part of this integrated summary to evaluate potential mine-related effects on biological components, with the understanding that the 2018 fish program was not designed to answer the key questions from the AEMP. The next AEMP fish health and fish tissue chemistry program is scheduled for 2021.

The results of the 2018 AEMP in Meliadine Lake and the Peninsula Lakes (water quality and phytoplankton only) were evaluated in the context of the key questions proposed for each core component in the AEMP Design Plan (Golder 2016a). The key questions and a summary of the results for each component are presented in Table 12.2-3 and discussed below. The results of the effluent chemistry and toxicity testing program are also discussed in the context of the results of the AEMP components, where relevant.

Peninsula Lake Summary and Conclusions

Changes in some water quality parameters over time were observed in Lakes A8, B7, and D7. However, all parameter concentrations were less than their respective water quality guidelines, were within normal ranges, and aligned with FEIS predictions. The water quality dataset for peninsula lakes for the pre-construction and construction phase was limited, and potential factors accounting for temporal trends were not identified in

this report. A phytoplankton targeted study was also conducted in Peninsula Lakes in 2018 with collection of chlorophyll *a* data. No findings of significance were identified as part of the 2018 phytoplankton study of the Peninsula Lakes.

Meliadine Lake Summary

Potential mine-related changes in water quality in Meliadine Lake were observed in the Near-field area in 2018 for specific conductivity, TDS, hardness, several major ions, and a number of total metals; concentrations exceeded the upper bound of their respective normal range and increased in the Near-field and relative to reference areas over time. Water Licence exceedances in the effluent were observed for TDS and total aluminum. However, the exceedance of total aluminum WL limit occurred only in one sample, with other effluent samples noticeably lower in concentration, suggesting that the measured value may be anomalous. In addition, although total aluminum concentrations were higher in the Near-field area, there was no indication of declining concentrations with distance from the diffuser. Concentrations of a few metals in bottom sediments exceeded the upper bound of their respective normal range, but exceedances were marginal and sediment metal concentrations in the Near-field area did not increase relative to the reference areas over time. Concentrations of sediment quality parameters were less than their respective guidelines, with the exception of sediment arsenic, copper, and chromium. However, arsenic, copper, and chromium concentrations in Near-field sediments were within the upper bound of their respective normal ranges. Overall, water and sediment quality in 2018 was generally consistent with FEIS predictions.

The 2018 AEMP results indicated that the benthic community was not measurably affected by potential Mine-related changes in water or sediment quality in Meliadine Lake. Lower density and BCI values were observed in the Near-field area (relative to pooled reference areas), but values were within the normal range. Therefore, differences among these areas may be attributed to pre-discharge differences in sediment composition and natural spatial variation. Effects on fish health were not observed in 2018. There was a statistically significant difference female condition in the Near-field area relative to Reference Area 1. However, the magnitude of difference on female condition did not exceed the 10% critical effect size and a similar difference was not observed in supporting energy storage endpoints. The comprehensive AEMP fish health program was not conducted in 2018 and so an evaluation of fish tissue was not conducted.

Low Action Levels for toxicological impairment or nutrient enrichment were not triggered by the 2018 AEMP results.

Meliadine Lake Conclusions

The results of the water quality monitoring program suggest a Mine-related effect on water quality in the Near-field and Mid-field areas. Baseline (pre-2015) and pre-construction and construction phase (2015 to 2017) water quality data were evaluated as part of the normal range screening (Appendix 6B). The assessment indicated a change in major ion concentrations in the Near-field area, and a potential change in the Mid-field area in the 2015 to 2017 data, relative to pre-2015 data collected periodically between 1995 and 2013 in Meliadine Lake.
This evaluation, in combination with the qualitative temporal analysis conducted as part of the 2018 AEMP water quality program (Section 6.4.5), suggest a potential pre-construction effect on water quality, as well as a potential effect on water quality for selected parameters during treated mine effluent discharge in 2018. However, the changes in water quality in Meliadine Lake were within the conditions predicted by FEIS. Mine-related effects on sediment quality were not observed in 2018.

Observed changes in key water quality parameters in 2018 did not translate into effects in the biological components in 2018, with respect to major ions and total metals. However, the nutrient enrichment effect observed in prior AEMP monitoring years continued to be observed in some biological components in 2018. A phytoplankton targeted study was conducted as part of the 2018 AEMP monitoring program; this program is not a formal component under the AEMP Design Plan (Golder 2016a). Higher chlorophyll *a* concentrations and phytoplankton biomass, and unique phytoplankton community structure were observed in the Near-field area (relative to Mid-field and reference areas), indicating potential nutrient enrichment originating from the exploration camp STP discharge. Chlorophyll *a* and phytoplankton biomass were within the ranges observed during the pre-construction phase of the Mine, suggesting that nutrient enrichment may have begun prior to the discharge of treated mine effluent from MEL-14.

Mine-related effects on the benthic invertebrate community were not observed in 2018. However in 2016, mean density fell outside of the upper bound of the normal range in the Near-field area, potentially due to the influence of exploration camp STP discharge. Total phosphorus loadings approximately doubled in treated sewage effluent in 2016 (corresponding to an increase in Mine population), and held steady in 2017, prior to declining in 2018 (Section 2.6.2). TP loadings did not correspond to observed spatial or temporal TP water quality trends in the Near-field area but median TP concentrations were slightly elevated in 2016 and 2017, relative to 2015 and 2018. A statistically significant difference in female condition factor was observed during the fish health program, which also aligns with potential nutrient enrichment in the Near-field area, however, the magnitude of the difference was within the CES.

Overall, nutrient enrichment in Meliadine Lake may have begun in 2016 with expansion of the Mine population and increased STP nutrient loading into the lake. Effects observed in phytoplankton, benthos and fish biological components are consistent with mild nutrient enrichment. Although effects in benthos were not observed in 2018, effects on phytoplankton were evident in the Near-field area despite a reduction in sewage TP loadings; TP loadings in 2018 were lower relative to 2016/2017 loadings and relative to baseline (i.e., 2013 and 2015). Additionally in 2018, a stimulatory effect on freshwater algae growth (*Pseudokirchneriella subcapitata*) was observed during sublethal toxicity testing with effluent; this further supports the potential for nutrient enrichment in Meliadine Lake as a result of Mine effluent discharge. Lastly, increased major ion and some total metal concentrations in lake water in the Near-field area were observed, and are indicative of a Mine-related effect.

Similar to nutrient enrichment, major ion concentrations and increases in selected total metal concentrations were observed in the Near-field area during pre-construction and continued to increase during the construction phase. It is likely that the exploration camp STP discharge contributed to increases in these parameters. However, concentrations are within the range of FEIS predictions and have not translated into increased concentrations in the sediment, or effects on biological components. Future AEMP monitoring programs will continue to monitor for spatial and temporal trends.

Table 12.2-3: A Summary of the 2018 AEMP Results by Component in the Context of the Key Questions

Component	Key Question	Summary
Peninsula Lakes		
Water Quality	Are concentrations of key parameters in peninsula lakes consistent with FEIS predictions and less than AEMP benchmarks?	• Concentrations of key parameters were below AEMP benchmarks • Water quality in Peninsula Lakes was outside the normal range for selected total metals • Water quality in the Peninsula Lakes was generally consistent with FEIS predictions
	Are concentrations in peninsula lakes increasing over time relative to baseline or reference conditions?	• Increasing concentrations over time for selected parameters were identified in Lakes A8, B7, and D7
Meliadine Lake		
Water Quality	Are concentrations of key parameters in effluent less than Water Licence Limits?	• Key parameter concentrations were below Water Licence Limits, except for total dissolved solids (one sample) and total aluminum (one sample) • Effluent was not acutely toxic to Rainbow Trout
	Are concentrations of key parameters in Meliadine Lake consistent with FEIS predictions and less than AEMP Action Levels?	• Water quality in the Near-field area was generally consistent with FEIS predictions • Concentrations of key parameters in the Near-field area did not trigger the Low Action Level
	Are concentrations in the exposure area increasing over time relative to the reference areas?	• Increasing concentrations over time in the Near-field area in 2018 and relative to temporal variation in reference areas were identified for specific conductivity, hardness, TDS, major ions, organics, and selected total metals. • Observed changes suggest a potential mine-related effect on water quality in the Near-field and Mid-field areas but conditions are within the range predicted by FEIS.
Sediment Quality	Are concentrations of sediment quality parameters in Meliadine Lake greater than benchmarks?	• Concentrations of arsenic, copper, and chromium exceeded Interim Sediment Quality Guidelines • Normal range exceedances occurred in the Near-field area for aluminum, beryllium, cadmium, nickel, silver, thallium, and zinc, and in the Mid-field area for copper.
	Are concentrations in the exposure area increasing over time relative to the reference areas?	• Increasing concentrations over time in the Near-field area in 2018 were identified for select metals but these metals either did not or only slightly exceeded their normal ranges.
Benthic Invertebrate Community	Is the benthic invertebrate community affected by potential Mine-related changes in water and sediment quality in Meliadine Lake?	• Benthic invertebrate communities in the Near-field area had significantly lower density and BCI values (relative to Reference area 3 median) compared to pooled reference areas. However, all mean 2018 AEMP variables for both exposure and reference areas sampled in Meliadine Lake were within their respective normal ranges in the Near-field area • Mine-related effects on the benthic invertebrate community were not observed in 2018

Table 12.2-3: A Summary of the 2018 AEMP Results by Component in the Context of the Key Questions

Component	Key Question	Summary
Fish Health	Is fish health affected by changes in water and sediment quality in Meliadine Lake?[(a)]	• An effect was observed in female condition, which was 6% greater in the Near-field area than Reference area 1. The magnitude of effect was below the 10% critical effect size, and a similar difference was not observed in supporting energy storage endpoints
Fish Tissue Chemistry	Are tissue metal concentrations in fish from Meliadine Lake increasing due to mining activities?	Not assessed as part of the 2018 AEMP and not required under the 2018 EEM program.
	Are tissue metal concentrations in fish from Meliadine Lake increasing relative to reference areas or baseline?	

(a) Fish health was not included as a component of the 2018 AEMP program but is included in the integrated summary to evaluate potential mine-related effects on the biological components.

AEMP = Aquatic Effects Monitoring Program; EEM = Environmental Effects Monitoring; BCI = Bray-Curtis Index; TDS = total dissolved solids; FEIS = Final Environmental Impact Statement.

12.3 Future Monitoring Timelines

12.3.1 EEM

The Cycle 2 EEM Interpretative Report is required to be submitted to the Minister of Environment no later than 36 months after the day on which the previous interpretative report was required to be submitted. As the previous interpretative report was due on June 21, 2019, the next interpretative report is due on or before June 21, 2022. The timelines for the next EEM cycle are provided in Table 12.3-1.

Table 12.3-1: Timelines for the Cycle 2 EEM Study

Item	Timeline Description	Tentative Execution/ Submission Date
Cycle 2 EEM Study Design	At least six months prior to the biological monitoring field program	February 2021
Field Program	At least six months after submission of Study Design	August 2021
Cycle 2 EEM Interpretative Report	Not later than 36 months after the day on which the previous interpretative report was required to be submitted	June 21, 2022

12.3.2 AEMP

The AEMP is an annual program required by the Water Licence, and therefore, the AEMP will be conducted in 2019. As per the AEMP Design Plan, the water quality components in Meliadine Lake and the Peninsula Lakes are conducted annually. Water quality sampling will be conducted in the Near-field and Mid-field areas once in the under-ice season and monthly in the open-water season during mine effluent discharge; monthly in the open-water season in Reference Area 1 during mine effluent discharge; and once in Reference Areas 2 and 3 in the open-water season. Biological monitoring studies of BIC (with supporting sediment quality), fish health, and fish tissue chemistry will be conducted concurrently with the next EEM cycle, which is planned for August 2021.

12.4 References

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13.0 CLOSURE

The reader is referred to the Study Limitations section, which precedes the text and forms an integral part of this report.

GLOSSARY

Term	Definition
Abundance	The number or quantity of cells or organisms in a particular area or volume of sample.
Alkalinity	A measure of the acid-neutralizing capacity carbonates, bicarbonates and hydroxides present in water. Alkalinity is typically reported in units of mg/L calcium carbonate ($CaCO_3$).
Aquatic Effects Monitoring Program	A monitoring program designed to evaluate the effect of mining activities and mitigation on the aquatic environment.
Benthic Invertebrates	Aquatic animals without backbones (e.g., insects, worms, snails, clams, crustaceans) that live on/in the bottom substrate of a waterbody.
Biomass	The mass of all the cells or organisms in a particular area or volume of sample.
Bray-Curtis index	An index used to summarize the overall difference in community structure between reference and exposure areas.
Canadian Water Quality Guidelines for the Protection of Aquatic Life	Guidelines established by the Canadian Council of Ministers of the Environment to protect aquatic life (i.e., fish, aquatic plants, and benthic invertebrates) in Canadian surface waters.
Chlorophyll *a*	A photosynthetic pigment found in plants, responsible for the conversion of inorganic carbon and water into organic carbon. The concentration of chlorophyll *a* is often used as an indicator of algal biomass.
Community	The groups of organisms living together in the same area, usually interacting or depending on each other for existence.
Community composition	The species present and their relative proportions in an assemblage of organisms.
Condition	A measure of the energetic status of fish.
Dominance	The predominance of one or more species in a community.
Drinking Water Quality Guidelines	Health Canada guidelines used to evaluate the suitability of water for human consumption.
Effluent	The out-flow water or wastewater from a water processing system or device, or the final water which is discharged from a treatment plant. For purposes of this document, effluent is the water that is discharged from the water treatment plant to Meliadine Lake.
Ekman grab	A sampling device used to collect a discrete sample of bottom sediment.
Environmental effects monitoring	A science-based performance measurement tool used to evaluate the adequacy of effluent regulation in protecting fish, fish habitats and the usability of fisheries resources
Euphotic zone	The extent of the water column that is exposed to sufficient sunlight for photosynthesis to occur (typically to a depth in the water column where 1% of the irradiance is measured, or two times the Secchi depth).
Exposure area	An area that receives direct discharge from mining activities.
Fecundity	The number of eggs ripening between current and next spawing period in a female (Bagenal and Tesch, 1978).
Homogeneity of variance	Statistical term for the assumption that the variance within each of the groupings/populations is equal.
Inhibition concentration at 25%	The concentration that results in a 25% reduction of a non-lethal endpoint, such as reproduction or growth, in a given time period.
in situ	Refers to measurements or data recorded in the field, at the sampling site.
Interim Sediment Quality Guidelines	In reference to the Canadian sediment quality guidelines (CCME 2001), the concentration above which adverse effects may occur, and below which they are not expected to occur.

Term	Definition
Kemmerer	A plastic or Teflon water sampling device that is opened, lowered into the water to the desired sample collection depth; a weighted messenger device is used to close the Kemmerer and sample water from the desired depth.
Mean	Arithmetic average value.
Metalloid	A class of chemical elements intermediate in properties between metals and non-metals; e.g., arsenic and boron.
Median lethal concentration	The concentration that results in death of 50% of the test population
Metals	A class of chemical elements that are good conductors of electricity and heat and have the capacity to form positive ions in solution; e.g., aluminum, copper, iron, and zinc.
Normal Range	An estimate of natural variability.
Nutrients	Substances (elements or compounds) such as nitrogen or phosphorus, which are necessary for the growth and development of plants and animals.
Nutrient Enrichment	The type of effect resulting from an increase in the nutrients to an ecosystem, which may impact primary productivity.
Oligotrophic	Trophic state classification for lakes characterized by low concentration of nutrients and low organic productivity. OligotrophicTrophic state classification for lakes characterized by low concentration of nutrients and low organic productivity.
Otolith	A calcified structure that can be used to estimate fish age.
P–value	Statistical value used to determine the significance of a relationship or difference, e.g., $P < 0.1$.
Parameter	A particular physical, chemical, or biological property that is being measured.
pH	The negative logarithm of the concentration of the hydronium ion (H^+). The pH is a measure of the acidity or alkalinity of an aqueous solution, expressed on a scale from 0 to 14, where 7 is neutral, values below 7 are acidic, and values over 7 are alkaline.
Phytoplankton	Small, free-floating algae that are suspended in the water column.
Probable Effects Level (PEL)	Canadian sediment quality guideline for the protection of freshwater quality life (CCME 2001), representing the concentration above which adverse effects may but will not always occur.
R^2	A coefficient of determination, a statistical measure of how well a regression line approximates the real data points.
Reference area	An area that is reasonably similar in terms of monitored components and features to the exposure area, though not necessarily identical, but has no potential to be affected by the mine.
Richness	The number of different taxonomic groups present in a given area or sample volume.
Secchi Depth	A parameter used to determine the clarity of surface waters. The measurement is made with a Secchi disk, a black and white disk that is lowered into the water and the depth is recorded at which it is no longer visible. Higher Secchi depth readings indicate clearer water that allows sunlight to penetrate to a greater depth. Lower readings indicate turbid water that can reduce the penetration of sunlight. Limited light penetration can be a factor in diminished aquatic plant growth beneath the surface, thus reducing the biological re-aeration at greater depths.
Sediment	Solid material that is transported by, suspended in, or deposited from water. It originates mostly from disintegrated rocks; it also includes chemical and biochemical precipitates and decomposed organic material.
Standard deviation (SD)	A measure of the variability or spread of the measurements about the mean. It is calculated as the positive square root of the variance.
Simpson's Diversity Index	A measure of the number of taxonomic groups or species present within an area of habitat or in a sample, as well as the abundance of each of those groups. Index values range from 0 to 1; the greater the diversity, the greater the index value.

Term	Definition
Standard error (SE)	The standard deviation (positive square-root of the variation) of the errors associated with a series of measurements.
Simpson's Evenness Index	A measure of how evenly the total invertebrate density is distributed among the taxa in an area or sample. Index values range from 0 to 1; higher numbers indicate a greater equality among all taxa present in a sample and low values represent low evenness (i.e., a high degree of dominance by one or a few organisms).
Specific conductivity	A temperature-corrected measure of a water sample's ability to conduct electricity; measurements are corrected to 25°C. Waters with higher concentrations of dissolved ions conduct electricity more efficiently than waters with low ionic concentrations.
Taxa	A group of organisms of any taxonomic rank (e.g., family, genus, species).
Total dissolved solids	Organic and inorganic substances that are dissolved in water and will pass through a 0.45 micrometre filter.
Total Kjeldahl nitrogen	A measure of ammonia and organic nitrogen. It is used as an indicator of biologically available nitrogen.
Total suspended solids	A measurement of the concentration of particulate matter found in water.
Transformation	The process of converting data through replacement of a variable by a function of that variable.
Variable	A characteristic, number or quantity whose associated value may change or be studied.
Water Column	The water in any waterbody from the surface down to the substrate.
Young-of-the-year	Young fish produced in the current reproductive year.
Zooplankton	Small, sometimes microscopic animals that live suspended in the water column.



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APPENDIX 2A

Daily Discharge Volume from MEL-14 into Meliadine Lake, 2018

Table 1: Daily Discharge Volume from MEL-14 into Meliadine Lake, 2018

Date	Total Daily Volume (m^3)	Total Monthly Volume (m^3)
21-Jun-18	8,000	134,272
22-Jun-18	13,333	
23-Jun-18	12,167	
24-Jun-18	14,420	
25-Jun-18	13,480	
26-Jun-18	15,091	
27-Jun-18	14,366	
28-Jun-18	15,635	
29-Jun-18	12,669	
30-Jun-18	15,111	
Jul-18	not available[(a)]	352,551
01-Aug-18	15,662	153,066
02-Aug-18	14,990	
03-Aug-18	12,910	
04-Aug-18	15,043	
05-Aug-18	14,846	
06-Aug-18	12,876	
07-Aug-18	8,162	
08-Aug-18	0	
09-Aug-18	993	
10-Aug-18	4,270	
11-Aug-18	4,603	
12-Aug-18	2,641	
13-Aug-18	4,302	
14-Aug-18	2,514	
15-Aug-18	2,976	
16-Aug-18	825	
17-Aug-18	7,206	
18-Aug-18	7,070	
19-Aug-18	3,634	
20-Aug-18	6,842	
21-Aug-18	4,007	
22-Aug-18	3,583	
23-Aug-18	1,852	
24-Aug-18	580	
25-Aug-18	439	
26-Aug-18	103	
27-Aug-18	0	
28-Aug-18	0[(b)]	
29-Aug-18	0	
30-Aug-18	0	
31-Aug-18	137	
01-Sep-18	440	2,632
02-Sep-18	1,660	
03-Sep-18	532	
04-Sep-18	0	
05-Sep-18	0	
	Total Annual Volume	**642,521**

Notes:

a) Due to a malfunctioning flowmeter, accurate daily discharge volumes are not available for July.

b) Reverse osmosis system inoperative for approximately 14 hours.

APPENDIX 2B

Effluent Quality Data for MEL-14, 2018

Table 1: Effluent Quality Data for MEL-14, 2018

Parameter	Unit	MDMER	WL	Sampling Date (dd-mm-yyyy)										Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limit	
				01-07-2018	10-07-2018	15-07-2018	23-07-2018	29-07-2018	05-08-2018	13-08-2018	19-08-2018	26-08-2018	03-09-2018								MDMER	WL
Field Measured																						
pH	-	-	6.0 - 9.5	7.4	7.9	-	7.2	8.1	7.8	7.2	7.8	7.5	7.0	7.5	7.5	7.0	8.1	0.35	0	10	-	-
Specific conductivity	µS/cm	-	-	1,510	1,489	1,654	1,605	1,420	1,734	1,925	2,210	1,527	1,998	1,646	1,702	1,420	2,210	246	0	11	-	-
Temperature	°C	-	-	10	14	19	18	15	12	9.2	8.8	14	10	12	12	4.8	19	4.2	0	11	-	-
Conventional Parameters																						
pH	-	-	-	7.1	7.5	7.3	7.3	7.0	7.3	7.4	7.2	6.8	7.1	7.3	7.2	6.8	7.6	0.23	0	11	-	-
Specific conductivity	µS/cm	-	-	1,600	1,700	1,700	1,800	1,900	1,900	2,100	2,300	1,500	2,400	1,800	1,855	1,500	2,400	305	0	11	-	-
Hardness, as $CaCO_3$	mg/L	-	-	398	416	419	462	470	504	478	565	59	510	462	423	59	565	133	0	11	-	-
Total alkalinity, as $CaCO_3$	mg/L	-	-	34	47	42	39	27	32	33	37	<0.1	15	34	32	<0.1	51	14	1	11	-	-
Total dissolved solids	mg/L	-	1,400	930	1,030	1,020	1,070	1,180	1,144	1,260	**1,430**[(W)]	870	1,360	1,144	1,136	870	**1,430**[(W)]	173	0	11	-	9.0
Total suspended solids	mg/L	30	30	10	5.0	9.0	21	8.0	8.0	10	11	<1.0	14	9.0	9.2	<1.0	21	5.3	1	11	-	-
Total organic carbon	mg/L	-	-	5.9	6.4	6.7	13	8.9	8.4	9.1	12	<0.5	9.1	8.4	8.0	<0.5	13	3.4	1	11	-	-
Dissolved organic carbon	mg/L	-	-	4.8	5.7	5.6	7.4	7.3	7.3	8.9	11	<0.5	7.0	7.3	6.6	<0.5	11	2.7	1	11	-	-
Turbidity	NTU	-	-	0.70	0.30	0.70	1.6	0.90	0.30	0.50	1.0	<0.1	0.40	0.70	0.81	<0.1	2.5	0.70	1	11	-	-
Major Ions																						
Bicarbonate, as $CaCO_3$	mg/L	-	-	34	47	42	38	27	32	33	37	6.2	15	34	33	6.2	51	13	0	11	-	-
Calcium	mg/L	-	-	125	129	130	145	144	156	147	173	17	156	144	131	17	173	41	0	11	-	-
Carbonate, as $CaCO_3$	mg/L	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	11	11	-	-
Chloride	mg/L	-	-	400	420	440	400	500	530	590	660	400	660	440	482	300	660	117	0	11	-	-
Cyanide	mg/L	2.0	1.0	<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	-	11	11	-	-
Magnesium	mg/L	-	-	21	23	23	24	27	28	27	32	4.0	29	24	23	4.0	32	7.4	0	11	-	-
Potassium	mg/L	-	-	11	12	12	14	14	15	14	17	14	17	14	14	10	17	2.2	0	11	-	-
Reactive silica, as SiO2	mg/L	-	-	0.28	0.071	0.21	0.21	0.45	0.58	0.96	1.3	0.078	1.2	0.45	0.57	0.071	1.3	0.45	0	11	-	-
Sodium	mg/L	-	-	101	110	117	124	136	144	144	165	236	189	136	142	94	236	42	0	11	-	-
Sulphate	mg/L	-	-	49	51	51	43	48	53	54	60	7.2	53	51	46	7.2	60	14	0	11	-	-
Nutrients																						
Nitrate	mg-N/L	-	-	5.5	5.3	5.0	4.5	3.7	3.0	3.2	3.7	15	5.7	5.0	5.5	3.0	15	3.4	0	11	-	-
Nitrite	mg-N/L	-	-	0.092	0.12	0.18	0.30	0.22	0.13	0.24	0.36	0.19	0.33	0.19	0.21	0.092	0.36	0.093	0	11	-	-
Nitrate + nitrite	mg-N/L	-	-	5.6	5.4	5.2	4.8	3.9	3.1	3.4	4.1	16	6.1	5.2	5.7	3.1	16	3.4	0	11	-	-
Total ammonia	mg-N/L	-	18	2.6	2.2	1.8	0.47	0.095	0.30	0.88	0.80	4.1	0.91	0.91	1.6	0.095	4.1	1.3	0	11	-	-
Total Kjeldahl nitrogen	mg-N/L	-	-	2.8	3.2	2.1	1.2	1.2	0.88	1.3	1.4	3.6	1.3	1.4	2.0	0.88	3.6	1.0	0	11	-	-
Total nitrogen (calculated)	mg-N/L	-	-	8.4	8.6	7.3	6.0	5.1	4.0	4.7	5.5	19	7.4	7.3	7.7	4.0	19	4.1	0	11	-	-
Total phosphorus	mg-P/L	-	4.0	0.034	0.022	0.032	0.099	0.037	<0.02	<0.02	0.037	0.021	0.023	0.032	0.038	<0.02	0.099	0.030	2	11	-	-
Orthophosphate	mg-P/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	0.068	-	10	11	-	-
General Organics																						
Total oil and grease	mg/L	-	-	1.3	<0.5	1.0	1.8	<0.5	<0.5	1.2	<0.5	-	-	1.0	-	<0.5	1.8	-	4	8	-	-

Table 1: Effluent Quality Data for MEL-14, 2018

Parameter	Unit	MDMER	WL	Sampling Date (dd-mm-yyyy)										Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limit	
				01-07-2018	10-07-2018	15-07-2018	23-07-2018	29-07-2018	05-08-2018	13-08-2018	19-08-2018	26-08-2018	03-09-2018								MDMER	WL
Total Metals																						
Aluminum	µg/L	-	3,000	1,220	518	1,230	**4,390**[(W)]	811	784	705	1,030	5.0	1,320	811	1,104	5.0	**4,390**[(W)]	1,171	0	11	-	9.0
Antimony	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<5,000	<0.5	<0.5	<5.0	<0.5	<0.5	-	<0.5	<5,000	-	11	11	-	-
Arsenic	µg/L	1,000	600	1.1	1.2	1.3	1.8	1.9	2.1	2.2	3.0	0.28	2.4	1.9	1.7	0.28	3.0	0.73	0	11	-	-
Barium	µg/L	-	-	98	100	99	83	123	124	133	160	4.3	150	100	107	4.3	160	42	0	11	-	-
Beryllium	µg/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	-	11	11	-	-
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	-	-	-	1	1	-	-
Boron	µg/L	-	-	100	115	157	94	135	154	191	190	770	325	154	212	94	770	196	0	11	-	-
Cadmium	µg/L	-	-	0.024	0.018	0.015	0.020	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	0.015	-	<0.01	<0.1	-	6	11	-	-
Chromium	µg/L	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	11	11	-	-
Cobalt	µg/L	-	-	-	-	-	-	-	-	-	-	-	0.66	0.66	0.66	-	-	-	0	1	-	-
Copper	µg/L	600	400	1.3	1.4	1.3	2.1	1.0	1.1	8.5	0.99	<0.5	0.62	1.3	1.9	<0.5	8.5	2.3	1	11	-	-
Iron	µg/L	-	-	118	98	90	293	83	79	134	260	<10	153	118	153	<10	374	110	1	11	-	-
Lead	µg/L	400	400	0.33	<0.2	<0.2	<0.2	<0.2	<0.2	0.22	<0.2	<0.2	<0.2	<0.2	-	<0.2	0.33	-	8	11	-	-
Lithium	µg/L	-	-	113	117	118	92	116	144	138	159	133	157	118	127	92	159	21	0	11	-	-
Manganese	µg/L	-	-	309	23	61	190	136	237	381	406	2.4	253	237	213	2.4	406	143	0	11	-	-
Mercury	µg/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	0.010	-	10	11	-	-
Molybdenum	µg/L	-	-	<1.0	<1.0	<1.0	<1.0	1.4	1.8	1.8	2.2	<1.0	1.4	<1.0	-	<1.0	2.2	-	6	11	-	-
Nickel	µg/L	1,000	1,000	2.5	2.5	2.2	2.5	2.3	2.8	3.0	3.4	<1.0	2.7	2.5	2.5	<1.0	3.4	0.75	1	11	-	-
Selenium	µg/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	-	11	11	-	-
Silicon	µg/L	-	-	-	-	-	-	-	-	-	-	-	650	650	650	-	-	-	0	1	-	-
Silver	µg/L	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	-	11	11	-	-
Strontium	µg/L	-	-	2,410	2,470	2,360	2,180	2,590	3,120	3,530	3,970	401	4,060	2,470	2,682	401	4,060	1,011	0	11	-	-
Thallium	µg/L	-	-	0.026	0.030	0.035	0.022	0.033	<0.01	<0.01	<0.01	0.020	0.015	0.022	-	<0.01	0.035	-	3	11	-	-
Tin	µg/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	11	11	-	-
Titanium	µg/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	11	11	-	-
Uranium	µg/L	-	-	0.11	0.13	0.20	0.64	0.18	0.13	0.12	0.18	0.10	0.13	0.13	0.23	0.10	0.64	0.19	0	11	-	-
Vanadium	µg/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	11	11	-	-
Zinc	µg/L	800	1,000	5.4	5.5	<5.0	8.6	<5.0	<5.0	8.5	6.7	<5.0	<5.0	5.4	-	<5.0	8.6	-	5	11	-	-
Zirconium	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	-	-	-	1	1	-	-
Dissolved Metals																						
Aluminum	µg/L	-	-	17	50	84	99	91	220	56	57	4.3	23	56	65	4.3	220	61	0	11	-	-
Antimony	µg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<25	<5.0	<0.5	<0.5	<0.5	<0.5	-	<0.5	<25	-	11	11	-	-
Arsenic	µg/L	-	-	0.88	1.1	1.2	1.6	1.8	<5.0	2.1	2.7	0.29	2.0	1.6	1.6	0.29	<5.0	0.72	1	11	-	-
Barium	µg/L	-	-	98	93	93	114	120	126	129	150	4.4	141	114	105	4.4	150	39	0	11	-	-
Beryllium	µg/L	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<5.0	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<5.0	-	11	11	-	-
Bismuth	µg/L	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.0	<1.0	-	-	-	1	1	-	-
Boron	µg/L	-	-	101	123	146	138	139	<2,500	195	206	723	317	146	313	101	<2,500	358	1	11	-	-
Cadmium	µg/L	-	-	0.021	0.017	0.015	0.010	<0.01	<0.5	<0.01	<0.01	<0.01	<0.01	0.010	-	<0.01	<0.5	-	6	11	-	-
Chromium	µg/L	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<50	-	11	11	-	-
Cobalt	µg/L	-	-	-	-	-	-	-	-	-	-	-	0.58	0.58	0.58	-	-	-	0	1	-	-
Copper	µg/L	-	-	0.99	1.1	1.1	1.2	0.85	<10	0.65	0.65	0.22	0.50	0.99	1.3	0.22	<10	1.3	1	11	-	-
Iron	µg/L	-	-	28	18	48	<5.0	26	<250	43	32	<5.0	41	32	-	<5.0	<250	-	3	11	-	-
Lead	µg/L	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<10	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<10	-	11	11	-	-
Lithium	µg/L	-	-	113	120	125	135	144	140	144	163	134	158	135	135	104	163	18	0	11	-	-
Manganese	µg/L	-	-	302	8.9	29	61	102	225	331	382	2.5	209	209	181	2.5	382	145	0	11	-	-
Mercury	µg/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	0.040	-	10	11	-	-
Molybdenum	µg/L	-	-	<1.0	<1.0	<1.0	1.1	1.4	<50	1.9	2.0	<1.0	1.3	1.1	-	<1.0	<50	-	6	11	-	-
Nickel	µg/L	-	-	2.2	2.3	2.2	2.2	2.2	<50	2.9	3.0	<1.0	2.3	2.3	4.3	<1.0	<50	6.9	2	11	-	-
Selenium	µg/L	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<5.0	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<5.0	-	11	11	-	-
Silicon	µg/L	-	-	-	-	-	-	-	-	-	-	-	590	590	590	-	-	-	0	1	-	-
Silver	µg/L	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<1.0	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<1.0	-	11	11	-	-
Strontium	µg/L	-	-	2,440	2,730	2,580	2,380	2,600	2,720	3,240	4,100	422	3,310	2,600	2,625	422	4,100	898	0	11	-	-
Thallium	µg/L	-	-	0.027	0.029	0.033	0.033	0.028	<0.5	<0.01	<0.01	0.020	0.016	0.027	-	<0.01	<0.5	-	3	11	-	-
Tin	µg/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<250	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<250	-	11	11	-	-

Table 1: Effluent Quality Data for MEL-14, 2018

Parameter	Unit	MDMER	WL	Sampling Date (dd-mm-yyyy)										Median	Mean	Min	Max	SD	nd	Count	% Above Effluent Limit	
				01-07-2018	10-07-2018	15-07-2018	23-07-2018	29-07-2018	05-08-2018	13-08-2018	19-08-2018	26-08-2018	03-09-2018								MDMER	WL
Titanium	µg/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<250	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<250	-	11	11	-	-
Uranium	µg/L	-	-	<0.1	<0.1	<0.1	0.12	<0.1	<5.0	<0.1	<0.1	0.11	<0.1	<0.1	-	<0.1	<5.0	-	8	11	-	-
Vanadium	µg/L	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	<250	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<250	-	11	11	-	-
Zinc	µg/L	-	-	6.8	5.1	<5.0	<5.0	<5.0	<250	7.1	<5.0	<5.0	<5.0	<5.0	-	<5.0	<250	-	7	11	-	-
Zirconium	µg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	-	-	-	1	1	-	-
Volatile Organics																						
Benzene	µg/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	-	10	10	-	-
Ethylbenzene	µg/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	-	10	10	-	-
Toluene	µg/L	-	-	0.32	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	0.32	-	9	10	-	-
Xylenes	µg/L	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4	<0.4	-	10	10	-	-
m,p-Xylenes	µg/L	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4	<0.4	-	10	10	-	-
o-Xylene	µg/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	-	10	10	-	-
F1 (C6-C10)-BTEX	µg/L	-	-	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	-	<25	<25	-	10	10	-	-
F2 (C10-C16)	µg/L	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	-	11	11	-	-
F3 (C16-C34)	µg/L	-	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	-	<200	<200	-	11	11	-	-
F1 (C6-C10)	µg/L	-	-	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	-	<25	<25	-	10	10	-	-
F4 (C34-C50)	µg/L	-	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	-	<200	<200	-	11	11	-	-
Radionuclides																						
Radium-226	Bq/L	1.1	-	<0.005	<0.005	<0.005	0.0070	<0.005	<0.005	<0.005	0.0080	<0.005	<0.005	<0.005	-	<0.005	0.0080	-	9	11	-	-
Ungrouped Analytes																						
Cyanide (free)	mg/L	-	-	-	-	-	-	-	-	-	-	10	11	10	10	10	11	0.21	0	2	-	-

Notes: Bolded concentrations are higher than effluent limits. Water quality data shown in this table were rounded to reflect laboratory or field instrument precision after comparisons to effluent limits. Therefore, values slightly above effluent limits may be displayed as being equal to the limits and identified as exceedances. Concentrations equal to the limits were not identified as exceedances. In cases where 25% or more of data were <DL, no mean or standard deviation was calculated.

mg/L = milligrams per litre; µg/L = micrograms per litre; µS/cm = microsiemens per centimetre; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; Bq/L = becquerels per litre; + = plus; °C = degrees Celsius; NTU = nephelometric turbidity unit; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; TDS = total dissolved solids; TSS = total suspended solids; TOC = Total organic carbon; DOC = dissolved organic carbon; BTEX = benzene, toluene, ethylbenzene, and xylene; Min = minimum; Max = maximum; SD = standard deviation; nd = not detected; < = less than; DL = detection limit; % = percent; MDMER = Metal and Diamond Mining Effluent Regulations; EEM = Environmental Effects Monitoring; WL = Water Licence; W = concentration is higher than the Water Licence effluent limits or outside the recommended pH range; - = no effluent limit or no data.

APPENDIX 2C

Water Quality Data for MEL-13, 2018

Table 1: Water Quality Data for MEL-13, 2018

Parameter	Unit	Guidelines					Sampling Date (dd-mm-yyyy)				Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q	23-07-2018	20-08-2018	26-08-2018	04-09-2018								A	C	D	S	Q
Field Measured																						
pH	-	-	6.5 - 9.0	-	7.0 - 11	-	7.2	8.2	7.8	8.2	8.0	7.8	7.2	8.2	0.48	0	4	-	-	-	-	-
Specific conductivity	µS/cm	-	-	-	-	-	80	82	84	85	83	83	80	85	2.6	0	4	-	-	-	-	-
Temperature	°C	-	-	-	15	-	**16**[(S)]	11	10	10	10	12	10	**16**[(S)]	2.7	0	4	-	-	-	25	-
Conventional Parameters																						
pH	-	-	6.5 - 9.0	-	7.0 - 11	-	7.0	7.3	7.3	7.4	7.3	7.3	7.0	7.4	0.17	0	4	-	-	-	-	-
Specific conductivity	µS/cm	-	-	-	-	-	88	91	87	84	88	88	84	91	2.9	0	4	-	-	-	-	-
Hardness, as $CaCO_3$	mg/L	-	-	-	-	-	24	25	25	-	25	25	24	25	0.70	0	3	-	-	-	-	-
Total alkalinity, as $CaCO_3$	mg/L	-	-	-	-	-	16	17	15	16	16	16	15	17	0.82	0	4	-	-	-	-	-
Total dissolved solids	mg/L	-	-	-	500	-	15	400	75	100	88	148	15	400	172	0	4	-	-	-	-	-
Total suspended solids	mg/L	-	-	-	-	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0	0	4	-	-	-	-	-
Total organic carbon	mg/L	-	-	-	-	-	3.1	2.9	3.0	3.0	3.0	3.0	2.9	3.1	0.082	0	4	-	-	-	-	-
Dissolved organic carbon	mg/L	-	-	-	-	-	3.0	2.9	2.8	2.9	2.9	2.9	2.8	3.0	0.082	0	4	-	-	-	-	-
Turbidity	NTU	-	-	-	-	-	0.30	0.30	0.30	0.20	0.30	0.28	0.20	0.30	0.050	0	4	-	-	-	-	-
Major Ions																						
Bicarbonate, as $CaCO_3$	mg/L	-	-	-	-	-	16	17	15	16	16	16	15	17	0.82	0	4	-	-	-	-	-
Calcium	mg/L	-	-	-	-	-	7.4	7.7	7.8	7.0	7.5	7.5	7.0	7.8	0.35	0	4	-	-	-	-	-
Carbonate, as $CaCO_3$	mg/L	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	4	4	-	-	-	-	-
Chloride	mg/L	640	120	-	250	-	13	13	13	13	13	13	13	13	0	0	4	-	-	-	-	-
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	4	4	-	-	-	-	-
Magnesium	mg/L	-	-	-	-	-	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.4	0.053	0	4	-	-	-	-	-
Potassium	mg/L	-	-	-	-	-	0.91	0.95	0.99	0.90	0.93	0.94	0.90	0.99	0.038	0	4	-	-	-	-	-
Reactive silica, as SiO2	mg/L	-	-	-	-	-	-	0.33	0.29	0.27	0.29	0.30	0.27	0.33	0.031	0	3	-	-	-	-	-
Sodium	mg/L	-	-	-	200	-	5.2	5.7	5.4	5.3	5.4	5.4	5.2	5.7	0.19	0	4	-	-	-	-	-
Sulphate	mg/L	-	-	-	500	-	4.8	4.3	3.7	4.5	4.4	4.3	3.7	4.8	0.46	0	4	-	-	-	-	-
Nutrients																						
Nitrate	mg-N/L	124	2.9	10	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Total ammonia	mg-N/L	-	0.56 - 3.8[(a)]	-	-	-	<0.05	<0.05	0.19	<0.05	<0.05	-	<0.05	0.19	-	3	4	-	-	-	-	-
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.12	0.14	0.27	<0.1	0.13	0.15	<0.1	0.27	0.092	1	4	-	-	-	-	-
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.12	0.14	0.27	<0.1	0.13	0.15	<0.1	0.27	0.092	1	4	-	-	-	-	-
Total phosphorus	mg-P/L	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	-	4	4	-	-	-	-	-
Orthophosphate	mg-P/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
General Organics																						
Total oil and grease	mg/L	-	-	-	-	-	<0.5	0.60	-	-	0.60	-	<0.5	0.60	-	1	2	-	-	-	-	-

Table 2: Water Quality Data for MEL-13, 2018

Parameter	Unit	Guidelines					Sampling Date (dd-mm-yyyy)				Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q	23-07-2018	20-08-2018	26-08-2018	04-09-2018								A	C	D	S	Q
Total Metals																						
Aluminum	µg/L	-	100[b, c]	-	-	-	**6,640[C]**	12	9.8	8.3	11	**1,667[C]**	8.3	**6,640[C]**	3,315	0	4	-	25	-	-	-
Antimony	µg/L	-	-	6.0	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	4	4	-	-	-	-	-
Arsenic	µg/L	-	5.0	10	-	25	2.8	0.42	0.46	0.43	0.45	1.0	0.42	2.8	1.2	0	4	-	-	-	-	-
Barium	µg/L	-	-	1,000	-	-	126	8.2	7.7	7.9	8.1	37	7.7	126	59	0	4	-	-	-	-	-
Beryllium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Boron	µg/L	29,000	1,500	5,000	-	-	156	<50	<50	<50	<50	-	<50	156	-	3	4	-	-	-	-	-
Cadmium	µg/L	0.49 - 0.51[d]	0.048 - 0.050[d]	5.0	-	-	0.028	<0.01	<0.01	<0.01	<0.01	-	<0.01	0.028	-	3	4	-	-	-	-	-
Chromium	µg/L	-	1.0	50[e]	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	4	4	-	-	-	-	-
Copper	µg/L	-	2.0[d]	-	1,000	-	**2.8[C]**	0.79	0.77	0.76	0.78	1.3	0.76	**2.8[C]**	1.0	0	4	-	25	-	-	-
Iron	µg/L	-	300	-	300	1,060	**405[C, S]**	29	24	19	27	119	19	**405[C, S]**	191	0	4	-	25	-	25	-
Lead	µg/L	-	1.0[d]	10	-	-	0.21	<0.2	<0.2	<0.2	<0.2	-	<0.2	0.21	-	3	4	-	-	-	-	-
Lithium	µg/L	-	-	-	-	-	145	<2.0	<2.0	<2.0	<2.0	-	<2.0	145	-	3	4	-	-	-	-	-
Manganese	µg/L	-	-	-	50	-	**271[S]**	4.8	4.4	4.5	4.7	**71[S]**	4.4	**271[S]**	133	0	4	-	-	-	25	-
Mercury	µg/L	-	0.026	1.0	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
Molybdenum	µg/L	-	73	-	-	-	1.3	<1.0	<1.0	<1.0	<1.0	-	<1.0	1.3	-	3	4	-	-	-	-	-
Nickel	µg/L	-	25[d]	-	-	-	3.3	<1.0	<1.0	<1.0	<1.0	-	<1.0	3.3	-	3	4	-	-	-	-	-
Selenium	µg/L	-	1.0	50	-	-	0.11	<0.1	<0.1	<0.1	<0.1	-	<0.1	0.11	-	3	4	-	-	-	-	-
Silver	µg/L	-	0.25	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	-	4	4	-	-	-	-	-
Strontium	µg/L	-	-	-	-	-	3,800	49	48	49	49	987	48	3,800	1,876	0	4	-	-	-	-	-
Thallium	µg/L	-	0.80	-	-	-	0.036	<0.01	<0.01	<0.01	<0.01	-	<0.01	0.036	-	3	4	-	-	-	-	-
Tin	µg/L	-	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	4	4	-	-	-	-	-
Titanium	µg/L	-	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	4	4	-	-	-	-	-
Uranium	µg/L	33	15	20	-	-	0.98	<0.1	<0.1	<0.1	<0.1	-	<0.1	0.98	-	3	4	-	-	-	-	-
Vanadium	µg/L	-	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	4	4	-	-	-	-	-
Zinc	µg/L	-	-	-	5,000	-	11	<5.0	<5.0	<5.0	<5.0	-	<5.0	11	-	3	4	-	-	-	-	-

Table 2: Water Quality Data for MEL-13, 2018

Parameter	Unit	Guidelines					Sampling Date (dd-mm-yyyy)				Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q	23-07-2018	20-08-2018	26-08-2018	04-09-2018								A	C	D	S	Q
Dissolved Metals																						
Aluminum	µg/L	-	-	-	-	-	12	7.7	5.4	6.0	6.9	7.9	5.4	12	3.1	0	4	-	-	-	-	-
Antimony	µg/L	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	4	4	-	-	-	-	-
Arsenic	µg/L	-	-	-	-	-	0.31	0.40	0.40	0.34	0.37	0.36	0.31	0.40	0.045	0	4	-	-	-	-	-
Barium	µg/L	-	-	-	-	-	7.6	7.8	7.6	7.5	7.6	7.6	7.5	7.8	0.13	0	4	-	-	-	-	-
Beryllium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Boron	µg/L	-	-	-	-	-	<50	<50	<50	<50	<50	-	<50	<50	-	4	4	-	-	-	-	-
Cadmium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
Chromium	µg/L	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	4	4	-	-	-	-	-
Copper	µg/L	-	-	-	-	-	0.62	0.76	0.75	0.73	0.74	0.72	0.62	0.76	0.065	0	4	-	-	-	-	-
Iron	µg/L	-	-	-	-	-	9.2	11	7.4	5.4	8.3	8.3	5.4	11	2.5	0	4	-	-	-	-	-
Lead	µg/L	-	-	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	4	4	-	-	-	-	-
Lithium	µg/L	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	-	<2.0	<2.0	-	4	4	-	-	-	-	-
Manganese	µg/L	-	-	-	-	-	1.2	<1.0	<1.0	<1.0	<1.0	-	<1.0	1.2	-	3	4	-	-	-	-	-
Mercury	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
Molybdenum	µg/L	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	4	4	-	-	-	-	-
Nickel	µg/L	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	-	4	4	-	-	-	-	-
Selenium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Silver	µg/L	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02	<0.02	-	4	4	-	-	-	-	-
Strontium	µg/L	-	-	-	-	-	49	51	49	47	49	49	47	51	1.7	0	4	-	-	-	-	-
Thallium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	-	4	4	-	-	-	-	-
Tin	µg/L	-	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	4	4	-	-	-	-	-
Titanium	µg/L	-	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	4	4	-	-	-	-	-
Uranium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	4	4	-	-	-	-	-
Vanadium	µg/L	-	-	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	<5.0	-	4	4	-	-	-	-	-
Zinc	µg/L	31 - 32	4.4 - 9.0	-	-	-	<5.0	**<5.0**[(C)]	<5.0	**<5.0**[(C, f)]	<5.0	-	<5.0	<5.0	-	4	4	-	-	-	-	-
Volatile Organics																						
Benzene	µg/L	-	370	5.0	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	4	4	-	-	-	-	-
Ethylbenzene	µg/L	-	90	140	1.6	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	4	4	-	-	-	-	-
Toluene	µg/L	-	2.0	60	24	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	4	4	-	-	-	-	-
Xylenes	µg/L	-	-	90	20	-	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4	<0.4	-	4	4	-	-	-	-	-
m,p-Xylenes	µg/L	-	-	-	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4	<0.4	-	4	4	-	-	-	-	-
o-Xylene	µg/L	-	-	-	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	4	4	-	-	-	-	-
F1 (C6-C10)-BTEX	µg/L	-	-	-	-	-	<25	<25	<25	<25	<25	-	<25	<25	-	4	4	-	-	-	-	-
F2 (C10-C16)	µg/L	-	-	-	-	-	<100	<100	<100	<100	<100	-	<100	<100	-	4	4	-	-	-	-	-
F3 (C16-C34)	µg/L	-	-	-	-	-	<200	<200	<200	<200	<200	-	<200	<200	-	4	4	-	-	-	-	-
F1 (C6-C10)	µg/L	-	-	-	-	-	<25	<25	<25	<25	<25	-	<25	<25	-	4	4	-	-	-	-	-
F4 (C34-C50)	µg/L	-	-	-	-	-	<200	<200	<200	<200	<200	-	<200	<200	-	4	4	-	-	-	-	-

Table 2: Water Quality Data for MEL-13, 2018

Parameter	Unit	Guidelines					Sampling Date (dd-mm-yyyy)				Median	Mean	Min	Max	SD	nd	Count	% Above Guideline				
		A	C	D	S	Q	23-07-2018	20-08-2018	26-08-2018	04-09-2018								A	C	D	S	Q
Radionuclides																						
Radium-226	Bq/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005	<0.005	-	4	4	-	-	-	-	-
Ungrouped Analytes																						
Cyanide (free)	mg/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	4	4	-	-	-	-	-

Notes: Bolded concentrations are higher than water quality guidelines. Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

[(a)] = the ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.5592 mg-N/L) is based on the combination of field pH (8.2) and water temperature (10.0°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH

[(b)] = guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.2 to 8.2). The guideline is calculated based on the individual pH for each sample.

[(c)] = guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5.

[(d)] = guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (24 to 25 mg/L). The guideline is calculated based on the individual hardness value for each sample.

[(e)] = guideline is for chromium VI.

[(f)] = Used median for hardness (as $CaCO_3$) because value was unavailable.

[(C)] = concentration is higher than the Canadian Water Quality Guidelines for the Protection of Aquatic Life – Chronic or outside the recommended pH, DO or total alkalinity range.

[(S)] = concentration is higher than the Aesthetic Objectives for Canadian Drinking Water Quality or outside the recommended pH range.

mg/L = milligrams per litre; µg/L = micrograms per litre; µS/cm = microsiemens per centimeter; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; Bq/L = becquerels per litre; + = plus; °C = degrees Celsius; NTU = nephelometric turbidity unit; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; TDS = total dissolved solids; TSS = total suspended solids; TOC = Total organic carbon; DOC = dissolved organic carbon; BTEX = benzene, toluene, ethylbenzene, and xylene; Min = minimum; Max = maximum; SD = standard deviation; nd = not detected; < = less than; % = percent; MDMER = Metal and Diamond Mining Effluent Regulations; WL = Water Licence; - = Parameter below MDMER or WL guideline, or no guideline or no data; A = Canadian Water Quality Guidelines for the Protection of Aquatic Life – Acute; C = Canadian Water Quality Guidelines for the Protection of Aquatic Life – Chronic; D = Guidelines for Canadian Drinking Water Quality; S = Aesthetic Objectives for Canadian Drinking Water Quality; Q = Site-Specific Water Quality Objectives.

APPENDIX 2D

Acute Lethality Toxicology Laboratory Reports

Request number: **18-891755**

Date Received: 2018-06-27

Date Certificate Issued: 2018-08-22

Certificate Version: 2

☑ Official Certificate of Analysis

☐ Preliminary Certificate of Analysis

Client

H2Lab - Val d' Or

900, 5e Avenue
Val-d'Or, Québec, Canada
J9P 1B9
Telephone : (819) 874-0350
Fax : (819) 874-0360

P.O. Number	Your project ID.	Project Manager
NA	76327	M. Roger Turmel

Comments

Version 02: Modification of the reference and sampling of location for sample 3645994 at client's request.

This version replaces and cancels all earlier version.

NA : Information Not Available

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Client: **H2Lab - Val d' Or**

Request Number: 18-891755

P.O. Number	Your Project ID.	Project Manager
NA	76327	M. Roger Turmel

		Sample(s)
Lab. No.		**3645994**
Your Reference		MEL-14b
Matrix		Surface water
Sampled by		J.M.
Site sampled		63*02'15,5"92*13'06,3"
Date sampled		2018-06-24
Date received		2018-06-27
Parameter(s)		
Method Reference		
Daphnia toxicity results	Preparation	-
SA-EN-TOX-PON014-Fed. (Accredited)	Analysis	-
	Sequential No.	NA
LC50-48h	% v/v	>100
% mortality at 100% v/v	% mort 48h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Not lethal
Analysis details		APPENDIX
Trout toxicity results	Preparation	-
SA-EN-TOX-PON008 (Accredited)	Analysis	-
	Sequential No.	NA
LC50-96h	% v/v	>100
% mortality at 100% v/v	% mort 96h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Not lethal
Analysis details		APPENDIX

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Client: **H2Lab - Val d' Or**

Request Number: 18-891755

P.O. Number	Your Project ID.	Project Manager
NA	76327	M. Roger Turmel

Comments:

3645994 MEL-14b Daphnia - Test type : LC50, Trout - Test type : LC50

Note 1: Results and comments, if any, relate only to samples submitted for analysis at the Saint-Augustin-de-Desmaures laboratory (#302).

Linda Bouchard, biologist

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Appendix

Client: H2Lab **Request number:** 18-891755

BIOASSAY Rainbow trout

Lab. No: 3645994
Your reference: MEL-14b
Matrix: Surface water
Sampled by: J.M.
Site sampled: 63*02'15,5"92*13'06,3"

Sampling method: NA
Date sampled (date and hour): 2018-06-24 9:15:00 AM
Date received (date and hour): 2018-06-27 3:41:00 PM
State of sampled received: Conform

Date and hour start analysis (0hrs): 2018-06-28 15:00 **Date and hour end analysis (96hrs):** 2018-07-02 15:00

Analysed by: JB

Organisms: ***Oncorhynchus mykiss*** ; Acclimation: ≥ 2 weeks
% mortality 7 days before test:<1

Lot # and origin(1): PAV180607
Average weight of control fish (g): 0.36 **Minimum:** 0.27 **Maximum:** 0.44
± std. dev.: 0.06
Average fork length of control fish (mm): 34.7 **Minimum:** 30 **Maximum:** 38
± std. dev.: 2.7
Number of fish/container: 10
Number of repetitions per concentration: 1
Loading density (g/L): 0.36
Volume of test solutions (L): 10
Height of test solutions (cm): 22
Photoperiod: 16hrs light / 8hrs darkness
Dilution water: Dechlorinated municipal water
Pre-aeration of sample: 30 minutes
Pre-aeration and aeration rate (mL/min/L ±1): 6.5
Pre-treatment of sample: NA
Protocol / Reference method: SPE1/RM/13, 2000, mod. 05/2007 et 02/2016
No modification to protocol

sample concentration (% v/v)	number of fish 0 hrs	volume (L)	atypical or stressed 96hrs (number)	atypical or stressed 96hrs (%)	mortality 96hrs (number)	mortality 96hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
							0hrs	96hrs	0hrs	96hrs	0hrs	96hrs	0hrs
0	10	10	0	0	0	0	15.6	15.4	7.9	7.8	9.5	9.1	305
6.25	10	10	0	0	0	0	15.7	15.4	7.9	7.7	9.4	9.0	394
12.5	10	10	0	0	0	0	15.7	15.4	7.8	7.8	9.4	9.0	487
25	10	10	0	0	0	0	15.7	15.5	7.7	7.6	9.3	9.0	672
50	10	10	0	0	0	0	15.8	15.5	7.6	7.6	9.1	9.0	1023
100	10	10	0	0	1	10	15.9	15.5	7.4	7.6	8.6	9.1	1732
Sample characteristics before analysis			**Appearance**				15.9		7.4		8.1		1728
			Brown, clear										

Reference assay (Phenol)
Reference assay date: 2018-06-26
LC50-96h (mg/L of Phenol): 7.94
Lower C.I. at 95%: 7.20
Upper C.I. at 95%: 8.76

Geometric average: 9.37
Lower control limit: 7.11
Upper control limit: 11.63

(1) PAV: Pisciculture des Arpents Verts.
PJC: Pisciculture de la Jacques-Cartier.
PDF: Pisciculture Denis Fournier

Sample stored at 4 ± 2 ° C in the dark.

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Appendix

Client: H2Lab **Request number:** 18-891755

BIOESSAI *Daphnia magna*

Lab. No: 3645994
Your reference: MEL-14b
Matrix: Surface water
Sampled by: J.M.
Site sampled 63*02'15,5"92*13'06,3"

Sampling method: NA
Date sampled (date and hour): 2018-06-24 9:15:00 AM
Date received (date and hour): 2018-06-27 3:41:00 PM
State of sampled received: Conform

Date and hour start analysis (0hrs): 2018-06-28 15:30 **Date and hour end analysis (48hrs):** 2018-06-30 15:30

EC50-48h (% v/v): >100
Lower C.I. at 95%: NA
Upper C.I. at 95%: NA
Calculation method: Aucune méthode utilisée

Analysed by: CGJ NB JG

Organisms: ***Daphnia magna*** (<24 hours) - Culture Eurofins Essais Environnementaux St-Augustin-de-Desmaures
<1% of mortality of brood stock 7 days before test
Average number of neonates per brood: 19
Age at first brood (days): 8
Number of Daphnia/container: 10
Number of repetitions per concentration: 1
Loading density (mL/Daphnia): 30
Volume of test solutions (mL): 300
Photoperiod: 16hrs light / 8hrs darkness
Dilution water: Dechlorinated municipal water, hardness adjusted
Culture and dilution water hardness (mg/L CaCO3): 168
Pre-aeration of sample: 0 minute
Pre-aeration rate (mL/min/L ±1): NA
Sample hardness (mg/L CaCO3): 455
Sample hardness adjusted (mg/L CaCO3): NA
Pre-treatment of sample: NA
Protocol / Reference method: SPE1/RM/14, 2000 et 02/2016
No modification to protocol

sample concentration (% v/v)	number of Daphnia 0hrs	immobility 48hrs (number)	immobility 48hrs (%)	mortality 48hrs (number)	mortality 48hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
						0hrs	48hrs	0hrs	48hrs	0hrs	48hrs	0hrs
0	10	0	0	0	0	21.2	20.7	8.2	8.0	8.5	8.3	533
6.25	10	0	0	0	0	21.1	20.5	8.1	8.0	8.4	8.5	606
12.5	10	0	0	0	0	21.1	20.4	8.0	8.0	8.3	8.8	684
25	10	0	0	0	0	21.2	20.4	7.9	8.0	8.2	8.0	837
50	10	0	0	0	0	21.2	20.4	7.7	7.9	8.2	8.4	1144
100	10	0	0	0	0	21.3	20.4	7.2	7.8	7.9	8.2	1747
Sample characteristics before analysis			**Appearance**			21.0		7.2		7.5		1751
			Beige, clear									

Reference assay (Potassium dichromate):
Reference assay date: 2018-06-26
LC-50-48h (mg/L of Cr): 0.279
Lower C.I. at 95%: 0.247
Upper C.I. at 95%: 0.313

Geometric average: 0.279
Lower control limit: 0.200
Upper control limit: 0.357

Sample stored at 4 ± 2 ° C in the dark.

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Certificate of Analysis

Request number: **18-893091**

Date Received: 2018-07-04

Date Certificate Issued: 2018-08-22

Certificate Version: 2

☑ Official Certificate of Analysis

☐ Preliminary Certificate of Analysis

Client

H2Lab - Val d' Or

900, 5e Avenue
Val-d'Or, Québec, Canada
J9P 1B9
Telephone : (819) 874-0350
Fax : (819) 874-0360

P.O. Number	Your project ID.	Project Manager
NA	76583	M. Roger Turmel

Comments

Version 02: Modification of the reference and sampling of location for sample 3650775 at client's request.

This version replaces and cancels all earlier version.

NA : Information Not Available

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Client: **H2Lab - Val d' Or**

Request Number: 18-893091

P.O. Number	Your Project ID.	Project Manager
NA	76583	M. Roger Turmel

		Sample(s)
Lab. No.		**3650775**
Your Reference		MEL-14b
Matrix		Surface water
Sampled by		DM / AG
Site sampled		63*02'15,5"92*13'06,3"
Date sampled		2018-07-01
Date received		2018-07-04
Parameter(s)		
Method Reference		
Daphnia toxicity results	Preparation	-
SA-EN-TOX-PON014-Fed. (Accredited)	Analysis	-
	Sequential No.	NA
LC50-48h	% v/v	>100
% mortality at 100% v/v	% mort 48h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Not lethal
Analysis details		APPENDIX
Trout toxicity results	Preparation	-
SA-EN-TOX-PON008 (Accredited)	Analysis	-
	Sequential No.	NA
LC50-96h	% v/v	>100
% mortality at 100% v/v	% mort 96h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Not lethal
Analysis details		APPENDIX

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Client: **H2Lab - Val d' Or**

Request Number: 18-893091

P.O. Number	Your Project ID.	Project Manager
NA	76583	M. Roger Turmel

Comments:

3650775 MEL-14b Daphnia - Test type: LC50, Trout - Test type: LC50.

Note 1: Results and comments, if any, relate only to samples submitted for analysis at the Saint-Augustin-de-Desmaures laboratory (#302).

Linda Bouchard, biologist

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Appendix

Client: H2Lab **Request number:** 18-893091

BIOASSAY Rainbow trout

Lab. No: 3650775
Your reference: MEL-14b
Matrix: Surface water
Sampled by: DM / AG
Site sampled: 63*02'15,5"92*13'06,3"

Sampling method: NA
Date sampled (date and hour): 2018-07-01 4:15:00 PM
Date received (date and hour): 2018-07-04 9:35:00 AM
State of sampled received: Conform

Date and hour start analysis (0hrs): 2018-07-04 14:00
Date and hour end analysis (96hrs): 2018-07-08 14:00

Analysed by: JB, SV, NB

Organisms: ***Oncorhynchus mykiss*** ; Acclimation: ≥ 2 weeks
% mortality 7 days before test:<1

Lot # and origin(1): PAV180607
Average weight of control fish (g): 0.32 **Minimum:** 0.27 **Maximum:** 0.38
± std. dev.: 0.04
Average fork length of control fish (mm): 33.4 **Minimum:** 31 **Maximum:** 35
± std. dev.: 1.4
Number of fish/container: 10
Number of repetitions per concentration: 1
Loading density (g/L): 0.32
Volume of test solutions (L): 10
Height of test solutions (cm): 22
Photoperiod: 16hrs light / 8hrs darkness
Dilution water: Dechlorinated municipal water
Pre-aeration of sample: 30 minutes
Pre-aeration and aeration rate (mL/min/L ±1): 6.5
Pre-treatment of sample: NA
Protocol / Reference method: SPE1/RM/13, 2000, mod. 05/2007 et 02/2016
No modification to protocol

sample concentration (% v/v)	number of fish 0 hrs	volume (L)	atypical or stressed 96hrs (number)	atypical or stressed 96hrs (%)	mortality 96hrs (number)	mortality 96hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
							0hrs	96hrs	0hrs	96hrs	0hrs	96hrs	0hrs
0	10	10	0	0	0	0	14.5	14.2	7.6	7.8	9.6	9.3	282
6.25	10	10	0	0	0	0	14.5	14.2	7.5	7.9	9.5	9.6	373
12.5	10	10	0	0	0	0	14.5	14.1	7.5	7.8	9.8	9.2	456
25	10	10	0	0	1	10	14.4	14.2	7.5	7.8	9.7	9.5	640
50	10	10	0	0	0	0	14.3	14.3	7.3	7.7	9.4	9.3	969
100	10	10	0	0	0	0	14.1	14.3	7.1	7.6	9.5	9.4	1643
Sample characteristics before analysis			**Appearance**				14.0		6.4		8.6		1646
			Beige, clear										

Reference assay (Phenol)
Reference assay date: 2018-06-26
LC50-96h (mg/L of Phenol): 7.94
Lower C.I. at 95%: 7.20
Upper C.I. at 95%: 8.76

Geometric average: 9.37
Lower control limit: 7.11
Upper control limit: 11.63

(1) PAV: Pisciculture des Arpents Verts.
PJC: Pisciculture de la Jacques-Cartier.
PDF: Pisciculture Denis Fournier

Sample stored at 4 ± 2 ° C in the dark.

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Appendix

Client: H2Lab **Request number:** 18-893091

BIOESSAI *Daphnia magna*

Lab. No: 3650775
Your reference: MEL-14b
Matrix: Surface water
Sampled by: DM / AG
Site sampled 63*02'15,5"92*13'06,3"

Sampling method: NA
Date sampled (date and hour): 2018-07-01 4:15:00 PM
Date received (date and hour): 2018-07-04 9:35:00 AM
State of sampled received: Conform

Date and hour start analysis (0hrs): 2018-07-04 15:00 **Date and hour end analysis (48hrs):** 2018-07-06 15:00

EC50-48h (% v/v): >100
Lower C.I. at 95%: NA
Upper C.I. at 95%: NA
Calculation method: Aucune méthode utilisée

Analysed by: JG, NB, CGJ

Organisms: ***Daphnia magna*** (<24 hours) - Culture Eurofins Essais Environnementaux St-Augustin-de-Desmaures
<1% of mortality of brood stock 7 days before test
Average number of neonates per brood: 20
Age at first brood (days): 8
Number of Daphnia/container: 10
Number of repetitions per concentration: 1
Loading density (mL/Daphnia): 30
Volume of test solutions (mL): 300
Photoperiod: 16hrs light / 8hrs darkness
Dilution water: Dechlorinated municipal water, hardness adjusted
Culture and dilution water hardness (mg/L CaCO3): 176
Pre-aeration of sample: 30 minutes
Pre-aeration rate (mL/min/L ±1): 50
Sample hardness (mg/L CaCO3): 436
Sample hardness adjusted (mg/L CaCO3): NA
Pre-treatment of sample: NA
Protocol / Reference method: SPE1/RM/14, 2000 et 02/2016
No modification to protocol

sample concentration (% v/v)	number of Daphnia 0hrs	immobility 48hrs (number)	immobility 48hrs (%)	mortality 48hrs (number)	mortality 48hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
						0hrs	48hrs	0hrs	48hrs	0hrs	48hrs	0hrs
0	10	0	0	0	0	21.0	20.6	8.1	8.0	8.6	8.3	485
6.25	10	0	0	0	0	21.0	20.5	8.0	8.0	8.6	8.4	557
12.5	10	0	0	0	0	21.0	20.4	7.9	8.0	8.6	8.4	634
25	10	0	0	0	0	21.1	20.4	7.7	8.0	8.5	8.4	790
50	10	0	0	0	0	21.3	20.4	7.4	7.9	8.3	8.4	1092
100	10	0	0	0	0	21.7	20.5	7.0	7.7	8.1	8.5	1675
Sample characteristics before analysis			**Appearance**			22.0		6.8		9.3		1676
			Beige, clear									

Reference assay (Potassium dichromate):
Reference assay date: 2018-07-03
LC-50-48h (mg/L of Cr): 0.275
Lower C.I. at 95%: 0.251
Upper C.I. at 95%: 0.302

Geometric average: 0.279
Lower control limit: 0.201
Upper control limit: 0.357

Sample stored at 4 ± 2 ° C in the dark.

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Request number: **18-900725**

Date Received: 2018-08-08

Date Certificate Issued: 2018-09-04

Certificate Version: 1

☑ Official Certificate of Analysis

☐ Preliminary Certificate of Analysis

Client

H2Lab - Val d' Or

900, 5e Avenue
Val-d'Or, Québec, Canada
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Telephone : (819) 874-0350
Fax : (819) 874-0360

P.O. Number	Your project ID.	Project Manager
NA	77837	M. Roger Turmel

Comments

This version replaces and cancels all earlier version.

NA : Information Not Available

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Client: **H2Lab - Val d' Or**

Request Number: 18-900725

P.O. Number	Your Project ID.	Project Manager
NA	77837	M. Roger Turmel

		Sample(s)
Lab. No.		**3679295**
Your Reference		MEL-14b
Matrix		Surface water
Sampled by		DM/AG
Site sampled		63*02'15,5"92*13'06,3"
Date sampled		2018-08-05
Date received		2018-08-08
Parameter(s)		
Method Reference		
Daphnia toxicity results	Preparation	-
SA-EN-TOX-PON014-Fed. (Accredited)	Analysis	-
	Sequential No.	NA
LC50-48h	% v/v	>100
% mortality at 100% v/v	% mort 48h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Non létal
Analysis details		ANNEXE
Trout toxicity results	Preparation	-
SA-EN-TOX-PON008 (Accredited)	Analysis	-
	Sequential No.	NA
LC50-96h	% v/v	>100
% mortality at 100% v/v	% mort 96h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Non létal
Analysis details		ANNEXE

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Client: **H2Lab - Val d' Or**

Request Number: 18-900725

P.O. Number	Your Project ID.	Project Manager
NA	77837	M. Roger Turmel

Comments:

3679295 MEL-14b Daphnia - Type d'essai : CL50, Truites - Type d'essai : CL50

Note 1: Results and comments, if any, relate only to samples submitted for analysis at the Saint-Augustin-de-Desmaures laboratory (#302).

Stephan Veilleux, biologist

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Appendix

Client: H2Lab **Request number:** 18-900725

BIOASSAY Rainbow trout

Lab. No:	3679295	**Sampling method:**	NA
Your reference:	MEL-14b	**Date sampled (date and hour):**	2018-08-05 1:30:00 PM
Matrix:	Surface water	**Date received (date and hour):**	2018-08-08 3:14:00 PM
Sampled by:	DM/AG	**State of sampled received:**	Échantillon conforme
Site sampled:	63*02'15,5"92*13'06,3"		

Date and hour start analysis (0hrs): 2018-08-09 14:00 **Date and hour end analysis (96hrs):** 2018-08-13 14:00

Analysed by: JC JB

Organisms:	***Oncorhynchus mykiss*** ; Acclimation: ≥ 2 weeks % mortality 7 days before test:<1				
Lot # and origin(1):	PAV180712				
Average weight of control fish (g):	0.41	**Minimum:**	0.26	**Maximum:**	0.5
± std. dev.:	0.09				
Average fork length of control fish (mm):	35.4	**Minimum:**	30	**Maximum:**	43
± std. dev.:	3.6				
Number of fish/container:	10				
Number of repetitions per concentration:	1				
Loading density (g/L):	0.41				
Volume of test solutions (L):	10				
Height of test solutions (cm):	22				
Photoperiod:	16hrs light / 8hrs darkness				
Dilution water:	Dechlorinated municipal water				
Pre-aeration of sample:	30 minutes				
Pre-aeration and aeration rate (mL/min/L ±1):	6.5				
Pre-treatment of sample:	NA				
Protocol / Reference method:	SPE1/RM/13, 2000, mod. 05/2007 et 02/2016 No modification to protocol				

sample concentration (% v/v)	number of fish 0 hrs	volume (L)	atypical or stressed 96hrs (number)	atypical or stressed 96hrs (%)	mortality 96hrs (number)	mortality 96hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
							0hrs	96hrs	0hrs	96hrs	0hrs	96hrs	0hrs
0	10	10	0	0	0	0	14.7	14.4	7.4	7.8	9.3	9.5	286
6.25	10	10	0	0	0	0	15.1	14.4	7.5	7.9	9.4	9.7	437
12.5	10	10	0	0	0	0	15.0	14.4	7.6	7.7	9.2	9.0	529
25	10	10	0	0	0	0	15.1	14.6	7.5	7.7	9.4	8.9	772
50	10	10	0	0	0	0	15.2	14.7	7.5	7.7	9.3	9.2	1249
100	10	10	0	0	0	0	15.1	14.6	7.2	7.5	8.5	9.2	2148
Sample characteristics before analysis			**Appearance**				15.3		7.0		7.7		2146
			Beige, limpide										

Reference assay (Phenol)		**Geometric average:**	9.44
Reference assay date:	2018-08-03	**Lower control limit:**	7.19
LC50-96h (mg/L of Phenol):	7.64	**Upper control limit:**	11.69
Lower C.I. at 95%:	7.10		
Upper C.I. at 95%:	8.22		

(1) PAV: Pisciculture des Arpents Verts.
PJC: Pisciculture de la Jacques-Cartier.
PDF: Pisciculture Denis Fournier

Sample stored at 4 ± 2 ° C in the dark.

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Appendix

Client: H2Lab **Request number:** 18-900725

BIOESSAI *Daphnia magna*

Lab. No: 3679295
Your reference: MEL-14b
Matrix: Surface water
Sampled by: DM/AG
Site sampled 63*02'15,5"92*13'06,3"

Sampling method: NA
Date sampled (date and hour): 2018-08-05 1:30:00 PM
Date received (date and hour): 2018-08-08 3:14:00 PM
State of sampled received: Echantillon conforme

Date and hour start analysis (0hrs): 2018-08-09 17:00 **Date and hour end analysis (48hrs):** 2018-08-11 17:00

EC50-48h (% v/v): >100
Lower C.I. at 95%: NA
Upper C.I. at 95%: NA
Calculation method: Aucune méthode utilisée

Analysed by: JG NB JC

Organisms: ***Daphnia magna*** (<24 hours) - Culture Eurofins Essais Environnementaux St-Augustin-de-Desmaures
<1% of mortality of brood stock 7 days before test
Average number of neonates per brood: 17
Age at first brood (days): 8
Number of Daphnia/container: 10
Number of repetitions per concentration: 1
Loading density (mL/Daphnia): 30
Volume of test solutions (mL): 300
Photoperiod: 16hrs light / 8hrs darkness
Dilution water: Dechlorinated municipal water, hardness adjusted
Culture and dilution water hardness (mg/L CaCO3): 170
Pre-aeration of sample: 0 minute
Pre-aeration rate (mL/min/L ±1): NA
Sample hardness (mg/L CaCO3): 560
Sample hardness adjusted (mg/L CaCO3): NA
Pre-treatment of sample: NA
Protocol / Reference method: SPE1/RM/14, 2000 et 02/2016
No modification to protocol

sample concentration (% v/v)	number of Daphnia 0hrs	immobility 48hrs (number)	immobility 48hrs (%)	mortality 48hrs (number)	mortality 48hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
						0hrs	48hrs	0hrs	48hrs	0hrs	48hrs	0hrs
0	10	0	0	0	0	21.1	20.3	8.0	8.0	8.3	8.2	474
6.25	10	0	0	0	0	21.2	20.2	8.0	7.9	8.3	8.1	571
12.5	10	0	0	0	0	21.2	20.1	7.9	7.9	8.3	8.3	675
25	10	0	0	0	0	21.2	20.1	7.8	7.8	8.3	8.3	892
50	10	0	0	0	0	21.3	20.1	7.6	7.8	8.3	8.2	1282
100	10	0	0	0	0	21.5	20.2	7.2	7.7	8.2	8.2	2070
Sample characteristics before analysis			**Appearance**			21.4		7.1		8.2		2073
			Beige, limpide									

Reference assay (Potassium dichromate):
Reference assay date: 2018-08-06
LC-50-48h (mg/L of Cr): 0.358
Lower C.I. at 95%: 0.299
Upper C.I. at 95%: 0.407

Geometric average: 0.280
Lower control limit: 0.200
Upper control limit: 0.359

Sample stored at 4 ± 2 ° C in the dark.

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Certificate of Analysis

Request number: **18-906615**

Date Received: 2018-09-05

Date Certificate Issued: 2018-10-09

Certificate Version: 2

☑ Official Certificate of Analysis

☐ Preliminary Certificate of Analysis

Client

H2Lab - Val d' Or

900, 5e Avenue
Val-d'Or, Québec, Canada
J9P 1B9
Telephone : (819) 874-0350
Fax : (819) 874-0360

P.O. Number	Your project ID.	Project Manager
NA	78938	M. Roger Turmel

Comments

Version 02: Modification: Change of sampling location and the name of the sampler and adding the time for sample 3702490 at client's request.

This version replaces and cancels all earlier version.

NA : Information Not Available

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237 rue de Liverpool
Saint-Augustin-de-Desmaures
Québec, Canada
G3A 2C8

Sans Frais | 866-365-2310
T | 418-878-4927
F | 418-878-7185
www.Eurofins.ca/Env

121 Boulevard Hymus
Pointe-Claire
Québec, Canada
H9R 1E6

T | 514-697-3273
F | 514-697-2090
www.Eurofins.ca/Env

Client: **H2Lab - Val d' Or**

Request Number: 18-906615

P.O. Number	Your Project ID.	Project Manager
NA	78938	M. Roger Turmel

Parameter(s) / Method Reference		Sample(s)
Lab. No.		**3702490**
Your Reference		EWTP MEL-14b 07:30
Matrix		Surface water
Sampled by		Sean Arruda
Site sampled		EWTP MEL-14b GPS: 63"02'15.5 92"13'06.3
Date sampled		2018-09-03
Date received		2018-09-05
Daphnia toxicity results	Preparation	-
SA-EN-TOX-PON014-Fed. (Accredited)	Analysis	-
	Sequential No.	NA
LC50-48h	% v/v	>100
% mortality at 100% v/v	% mort 48h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Not lethal
Analysis details		APPENDIX
Trout toxicity results	Preparation	-
SA-EN-TOX-PON008 (Accredited)	Analysis	-
	Sequential No.	NA
LC50-96h	% v/v	>100
% mortality at 100% v/v	% mort 96h	NA
CI 95% lower		NA
CI 95% upper		NA
Code Statistical method		AUCUN
Toxic units	U.T.	<1.0
Conclusion		Not lethal
Analysis details		APPENDIX

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Client: **H2Lab - Val d' Or**

Request Number: 18-906615

P.O. Number	Your Project ID.	Project Manager
NA	78938	M. Roger Turmel

Comments:

3702490 EWTP MEL-14b 07:30 Daphnia - Type d'essai : CL50, Truites - Type d'essai : CL50

Note 1: Results and comments, if any, relate only to samples submitted for analysis at the Saint-Augustin-de-Desmaures laboratory (#302).

Linda Bouchard, biologist

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Appendix

Client: H2Lab **Request number:** 18-906615

BIOASSAY Rainbow trout

Lab. No:	3702490	**Sampling method:**	NA
Your reference:	EWTP MEL-14b 07:30	**Date sampled (date and hour):**	2018-09-03 7:30:00 AM
Matrix:	Surface water	**Date received (date and hour):**	2018-09-05 10:58:00 AM
Sampled by:	Sean Arruda	**State of sampled received:**	Conform
Site sampled:	EWTP MEL-14b GPS: 63"02'15.5 92"13'06.3		

Date and hour start analysis (0hrs): 2018-09-06 11:30 **Date and hour end analysis (96hrs):** 2018-09-10 11:30

Analysed by: JC JB

Organisms:	***Oncorhynchus mykiss*** ; Acclimation: ≥ 2 weeks % mortality 7 days before test:<1				
Lot # and origin(1):	PAV180813				
Average weight of control fish (g):	0.35	**Minimum:**	0.31	**Maximum:**	0.39
± std. dev.:	0.03				
Average fork length of control fish (mm):	33.9	**Minimum:**	32	**Maximum:**	36
± std. dev.:	1.4				
Number of fish/container:	10				
Number of repetitions per concentration:	1				
Loading density (g/L):	0.35				
Volume of test solutions (L):	10				
Height of test solutions (cm):	22				
Photoperiod:	16hrs light / 8hrs darkness				
Dilution water:	Dechlorinated municipal water				
Pre-aeration of sample:	30 minutes				
Pre-aeration and aeration rate (mL/min/L ±1):	6.5				
Pre-treatment of sample:	NA				
Protocol / Reference method:	SPE1/RM/13, 2000, mod. 05/2007 et 02/2016 No modification to protocol				

sample concentration (% v/v)	number of fish 0 hrs	volume (L)	atypical or stressed 96hrs (number)	atypical or stressed 96hrs (%)	mortality 96hrs (number)	mortality 96hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
							0hrs	96hrs	0hrs	96hrs	0hrs	96hrs	0hrs
0	10	10	0	0	0	0	14.9	14.5	7.6	8.1	9.5	9.5	352
6.25	10	10	0	0	0	0	15.2	14.4	7.6	8.0	9.3	9.8	547
12.5	10	10	0	0	0	0	15.3	14.6	7.5	8.0	9.4	9.8	694
25	10	10	0	0	0	0	15.4	14.8	7.7	8.0	9.3	9.7	1005
50	10	10	0	0	0	0	15.4	14.8	7.5	7.8	9.2	9.6	1638
100	10	10	0	0	0	0	15.3	14.7	7.2	7.6	9.3	9.9	2843
Sample characteristics before analysis			**Appearance**				15.4		6.8		8.5		2842
			Beige,clear										

Reference assay (Phenol)		**Geometric average:**	9.43
Reference assay date:	2018-09-04	**Lower control limit:**	7.20
LC50-96h (mg/L of Phenol):	10.05	**Upper control limit:**	11.65
Lower C.I. at 95%:	8.57		
Upper C.I. at 95%:	11.63		

(1) PAV: Pisciculture des Arpents Verts.
PJC: Pisciculture de la Jacques-Cartier.
PDF: Pisciculture Denis Fournier

Sample stored at 4 ± 2 ° C in the dark.

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Appendix

Client: H2Lab **Request number:** 18-906615

BIOESSAI *Daphnia magna*

Lab. No: 3702490
Your reference: EWTP MEL-14b 07:30
Matrix: Surface water
Sampled by: Sean Arruda
Site sampled EWTP MEL-14b GPS: 63"02'15.5 92"13'06.3

Sampling method: NA
Date sampled (date and hour): 2018-09-03 7:30:00 AM
Date received (date and hour): 2018-09-05 10:58:00 AM
State of sampled received: Conform

Date and hour start analysis (0hrs): 2018-09-07 15:15 **Date and hour end analysis (48hrs):** 2018-09-09 15:15

EC50-48h (% v/v): >100
Lower C.I. at 95%: NA
Upper C.I. at 95%: NA
Calculation method: Aucune méthode utilisée

Analysed by: CGJ JB

Organisms: ***Daphnia magna*** (<24 hours) - Culture Eurofins Essais Environnementaux St-Augustin-de-Desmaures
<1% of mortality of brood stock 7 days before test
Average number of neonates per brood: 18
Age at first brood (days): 8
Number of Daphnia/container: 10
Number of repetitions per concentration: 1
Loading density (mL/Daphnia): 30
Volume of test solutions (mL): 300
Photoperiod: 16hrs light / 8hrs darkness
Dilution water: Dechlorinated municipal water, hardness adjusted
Culture and dilution water hardness (mg/L CaCO3): 164
Pre-aeration of sample: 0 minute
Pre-aeration rate (mL/min/L ±1): NA
Sample hardness (mg/L CaCO3): 495
Sample hardness adjusted (mg/L CaCO3): NA
Pre-treatment of sample: NA
Protocol / Reference method: SPE1/RM/14, 2000 et 02/2016
No modification to protocol

sample concentration (% v/v)	number of Daphnia 0hrs	immobility 48hrs (number)	immobility 48hrs (%)	mortality 48hrs (number)	mortality 48hrs (%)	temperature (°C)		pH		dissolved oxygen (mg/L)		conductivity (µS/cm)
						0hrs	48hrs	0hrs	48hrs	0hrs	48hrs	0hrs
0	10	0	0	0	0	20.8	19.6	8.1	8.1	8.7	8.7	464
6.25	10	0	0	0	0	20.8	19.4	8.0	8.0	8.7	8.6	585
12.5	10	0	0	0	0	20.8	19.3	7.9	8.0	8.6	8.8	693
25	10	0	0	0	0	20.9	19.3	7.8	7.9	8.4	8.7	934
50	10	0	0	0	0	20.9	19.3	7.5	7.8	8.6	8.6	1398
100	10	0	0	0	0	21.0	19.4	6.9	7.5	8.6	8.7	2306
Sample characteristics before analysis			**Appearance**			21.2		6.8		8.6		2305
			Clear									

Reference assay (Potassium dichromate):
Reference assay date: 2018-09-04
LC-50-48h (mg/L of Cr): 0.223
Lower C.I. at 95%: 0.196
Upper C.I. at 95%: 0.248

Geometric average: 0.280
Lower control limit: 0.201
Upper control limit: 0.358

Sample stored at 4 ± 2 ° C in the dark.

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APPENDIX 2E

Sublethal Toxicity Toxicology Laboratory Reports

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Rd.
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

September 07, 2018

Jennifer Brown
Agnico Eagle Mines Limited - Meliadine Project
Meliadine Division
Rankin Inlet NU
X0C 0G0

Dear Jennifer,

Re: Report on Sublethal Toxicity Analysis of Wastewater for MMER - August 2018

Enclosed are the reports for sublethal testing conducted on the sample of MEL-14 collected 2018-08-07. Data are presented in electronic format.

As you are aware, submission of sublethal toxicity data via RISS is a requirement of the MMER regulation. We would be pleased to enter this information on your behalf, for a fee. Please review the attached reports, and in an e-mail to **reporter@aquatox.ca**, provide us with your RISS user name and password (supplied to you by ECCC), along with written permission for AquaTox to access RISS on your behalf. We will then enter your results. In the future, if you would prefer us to enter the data automatically at the time the reports are issued, please indicate this in writing.

If you have any questions about the results, do not hesitate to contact me.

Sincerely,

AQUATOX TESTING & CONSULTING INC.

Martina Rendas
Project Manager

MR/jl

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Fathead minnow
EPS 1/RM/22

Work Order : 236864
Sample Number : 55841

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project	Date Collected :	2018-08-07
Location :	Rankin Inlet NU	Time Collected :	07:00
GPS Coordinates :	63° 02' 15.5"N 92° 13' 06.3"W	Date Received :	2018-08-09
Substance :	MEL-14	Time Received :	10:45
Sampling Method :	Grab	Temperature upon Receipt :	23.0 °C
Sampled By :	J. Brown	Date Tested :	2018-08-09
Sample Description :	Clear, yellow, odourless.		

Test Method : Test of Larval Growth and Survival Using Fathead Minnows. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/22 , 2nd ed. (February 2011).

7-DAY TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth from Biomass)	>100%	–	–
LC50	>100%	–	–

The results reported relate only to the sample tested and as received.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-07-31		
Test Duration :	7 days	Analyst(s) :	MV, RD, MR
IC25 Growth (from Biomass) :	0.87 g/L	LC50 :	1.00 g/L
95% Confidence Limits :	0.78 - 0.93 g/L	95% Confidence Limits :	0.93 - 1.07 g/L
Statistical Method :	Non-Linear Regression (CETIS)[a]	Statistical Method :	Linear Regression (MLE) (CETIS)[a]
Historical Mean IC25 :	0.94 g/L	Historical Mean LC50 :	1.10 g/L
Warning Limits (± 2SD) :	0.71 - 1.24 g/L	Warning Limits (± 2SD) :	0.92 - 1.31 g/L

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

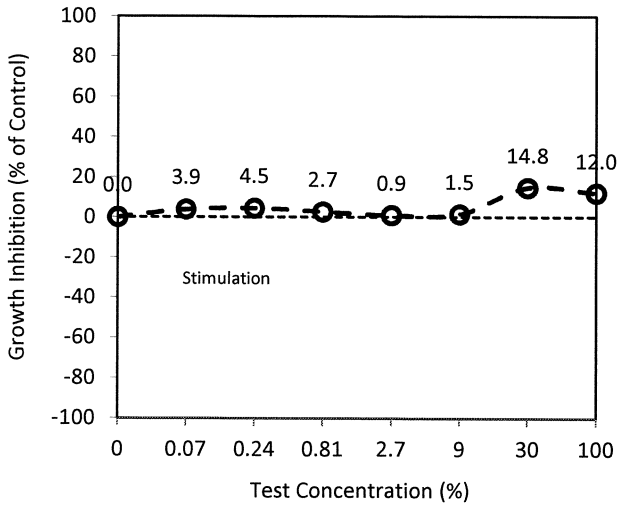
Test Organism :	*Pimephales promelas*	Test Type :	Static Renewal
Organism Batch :	Fm18-08	Control/Dilution Water :	Well water (no additional chemicals)
Organism Age :	~07:00 - 21:15 h at start of test	Test Volume / Replicate :	300 mL
Source :	In-house culture	Test Vessel :	420 mL polystyrene beaker
Culture Mortality/Diseased :	0.38 % (previous 7 days)	Depth of Test Solution :	8 cm
pH Adjustment :	None	Organisms per Replicate :	10
Sample Filtration :	None	Number of Replicates :	3
Hardness Adjustment :	None	Daily Renewal Method :	80-85% syphoned and replaced
Test Aeration :	None	Test Method Deviation(s):	None

COMMENTS

- All test validity criteria as specified in the test method cited above were satisfied.
- No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.
- Inflated swim bladders were confirmed in all test organisms used in this test.

Work Order : 236864
Sample Number : 55841

Fathead Minnow Growth Inhibition (based on Biomass)



REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

[b]Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics, 11* :1-21.

Date : 2018-09-07
yyyy-mm-dd

Approved By : JMdaz
Project Manager

Work Order : 236864
Sample Number : 55841

CUMULATIVE DAILY CONTROL MORTALITY AND IMPAIRMENT (±SD)

Date :	2018-08-09	2018-08-10	2018-08-11	2018-08-12	2018-08-13	2018-08-14	2018-08-15	2018-08-16
	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)

FATHEAD MINNOW CUMULATIVE DAILY MORTALITY

Initiation Time : 13:45
Initiation Date : 2018-08-09
Completion Date : 2018-08-16

		Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Treatment Mean Mortality (± SD)
Date :		2018-08-09		2018-08-10		2018-08-11		2018-08-12		2018-08-13		2018-08-14		2018-08-15		2018-08-16		
Analyst(s):		CZN		XD		MW		MV(CG)		CCM		CCM		CCM		XD		
Concentration (%)	Replicate	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	%
Control	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.07	A	0	0	0	0	0	0	0	0	1	10	1	10	1	10	1	10	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.33 (±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.24	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	1	10	1	10	1	10	1	10	3.33 (±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.81	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2.7	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	1	10	1	10	1	10	6.67 (±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10	
30	A	0	0	0	0	0	0	0	0	1	10	1	10	1	10	1	10	
	B	0	0	0	0	0	0	1	10	1	10	1	10	1	10	1	10	10.00 (±0.00)
	C	0	0	0	0	0	0	0	0	1	10	1	10	1	10	1	10	
100	A	0	0	0	0	0	0	1	10	1	10	1	10	1	10	1	10	
	B	0	0	0	0	0	0	2	20	3	30	3	30	3	30	3	30	16.67 (±11.55)
	C	0	0	0	0	1	10	1	10	1	10	1	10	1	10	1	10	

Aberrant behaviour or swimming impairment : None

Data Reviewed By: JC
Date : 2018-09-07

Work Order : 236864
Sample Number : 55841

FATHEAD MINNOW DRY WEIGHT AND BIOMASS DATA

Concentration (%)	Replicate	Number of Larvae Exposed	Replicate Mean Dry Weight (mg)	Treatment Mean Biomass (mg)	Standard Deviation
Control	A	10	0.960	0.979	0.031
	B	10	0.962		
	C	10	1.015		
0.07	A	10	0.884	0.941	0.079
	B	10	0.908		
	C	10	1.031		
0.24	A	10	0.987	0.935	0.101
	B	10	0.819		
	C	10	1.000		
0.81	A	10	1.070	0.953	0.102
	B	10	0.888		
	C	10	0.901		
2.7	A	10	0.853[1]	0.970	0.101
	B	10	1.026		
	C	10	1.031		
9	A	10	0.998	0.964	0.049
	B	10	0.986		
	C	10	0.908		
30	A	10	0.706	0.834	0.134
	B	10	0.822		
	C	10	0.974		
100	A	10	0.884	0.861	0.077
	B	10	0.776		
	C	10	0.924		

NOTES :

- [1]Outlier according to Grubbs Test[b]. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.
- Control average dry weight per surviving organism = 0.979 mg

Data Reviewed By: _____
Date : 08-09-07

Work Order : 236864
Sample Number: 55841

Fathead Minnow Water Chemistry Data

Initial Chemistry:	Temp. (°C)	DO (mg/L)	pH	Conductivity (µmhos/cm)	Hardness (mg/L as $CaCO_3$)
	25.0	7.9	7.2	2033	520

		Day 0 - 1 2018-08-09	Day 1 - 2 2018-08-10	Day 2 - 3 2018-08-11	Day 3 - 4 2018-08-12	Day 4 - 5 2018-08-13	Day 5 - 6 2018-08-14	Day 6 - 7 2018-08-15
Sub-sample Used		1	1	1	2	2	3	3
Temperature (°C)		25.0	24.0	24.0	24.0	24.0	25.0	24.0
Dissolved Oxygen (mg/L)		7.9	8.1	9.1	9.4	9.6	9.4	9.7
Dissolved Oxygen % Sat.[2]		99	98	110	113	116	114	117
pH		7.2	7.2	7.3	7.2	7.2	7.2	7.2
Pre-aeration Time (min)[3]		0	0	20	20	20	20	20
Analyst(s) :	Initial	SK	CCM	MV(CG)	MA	MW	TZL(CG)	TZL(CG)
	Final	XD	MA	MA	CCM	CCM	CCM	XD
Control (0%)								
Temp.(°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	25.0	25.0
DO % Sat.	Initial	99	100	99	99	100	98	100
DO (mg/L)	Initial	8.2	8.1	8.2	8.2	8.3	8.1	8.3
	Final	7.6	7.5	7.1	6.4	6.5	6.8	6.9
pH	Initial	8.3	8.3	8.3	8.4	8.3	8.3	8.4
	Final	8.2	8.2	8.0	7.9	8.0	8.1	8.0
Cond. (µmhos/cm)	Initial	690	695	694	693	690	732	686
0.07 %								
Temp.(°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	25.0	25.0
DO (mg/L)	Initial	8.0	8.3	8.2	8.2	8.4	8.2	8.3
	Final	7.6	7.5	7.1	6.6	6.8	6.7	6.9
pH	Initial	8.3	8.4	8.2	8.3	8.3	8.3	8.4
	Final	8.2	8.2	8.0	8.0	8.0	8.0	8.0
Cond. (µmhos/cm)	Initial	696	696	698	700	695	738	691
9 %								
Temp.(°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	25.0	25.0
DO (mg/L)	Initial	8.0	8.3	8.3	8.3	8.4	8.1	8.3
	Final	7.6	7.5	6.7	6.6	6.5	6.7	6.9
pH	Initial	8.2	8.3	8.3	8.3	8.3	8.3	8.3
	Final	8.1	8.1	7.9	7.9	7.9	8.0	7.9
Cond. (µmhos/cm)	Initial	822	819	821	824	820	854	806
100 %								
Temp.(°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	25.0	25.0
DO (mg/L)	Initial	7.8	8.2	8.5	8.7	8.7	8.5	8.8
	Final	7.4	7.5	6.7	6.6	6.5	6.8	6.8
pH	Initial	7.4	7.5	7.5	7.5	7.4	7.4	7.4
	Final	7.4	7.5	7.3	7.2	7.2	7.3	7.3
Cond. (µmhos/cm)	Initial	2052	2044	2039	2050	2045	2041	1917

"–" = not measured

[2] % saturation (adjusted for actual temperature and barometric pressure)

[3] ≤100 bubbles/minute

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TOXICITY TEST REPORT

Ceriodaphnia dubia
EPS 1/RM/21

Work Order : 236864
Sample Number : 55841

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project	Date Collected :	2018-08-07
Location :	Rankin Inlet NU	Time Collected :	07:00
GPS Coordinates :	63° 02' 15.5"N 92° 13' 06.3"W	Date Received :	2018-08-09
Substance :	MEL-14	Time Received :	10:45
Sampling Method :	Grab	Temperature upon Receipt :	23.0 °C
Sampled By :	J. Brown	Date Tested :	2018-08-09
Sample Description :	Clear, yellow, odourless.		

Test Method : Test of Reproduction and Survival using the Cladoceran *Ceriodaphnia dubia*. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/21, 2nd ed. (February 2007).

6-DAY TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Reproduction)	>100 %	–	–
LC50	>100 %	–	–

The results reported relate only to the sample tested and as received.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-07-31		
Test Duration :	6 days	Analyst(s) :	MW, MR
IC25 Reproduction :	1.09 g/L	LC50 :	2.74 g/L[2]
95% Confidence Limits :	0.90 - 1.30 g/L	95% Confidence Limits :	2.17 - 3.68 g/L
Statistical Method :	Non-linear Regression[1] (CETIS)[a]	Statistical Method :	Linear Regression (MLE) (CETIS)[a]
Historical Mean IC25 :	1.31 g/L	Historical Mean LC50 :	2.21 g/L
Warning Limits (± 2SD) :	1.00 - 1.72 g/L	Warning Limits (± 2SD) :	1.87 - 2.61 g/L

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

Sample Filtration :	None	Test Volume per Replicate :	15 mL
Test Aeration :	None	Test Vessel :	19 mL polystyrene vial
pH Adjustment :	None	Depth of Test Solution :	4.8 cm
Hardness Adjustment :	None	Number of Replicates :	10
Renewal Frequency :	Once daily (≤24 h)	Organisms per Replicate :	1
Renewal Method :	Transferred to fresh solutions	Number of Concentrations :	7 + 1 Control
Control/Dilution Water :	Well water (no chemicals added)	Test Method Deviation(s) :	None

COMMENTS

[1]Poisson weighting (CETIS)[a] was applied.

[2]Note: The reference toxicant LC50 test result exceeded the 95% warning limits for historical data. No other unusual circumstances were observed and therefore the test result is considered acceptable.

•All test validity criteria as specified in the test method cited above were satisfied.

Work Order : 236864
Sample Number : 55841

TEST ORGANISMS

Test Organism :	*Ceriodaphnia dubia*	Range of Age (at start of test) :	07:50 h - 19:50 h
Organism Batch :	Cd18-08	Mean Brood Organism Mortality :	0%
Organism Origin :	Single in-house mass culture	Ephippia in Culture :	No
Test Organism Origin :	Individual in-house cultures		

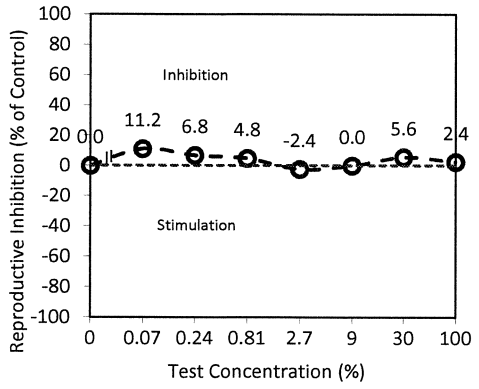
Brood Organism Neonate Production

Replicate :	1	2	3	4	5	6	7	8	9	10	Mean
Total (third or subsequent brood):	12	18	15	12	16	12	12	14	12	15	13.8
Total (first three broods):	25	28	27	25	23	26	27	23	26	25	25.5

No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.

TEST DATA

***Ceriodaphnia dubia* Reproductive Inhibition**



Cumulative Daily Test Organism Mortality (%)

		Test Concentration (%)							
Date	**Test Day**	Control	0.07	0.24	0.81	2.7	9	30	100
2018-08-10	1	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0
2018-08-12	3	0	0	0	0	0	0	0	0
2018-08-13	4	0	0	0	0	0	0	0	0
2018-08-14	5	0	0	0	0	0	0	0	0
2018-08-15	6	0	0	0	0	0	0	0	0
Total Mortality (%)		0	0	0	0	0	0	0	0

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

[b]Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics, 11* :1-21.

Date : 2018-09-07
yyyy-mm-dd

Approved By : _____
Project Manager

Work Order : 236864
Sample Number : 55841

Ceriodaphnia dubia Survival and Reproduction

Test Initiation Date : 2018-08-09
Initiation Time : 13:50
Test Completion Date : 2018-08-15

Concentration (%) Control	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)	Analyst(s)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0	XD
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0	SEW
2018-08-12	3	5	3	0	0	0	0	0	6	0	2	1.6	SEW
2018-08-13	4	0	0	5	5	4	6	3	0	4	0	2.7	RK
2018-08-14	5	0	9	8	6	9	10	4	8	10	8	7.2	CG
2018-08-15	6	14	12	14	14	13	14	11	14	15	15	13.6	MA
Total		**19**	**24**	**27**	**25**	**26**	**30**	**18**	**28**	**29**	**25**	**25.1 (±4.0)**	

Concentration (%) 2.7	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0
2018-08-12	3	0	5	5	0	0	5	0	0	0	0	1.5
2018-08-13	4	5	0	0	4	7	0	3	3	1	2	2.5
2018-08-14	5	11	9	10	8	11	7	10	6	8	10	9
2018-08-15	6	13	12	12	11	13	14	13	12	13	14	12.7
Total		**29**	**26**	**27**	**23**	**31**	**26**	**26**	**21**	**22**	**26**	**25.7 (±3.1)**

Concentration (%) 0.07	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0
2018-08-12	3	0	0	0	0	0	3	5	0	0	0	0.8
2018-08-13	4	5	6	4	3	3	0	5	6	1	2	3.5
2018-08-14	5	10	7	7	5	10	5	0	6	6	4	6
2018-08-15	6	14	14	10	11	12	12	13	10	11	13	12
Total		**29**	**27**	**21**	**19**	**25**	**20**	**23**	**22**	**18**	**19**	**22.3 (±3.7)**

Concentration (%) 9	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0
2018-08-12	3	3	0	0	0	0	0	0	0	0	5	0.8
2018-08-13	4	1	2	5	0	4	4	4	3	5	0	2.8
2018-08-14	5	10	8	9	7	8	8	5	5	6	10	7.6
2018-08-15	6	16	16	11	14	14	13	12	13	14	16	13.9
Total		**30**	**26**	**25**	**21**	**26**	**25**	**21**	**21**	**25**	**31**	**25.1 (±3.5)**

Concentration (%) 0.24	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0
2018-08-12	3	2	0	0	0	2	6	0	3	3	4	2
2018-08-13	4	4	5	4	7	0	10	5	0	0	0	3.5
2018-08-14	5	6	6	10	10	7	0	10	5	10	5	6.9
2018-08-15	6	–	11	13	15	12	14	11	11	14	9	11
Total		**12**	**22**	**27**	**32**	**21**	**30**	**26**	**19**	**27**	**18**	**23.4 (±6.1)**

Concentration (%) 30	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0
2018-08-12	3	0	4	0	0	0	0	5	0	0	0	0.9
2018-08-13	4	3	0	4	3	2	0	1	7	2	4	2.6
2018-08-14	5	9	7	5	0	10	6	9	12	5	10	7.3
2018-08-15	6	16	14	9	15	16	7	13	13	12	14	12.9
Total		**28**	**25**	**18**	**18**	**28**	**13**	**28**	**32**	**19**	**28**	**23.7 (±6.2)**

Concentration (%) 0.81	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0
2018-08-12	3	2	0	2	0	0	5	4	0	2	0	1.5
2018-08-13	4	0	5	2	6	5	0	0	5	0	3	2.6
2018-08-14	5	7	9	7	6	8	10	6	12	10	9	8.4
2018-08-15	6	14	13	–	12	13	11	12	15	13	11	11.4
Total		**23**	**27**	**11**[3]	**24**	**26**	**26**	**22**	**32**	**25**	**23**	**23.9 (±5.3)**

Concentration (%) 100	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-08-10	1	0	0	0	0	0	0	0	0	0	0	0
2018-08-11	2	0	0	0	0	0	0	0	0	0	0	0
2018-08-12	3	0	0	0	3	5	0	0	0	0	0	0.8
2018-08-13	4	6	4	5	0	0	4	5	4	2	5	3.5
2018-08-14	5	11	8	10	9	10	8	9	3	8	10	8.6
2018-08-15	6	10	10	9	11	13	12	14	12	11	14	11.6
Total		**27**	**22**	**24**	**23**	**28**	**24**	**28**	**19**	**21**	**29**	**24.5 (±3.4)**

NOTES : •All young produced by a test organism during its fourth and subsequent broods were discarded and not included in the above counts. The presence of two or more neonates in any test chamber, during any given day of the test, constitutes a brood.

•[3] Outlier according to Grubbs Test [b]. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.

"x"= test organism mortality
"*"= accidental test organism mortality
"–"=4th brood (see 'NOTES')

Data Reviewed By: JL
Date : 2018-09-07

Work Order : 236864
Sample Number: 55841

Ceriodaphnia dubia Water Chemistry Data

	Initial Chemistry:	Temp. (°C)	DO (mg/L)	pH	Conductivity (µmhos/cm)	Hardness (mg/L as $CaCO_3$)
		25.0	7.9	7.2	2033	520

Date :		Day 0 - 1 2018-08-09	Day 1 - 2 2018-08-10	Day 2 - 3 2018-08-11	Day 3 - 4 2018-08-12	Day 4 - 5 2018-08-13	Day 5 - 6 2018-08-14
Sub-sample Used		1	1	1	2	2	3
Temperature (°C)		25.0	24.0	24.0	24.0	24.0	25.0
Dissolved Oxygen (mg/L)		7.9	8.1	9.1	9.4	9.6	9.4
Dissolved Oxygen % Sat.[3]		99	98	110	113	116	114
pH		7.2	7.2	7.3	7.2	7.2	7.2
Pre-aeration Time (min)[4]		0	0	20	20	20	20
Analyst(s)	Initial	SK	CCM	MV(CG)	MA	MW	TZL(CG)
	Final	XD	MA	MA	RK	AS	TZL(CG)
Control (0%)							
Temp. (°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0
	Final	24.0	25.0	25.0	25.0	25.0	25.0
DO % Sat.[3]	Initial	99	100	99	99	100	98
DO (mg/L)	Initial	8.2	8.1	8.2	8.2	8.3	8.1
	Final	7.3	7.4	7.7	7.4	7.3	7.4
pH	Initial	8.3	8.3	8.3	8.4	8.3	8.3
	Final	8.2	8.2	8.1	8.2	8.1	8.1
Cond. (µmhos/cm)	Initial	690	695	694	693	690	732
0.07 %							
Temp. (°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0
	Final	24.0	25.0	25.0	25.0	25.0	25.0
DO (mg/L)	Initial	8.0	8.3	8.2	8.2	8.4	8.2
	Final	7.4	7.4	7.8	7.5	7.3	7.4
pH	Initial	8.3	8.4	8.2	8.3	8.3	8.3
	Final	8.2	8.2	8.2	8.2	8.1	8.2
Cond. (µmhos/cm)	Initial	696	696	698	700	695	738
9 %							
Temp. (°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0
	Final	24.0	25.0	25.0	25.0	25.0	25.0
DO (mg/L)	Initial	8.0	8.3	8.3	8.3	8.4	8.1
	Final	7.4	7.4	7.8	7.5	7.3	7.3
pH	Initial	8.2	8.3	8.3	8.3	8.3	8.3
	Final	8.1	8.1	8.1	8.1	8.0	8.1
Cond. (µmhos/cm)	Initial	822	819	821	824	820	854
100 %							
Temp. (°C)	Initial	24.0	25.0	24.0	24.0	24.5	25.0
	Final	24.0	25.0	25.0	25.0	25.0	25.0
DO (mg/L)	Initial	7.8	8.2	8.5	8.7	8.7	8.5
	Final	7.2	7.5	7.8	7.5	7.1	7.3
pH	Initial	7.4	7.5	7.5	7.5	7.4	7.4
	Final	7.5	7.5	7.5	7.5	7.4	7.4
Cond. (µmhos/cm)	Initial	2052	2044	2039	2050	2045	2041

"–" = not measured

[3] % saturation (adjusted for actual temperature and barometric pressure)

[4] ≤100 bubbles/minute

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TOXICITY TEST REPORT

Lemna minor
EPS 1/RM/37

Work Order : 236864
Sample Number : 55841

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project	Date Collected :	2018-08-07
Location :	Rankin Inlet NU	Time Collected :	07:00
GPS Coordinates :	63° 02' 15.5"N 92° 13' 06.3"W	Date Received :	2018-08-09
Substance :	MEL-14	Time Received :	10:45
Sampling Method :	Grab	Temperature upon Receipt :	23.0 °C
Sampled By :	J. Brown	Date Tested :	2018-08-09
Sample Description :	Clear, yellow, odourless.		

Test Method : Test for Measuring the Inhibition of Growth using the Freshwater Macrophyte, *Lemna minor*. Method Development and Application Section, Environmental Technology Centre, Environment Canada. Ottawa, Ontario. Report EPS 1/RM/37, 2nd ed. (January 2007).

7-DAY TEST RESULTS

Effect	Value (%)	95% Confidence Limits	Statistical Method
IC25 (Frond Yield)	72.3%	36.4 - 86.5	Linear Interpolation (CETIS)[a]
IC25 (Weight)	>97.0	–	–

The results reported relate only to the sample tested and as received.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-08-15	Historical Geometric Mean IC25 :	2.04 g/L
Test Duration :	7 days	Warning Limits (± 2SD) :	1.52 - 2.74 g/L
IC25 (Frond Production) :	2.16 g/L	Growth Medium :	Modified APHA
95% Confidence Limits :	1.95 - 2.39 g/L	Analyst(s) :	MA, CZN
Statistical Method :	Non-Linear Regression (CETIS)[a]		

The reference toxicant test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

Test Organism :	*Lemna minor* L., Strain 7730	Test Type :	Static (no sub-samples required)
Organism Batch :	Lm18-07	Control/Dilution Medium :	Modified APHA
Culture Origin :	UTCC 492	Medium Preparation Water :	Distilled Water
Test Organism Source :	Axenic in-house culture	Source of Water :	Morning Mist
Culture Medium :	Modified Hoaglands E+	Medium Preparation Chemicals :	Modified APHA stocks A, B, C (10 mL/L)
Age (on Test Day 0) :	10 days	Nutrient Spiking of Sample :	Modified APHA stocks A, B, C (10 mL/L)
Health Criteria (in APHA) :	13.33-fold frond increase in 7 days	Replicates per Concentration :	4
Organism Acclimation :	21:15 h in APHA medium	Test Volume per Replicate :	100 mL
Inoculum (Test Day 0) :	2 plants (3 fronds per plant)	Test Vessel :	250 mL glass Erlenmeyer flask
Sample Filtration :	1 µm (Whatman GF/C)	Depth of Test Solution :	4.0 cm
Sample Pre-aeration :	20 min. at ≤100 bubbles/min.	Photoperiod/Light Intensity :	Continuous, 4460 - 5250 lux
pH Adjustment :	None	Test Method Deviation(s) :	None
Hardness Adjustment :	None		

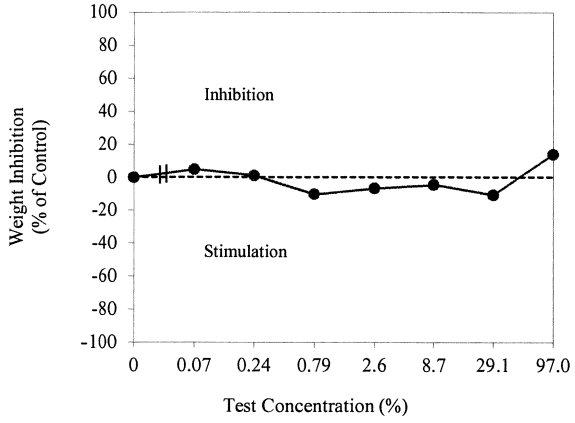
COMMENTS

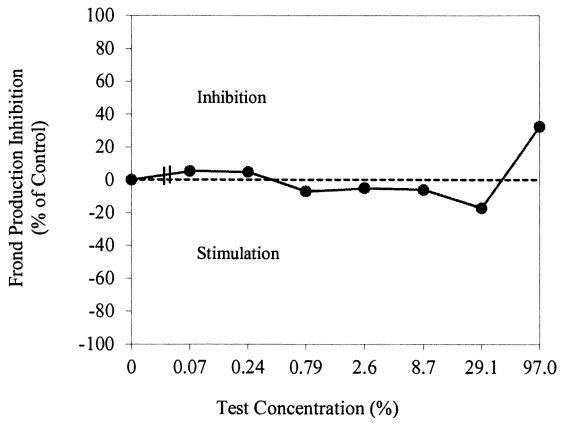
•All test validity criteria as specified in the test method cited above were satisfied.

•Statistical analysis could not be performed using non linear regression, since a suitable model could not be found. Therefore, test results were calculated using Linear Interpolation (CETIS)[a]. In test concentrations where frond production/weights were stimulated (greater than the control), data were replaced with control values for the purposes of statistical analysis, as recommended by Environment Canada (2005).

Work Order : 236864
Sample Number : 55841

Lemna minor Growth Inhibition





TEST MONITORING

Initiation Date : 2018-08-10
Intitiation Time : 13:30
Initiated By : MDS

Termination Date : 2018-08-17
Termination Time : 14:00
Terminated By : NK

Temperature Monitoring

Test Day	Date	Temperature (°C)
0 (unmodified sample)	2018-08-10	25.0
0	2018-08-10	24.5
1	2018-08-11	25.0
2	2018-08-12	25.0
3	2018-08-13	25.0
4	2018-08-14	25.0
5	2018-08-15	25.0
6	2018-08-16	25.0
7	2018-08-17	25.0

pH Monitoring

Concentration (%)	Day 0	Day 7
100 (unmodified sample)	7.0	–
Control	8.3	8.4
0.07	8.3	8.4
0.24	–	–
0.79	–	–
2.6	8.3	8.5
8.7	–	–
29.1	–	–
97.0	8.0	8.4

"–" = not required

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

Environment Canada, 2005. Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environmental Protection Series, Ottawa, Ont., Rept. EPS 1/RM/46.

Date : 2018-09-07
yyyy-mm-dd

Approved By:
Project Manager

Work Order : 236864
Sample Number : 55841

***Lemna minor* Frond Increase**

Test Concentration (%)	Replicate	Frond Count Day 0*	Frond Count Day 7	Frond Increase	Mean Frond Increase	Standard Deviation	CV (%)	Frond/Root Appearance (Day 7)
Control	A	6	98	92	79.00	8.87	11.2	Fronds healthy, appearance normal in all replicates.
	B	6	82	76				
	C	6	82	76				
	D	6	78	72				
0.07	A	6	80	74	74.75	0.96	1.3	Fronds healthy, appearance normal in all replicates.
	B	6	81	75				
	C	6	82	76				
	D	6	80	74				
0.24	A	6	83	77	75.25	3.59	4.8	Fronds healthy, appearance normal in all replicates.
	B	6	76	70				
	C	6	84	78				
	D	6	82	76				
0.79	A	6	94	88	84.50	16.60	19.6	Fronds healthy, appearance normal in all replicates.
	B	6	108	102				
	C	6	92	86				
	D	6	68	62				
2.6	A	6	76	70	83.00	15.19	18.3	Fronds healthy, appearance normal in all replicates.
	B	6	110	104				
	C	6	90	84				
	D	6	80	74				
8.7	A	6	102	96	83.75	8.81	10.5	Fronds healthy, appearance normal in all replicates.
	B	6	82	76				
	C	6	85	79				
	D	6	90	84				
29.1	A	6	105	99	92.50	7.51	8.1	Fronds healthy, appearance normal in all replicates.
	B	6	89	83				
	C	6	96	90				
	D	6	104	98				
97.0	A	6	59	53	53.25	1.71	3.2	Fronds healthy, appearance normal in all replicates.
	B	6	57	51				
	C	6	60	54				
	D	6	61	55				

NOTES: *No unusual appearance or treatment of culture prior to testing. Test inoculated with healthy plants.

•No significant stimulation (α=0.05) of frond increase was detected by ANOVA-Dunnett Multiple Comparison Test (CETIS)[a] at any test level compared to the control.

•A 14.2-fold increase in frond number was observed in the control over the testing period.

•No outlying data points were detected according to Grubbs Test (CETIS)[a].

"–" = not available/not required

Test Data Reviewed By : JC
Date : 2018-09-07

Work Order : 236864
Sample Number : 55841

Lemna minor Frond Weight Data

Test Concentration (%)	Replicate	Dry Weight of Fronds (mg)	Treatment Mean Dry Weight (mg)	Standard Deviation
Control	A	9.41	8.53	0.95
	B	7.22		
	C	9.01		
	D	8.47		
0.07	A	7.66	8.12	0.57
	B	8.51		
	C	7.61		
	D	8.72		
0.24	A	8.62	8.45	0.21
	B	8.35		
	C	8.19		
	D	8.62		
0.79	A	9.75	9.40	1.73
	B	11.49		
	C	9.06		
	D	7.31		
2.6	A	8.68	9.10	0.57
	B	9.93		
	C	8.93		
	D	8.84		
8.7	A	9.54	8.92	0.62
	B	8.23		
	C	8.56		
	D	9.33		
29.1	A	10.37	9.44	1.00
	B	8.27		
	C	8.95		
	D	10.15		
97.0	A	7.41	7.34	0.17
	B	7.27		
	C	7.54		
	D	7.15		

NOTES :

•No significant stimulation (α=0.05) of frond weight was detected by ANOVA-Dunnett Multiple Comparison Test (CETIS)[a] at any test level compared to the control.

•No outlying data points were detected according to Grubbs Test (CETIS)[a].

"–" = not available/not required

Test Data Reviewed By : JC
Date : 2018-09-07

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Pseudokirchneriella subcapitata

EPS 1/RM/25

Work Order : 236864
Sample Number : 55841

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project	Date Collected :	2018-08-07
Location :	Rankin Inlet NU	Time Collected :	07:00
GPS Coordinates :	63° 02' 15.5"N 92° 13' 06.3"W	Date Received :	2018-08-09
Substance :	MEL-14	Time Received :	10:45
Sampling Method :	Grab	Temperature upon Receipt :	23.0 °C
Sampled By :	J. Brown	Date Tested :	2018-08-09
Sample Description :	Clear, yellow, odourless.		

Test Method : Growth Inhibition Test Using a Freshwater Alga. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/25, 2nd ed. (March 2007).

72-h TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth)	>90.91 %	–	–

The results reported relate only to the sample tested.

ZINC (AS ZINC SULPHATE) REFERENCE TOXICANT DATA

Date Tested :	2018-08-21	Statistical Method :	Non-Linear Regression (CETIS)[a]
Organism Batch :	Ps18-08	Historical Mean IC25 :	10.4 µg/L
Test Duration :	72 hours	Warning Limits (± 2SD) :	4.9 - 22.3 µg/L
IC25 Growth :	8.8 µg/L	Analyst(s) :	AS, MDS, CZN
95% Confidence Limits :	7.5 - 10.2 µg/L		

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST ORGANISM

Test Organism :	*Pseudokirchneriella subcapitata*	Source :	In-house culture
Culture Origin :	University of Waterloo, Waterloo ON	Cell Density at 0-h :	9818 cells/mL
Strain Number :	CPCC 37	Inoculum Prepared :	00:05 h prior to test initiation
Organism Batch :	Ps18-08	Age (at start of test) :	3 days (in exponential growth)

•Algal growth curve is determined at least twice per year as required by the test method cited above.
•No unusual appearance or treatment of culture prior to testing.

TEST CONDITIONS

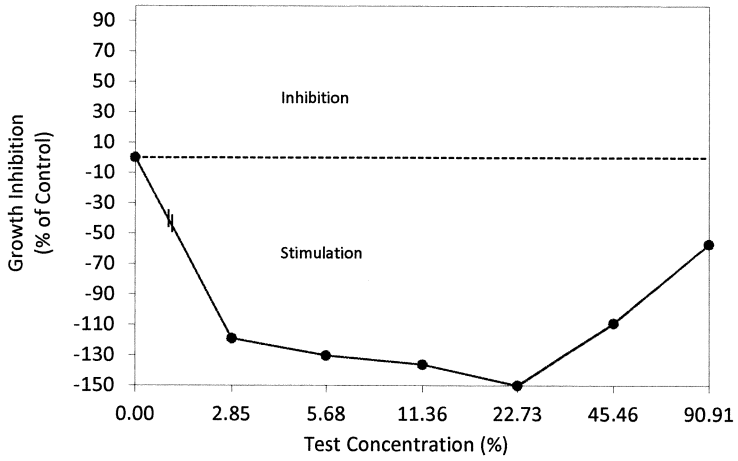
Test Type :	Static	Volume per Replicate :	220 µL
Test Duration :	72 hours	Control Replicates :	10
Mean Temperature (± SD):	24.3°C (± 0.3)	Test Replicates :	4
Sample Pre-aeration :	None	Concentrations Tested :	10 + Control
Sample Filtration :	0.45 µm preconditioned filter	Photoperiod :	Continuous light
Volume Filtered:	≥10 mL	Light Intensity :	3800-4320 lux
Control/Dilution Water :	Millipore Milli-Q (no chemicals added)	pH Adjustment :	None
Enrichment Medium :	Stock 2B: EDTA reduced to 25%	Hardness Adjustment :	None
Test Vessel :	U-shaped polystyrene microplate	Test Method Deviation(s) :	None

COMMENTS

•All test validity criteria as specified in the test method cited above were satisfied.

Work Order : 236864
Sample Number : 55841

***Pseudokirchneriella subcapitata* Growth Inhibition**



CELL ENUMERATION AT 72-HOURS

Initiated By :	SEW	Sample pH (at 0 hours) :	7.0
Completion/Enumeration Date :	2018-08-12	Control pH (at 0 hours) :	7.0
Enumerated By :	RD	Control pH (at 72 hours) :	7.0
Enumeration Method :	Manual (haemocytometer)	Control Cell Increase Factor :	63.2 times growth

Concentration	Cell Concentration (x 10000 cells/mL) Replicate								Cell Yield (x 10000 cells/mL) Mean	Standard Deviation	CV (%)	Stimulation (% of control)**
(%)	1	2	3	4	7	8	9	10				
Control	60.5	59.0	68.5	67.5	62.5	64.5	58.0	56.0	61.08	4.51	7.38	–
0.18	–	–	–	–	–	–	–	–	–	–	–	–
0.35	–	–	–	–	–	–	–	–	–	–	–	–
0.71	–	–	–	–	–	–	–	–	–	–	–	–
1.42	–	–	–	–	–	–	–	–	–	–	–	–
2.85	136.0	125.5	143.0	–	–	–	–	–	133.85	8.81	6.58	119.14
5.68	139.0	144.0	142.0	–	–	–	–	–	140.68	2.52	1.79	130.33
11.36	153.5	138.0	144.5	–	–	–	–	–	144.35	7.78	5.39	136.33
22.73	150.0	153.0	158.0	–	–	–	–	–	152.68	4.04	2.65	149.97
45.46	126.5	128.0	131.5	–	–	–	–	–	127.68	2.57	2.01	109.04
90.91	104.5	95.0	91.0	–	–	–	–	–	95.85	6.93	7.23	56.93

NOTES : **Statistically significant stimulation, according to ANOVA/Dunnett Multiple Comparison Test (CETIS)[a], (α=0.0

- Control replicates 5 and 6 used for pH measurement.
- The Mann-Kendall test shows that there is no inhibitory gradient (α=0.05).
- No outlying data points were detected according to Grubbs Test (CETIS)[a].

"–" = not enumerated/not required

Data Reviewed By : J
Date : 2018-09-07

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Softw LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

Date : 2018-09-07 *yyyy-mm-dd*

Approved By : *Project Manager*

CHAIN OF CUSTODY RECORD

AQUATOX

AquaTox Work Order No: 236864

Shipping Address: AquaTox Testing & Consulting Inc.
11B Nicholas Beaver Road, RR #3
Guelph, Ontario Canada N1H 6H9

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number:	580278
Field Sampler Name (print):	Jennifer Brown
Signature:	
Affiliation:	Agnico Eagle Mines Ltd. - Meliadine Division
Sample Storage (prior to shipping):	Shipped immediately after sampling
Custody Relinquished by:	Jennifer Brown
Date/Time Shipped:	2018-08-07 - 08:00

Client: Agnico Eagle Mines Limited
Meliadine Project
Rankin Inlet, Nunavut, Canada
X0C 0G0
GPS Coordinates 63* 02'15.5" 92* 13'06.3"

Phone: (819) 759-3555

Fax:

Contact: Jennifer Brown

Sample Identification					Analyses Requested										Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	AquaTox Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Lemna minor* Growth	*Pseudokirchneriella subcapitata* Growth	RISS Data Entry	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg 2 x 1L, 3 x 10L, etc.)
2018-08-07	07:00	~~EXP~~ MEL-14 (~~Post-treatment~~)	55841	23.0					✔	✔	✔	✔			✔		3 x 20L

Name change requested by Martin Theriault (email 2018-08-21) JR

For Lab Use Only	
Received By:	C2N
Date:	2018-08-09
Time:	10:45
Storage Location:	
Storage Temp.(°C)	

Please list any special requests or instructions:
TOXICOLOGY analysis required

Phone number: 819-759-3555 ext 3996

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Rd.
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

September 28, 2018

Jennifer Brown
Agnico Eagle Mines Limited - Meliadine Project
Meliadine Division
Rankin Inlet NU
X0C 0G0

Dear Jennifer,

Re: Report on Sublethal Toxicity Analysis of Wastewater for MMER - August 2018

Enclosed are the reports for sublethal testing conducted with Fathead Minnow, *Lemna minor*, and *Pseudokirchneriella subcapitata* on the sample of MEL-14 collected 2018-08-13. Data are presented in electronic format. The corresponding test with *Ceriodaphnia dubia* was unsuccessful, and requested submission of a sample to retest. Our understanding resampling was not possible at the time of notification.

As you are aware, submission of sublethal toxicity data via RISS is a requirement of the MMER regulation. We would be pleased to enter this information on your behalf, for a fee. Please review the attached reports, and in an e-mail to reporter@aquatox.ca, provide us with your RISS user name and password (supplied to you by ECCC), along with written permission for AquaTox to access RISS on your behalf. We will then enter your results. In the future, if you would prefer us to enter the data automatically at the time the reports are issued, please indicate this in writing.

If you have any questions about the results, do not hesitate to contact me.

Sincerely,

AQUATOX TESTING & CONSULTING INC.

Martina Rendas
Project Manager

MR/jl

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Fathead minnow
EPS 1/RM/22

Work Order : 236923
Sample Number : 55913

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project	Date Collected :	2018-08-13
Location :	Rankin Inlet NU	Time Collected :	07:00
GPS Coordinates :	63° 02' 15.5"N 92° 13' 06.3"W	Date Received :	2018-08-15
Substance :	MEL-14	Time Received :	10:45
Sampling Method :	Grab	Temperature upon Receipt :	21.0 °C
Sampled By :	D. Gorton	Date Tested :	2018-08-16
Sample Description :	Clear, light yellow, odourless.		

Test Method : Test of Larval Growth and Survival Using Fathead Minnows. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/22 , 2nd ed. (February 2011).

7-DAY TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth from Biomass)	>100%	–	–
LC50	>100%	–	–

The results reported relate only to the sample tested and as received.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-08-28	Analyst(s) :	MV, RD, MA
Organism Batch :	Fm18-08	Test Duration :	7 days
IC25 Growth (from Biomass) :	0.90 g/L	LC50 :	1.03 g/L
95% Confidence Limits :	0.81 - 0.97 g/L	95% Confidence Limits :	0.96 - 1.11 g/L
Statistical Method :	Non-Linear Regression (CETIS)[a]	Statistical Method :	Linear Regression (MLE) (CETIS)[a]
Historical Mean IC25 :	0.93 g/L	Historical Mean LC50 :	1.09 g/L
Warning Limits (± 2SD) :	0.71 - 1.23 g/L	Warning Limits (± 2SD) :	0.91 - 1.30 g/L

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

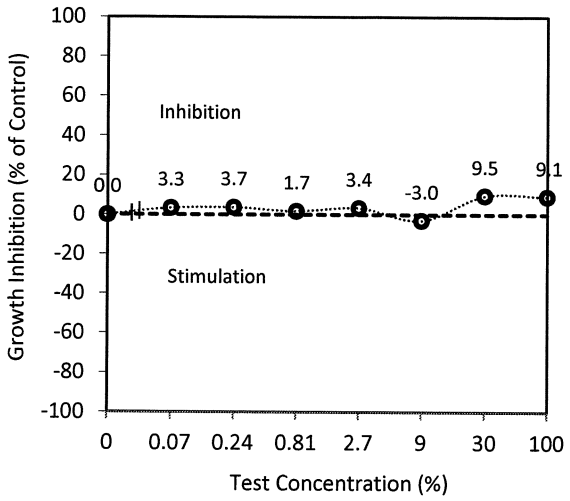
Test Organism :	*Pimephales promelas*	Test Type :	Static Renewal
Organism Batch :	Fm18-08	Control/Dilution Water :	Well water (no additional chemicals)
Organism Age :	~07:00 - 20:35 h at start of test	Test Volume / Replicate :	300 mL
Source :	In-house culture	Test Vessel :	420 mL polystyrene beaker
Culture Mortality/Diseased :	0.77 % (previous 7 days)	Depth of Test Solution :	8 cm
pH Adjustment :	None	Organisms per Replicate :	10
Sample Filtration :	None	Number of Replicates :	3
Hardness Adjustment :	None	Daily Renewal Method :	80-85% syphoned and replaced
Test Aeration :	None	Test Method Deviation(s):	None

COMMENTS

- All test validity criteria as specified in the test method cited above were satisfied.
- No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.
- Inflated swim bladders were confirmed in all test organisms used in this test.

Work Order : 236923
Sample Number : 55913

Fathead Minnow Growth Inhibition (based on Biomass)



REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

[b] Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics, 11* :1-21.

Date : 2018-09-27
yyyy-mm-dd

Approved By : Melissa E
Project Manager

AQUATOX

TOXICITY TEST REPORT

Fathead minnow
EPS 1/RM/22

Work Order : 236923
Sample Number : 55913

CUMULATIVE DAILY CONTROL MORTALITY AND IMPAIRMENT (±SD)

Date :	2018-08-16	2018-08-17	2018-08-18	2018-08-19	2018-08-20	2018-08-21	2018-08-22	2018-08-23
	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)

FATHEAD MINNOW CUMULATIVE DAILY MORTALITY

Initiation Time : 12:15
Initiation Date : 2018-08-16
Completion Date : 2018-08-23

		Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Treatment
Date :		2018-08-16		2018-08-17		2018-08-18		2018-08-19		2018-08-20		2018-08-21		2018-08-22		2018-08-23		Mean Mortality (± SD)
Analyst(s):		CCM(VC)		CCM(VC)		SEW		CG		SEW		SEW		RK(VC)		CCM(VC)		
Concentration (%)	Replicate	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	Number Dead	% Dead	%
Control	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.07	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.24	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0.81	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2.7	A	0	0	0	0	0	0	0	0	0	0	1	10	1	10	1	10	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.33 (±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	A	0	0	0	0	0	0	0	0	0	0	0	0	1	10	1	10	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.33 (±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
30	A	0	0	0	0	0	0	0	0	0	0	1	10	1	10	1	10	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.33 (±5.77)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
100	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Aberrant behaviour or swimming impairment : None

Data Reviewed By: VC
Date : 2018-09-10

Work Order : 236923
Sample Number : 55913

FATHEAD MINNOW DRY WEIGHT AND BIOMASS DATA

Concentration (%)	Replicate	Number of Larvae Exposed	Replicate Mean Dry Weight (mg)	Treatment Mean Biomass (mg)	Standard Deviation
Control	A	10	0.955	0.940	0.015
	B	10	0.926		
	C	10	0.938		
0.07	A	10	0.886	0.909	0.027
	B	10	0.938		
	C	10	0.902		
0.24	A	10	0.871	0.905	0.036
	B	10	0.902		
	C	10	0.943		
0.81	A	10	1.018	0.923	0.085
	B	10	0.897		
	C	10	0.855		
2.7	A	10	0.899	0.908	0.031
	B	10	0.882		
	C	10	0.943		
9	A	10	0.919	0.968	0.045
	B	10	1.007		
	C	10	0.977		
30	A	10	0.799	0.850	0.045
	B	10	0.869		
	C	10	0.883		
100	A	10	0.866	0.854	0.027
	B	10	0.824		
	C	10	0.873		

NOTES :
- No outlying data points were detected according to Grubbs Test[b].
- Control average dry weight per surviving organism = 0.940 mg

Data Reviewed By: VC

Date : 2018-09-10

Work Order : 236923
Sample Number: 55913

Fathead Minnow Water Chemistry Data

Initial Chemistry:	Temp. (°C)	DO (mg/L)	pH	Conductivity (µmhos/cm)	Hardness (mg/L as $CaCO_3$)
	25.0	8.0	7.2	2021	530

		Day 0 - 1 2018-08-16	Day 1 - 2 2018-08-17	Day 2 - 3 2018-08-18	Day 3 - 4 2018-08-19	Day 4 - 5 2018-08-20	Day 5 - 6 2018-08-21	Day 6 - 7 2018-08-22
Sub-sample Used		1	1	1	2	2	3	3
Temperature (°C)		25.0	24.0	24.0	24.0	25.0	24.0	24.0
Dissolved Oxygen (mg/L)		8.0	8.9	9.2	9.0	9.3	8.9	9.6
Dissolved Oxygen % Sat.[1]		98	109	112	110	112	108	118
pH		7.2	7.3	7.2	7.2	7.2	7.3	7.2
Pre-aeration Time (min)[2]		0	20	20	20	20	20	20
Analyst(s) :	Initial	CCM(VC)	CCM(VC)	RK(VC)	RK(VC)	CCM(VC)	CCM(VC)	SEW
	Final	CCM(VC)	RK(VC)	CG	SEW	SEW	RK(VC)	XD
Control (0%)								
Temp.(°C)	Initial	25.0	25.0	25.0	25.0	24.0	24.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	24.0	24.0
DO % Sat.[1]	Initial	100	102	100	102	100	100	100
DO (mg/L)	Initial	8.2	8.5	8.2	8.5	8.3	8.3	8.2
	Final	7.0	6.4	7.1	6.6	6.8	6.8	7.0
pH	Initial	8.3	8.4	8.3	8.4	8.4	8.4	8.4
	Final	8.1	8.0	8.0	7.9	8.1	8.1	8.0
Cond. (µmhos/cm)	Initial	615	611	705	703	615	615	634
0.07 %								
Temp.(°C)	Initial	25.0	25.0	25.0	25.0	24.0	24.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	24.0	24.0
DO (mg/L)	Initial	8.3	8.4	8.2	8.4	8.1	8.3	8.2
	Final	6.9	6.5	7.0	6.4	6.8	6.9	7.0
pH	Initial	8.4	8.4	8.4	8.4	8.3	8.4	8.4
	Final	8.1	8.0	8.0	7.9	8.0	8.1	8.0
Cond. (µmhos/cm)	Initial	612	612	710	709	615	614	635
9 %								
Temp.(°C)	Initial	25.0	25.0	25.0	25.0	24.0	24.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	24.0	24.0
DO (mg/L)	Initial	8.2	8.6	8.2	8.6	8.3	8.5	8.4
	Final	7.0	6.6	6.9	6.5	6.7	6.8	7.1
pH	Initial	8.3	8.3	8.3	8.3	8.3	8.4	8.3
	Final	8.1	8.0	7.9	7.8	7.9	8.0	8.0
Cond. (µmhos/cm)	Initial	743	739	828	835	746	744	756
100 %								
Temp.(°C)	Initial	25.0	25.0	25.0	25.0	24.0	24.0	24.0
	Final	25.0	25.0	25.0	25.0	25.0	24.0	24.0
DO (mg/L)	Initial	8.1	8.6	8.9	8.8	8.5	8.6	9.1
	Final	7.3	6.8	7.1	6.5	6.8	7.1	7.1
pH	Initial	7.4	7.5	7.5	7.5	7.4	7.6	7.6
	Final	7.5	7.3	7.4	7.3	7.3	7.4	7.5
Cond. (µmhos/cm)	Initial	2034	2021	2012	2035	2024	1999	1987

"–" = not measured

[1] % saturation (adjusted for actual temperature and barometric pressure)

[2] ≤100 bubbles/minute

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Lemna minor
EPS 1/RM/37

Work Order : 236923
Sample Number : 55913

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project	Date Collected :	2018-08-13
Location :	Rankin Inlet NU	Time Collected :	07:00
GPS Coordinates :	63° 02' 15.5"N 92° 13' 06.3"W	Date Received :	2018-08-15
Substance :	MEL-14	Time Received :	10:45
Sampling Method :	Grab	Temperature upon Receipt :	21.0 °C
Sampled By :	D. Gorton	Date Tested :	2018-08-16
Sample Description :	Clear, light yellow, odourless.		

Test Method : Test for Measuring the Inhibition of Growth using the Freshwater Macrophyte, *Lemna minor*. Method Development and Application Section, Environmental Technology Centre, Environment Canada. Ottawa, Ontario. Report EPS 1/RM/37, 2nd ed. (January 2007).

7-DAY TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Frond Yield)	38.2%	26.6 - 52.1	Non-Linear Regression* (CETIS)[a]
IC25 (Weight)	42.0%	26.5 - 63.2	Non-Linear Regression (CETIS)[a]

The results reported relate only to the sample tested and as received.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-08-15	Statistical Method :	Non-Linear Regression (CETIS)[a]
Organism Batch :	Lm18-08	Historical Geometric Mean IC25 :	2.04 g/L
Test Duration :	7 days	Warning Limits (± 2SD) :	1.52 - 2.74 g/L
IC25 (Frond Production) :	2.16 g/L	Growth Medium :	Modified APHA
95% Confidence Limits :	1.95 - 2.39 g/L	Analyst(s) :	MA, CZN

The reference toxicant test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

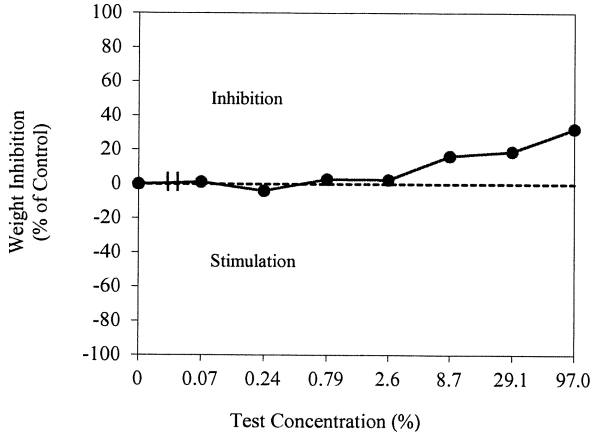
Test Organism :	*Lemna minor* L., Strain 7730	Test Type :	Static (no sub-samples required)
Organism Batch :	Lm18-08	Control/Dilution Medium :	Modified APHA
Culture Origin :	UTCC 492	Medium Preparation Water :	Distilled Water
Test Organism Source :	Axenic in-house culture	Source of Water :	Morning Mist
Culture Medium :	Modified Hoaglands E+	Medium Preparation Chemicals :	Modified APHA stocks A, B, C (10 mL/L)
Age (on Test Day 0) :	9 days	Nutrient Spiking of Sample :	Modified APHA stocks A, B, C (10 mL/L)
Health Criteria (in APHA) :	22.2-fold frond increase in 7 days	Replicates per Concentration :	4
Organism Acclimation :	23:20 h in APHA medium	Test Volume per Replicate :	100 mL
Inoculum (Test Day 0) :	2 plants (3 fronds per plant)	Test Vessel :	250 mL glass Erlenmeyer flask
Sample Filtration :	1 µm (Whatman GF/C)	Depth of Test Solution :	4.0 cm
Sample Pre-aeration :	20 min. at ≤100 bubbles/min.	Photoperiod/Light Intensity :	Continuous, 4100 - 5290 lux
pH Adjustment :	None	Test Method Deviation(s) :	None
Hardness Adjustment :	None		

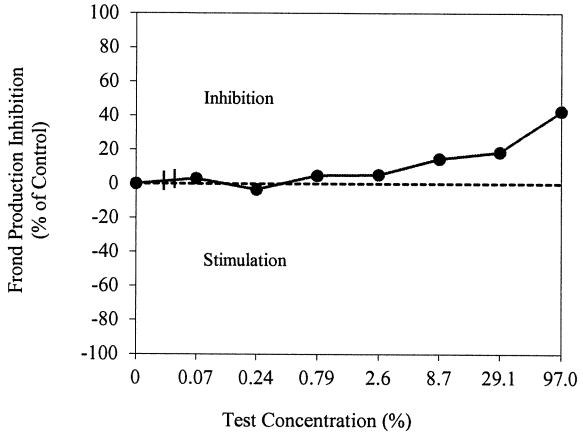
COMMENTS

•All test validity criteria as specified in the test method cited above were satisfied.
*Box-Cox weighting (CETIS)[a] was applied.

Work Order : 236923
Sample Number : 55913

Lemna minor Growth Inhibition





TEST MONITORING

Initiation Date : 2018-08-16
Intitiation Time : 14:20
Initiated By : CG/MDS

Termination Date : 2018-08-23
Termination Time : 15:00
Terminated By : NK

Temperature Monitoring

Test Day	Date	Temperature (°C)
0 (unmodified sample)	2018-08-16	25.0
0	2018-08-16	24.5
1	2018-08-17	24.5
2	2018-08-18	24.0
3	2018-08-19	24.0
4	2018-08-20	24.0
5	2018-08-21	24.0
6	2018-08-22	24.5
7	2018-08-23	24.0

pH Monitoring

Concentration (%)	Day 0	Day 7
100 (unmodified sample)	7.2	–
Control	8.3	8.5
0.07	8.3	8.6
0.24	–	–
0.79	–	–
2.6	8.3	8.6
8.7	–	–
29.1	–	–
97.0	8.0	8.6

"–" = not required

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

Date : 2018-09-27
yyyy-mm-dd

Approved By:
Project Manager

Work Order : 236923
Sample Number : 55913

Lemna minor Frond Increase

Test Concentration (%)	Replicate	Frond Count Day 0*	Frond Count Day 7	Frond Increase	Mean Frond Increase	Standard Deviation	CV (%)	Frond/Root Appearance (Day 7)
Control	A	6	152	146	125.50	21.67	17.3	Fronds healthy, appearance normal in all replicates.
	B	6	127	121				
	C	6	144	138				
	D	6	103	97[1]				
0.07	A	6	131	125	121.75	2.22	1.8	Fronds healthy, appearance normal in all replicates.
	B	6	127	121				
	C	6	127	121				
	D	6	126	120				
0.24	A	6	139	133	129.75	5.25	4.0	Fronds healthy, appearance normal in all replicates.
	B	6	128	122				
	C	6	139	133				
	D	6	137	131				
0.79	A	6	122	116	119.50	10.91	9.1	Fronds healthy, appearance normal in all replicates.
	B	6	131	125				
	C	6	112	106				
	D	6	137	131				
2.6	A	6	120	114	119.00	5.94	5.0	Fronds healthy, appearance normal in all replicates.
	B	6	133	127				
	C	6	121	115				
	D	6	126	120				
8.7	A	6	120	114	107.25	7.63	7.1	Fronds healthy, appearance normal in all replicates.
	B	6	110	104				
	C	6	119	113				
	D	6	104	98				
29.1	A	6	121	115	102.25	10.24	10.0	Fronds healthy, appearance normal in all replicates.
	B	6	107	101				
	C	6	96	90				
	D	6	109	103				
97.0	A	6	82	76	72.00	6.78	9.4	Fronds healthy, appearance normal in all replicates.
	B	6	85	79				
	C	6	70	64				
	D	6	75	69				

NOTES: *No unusual appearance or treatment of culture prior to testing. Test inoculated with healthy plants.

•No significant stimulation (α=0.05) of frond increase was detected by ANOVA-Dunnett Multiple Comparison Test (CETIS)[a] at any test level compared to the control.

•A 21.9-fold increase in frond number was observed in the control over the testing period.

• [1]Outlier according to Grubbs Test (CETIS)[a]. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.

"–" = not available/not required

Test Data Reviewed By : VC
Date : 2018-09-10

Work Order : 236923
Sample Number : 55913

Lemna minor Frond Weight Data

Test Concentration (%)	Replicate	Dry Weight of Fronds (mg)	Treatment Mean Dry Weight (mg)	Standard Deviation
Control	A	13.11	12.54	0.72
	B	12.06		
	C	13.19		
	D	11.79		
0.07	A	13.01	12.41	0.65
	B	11.61		
	C	12.14		
	D	12.87		
0.24	A	13.41	13.03	0.54
	B	12.23		
	C	13.17		
	D	13.30		
0.79	A	12.62	12.19	1.27
	B	12.72		
	C	10.31		
	D	13.12		
2.6	A	12.10	12.23	0.87
	B	13.33		
	C	11.20		
	D	12.29		
8.7	A	11.33	10.49	0.72
	B	10.11		
	C	10.82		
	D	9.71		
29.1	A	11.66	10.16	1.15
	B	9.60		
	C	9.00		
	D	10.39		
97.0	A	9.20	8.49	0.53
	B	8.49		
	C	7.94		
	D	8.32		

NOTES :

- No significant stimulation (α=0.05) of frond weight was detected by ANOVA-Dunnett Multiple Comparison Test (CETIS)[a] at any test level compared to the control.
- No outlying data points were detected according to Grubbs Test (CETIS)[a].

"–" = not available/not required

Test Data Reviewed By : VC
Date : 2018-09-10

AQUATOX
AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Pseudokirchneriella subcapitata

EPS 1/RM/25

Work Order : 236923
Sample Number : 55913

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project	Date Collected :	2018-08-13
Location :	Rankin Inlet NU	Time Collected :	7:00
GPS Coordinates :	63° 02' 15.5"N 92° 13' 06.3"W	Date Received :	2018-08-15
Substance :	MEL-14	Time Received :	11:00
Sampling Method :	Grab	Temperature upon Receipt :	21.0 °C
Sampled By :	D. Gorton	Date Tested :	2018-08-16
Sample Description :	Clear, light yellow, odourless.		

Test Method : Growth Inhibition Test Using a Freshwater Alga. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/25, 2nd ed. (March 2007).

72-h TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth)	>90.91 %	–	–

The results reported relate only to the sample tested and as received.

ZINC (AS ZINC SULPHATE) REFERENCE TOXICANT DATA

Date Tested :	2018-08-21	Statistical Method :	Non-Linear Regression (CETIS)[a]
Organism Batch :	Ps18-08	Historical Mean IC25 :	10.4 µg/L
Test Duration :	72 hours	Warning Limits (± 2SD) :	4.9 - 22.3 µg/L
IC25 Growth :	8.8 µg/L	Analyst(s) :	AS, MDS, CZN
95% Confidence Limits :	7.5 - 10.2 µg/L		

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST ORGANISM

Test Organism :	*Pseudokirchneriella subcapitata*	Source :	In-house culture
Culture Origin :	University of Waterloo, Waterloo ON	Cell Density at 0-h :	10955 cells/mL
Strain Number :	CPCC 37	Inoculum Prepared :	00:10 h prior to test initiation
Organism Batch :	Ps18-08	Age (at start of test) :	3 days (in exponential growth)

•Algal growth curve is determined at least twice per year as required by the test method cited above.
•No unusual appearance or treatment of culture prior to testing.

TEST CONDITIONS

Test Type :	Static	Volume per Replicate :	220 µL
Test Duration :	72 hours	Control Replicates :	10
Mean Temperature (± SD):	24.1°C (± 0.3)	Test Replicates :	4
Sample Pre-aeration :	None	Concentrations Tested :	10 + Control
Sample Filtration :	0.45 µm preconditioned filter	Photoperiod :	Continuous light
Volume Filtered:	≥10 mL	Light Intensity :	3810-4160 lux
Control/Dilution Water :	Millipore Milli-Q (no chemicals added)	pH Adjustment :	None
Enrichment Medium :	Stock 2B: EDTA reduced to 25%	Hardness Adjustment :	None
Test Vessel :	U-shaped polystyrene microplate	Test Method Deviation(s) :	None

COMMENTS

•All test validity criteria as specified in the test method cited above were satisfied.

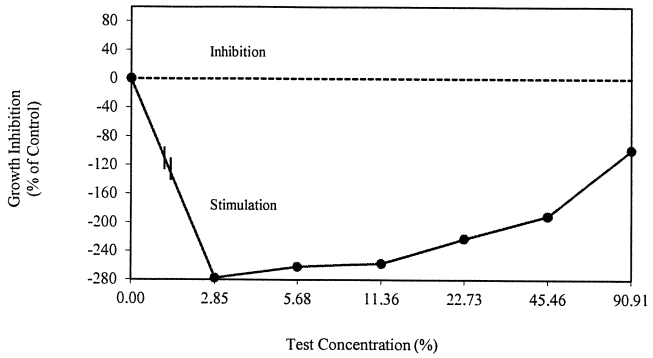
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TOXICITY TEST REPORT

Pseudokirchneriella subcapitata
EPS 1/RM/25

Work Order : 236923
Sample Number : 55913

***Pseudokirchneriella subcapitata* Growth Inhibition**



CELL ENUMERATION AT 72-HOURS

Initiated By : CG/MA
Completion/Enumeration Date : 2018-08-19
Enumerated By : CG
Enumeration Method : Manual (haemocytometer)

Sample pH (at 0 hours) : 7.2
Control pH (at 0 hours) : 7.0
Control pH (at 72 hours) : 7.0
Control Cell Increase Factor : 29.4 times growth

Concentration	Cell Concentration (x 10000 cells/mL) Replicate								Cell Yield (x 10000 cells/mL) Mean	Standard Deviation	CV (%)	Stimulation (% of control)**
(%)	1	2	3	4	7	8	9	10				
Control	26.5	30.5	31.5	38.0	35.5	34.0	30.5	31.0	31.09	3.54	11.40	–
0.18	–	–	–	–	–	–	–	–	–	–	–	–
0.35	–	–	–	–	–	–	–	–	–	–	–	–
0.71	–	–	–	–	–	–	–	–	–	–	–	–
1.42	–	–	–	–	–	–	–	–	–	–	–	–
2.85	122.5	118.5	115.0	–	–	–	–	–	117.57	3.75	3.19	278.14
5.68	116.5	109.0	115.5	–	–	–	–	–	112.57	4.07	3.62	262.06
11.36	118.0	109.0	110.0	–	–	–	–	–	111.24	4.93	4.43	257.77
22.73	96.5	101.0	107.0	–	–	–	–	–	100.40	5.27	5.25	222.93
45.46	101.5	85.0	88.5	–	–	–	–	–	90.57	8.69	9.60	191.30
90.91	54.0	63.5	71.5	–	–	–	–	–	61.90	8.76	14.15	99.10

NOTES : **Statistically significant stimulation, according to ANOVA/Dunnett Multiple Comparison Test (CETIS)[a], (a=0.05).
•Control replicates 5 and 6 used for pH measurement.
•The Mann-Kendall test shows that there is no inhibitory gradient (α=0.05).
•No outlying data points were detected according to Grubbs Test (CETIS)[a].

"–" = not enumerated/not required

Data Reviewed By : VC
Date : 2018-09-10

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

Date : 2018-09-27
yyyy-mm-dd

Approved By : *Project Manager*

CHAIN OF CUSTODY RECORD

AQUATOX

AquaTox Work Order No: 236923

Shipping Address: AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road,
Puslinch, Ontario, Canada
N0B2J0

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number:	580278
Field Sampler Name (print):	Dan Gorton
Signature:	
Affiliation:	Agnico Eagle Mines Ltd. - Meliadine Division
Sample Storage (prior to shipping):	Shipped immediately after sampling
Custody Relinquished by:	Dan Gorton
Date/Time Shipped:	2018-08-13 - 08:00

Client: Agnico Eagle Mines Limited
Meliadine Project
Rankin Inlet, Nunavut, Canada
X0C 0G0
GPS Coordinates 63°02'15.5" 92°13'06.3"

Phone: (819) 759-3555

Fax:

Contact: Dan Gorton

Sample Identification					Analyses Requested										Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	AquaTox Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Lemna minor* Growth	*Pseudokirchneriella subcapitata* Growth	RISS Data Entry	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2018-08-13	07:00	~~EWTP~~ MEL-14 ~~(Post-treatment)~~	55913	21.0					✓	✓	✓	✓			✓		3 x 20L
		Name change requested by Martin Theriault (email 20180821) JR.															

For Lab Use Only

Received By:	NK/RK
Date:	2018-08-15
Time:	11:00
Storage Location:	
Storage Temp.(°C)	

Please list any special requests or instructions:
TOXICOLOGY analysis required

Phone number: 819-759-3555 ext 3996

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Rd.
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

October 16, 2018

Jennifer Brown
Agnico Eagle Mines Limited - Meliadine Project
Meliadine Division
Rankin Inlet NU
X0C 0G0

Dear Jennifer,

Re: Report on Sublethal Toxicity Analysis of Wastewater for MMER - September 2018

Enclosed are the reports for sublethal testing conducted on the sample of MEL-14 collected 2018-09-03. Data are presented in electronic format.

As you are aware, submission of sublethal toxicity data via RISS is a requirement of the MMER regulation. We would be pleased to enter this information on your behalf, for a fee. Please review the attached reports, and in an e-mail to **reporter@aquatox.ca**, provide us with your RISS user name and password (supplied to you by ECCC), along with written permission for AquaTox to access RISS on your behalf. We will then enter your results. In the future, if you would prefer us to enter the data automatically at the time the reports are issued, please indicate this in writing.

If you have any questions about the results, do not hesitate to contact me.

Sincerely,

AQUATOX TESTING & CONSULTING INC.

Martina Rendas
Project Manager

MR/jl

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Rd.
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Fathead minnow
EPS 1/RM/22

Work Order : 237106
Sample Number : 56153

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project		
Location :	Rankin Inlet NU	Date Collected :	2018-09-03
Substance :	MEL-14	Time Collected :	07:00
Sampling Method :	Grab	Date Received :	2018-09-06
Sampled By :	J. Brown	Time Received :	09:45
Temp. on arrival :	22.0°C	Date Tested :	2018-09-06
Sample Description :	Clear, yellow, odourless		
Test Method :	Test of Larval Growth and Survival Using Fathead Minnows. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/22 , 2nd ed. (February 2011).		

TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth from Biomass)	>100%	-	-
LC50	>100%	-	-

The results reported relate only to the sample tested and as received.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-08-28		
Test Duration :	7 days	Analyst(s) :	MV, RD, MA
IC25 Growth (from Biomass) :	0.90 g/L	LC50 :	1.03 g/L
95% Confidence Limits :	0.81 - 0.97 g/L	95% Confidence Limits :	0.96 - 1.11 g/L
Statistical Method :	Non-Linear Regression (CETIS)[a]	Statistical Method :	Linear Regression (MLE) (CETIS)[a]
Historical Mean IC25 :	0.93 g/L	Historical Mean LC50 :	1.09 g/L
Warning Limits (± 2SD) :	0.71 - 1.23 g/L	Warning Limits (± 2SD) :	0.91 - 1.30 g/L

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

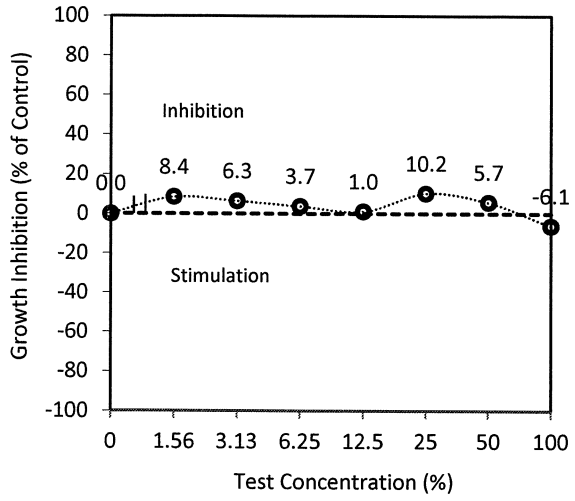
Test Organism :	*Pimephales promelas*	Test Type :	Static Renewal
Organism Batch :	Fm18-09	Control/Dilution Water :	Well water (no chemicals added)
Organism Age :	~07:00 - 23:35 h at start of test	Test Volume / Replicate :	300 mL
Source :	In-house culture	Test Vessel :	420 mL polystyrene beaker
Culture Mortality/Diseased :	1.54 % (previous 7 days)	Depth of Test Solution :	8 cm
pH Adjustment :	None	Organisms per Replicate :	10
Sample Filtration :	None	Number of Replicates :	3
Hardness Adjustment :	None	Daily Renewal Method :	80-85% syphoned and replaced
Test Aeration :	None	Test Method Deviation(s):	None

COMMENTS

•All test validity criteria as specified in the test method cited above were satisfied.
•No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.
•Inflated swim bladders were confirmed in all test organisms used in this test.

Work Order : 237106
Sample Number : 56153

Fathead Minnow Growth Inhibition (based on Biomass)



REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

[b] Grubbs, F.E., 1969. Procedures for detecting outlying observations in samples. *Technometrics, 11* :1-21.

Date : 2018-10-16
yyyy-mm-dd

Approved By : _____
Project Manager

Work Order : 237106
Sample Number : 56153

CUMULATIVE DAILY CONTROL MORTALITY AND IMPAIRMENT (±SD)

Date :	2018-09-06	2018-09-07	2018-09-08	2018-09-09	2018-09-10	2018-09-11	2018-09-12	2018-09-13
	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)	0.00% (±0.0)

FATHEAD MINNOW CUMULATIVE DAILY MORTALITY

Initiation Time : 15:45
Initiation Date : 2018-09-06
Completion Date : 2018-09-13

		Day 0		Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7		Treatment
Date :		2018-09-06		2018-09-07		2018-09-08		2018-09-09		2018-09-10		2018-09-11		2018-09-12		2018-09-13		Mean Mortality (± SD)
Analyst(s):		NK		MV(VC)		RK(VC)		MV(VC)		TL		CCM(VC)		TL		SD(RD)		
Concentration		Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	%
(%)	Replicate	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	Dead	
Control	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1.56	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2*	0	0.00 (±0.00)*
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3.13	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6.25	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12.5	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
50	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.67 (±11.55)
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	2	20	2	20	2	20	2	20	2	20	
100	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00 (±0.00)
	B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Aberrant behaviour or swimming impairment : None

NOTES : *2018-09-13: Replicate 1.56-A was accidentally spilled. Two test organisms were lost from the test vessel, resulting in accidental mortalities (SD/RD). The test organisms that suffered accidental mortalities were excluded from statistical analysis. All test endpoints were calculated from a total of 8 test organisms exposed in replicate 1.56-A (VC).

Test Data Reviewed By: VC
Date : 2018-10-04

Work Order : 237106
Sample Number : 56153

FATHEAD MINNOW DRY WEIGHT AND BIOMASS DATA

Concentration (%)	Replicate	Number of Larvae Exposed	Replicate Mean Dry Weight (mg)	Treatment Mean Biomass (mg)	Standard Deviation
Control	A	10	0.806	0.817	0.022
	B	10	0.802		
	C	10	0.842		
1.56	A	8*	0.758	0.748	0.014
	B	10	0.732		
	C	10	0.755		
3.13	A	10	0.769	0.765	0.042
	B	10	0.805		
	C	10	0.721		
6.25	A	10	0.764	0.786	0.032
	B	10	0.823		
	C	10	0.772		
12.5	A	10	0.843	0.809	0.077
	B	10	0.862		
	C	10	0.721		
25	A	10	0.714[1]	0.733	0.016
	B	10	0.742		
	C	10	0.743		
50	A	10	0.797	0.770	0.070
	B	10	0.823		
	C	10	0.691		
100	A	10	0.875	0.867	0.024
	B	10	0.840		
	C	10	0.885		

NOTES :

- [1]Outlier according to Grubbs Test[b]. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.
- Control average dry weight per surviving organism = 0.817 mg

*Two accidental mortalities (see note on pg. 3).

Test Data Reviewed By: VC
Date : 2018-10-04

Work Order : 237106
Sample Number: 56153

WATER CHEMISTRY DATA

Initial Chemistry:	Temp. (°C)	DO (mg/L)	pH	Conductivity (µmhos/cm)	Hardness (mg/L as $CaCO_3$)
	24.0	8.7	6.8	2184	540

		Day 0 - 1 2018-09-06	Day 1 - 2 2018-09-07	Day 2 - 3 2018-09-08	Day 3 - 4 2018-09-09	Day 4 - 5 2018-09-10	Day 5 - 6 2018-09-11	Day 6 - 7 2018-09-12
Sub-sample Used		1	1	1	2	2	3	3
Temperature (°C)		24.0	24.0	24.0	24.0	25.0	25.0	24.0
Dissolved Oxygen (mg/L)		8.7	8.5	9.1	9.5	9.4	8.9	9.8
Dissolved Oxygen % Sat.[2]		105	103	109	114	113	108	118
pH		6.8	6.9	6.9	6.9	7.0	6.8	6.9
Pre-aeration Time (min)[3]		20	20	20	20	20	20	20
Analyst(s) :	Initial	SD(RD)	SD(RD)	RK(VC)	RK(VC)	SD(RD)	SD(RD)	SD(RD)
	Final	MV(VC)	RK(VC)	MV(VC)	TL	CCM(VC)	SD(RD)	SD(RD)
Control (0%)								
Temp.(°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0	25.0
	Final	24.5	24.5	25.0	24.0	24.0	25.0	25.0
DO % Sat.[2]	Initial	100	100	101	100	100	100	98
DO (mg/L)	Initial	8.2	8.3	8.3	8.4	8.4	8.2	8.1
	Final	7.4	7.3	7.1	6.8	6.6	7.0	7.5
pH	Initial	8.4	8.3	8.3	8.3	8.4	8.4	8.4
	Final	8.1	8.0	8.2	8.1	8.0	8.0	8.1
Cond. (µmhos/cm)	Initial	681	678	677	702	693	669	703
1.56 %								
Temp.(°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0	25.0
	Final	24.5	24.5	25.0	24.0	24.0	25.0	25.0
DO (mg/L)	Initial	8.4	8.4	8.3	8.4	8.2	8.2	8.2
	Final	7.5	7.5	6.9	6.7	6.7	7.1	7.5
pH	Initial	8.3	8.3	8.3	8.4	8.3	8.4	8.3
	Final	8.1	8.1	8.1	8.0	8.0	8.1	8.1
Cond. (µmhos/cm)	Initial	708	705	698	728	717	746	715
25 %								
Temp.(°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0	25.0
	Final	24.5	24.5	25.0	24.0	24.0	25.0	25.0
DO (mg/L)	Initial	8.4	8.4	8.4	8.5	8.3	8.3	8.3
	Final	7.5	7.4	7.2	6.8	6.7	7.0	7.5
pH	Initial	8.1	8.1	8.2	8.2	8.1	8.2	8.2
	Final	8.0	8.0	8.0	7.9	7.9	7.9	8.0
Cond. (µmhos/cm)	Initial	1062	1067	1065	1086	1070	1137	1093
100 %								
Temp.(°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0	25.0
	Final	24.5	24.5	25.0	24.0	24.0	25.0	25.0
DO (mg/L)	Initial	8.5	8.5	8.8	8.9	9.0	8.8	9.2
	Final	7.6	7.7	7.3	7.0	6.8	7.6	7.5
pH	Initial	7.1	7.1	7.2	7.2	7.2	7.3	7.1
	Final	7.3	7.3	7.2	7.1	7.0	7.0	7.2
Cond. (µmhos/cm)	Initial	2185	2188	2188	2188	2183	2330	2222

"–" = not measured

[2] % saturation (adjusted for actual temperature and barometric pressure)

[3] ≤100 bubbles/minute

Test Data Reviewed By : VC
Date: 2018-10-04

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Rd.
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Ceriodaphnia dubia
EPS 1/RM/21

Work Order : 237106
Sample Number : 56153

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project		
Location :	Rankin Inlet NU	Date Collected :	2018-09-03
Substance :	MEL-14	Time Collected :	07:00
Sampling Method :	Grab	Date Received :	2018-09-06
Sampled By :	J. Brown	Time Received :	09:45
Temp. on arrival :	22.0°C	Date Tested :	2018-09-06
Sample Description :	Clear, yellow, odourless		

Test Method : Test of Reproduction and Survival using the Cladoceran *Ceriodaphnia dubia*. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/21, 2nd ed. (February 2007).

TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
LC50	>100%	-	-
IC25 (Reproduction)	90.1%	23.3-96.3	Linear Interpolation (TOXSTAT) d

The results reported relate only to the sample tested and as received.

SODIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-08-28		
Test Duration :	6 days	Analyst(s) :	MW, MA
IC25 Reproduction :	1.46 g/L	LC50 :	2.32 g/L
95% Confidence Limits :	0.98 - 1.82 g/L	95% Confidence Limits :	1.80 - 3.00 g/L
Statistical Method :	Linear Interpolation (CETIS)[a]	Statistical Method :	Binomial (CETIS)[a]
Historical Mean IC25 :	1.30 g/L	Historical Mean LC50 :	2.23 g/L
Warning Limits (± 2SD) :	0.98 - 1.73 g/L	Warning Limits (± 2SD) :	1.84 - 2.70 g/L

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

Sample Filtration :	None	Test Volume per Replicate :	15 mL
Test Aeration :	None	Test Vessel :	19 mL polystyrene vial
pH Adjustment :	None	Depth of Test Solution :	4.8 cm
Hardness Adjustment :	None	Organisms per Replicate :	1
Daily Renewal Method :	Transferred to fresh solutions	Number of Replicates :	10
Control/Dilution Water :	Well water (no chemicals added)	Test Method Deviation(s) :	None

COMMENTS

•All test validity criteria as specified in the test method cited above were satisfied.
•Statistical analysis could not be performed using non linear regression, since a suitable model could not be found. Therefore, test results were calculated using Linear Interpolation (Toxstat)[d]. In test concentrations where reproduction was stimulated (greater than the control), data were replaced with control values for the purposes of statistical analysis, as recommended by Environment Canada (2005).

Work Order : 237106
Sample Number : 56153

TEST ORGANISMS

Test Organism :	*Ceriodaphnia dubia*	Range of Age (at start of test) :	19:40 h - 23:40 h
Organism Batch :	Cd18-09	Mean Brood Organism Mortality :	3.3%
Organism Origin :	Single in-house mass culture	Ephippia in Culture :	No
Test Organism Origin :	Individual in-house cultures		

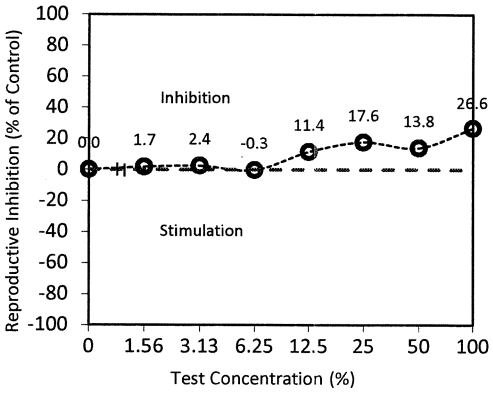
Brood Organism Neonate Production

Replicate :	1	2	3	4	5	6	7	8	9	10	Mean
Total (third or subsequent brood):	16	9	15	15	15	17	12	17	16	15	14.7
Total (first three broods):	23	19	23	19	21	23	21	25	20	23	21.7

No organisms exhibiting unusual appearance, behaviour, or undergoing unusual treatment were used in the test.

TEST DATA

***Ceriodaphnia dubia* Reproductive Inhibition**



Cumulative Daily Test Organism Mortality (%)

		Test Concentration (%)							
Date	**Test Day**	Control	1.56	3.13	6.25	12.5	25	50	100
2018-09-07	1	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0
2018-09-09	3	0	0	0	0	0	0	0	0
2018-09-10	4	0	0	0	0	0	0	10	10
2018-09-11	5	0	0	0	0	10	0	10	10
2018-09-12	6	0	0	0	0	10	0	20	10
Total Mortality (%)		0	0	0	0	10	0	20	10

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

[d] West, Inc. and D. Gulley. 1996. Toxstat Release 3.5. Western Ecosystems Technology. Cheyenne, WY, U.S.A.

Environment Canada, 2005. Guidance Document on Statistical Methods for Environmental Toxicity Tests. Environmental Protection Series, Ottawa, Ont., Rept. EPS 1/RM/46.

Date : 2018-10-16
yyyy-mm-dd

Approved By : *Project Manager*

AQUATOX

TOXICITY TEST REPORT

Ceriodaphnia dubia
EPS 1/RM/21

Work Order : 237106
Sample Number : 56153

Ceriodaphnia dubia Survival and Reproduction

Test Initiation Date : 2018-09-06
Initiation Time : 13:40
Test Completion Date : 2018-09-12

Concentration (%) Control	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)	Analyst(s)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0	RD
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0	HR
2018-09-09	3	5	5	6	6	3	6	4	5	7	6	5.3	AW
2018-09-10	4	9	8	8	10	0	12	12	11	8	0	7.8	SK
2018-09-11	5	0	0	0	0	8	0	0	0	0	14	2.2	SK
2018-09-12	6	13	11	11	13	11	14	16	16	14	17	13.6	CCM(VC)
Total		**27**	**24**	**25**	**29**	**22**	**32**	**32**	**32**	**29**	**37**	**28.9 (±4.5)**	

Concentration (%) 12.5	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0
2018-09-09	3	5	5	5	4	4	4	5	6	5	4	4.7
2018-09-10	4	10	8	10	8	0	11	9	11	10	0	7.7
2018-09-11	5	0	0	0	0	9	0	0	0	0 x	12	2.1
2018-09-12	6	10	12	11	12	11	13	15	14	0	13	11.1
Total		**25**	**25**	**26**	**24**	**24**	**28**	**29**	**31**	**15**	**29**	**25.6 (±4.4)**

Concentration (%) 1.56	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0
2018-09-09	3	4	3	3	6	5	6	5	5	4	5	4.6
2018-09-10	4	0	8	10	7	13	12	13	8	9	1	8.1
2018-09-11	5	11	0	0	0	0	0	0	0	0	11	2.2
2018-09-12	6	12	12	12	13	16	16	11	13	14	16	13.5
Total		**27**	**23**	**25**	**26**	**34**	**34**	**29**	**26**	**27**	**33**	**28.4 (±3.9)**

Concentration (%) 25	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0
2018-09-09	3	0	6	3	6	2	1	4	2	4	2	3
2018-09-10	4	9	7	7	10	0	7	10	10	5	12	7.7
2018-09-11	5	0	0	0	0	8	0	0	0	0	0	0.8
2018-09-12	6	14	12	12	15	11	15	13	11	8	12	12.3
Total		**23**	**25**	**22**	**31**	**21**	**23**	**27**	**23**	**17**	**26**	**23.8 (±3.8)**

Concentration (%) 3.13	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0
2018-09-09	3	2	6	5	4	4	5	5	4	6	5	4.6
2018-09-10	4	9	10	10	7	0	11	10	11	13	9	9
2018-09-11	5	0	0	0	0	8	0	0	0	0	0	0.8
2018-09-12	6	14	11	14	13	13	16	13	15	16	13	13.8
Total		**25**	**27**	**29**	**24**	**25**	**32**	**28**	**30**	**35**	**27**	**28.2 (±3.4)**

Concentration (%) 50	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0
2018-09-09	3	5	2	5	6	4	4	5	4	3	3	4.1
2018-09-10	4	8	11	7	10	8	14	10	9 x	10	11	9.8
2018-09-11	5	0	0	0	0	0	0	0	0	0	0	0
2018-09-12	6	14	15	11	14	12	13	2 x	0	14	15	11
Total		**27**	**28**	**23**	**30**	**24**	**31**	**17**	**13**	**27**	**29**	**24.9 (±5.8)**

Concentration (%) 6.25	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0
2018-09-09	3	5	4	3	6	1	5	6	5	4	4	4.3
2018-09-10	4	11	10	9	10	2	13	11	9	11	9	9.5
2018-09-11	5	0	0	0	0	8	0	0	0	0	0	0.8
2018-09-12	6	14	12	15	14	13	14	15	17	14	16	14.4
Total		**30**	**26**	**27**	**30**	**24**	**32**	**32**	**31**	**29**	**29**	**29.0 (±2.6)**

Concentration (%) 100	Day	Replicate 1	2	3	4	5	6	7	8	9	10	Mean Young (±SD)
2018-09-07	1	0	0	0	0	0	0	0	0	0	0	0
2018-09-08	2	0	0	0	0	0	0	0	0	0	0	0
2018-09-09	3	2	6	4	4	4	3	4	4	3	4	3.8
2018-09-10	4	10	10	7	11	12	10	9	0 x	11	12	9.2
2018-09-11	5	0	0	0	0	0	0	0	0	0	0	0
2018-09-12	6	7	3	7	11	13	10	12	0	9	10	8.2
Total		**19**	**19**	**18**	**26**	**29**	**23**	**25**	**4[1]**	**23**	**26**	**21.2 (±7.0)**

NOTES : •All young produced by a test organism during its fourth and subsequent broods were discarded and not included in the above counts. The presence of two or more neonates in any test chamber, during any given day of the test, constitutes a brood.

•[1] Outlier according to Grubbs Test (CETIS)[a]. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.

"x"= test organism mortality
"*"= accidental test organism mortality
"–"=4th brood (see 'NOTES')

Data Reviewed By : VC
Date : 2018-10-04

Work Order : 237106
Sample Number: 56153

Ceriodaphnia dubia Water Chemistry Data

Initial Chemistry:	Temp. (°C)	DO (mg/L)	pH	Conductivity (µmhos/cm)	Hardness (mg/L as $CaCO_3$)
	24.0	8.7	6.8	2184	540

Date :		Day 0 - 1 2018-09-06	Day 1 - 2 2018-09-07	Day 2 - 3 2018-09-08	Day 3 - 4 2018-09-09	Day 4 - 5 2018-09-10	Day 5 - 6 2018-09-11
Sub-sample Used		1	1	1	2	2	3
Temperature (°C)		24.0	24.0	24.0	24.0	25.0	25.0
Dissolved Oxygen (mg/L)		8.7	8.5	9.1	9.5	9.4	8.9
Dissolved Oxygen % Sat.[2]		105	103	109	114	113	108
pH		6.8	6.9	6.9	6.9	7.0	6.8
Pre-aeration Time (min)[3]		20	20	20	20	20	20
Analyst(s)	Initial	SD(RD)	SD(RD)	RK(VC)	RK(VC)	SD(RD)	SD(RD)
	Final	SD(RD)	HR	AW	SK	SK	CCM(VC)
Control (0%)							
Temp. (°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0
	Final	24.0	24.0	24.5	24.0	24.0	24.5
DO % Sat.[2]	Initial	100	100	101	100	100	100
DO (mg/L)	Initial	8.2	8.3	8.3	8.4	8.4	8.2
	Final	7.7	7.7	7.4	7.1	6.8	7.2
pH	Initial	8.4	8.3	8.3	8.3	8.4	8.4
	Final	8.2	8.2	8.2	8.2	8.2	8.1
Cond. (µmhos/cm)	Initial	681	678	677	702	693	669
1.56 %							
Temp. (°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0
	Final	24.0	24.0	24.5	24.0	24.0	24.5
DO (mg/L)	Initial	8.4	8.4	8.3	8.4	8.2	8.2
	Final	7.7	7.6	7.5	7.2	7.1	7.3
pH	Initial	8.3	8.3	8.3	8.4	8.3	8.4
	Final	8.2	8.2	8.2	8.2	8.2	8.2
Cond. (µmhos/cm)	Initial	708	705	698	728	717	746
25 %							
Temp. (°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0
	Final	24.0	24.0	24.5	24.0	24.0	24.5
DO (mg/L)	Initial	8.4	8.4	8.4	8.5	8.3	8.3
	Final	7.6	7.7	7.4	7.2	6.9	7.2
pH	Initial	8.1	8.1	8.2	8.2	8.1	8.2
	Final	8.1	8.0	8.1	8.0	8.0	8.0
Cond. (µmhos/cm)	Initial	1062	1067	1065	1086	1070	1137
100 %							
Temp. (°C)	Initial	25.0	24.0	24.0	24.0	25.0	24.0
	Final	24.0	24.0	24.5	24.0	24.0	24.5
DO (mg/L)	Initial	8.5	8.5	8.8	8.9	9.0	8.8
	Final	7.8	7.9	7.6	7.5	7.2	7.5
pH	Initial	7.1	7.1	7.2	7.2	7.2	7.3
	Final	7.5	7.5	7.5	7.4	7.4	7.3
Cond. (µmhos/cm)	Initial	2185	2188	2188	2188	2183	2330

"–" = not measured

[2] % saturation (adjusted for actual temperature and barometric pressure)

[3] ≤100 bubbles/minute

AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Rd.
Puslinch ON N0B 2J0
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TOXICITY TEST REPORT

Lemna minor
EPS 1/RM/37

Work Order : 237106
Sample Number : 56153

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project		
Location :	Rankin Inlet NU	Date Collected :	2018-09-03
Substance :	MEL-14	Time Collected :	07:00
Sampling Method :	Grab	Date Received :	2018-09-06
Sampled By :	J. Brown	Time Received :	09:45
Temp. on arrival :	22.0°C	Date Tested :	2018-09-06
Sample Description :	Clear, yellow, odourless		

Test Method : Test for Measuring the Inhibition of Growth using the Freshwater Macrophyte, *Lemna minor*. Method Development and Application Section, Environmental Technology Centre, Environment Canada. Ottawa, Ontario. Report EPS 1/RM/37, 2nd ed. (January 2007).

TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Weight)	>97.0%	-	-
IC25 (Frond Production)	>97.0%	-	-

The results reported relate only to the sample tested and as received.

POTASSIUM CHLORIDE REFERENCE TOXICANT DATA

Date Tested :	2018-09-12	Statistical Method :	Non-Linear Regression (CETIS)[a]
Test Duration :	7 days	Historical Geometric Mean IC25 :	2.11 g/L
IC25 (Frond Production) :	2.45 g/L	Warning Limits (± 2SD) :	1.57 - 2.85 g/L
95% Confidence Limits :	1.99 - 2.90 g/L	Growth Medium :	Modified APHA
		Analyst(s) :	MDS

The reference toxicant test was performed under the same experimental conditions as those used with the test sample.

TEST CONDITIONS

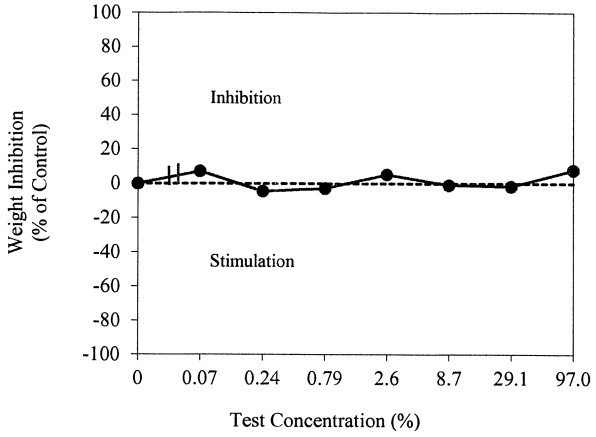
Test Organism :	*Lemna minor* L., Strain 7730	Test Type :	Static (no sub-samples required)
Organism Batch :	Lm18-08	Control/Dilution Medium :	Modified APHA
Culture Origin :	UTCC 492	Medium Preparation Water :	Distilled Water
Test Organism Source :	Axenic in-house culture	Source of Water :	Morning Mist
Culture Medium :	Modified Hoaglands E+	Medium Preparation Chemicals :	Modified APHA stocks A, B, C (10 mL/L)
Age (on Test Day 0) :	9 days	Nutrient Spiking of Sample :	Modified APHA stocks A, B, C (10 mL/L)
Health Criteria (in APHA) :	16.16-fold frond increase in 7 days	Replicates per Concentration :	4
Organism Acclimation :	19:50 h in APHA medium	Test Volume per Replicate :	100 mL
Inoculum (Test Day 0) :	2 plants (3 fronds per plant)	Test Vessel :	250 mL glass Erlenmeyer flask
Sample Filtration :	1 µm (Whatman GF/C)	Depth of Test Solution :	4.0 cm
Sample Pre-aeration :	20 min. at ≤100 bubbles/min.	Photoperiod/Light Intensity :	Continuous, 4290 - 5440 lux
pH Adjustment :	None	Test Method Deviation(s) :	None
Hardness Adjustment :	None		

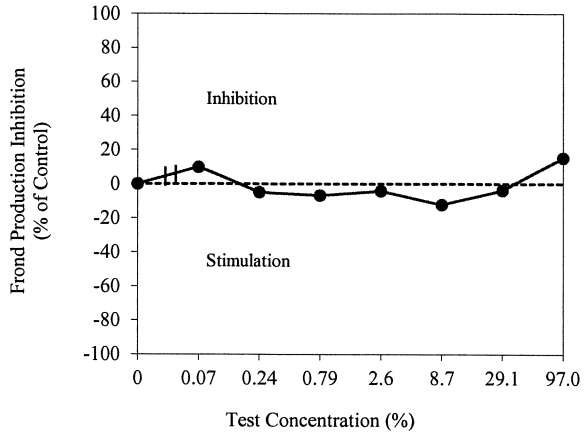
COMMENTS

•All test validity criteria as specified in the test method cited above were satisfied.

Work Order : 237106
Sample Number : 56153

Lemna minor Growth Inhibition





TEST MONITORING

Initiation Date : 2018-09-06
Intitiation Time : 13:15
Initiated By : SEW

Termination Date : 2018-09-13
Termination Time : 13:10
Terminated By : MDS

Temperature Monitoring

Test Day	Date	Temperature (°C)
0 (unmodified sample)	2018-09-06	25.0
0	2018-09-06	25.0
1	2018-09-07	24.0
2	2018-09-08	24.0
3	2018-09-09	24.0
4	2018-09-10	24.0
5	2018-09-11	24.0
6	2018-09-12	24.0
7	2018-09-13	24.0

pH Monitoring

Concentration (%)	Day 0	Day 7
100 (unmodified sample)	6.8	–
Control	8.3	8.4
0.07	8.2	8.4
0.24	–	–
0.79	–	–
2.6	8.3	8.4
8.7	–	–
29.1	–	–
97.0	7.8	9.2

"–" = not required

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

Date : 2018-10-16
yyyy-mm-dd

Approved By:
Project Manager

Work Order : 237106
Sample Number : 56153

Lemna minor Frond Increase

Test Concentration (%)	Replicate	Frond Count Day 0*	Frond Count Day 7	Frond Increase	Mean Frond Increase	Standard Deviation	CV (%)	Frond/Root Appearance (Day 7)
Control	A	6	69	63	66.25	8.06	12.2	Fronds healthy, appearance normal in all replicates.
	B	6	83	77				
	C	6	73	67				
	D	6	64	58				
0.07	A	6	77	71	59.75	9.00	15.1	Fronds healthy, appearance normal in all replicates.
	B	6	58	52				
	C	6	69	63				
	D	6	59	53				
0.24	A	6	65	59	69.50	8.23	11.8	Fronds healthy, appearance normal in all replicates.
	B	6	75	69				
	C	6	77	71				
	D	6	85	79				
0.79	A	6	87	81	70.75	10.01	14.2	Fronds healthy, appearance normal in all replicates.
	B	6	79	73				
	C	6	78	72				
	D	6	63	57				
2.6	A	6	68	62	69.00	11.49	16.7	Fronds healthy, appearance normal in all replicates.
	B	6	68	62				
	C	6	92	86				
	D	6	72	66				
8.7	A	6	78	72	74.25	11.15	15.0	Fronds healthy, appearance normal in all replicates. Solutions very pale green in colour.
	B	6	82	76				
	C	6	67	61				
	D	6	94	88				
29.1	A	6	64	58	68.75	13.20	19.2	Fronds healthy, appearance normal in all replicates. Solutions light green in colour.
	B	6	94	88				
	C	6	70	64				
	D	6	71	65				
97.0	A	6	63	57	56.25	7.50	13.3	Fronds healthy, appearance normal in all replicates. Solutions green in colour with some settled solids.
	B	6	72	66				
	C	6	60	54				
	D	6	54	48				

NOTES: *No unusual appearance or treatment of culture prior to testing. Test inoculated with healthy plants.

•No significant stimulation (α=0.05) of frond increase was detected by ANOVA-Dunnett Multiple Comparison Test (CETIS)[a] at any test level compared to the control.

•A 12.0-fold increase in frond number was observed in the control over the testing period.

•No outlying data points were detected according to Grubbs Test (CETIS)[a].

"–" = not available/not required

Test Data Reviewed By : VC
Date : 2018-10-04

Work Order : 237106
Sample Number : 56153

Lemna minor Frond Weight Data

Test Concentration (%)	Replicate	Dry Weight of Fronds (mg)	Treatment Mean Dry Weight (mg)	Standard Deviation
Control	A	7.26	7.63	0.85
	B	8.85		
	C	7.52		
	D	6.89		
0.07	A	7.20	7.09	0.55
	B	6.54		
	C	7.80		
	D	6.82		
0.24	A	7.10	7.97	0.80
	B	7.80		
	C	7.94		
	D	9.04		
0.79	A	8.39	7.85	0.70
	B	8.02		
	C	8.16		
	D	6.83		
2.6	A	7.00	7.23	1.01
	B	6.22		
	C	8.63		
	D	7.07		
8.7	A	8.05	7.70	1.45
	B	6.79		
	C	6.36		
	D	9.59		
29.1	A	7.29	7.76	0.62
	B	8.56		
	C	7.25		
	D	7.94		
97.0	A	6.70	7.03	0.75
	B	8.10		
	C	6.96		
	D	6.37		

NOTES :

- No significant stimulation (α=0.05) of frond weight was detected by ANOVA-Dunnett Multiple Comparison Test (CETIS)[a] at any test level compared to the control.
- No outlying data points were detected according to Grubbs Test (CETIS)[a].

"–" = not available/not required

Test Data Reviewed By : VC
Date : 2018-10-04

AQUATOX
AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Rd.
Puslinch ON N0B 2J0
Tel: (519) 763-4412 Fax: (519) 763-4419

TOXICITY TEST REPORT

Pseudokirchneriella subcapitata
EPS 1/RM/25

Work Order : 237106
Sample Number : 56153

SAMPLE IDENTIFICATION

Company :	Agnico Eagle Mines Limited - Meliadine Project		
Location :	Rankin Inlet NU	Date Collected :	2018-09-03
Substance :	MEL-14	Time Collected :	07:00
Sampling Method :	Grab	Date Received :	2018-09-06
Sampled By :	J. Brown	Time Received :	09:45
Temp. on arrival :	22.0°C	Date Tested :	2018-09-06
Sample Description :	Clear, yellow, odourless		
Test Method :	Growth Inhibition Test Using a Freshwater Alga. Environment Canada, Conservation and Protection. Ottawa, Ontario. Report EPS 1/RM/25, 2nd ed. (March 2007), with deviation(s) as noted below.		

72-h TEST RESULTS

Effect	Value	95% Confidence Limits	Statistical Method
IC25 (Growth)	>90.91%	-	-

The results reported relate only to the sample tested and as received.

ZINC (AS ZINC SULPHATE) REFERENCE TOXICANT DATA

Date Tested :	2018-09-24	Statistical Method :	Nonlinear Regression* (CETIS)[a]
Organism Batch :	Ps18-09	Historical Mean IC25 :	10.4 µg/L
Test Duration :	72 hours	Warning Limits (± 2SD) :	4.8 - 22.3 µg/L
IC25 Growth :	10.3 µg/L	Analyst(s) :	MA
95% Confidence Limits :	8.6 - 11.9 µg/L		

The reference toxicity test was performed under the same experimental conditions as those used with the test sample.

TEST ORGANISM

Test Organism :	*Pseudokirchneriella subcapitata*	Source :	In-house culture
Culture Origin :	University of Waterloo, Waterloo ON	Cell Density at 0-h :	10409 cells/mL
Strain Number :	CPCC 37	Inoculum Prepared :	00:10 h prior to test initiation
Organism Batch :	Ps18-09	Age (at start of test) :	3 days (in exponential growth)

•Algal growth curve is determined at least twice per year as required by the test method cited above.

•No unusual appearance or treatment of culture prior to testing.

TEST CONDITIONS

Test Type :	Static	Volume per Replicate :	220 µL
Test Duration :	72 hours	Control Replicates:	10
Mean Temperature (± SD):	24.0°C (± 0.0)	Test Replicates :	4
Sample Pre-aeration :	None	Concentrations Tested :	10 + Control
Sample Filtration :	0.45 µm preconditioned filter	Photoperiod :	Continuous light
Volume Filtered:	≥10 mL	Light Intensity :	4160-4350 lux
Control/Dilution Water :	Millipore Milli-Q (no chemicals added)	pH Adjustment :	None
Enrichment Medium :	Stock 2B: EDTA reduced to 25%	Hardness Adjustment :	None
Test Vessel :	U-shaped polystyrene microplate	Test Method Deviation(s) :	None

COMMENTS

Noted Deviation(s) : A reference toxicant test was not started within 14 days of the toxicity test, as required by the test method.

•All test validity criteria as specified in the test method cited above were satisfied.

*Box Cox weighting (CETIS)[a] was applied.

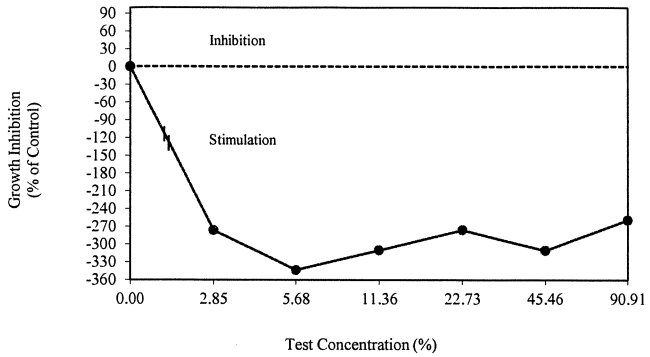
AQUATOX

TOXICITY TEST REPORT

Pseudokirchneriella subcapitata

Work Order : 237106
Sample Number : 56153

***Pseudokirchneriella subcapitata* Growth Inhibition**



CELL ENUMERATION AT 72-HOURS

Initiated By : SEW
Completion/Enumeration Date : 2018-09-09
Enumerated By : SF
Enumeration Method : Manual (haemocytometer)

Sample pH (at 0 hours) : 6.8
Control pH (at 0 hours) : 7.0
Control pH (at 72 hours) : 7.0
Control Cell Increase Factor : 27.6 times growth

Concentration	Cell Concentration (x 10000 cells/mL) Replicate								Cell Yield (x 10000 cells/mL) Mean	Standard Deviation	CV (%)	Stimulation (% of control)**
(%)	1	2	3	4	7	8	9	10				
Control	30.5	22.0	23.5	37.5	27.5	24.5	32.5	32.0	27.71	5.30	19.15	–
0.18	–	–	–	–	–	–	–	–	–	–	–	–
0.35	–	–	–	–	–	–	–	–	–	–	–	–
0.71	–	–	–	–	–	–	–	–	–	–	–	–
1.42	–	–	–	–	–	–	–	–	–	–	–	–
2.85	107.0	110.0	99.0	–	–	–	–	–	104.29	5.69	5.45	276.38
5.68	128.0	123.5	120.5	–	–	–	–	–	122.96	3.77	3.07	343.75
11.36	117.0	118.0	109.0	–	–	–	–	–	113.63	4.93	4.34	310.07
22.73	126.5	111.0	78.0[1]	–	–	–	–	–	104.13	24.77	23.79	275.78
45.46	132.0	107.0	105.5	–	–	–	–	–	113.79	14.89	13.08	310.67
90.91	110.0	94.5	97.0	–	–	–	–	–	99.46	8.32	8.37	258.94

NOTES : **Statistically significant stimulation, according to ANOVA/Dunnett Multiple Comparison Test (CETIS)[a], (a=0.05).
- Control replicates 5 and 6 used for pH measurement.
- The Mann-Kendall test shows that there is no inhibitory gradient (α=0.05).
- [1]Outlier according to Grubbs Test (CETIS)[a]. Outlying data points were not excluded from statistical analysis, since they could not be attributed to error.

"–" = not enumerated/not required

Data Reviewed By : VC
Date : 2018-10-04

REFERENCES

[a] CETIS™, © 2000-2018. V.1.9.4.7. Comprehensive Environmental Toxicity Information System. Tidepool Scientific Software, LLC, McKinleyville, CA 95519 [Program on disk and printed User's Guide].

Date : 2018-10-16
yyyy-mm-dd

Approved By :
Project Manager

CHAIN OF CUSTODY RECORD

AQUATOX

AquaTox Work Order No: 237106

Shipping Address: AquaTox Testing & Consulting Inc.
11B Nicholas Beaver Road, RR #3
Guelph, Ontario Canada N1H 6H9

Voice: (519) 763-4412 **Fax:** (519) 763-4419

P.O. Number:	580278
Field Sampler Name (print):	Jennifer Brown
Signature:	
Affiliation:	Agnico Eagle Mines Ltd. - Meliadine Division
Sample Storage (prior to shipping):	Shipped immediately after sampling
Custody Relinquished by:	Jennifer Brown
Date/Time Shipped:	2018-09-03 - 08:00

Client: Agnico Eagle Mines Limited
Meliadine Project
Rankin Inlet, Nunavut, Canada
X0C 0G0

Phone: (819) 759-3555

Fax:

Contact: Jennifer Brown

Sample Identification					Analyses Requested										Sample Method and Volume		
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	Sample Name	AquaTox Sample Number	Temp. on arrival	Rainbow Trout Single Concentration	Rainbow Trout LC50	*Daphnia magna* Single Concentration	*Daphnia magna* LC50	Fathead Minnow Survival & Growth	*Ceriodaphnia dubia* Survival & Reproduction	*Lemna minor* Growth	*Pseudokirchneriella subcapitata* Growth	RISS Data Entry	Other (please specify below)	Grab	Composite	# of Containers and Volume (eg. 2 x 1L, 3 x 10L, etc.)
2018-09-03	07:00	EWTP MEL-14b (Post-treatment)	56153	22.0					✓	✓	✓	✓			✓		3 x 20L

For Lab Use Only

Received By: EJS/MJT
Date: 2018-09-06
Time: 0945
Storage Location:
Storage Temp.(°C)

Please list any special requests or instructions:

TOXICOLOGY analysis required

Phone number: 819-759-3555 ext 3996

APPENDIX 2F

Effluent Quality Data at CP1, 2017

Table 1 - Effluent Quality Data at CP1, 2017

Parameters	Units	MDMER	WL	7-Jun-17	14-Jun-17	20-Jun-17	21-Jun-17	28-Jun-17	5-Jul-17	12-Jul-17	18-Jul-17	26-Jul-2017[a]	26-Jul-17	9-Aug-17	27-Aug-17	4-Sep-17	6-Sep-17	11-Sep-17	17-Sep-17	25-Sep-17
Conventional Parameters																				
Alkalinity (Total as $CaCO_3$)	mg/L	-	-	43	45	47	-	52	56	57	57	-	55	55	54	-	56	56	55	57
Bicarbonate Alkalinity (as $CaCO_3$)	mg/L	-	-	43	44	47	-	51	55	57	57	-	54	55	53	-	55	56	54	56
Carbonate Alkalinity (as $CaCO_3$)	mg/L	-	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	-	<1.0	<1.0	<1.0	<1.0
Conductivity	µS/cm	-	-	1100	1200	1300	-	1300	1400	1500	1500	-	1500	1900	2200	-	2400	2400	2500	2500
Total Hardness	mg/L	-	-	344	386	365	-	389	380	420	432	439	462	539	572	-	674	636	654	646
Dissolved Hardness	mg/L	-	-	309	363	351	-	405	446	430	439	480	466	541	575	-	639	698	649	648
pH	-	-	Max avg (6.0 to 9.5) max grab (6.0 to 9.5)	7.68	7.67	7.74	-	7.72	7.85	7.83	7.69	-	7.82	7.68	7.56	-	8.02	7.54	7.99	7.74
TDS	mg/L	-	Max Avg (1400 mg/L) Max grab (1400 mg/L)	822	1080	1190	-	1160	1230	908	1040	-	1030	**1600**	**1760**	**-**	**1680**	**1720**	**1880**	**1490**
TSS	mg/L	Max grab (30.00 mg/L)	Max avg (15 mg/L) Max grab (30 mg/L)	16	4	7	-	4	2	4	2	-	**35**	**3**	<10	<10	5	24	13	9
Turbidity	NTU	-	-	9.5	1.6	1.9	-	0.9	0.5	0.8	0.4	-	1.1	0.6	3.5	-	1.9	11	3.1	7.5
Major Ions																				
Dissolved Calcium	mg/L	-	-	102	117	115	-	133	146	140	144	157	152	176	182	-	202	220	206	206
Dissolved Chloride	mg/L	-	-	240	290	290	-	310	330	350	370	-	200	470	580	-	660	650	-	680
Dissolved Magnesium	mg/L	-	-	13.1	17.1	15.7	-	17.8	19.6	19.6	19.3	21.2	21.1	25	29	-	32.5	36.1	32.9	32.7
Dissolved Potassium	mg/L	-	-	7.1	9.07	8.12	-	9.07	10.4	11.1	10.1	11.9	12.1	13.8	14.9	-	17	17.2	16.2	16.9
Dissolved Sodium	mg/L	-	-	51.4	68.3	60.4	-	69.1	77.3	84.7	77.6	85	88.8	115	137	-	159	163	163	153
Dissolved Sulphate	mg/L	-	-	36	38	38	-	45	43	46	47	-	21	52	62	-	63	66	-	71
Reactive Silica	mg/L	-	-	0.31	<0.050	0.07	-	0.11	0.27	0.34	0.37	0.35	0.33	3.6	-	-	0.84	0.22	0.23	0.33
Nutrients																				
DOC	mg/L	-	-	5.7	6.2	6.8	-	7.2	8.1	8.1	8.3	9.1	-	9.5	11	-	11	11	11	12
TOC	mg/L	-	-	6.5	7.1	8	-	7.9	8.9	9.4	9.7	9.9	9.8	11	11	-	13	14	13	13
Total Kjeldahl Nitrogen	mg/L	-	-	5	4.3	4.4	-	4.9	4.5	4.4	3.9	3.3	3.4	3.7	3.9	-	2.8	2.8	2.2	2.6
Total Ammonia	mg/L	-	-	4.3	4.1	3.7	-	4.2	3.9	3.5	3.2	2.8	2.9	3.5	2.9	-	2.1	1.8	1.6	1.1
Nitrite	mg/L	-	-	0.216	0.199	0.182	-	0.165	0.148	0.153	0.156	0.118	0.152	0.172	0.167	-	0.177	0.125	0.134	0.121
Nitrate	mg/L	-	-	4.03	4.44	4.36	-	4.45	4.58	4.74	4.5	3.75	4.47	5.16	5.24	-	5.47	6	6.06	5.68
Nitrite-Nitrate	mg/L	-	-	4.25	4.64	4.54	-	4.61	4.73	4.89	4.65	3.87	4.62	5.33	5.41	-	5.65	6.13	6.19	5.8
Orthophosphate	mg/L	-	-	<0.010	0.013	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.10	<0.10	<0.010
Total Phosphorus	mg/L	-	Max avg (2 mg/L)	0.042	0.031	0.028	-	0.029	0.02	0.023	0.032	0.036	0.05	0.035	0.029	-	0.05	0.07	0.066	0.07
Total Metals																				
Aluminium	mg/L	-	Max avg (2 mg/L) Max grab (3 mg/L)	0.447	0.0478	0.0565	-	0.0733	0.0148	0.0133	0.083	0.0102	0.0278	0.0198	0.0253	-	0.015	0.479	0.081	<0.015
Antimony	mg/L	-	-	<0.00050	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	-	<0.0025	<0.0025	<0.0025	<0.0025
Arsenic	mg/L	Max grab (1.00 mg/L)	Max avg (0.3 mg/L) Max grab (0.6 mg/L)	0.00214	0.00204	0.00198	-	0.00172	0.00193	0.00225	0.00201	0.00195	0.00214	0.00201	0.00195	-	0.00187	0.00252	0.00211	0.00201
Barium	mg/L	-	-	0.0935	0.0992	0.102	-	0.107	0.108	0.116	0.12	0.119	0.117	0.14	0.153	-	0.16	0.158	0.170	0.162
Beryllium	mg/L	-	-	<0.00010	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	<0.00010	<0.00010	-	<0.00050	<0.00050	<0.00050	<0.00050
Boron	mg/L	-	-	0.069	0.075	0.077	-	0.075	0.081	0.088	<0.25	0.093	0.088	0.116	0.114	-	<0.25	<0.25	<0.25	<0.25
Cadmium	mg/L	-	-	0.000014	0.000016	0.000013	-	0.000012	0.000012	0.000012	<0.000050	<0.000010	<0.000010	0.000016	0.000014	-	<0.000050	<0.000050	<0.000050	<0.000050
Calcium	mg/L	-	-	114	127	121	-	128	123	138	139	143	151	176	184	-	213	200	204	207
Chromium	mg/L	-	-	0.0014	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	-	<0.0050	<0.0050	<0.0050	<0.0050
Copper	mg/L	Max grab (0.60 mg/L)	Max avg (0.2 mg/L) Max grab (0.4 mg/L)	0.00172	0.00143	0.00163	-	0.00152	0.00156	0.00163	<0.0025	0.00177	0.00173	0.00166	0.00168	-	<0.0025	0.0029	<0.0025	<0.0025
Iron	mg/L	-	-	0.983	0.289	0.175	-	0.17	0.057	0.093	0.249	0.051	0.143	0.163	0.158	-	0.186	1.28	0.285	0.182
Lead	mg/L	Max grab (0.40 mg/L)	Max avg (0.2 mg/L) Max grab (0.4 mg/L)	0.00081	0.00024	<0.00020	-	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	-	<0.0010	<0.0010	<0.0010	<0.0010
Lithium	mg/L	-	-	0.0904	0.102	0.11	-	0.122	0.121	0.128	0.135	0.131	0.131	0.168	0.177	-	0.193	0.196	0.222	0.192
Magnesium	mg/L	-	-	14.5	16.5	15.5	-	17	17.9	18.4	20.6	20.2	20.7	23.9	27.1	-	34.3	33.1	34.9	31.6
Manganese	mg/L	-	-	0.0816	0.0524	0.0368	-	0.0217	0.0162	0.0226	0.0173	0.004	0.0131	0.0202	0.0197	-	0.0216	0.0718	0.0393	0.0503
Mercury	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	<0.00001	0.00004
Molybdenum	mg/L	-	-	0.0011	0.0012	0.0011	-	0.0012	0.0013	0.0013	<0.0050	0.0012	0.0012	0.0012	0.0011	-	<0.0050	<0.0050	<0.0050	<0.0050
Nickel	mg/L	Max grab (1.00 mg/L)	Max avg (0.5 mg/L) Max grab (1.0 mg/L)	0.0042	0.002	0.0022	-	0.0021	0.0017	0.0019	<0.0050	0.0018	0.0018	0.0019	0.002	-	<0.0050	<0.0050	<0.0050	<0.0050
Selenium	mg/L	-	-	<0.00010	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00050	<0.00010	<0.00010	0.00011	<0.00010	-	<0.00050	<0.00050	<0.00050	<0.00050
Silver	mg/L	-	-	<0.000020	<0.000020	<0.000020	-	<0.000020	<0.000020	<0.000020	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010
Strontium	mg/L	-	-	1.8	1.99	2.11	-	2.27	2.36	2.57	2.55	2.64	2.56	3.23	3.94	-	3.47	3.84	3.96	3.54
Potassium	mg/L	-	-	7.76	9.35	8.46	-	9.83	9.72	10	10.7	11.5	11.8	13.3	14.1	-	16.6	16.4	16.7	16.7
Sodium	mg/L	-	-	54.1	66.8	62.2	-	68.5	74	76.3	79.5	87.6	83	110	129	-	159	159	171	147
Thallium	mg/L	-	-	0.000024	0.000032	0.000037	-	0.000049	0.000047	0.000049	<0.000050	0.000045	0.000045	0.000049	0.000049	-	<0.000050	<0.000050	-	<0.000050
Tin	mg/L	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.025	<0.025	<0.025	<0.025
Titanium	mg/L	-	-	0.0084	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.025	<0.025	<0.025	<0.025
Uranium	mg/L	-	-	0.00057	0.00059	0.00062	-	0.00065	0.00064	0.00066	0.00062	0.00056	0.00057	0.00054	0.00053	-	<0.00050	0.00055	0.00064	0.00055
Vanadium	mg/L	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.025	<0.025	<0.025	<0.025
Zinc	mg/L	Max grab (1.00 mg/L)	Max avg (0.4 mg/L) Max grab (0.8 mg/L)	0.0084	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	0.005	-	<0.025	<0.025	<0.025	<0.025

Table 1 - Effluent Quality Data at CP1, 2017

Parameters	Units	MDMER	WL	7-Jun-17	14-Jun-17	20-Jun-17	21-Jun-17	28-Jun-17	5-Jul-17	12-Jul-17	18-Jul-17	26-Jul-2017[a]	26-Jul-17	9-Aug-17	27-Aug-17	4-Sep-17	6-Sep-17	11-Sep-17	17-Sep-17	25-Sep-17
Dissolved Metals																				
Aluminium	mg/L	-	-	0.0082	0.0081	0.0112	-	0.0096	0.0128	0.0076	0.0114	<0.015	<0.030	0.0382	0.0057	-	<0.015	<0.015	0.0103	0.067
Antimony	mg/L	-	-	<0.00050	<0.00050	<0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.0025	<0.0050	<0.00050	<0.00050	-	<0.0025	<0.0025	<0.00050	<0.0025
Arsenic	mg/L	-	-	0.00147	0.0015	0.00164	-	0.00164	0.00212	0.00212	0.00211	0.00195	0.0023	0.00201	0.00165	-	0.00152	0.00249	0.00167	0.00182
Barium	mg/L	-	-	0.096	0.0942	0.0965	-	0.104	0.115	0.122	0.121	0.121	0.12	0.142	0.145	-	0.163	0.165	0.186	0.159
Beryllium	mg/L	-	-	<0.00010	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.0010	<0.00010	<0.00010	-	<0.00050	<0.00050	<0.00010	<0.00050
Boron	mg/L	-	-	0.062	0.082	0.07	-	0.082	0.091	0.086	0.098	<0.25	<0.50	0.113	0.121	-	<0.25	<0.25	0.142	<0.25
Cadmium	mg/L	-	-	0.000011	<0.000010	<0.000010	-	<0.000010	0.000015	0.00001	0.00001	<0.000050	<0.00010	0.000015	<0.000010	-	<0.000050	<0.000050	0.000016	<0.000050
Chromium	mg/L	-	-	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.010	<0.0010	<0.0010	-	<0.0050	<0.0050	<0.0010	<0.0050
Copper	mg/L	-	-	0.00089	0.00115	0.00107	-	0.00172	0.0017	0.00148	0.00152	0.0019	<0.0020	0.00165	0.00158	-	0.0019	0.0021	0.0014	0.0022
Iron	mg/L	-	-	0.0476	0.0522	0.0407	-	0.0365	0.0351	0.0568	0.0677	0.047	0.104	0.186	0.105	-	0.174	0.158	0.112	0.133
Lead	mg/L	-	-	<0.00020	<0.00020	<0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.0020	<0.00020	<0.00020	-	<0.0010	<0.0010	<0.00020	<0.0010
Lithium	mg/L	-	-	0.102	0.111	0.115	-	0.116	0.132	0.125	0.135	0.13	0.139	0.173	0.185	-	0.198	0.205	0.225	0.200
Manganese	mg/L	-	-	0.05	0.0185	0.0037	-	0.0052	0.0064	0.0045	0.0067	<0.0050	0.012	0.0174	0.0056	-	<0.0050	0.013	0.0183	0.0273
Mercury	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	0.00002
Molybdenum	mg/L	-	-	0.0049	0.0012	0.0011	-	0.0011	0.0012	0.0014	0.0013	<0.0050	<0.010	0.0012	<0.0010	-	<0.0050	<0.0050	0.0012	<0.0050
Nickel	mg/L	-	-	0.0019	0.0019	0.0017	-	0.0016	0.0019	0.0017	0.0016	<0.0050	<0.010	0.0019	0.0021	-	<0.0050	<0.0050	0.0021	<0.0050
Selenium	mg/L	-	-	<0.00010	<0.00010	<0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00050	<0.0010	<0.00010	<0.00010	-	<0.00050	<0.00050	<0.00010	<0.00050
Silver	mg/L	-	-	<0.000020	<0.000020	<0.000020	-	<0.000020	<0.000020	<0.000020	<0.000020	<0.00010	<0.00020	<0.000020	<0.000020	-	<0.00010	<0.00010	<0.000020	<0.00010
Strontium	mg/L	-	-	1.96	2.08	2.19	-	2.19	2.36	2.64	2.8	2.6	2.7	3.27	3.29	-	3.54	3.66	3.9	3.36
Sulphur	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	-	-	0.000021	0.000032	0.000038	-	0.000043	0.000048	0.000048	0.000047	0.000052	<0.00010	0.000049	0.00005	-	<0.000050	<0.000050	-	<0.000050
Tin	mg/L	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.025	<0.0050	<0.0050	<0.025	<0.050	<0.0050	<0.0050	-	<0.025	<0.025	<0.0050	<0.025
Titanium	mg/L	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.050	<0.0050	<0.0050	-	<0.025	<0.025	<0.0050	<0.025
Uranium	mg/L	-	-	0.00061	0.00055	0.00061	-	0.0006	0.00062	0.00066	0.00064	0.00059	<0.0010	0.00056	0.00045	-	<0.00050	0.00055	0.00069	0.00056
Vanadium	mg/L	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.050	<0.0050	<0.0050	-	<0.025	<0.025	<0.0050	<0.025
Zinc	mg/L	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.050	<0.0050	<0.0050	-	<0.025	<0.025	<0.0050	<0.025
Cyanide																				
Total Cyanide	mg/L	Max grab (2.0 mg/L)	Max avg (0.5 mg/L) Max grab (1.0 mg/L)	-	-	-	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050
Free Cyanide	mg/L	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	-	<0.0010	0.001	<0.0010	<0.0010
Other parameters																				
Radium-226	Bq/L	Max grab (1.11 Bq/L)	-	<0.50	0.70	<0.50	-	-	-	-	-	-	-	<0.0050	<0.010	-	-	0.007	-	-
General Organics																				
Total Oil & Grease	mg/L	-	-	-	-	-	-	-	<0.50	1.20	<0.50	-	<0.50	-	-	-	<0.50	-	1.2	2.1
Volatile Organics																				
Benzene	ug/L	-	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20
Toluene	ug/L	-	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20
Ethylbenzene	ug/L	-	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20
o-Xylene	ug/L	-	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	<0.20	-	<0.20	<0.20
m, p-Xylenes	ug/L	-	-	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	<0.40	-	<0.40	<0.20	<0.20	-	<0.20	-	<0.40	<0.40
Xylenes	ug/L	-	-	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	<0.40	-	<0.40	<0.20	<0.20	-	<0.20	-	<0.40	<0.40
F1 (C6-C10)	ug/L	-	-	<25	<25	<25	-	<25	<25	<25	<25	-	<25	<25	<25	-	<25	-	-	<25
F1 (C6-C10) - BTEX	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25
Hydrocarbons (L) (Fraction F1 (C6-C10)	µg/L	-	-	<25	<25	<25	-	<25	<25	<25	<25	-	<25	<25	<25	-	<25	-	-	-
Hydrocarbons (L) (Fraction F2 - F4)	-	-	TPH : 5 mg/L avg and grab	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F2 (C10-C16 Hydrocarbons)	µg/L	-	-	<100	<100	<100	-	<100	<100	<100	<100	-	<100	<100	<100	-	<100	<100	<100	<100
F3 (C16-34 Hydrocarbons)	µg/L	-	-	<200	<200	<200	-	<200	<200	<200	<200	-	<200	<200	<200	-	<200	<200	<200	<200
F4 (C34-50 Hydrocarbons)	µg/L	-	-	<200	<200	<200	-	<200	<200	<200	<200	-	<200	<200	<200	-	<200	<200	<200	<200
Reached Baseline at C50	µg/L	-	-	Yes	Yes	Yes	-	Yes	Yes	yes	yes	-	yes	yes	yes	-	yes	yes	yes	yes
Diesel (C10-C24)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<200	-
Diesel (C11-C32)	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<200	-
F4G-sg (Grav. Heavy Hydrocarbons)	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: **Bolded** value indicates MMER or WL exceedance.

a) INAC replicate.

mg/L = milligrams per litre; µg/L = microgram per litre; µS/cm = microSiemens per centimetre; Bq/L = becquerel per litre; + = plus; % = percent; °C = degrees Celsius; NTU = nephelometric turbidity unit; U.T. = Toxic Units; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide; TDS = total dissolved solids; TSS = total suspended solids; TOC = Total organic carbon; TPH = Total petroleum hydrocarbons; DOC = dissolved organic carbon; BTEX = benzene, toluene, ethylbenzene, and xylene; grav. = gravimetric; Min = minimum; Max = maximum; SD = standard deviation; nd = not detected; < = less than; % = percent; MDMER = Metal and Diamond Mine Effluent Regulations; WL = Water Licence; INAC = Indigenous and Northern Affairs; - = Parameter below MDMER or WL effluent limit, or no limit or no data; Jun = June; Jul = July; Aug = August; Sep = September; h = hours; % v/v = volume concentration; avg = average

APPENDIX 2G

Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018

Table 1: Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018

Sample Name	Sample Date	Sample Depth	Temperature (°C)	DO (mg/L)	DO (% saturation)	Specific Conductivity (µS/cm)	pH
050-01	10-Aug-2018	0.3	13.03	9.87	94	88.2	8.53
050-01	10-Aug-2018	1	13.03	9.95	94.8	88.3	8.51
050-01	10-Aug-2018	2	12.98	9.96	94.8	90.3	8.51
050-01	10-Aug-2018	3	12.79	9.98	94.6	91.4	8.51
050-01	10-Aug-2018	4	12.77	9.98	94.5	92.6	8.5
050-01	10-Aug-2018	5	12.72	9.98	94.4	96.2	8.5
050-01	10-Aug-2018	6	12.71	9.97	94.3	99.8	8.5
050-01	10-Aug-2018	7	12.65	9.95	94.1	97.1	8.5
050-01	10-Aug-2018	8	12.63	9.95	93.9	90.3	8.52
050-01	10-Aug-2018	9	12.59	9.93	93.7	87.8	8.53
050-03	10-Aug-2018	0.3	13.12	9.82	93.8	87.8	8.55
050-03	10-Aug-2018	1	13.02	9.91	94.5	91	8.54
050-03	10-Aug-2018	2	12.82	9.98	94.7	105.5	8.51
050-03	10-Aug-2018	3	12.76	9.98	94.6	102.2	8.5
050-03	10-Aug-2018	4	12.73	9.98	94.5	99.7	8.5
050-03	10-Aug-2018	5	12.72	9.96	94.3	96.3	8.5
050-03	10-Aug-2018	6	12.7	9.95	94.2	95.9	8.5
050-03	10-Aug-2018	7	12.68	9.94	94	92.5	8.51
050-03	10-Aug-2018	8	12.59	9.95	93.9	87.4	8.52
050-03	10-Aug-2018	9	12.49	9.93	93.5	86.6	8.52
050-03	10-Aug-2018	10	12.48	9.88	93	86.4	8.51
050-03	10-Aug-2018	11	12.48	9.85	92.7	86.4	8.5
100-01	10-Aug-2018	0.3	13.09	9.93	94.7	86.6	8.54
100-01	10-Aug-2018	1	13.07	9.94	94.8	86.7	8.49
100-01	10-Aug-2018	2	12.8	9.97	94.5	93.4	8.47

Table 1: Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018

Sample Name	Sample Date	Sample Depth	Temperature (°C)	DO (mg/L)	DO (% saturation)	Specific Conductivity (µS/cm)	pH
100-01	10-Aug-2018	3	12.72	9.99	94.5	90.3	8.47
100-01	10-Aug-2018	4	12.67	9.99	94.4	89.4	8.47
100-01	10-Aug-2018	5	12.66	9.99	94.4	88.8	8.46
100-01	10-Aug-2018	6	12.66	9.98	94.4	92.1	8.45
100-02	23-Jul-2018	0.025	12.85	11.7	112.1	81.4	7.85
100-02	23-Jul-2018	0.1	12.86	11.73	112.5	81.8	7.83
100-02	23-Jul-2018	0.5	12.86	11.73	112.5	82	7.81
100-02	23-Jul-2018	1	12.86	11.73	112.5	82.2	7.8
100-02	23-Jul-2018	2	12.85	11.73	112.6	84.4	7.77
100-02	23-Jul-2018	3	12.85	11.73	112.5	83.3	7.78
100-02	23-Jul-2018	4	12.85	11.73	112.5	83.3	7.77
100-02	23-Jul-2018	5	12.81	11.72	112.3	86.1	7.76
100-02	23-Jul-2018	6	12.74	11.72	112.1	91.9	7.73
100-02	23-Jul-2018	7	12.64	11.72	111.9	93	7.72
100-02	23-Jul-2018	8	12.26	11.69	110.8	91.9	7.66
100-02	23-Jul-2018	8.2	12.25	11.68	110.5	91.3	7.65
100-03	10-Aug-2018	0.3	13.06	9.92	94.6	87.4	8.47
100-03	10-Aug-2018	1	13.05	9.93	94.7	89.6	8.46
100-03	10-Aug-2018	2	13.02	9.94	94.7	91.6	8.45
100-03	10-Aug-2018	3	12.9	9.98	94.7	104	8.42
100-03	10-Aug-2018	4	12.8	9.98	94.6	102.6	8.42
100-03	10-Aug-2018	5	12.75	9.98	94.6	96.6	8.44
100-03	10-Aug-2018	6	12.7	9.99	94.5	86.9	8.47
100-03	10-Aug-2018	7	12.54	9.99	94.2	86.7	8.47
100-04	10-Aug-2018	0.3	13.09	9.85	94	91.3	8.47

Table 1: Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018

Sample Name	Sample Date	Sample Depth	Temperature (°C)	DO (mg/L)	DO (% saturation)	Specific Conductivity (µS/cm)	pH
100-04	10-Aug-2018	1	13.05	9.91	94.5	92.6	8.46
100-04	10-Aug-2018	2	13.02	9.92	94.5	96.3	8.45
100-04	10-Aug-2018	3	12.84	9.95	94.5	102.6	8.44
100-04	10-Aug-2018	4	12.76	9.97	94.4	90.8	8.46
100-04	10-Aug-2018	5	12.78	9.97	94.3	90.9	8.47
100-04	10-Aug-2018	6	12.67	9.96	94.1	87.6	8.46
100-04	10-Aug-2018	7	12.64	9.94	93.9	87.1	8.46
100-04	10-Aug-2018	8	12.53	9.93	93.6	87	8.45
100-04	10-Aug-2018	9	12.52	9.85	92.9	86.9	8.43
100-05	10-Aug-2018	0.3	13.12	9.84	93.9	89.5	8.47
100-05	10-Aug-2018	1	13.04	9.94	94.8	89.6	8.48
100-05	10-Aug-2018	2	12.76	9.95	94.3	94.6	8.48
100-05	10-Aug-2018	3	12.77	9.92	94	98.2	8.49
100-05	10-Aug-2018	4	12.74	9.93	94	90.1	8.48
100-05	10-Aug-2018	5	12.76	9.92	94	98.9	8.47
100-05	10-Aug-2018	6	12.77	9.92	94	98.8	8.47
100-05	10-Aug-2018	7	12.71	9.92	93.9	90.8	8.5
100-05	10-Aug-2018	8	12.64	9.91	93.8	88.3	8.5
100-05	10-Aug-2018	9	12.58	9.87	93.1	87.2	8.5
100-05	10-Aug-2018	10	12.47	9.83	92.7	86.7	8.48
100-06	10-Aug-2018	0.3	13.1	9.8	93.5	86.8	8.47
100-06	10-Aug-2018	1	13.09	9.91	94.4	86.5	8.47
100-06	10-Aug-2018	2	13.04	9.94	94.7	86.9	8.47
100-06	10-Aug-2018	3	13	9.94	94.7	87.5	8.47
100-06	10-Aug-2018	4	12.87	9.97	94.7	88.5	8.46

Table 1: Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018

Sample Name	Sample Date	Sample Depth	Temperature (°C)	DO (mg/L)	DO (% saturation)	Specific Conductivity (µS/cm)	pH
100-06	10-Aug-2018	5	12.77	9.99	94.6	87.1	8.46
100-06	10-Aug-2018	6	12.65	9.96	94.2	87.1	8.46
100-06	10-Aug-2018	7	12.62	9.93	93.8	86.9	8.46
100-06	10-Aug-2018	8	12.56	9.88	93.3	87.3	8.44
100-06	10-Aug-2018	9	12.5	9.84	92.7	86.7	8.43
100-07	19-Jul-2018	0.025	11.27	11.49	105.6	84.1	7.53
100-07	19-Jul-2018	0.1	11.27	11.87	109.8	84	7.48
100-07	19-Jul-2018	0.5	11.28	11.94	110.6	84	7.45
100-07	19-Jul-2018	1	11.29	11.98	110.9	83.9	7.43
100-07	19-Jul-2018	2	11.29	12.11	112.1	83.9	7.45
100-07	19-Jul-2018	3	11.24	12.16	112.4	84.2	7.45
100-07	19-Jul-2018	4	11.22	12.16	112.5	83.8	7.43
100-07	19-Jul-2018	5	11.21	12.17	112.5	84.4	7.44
100-07	19-Jul-2018	6	11.2	12.19	112.5	85.7	7.45
100-07	19-Jul-2018	7	11.14	12.17	112.3	85.6	7.45
100-07	19-Jul-2018	8	11.12	12.13	112	85	7.46
100-07	19-Jul-2018	9	11.13	12.07	111.3	84.5	7.45
100-07	19-Jul-2018	10	11.09	11.99	110.6	84.5	7.45
100-07	19-Jul-2018	11	11.09	11.64	110	84.3	7.44
100-08	10-Aug-2018	0.3	13.09	9.79	93.3	86.8	8.5
100-08	10-Aug-2018	1	13.02	9.92	94.4	86.9	8.49
100-08	10-Aug-2018	2	12.88	9.94	94.4	87.5	8.48
100-08	10-Aug-2018	3	12.82	9.93	94.2	89.5	8.47
100-08	10-Aug-2018	4	12.7	9.91	93.8	96.6	8.45
100-08	10-Aug-2018	5	12.61	9.9	93.5	88.4	8.46

Table 1: Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018

Sample Name	Sample Date	Sample Depth	Temperature (°C)	DO (mg/L)	DO (% saturation)	Specific Conductivity (µS/cm)	pH
100-08	10-Aug-2018	6	12.62	9.88	93.3	89.2	8.45
100-08	10-Aug-2018	7	12.62	9.87	93.2	89.4	8.44
100-08	10-Aug-2018	8	12.64	9.87	93.2	90.6	8.44
175-01	10-Aug-2018	0.3	13.06	9.84	93.7	86.6	8.5
175-01	10-Aug-2018	1	12.91	9.91	94.1	86.6	8.49
175-01	10-Aug-2018	2	12.77	9.95	94.2	87.1	8.49
175-01	10-Aug-2018	3	12.77	9.96	94.3	89.1	8.48
175-01	10-Aug-2018	4	12.73	9.96	94.3	94.3	8.46
175-01	10-Aug-2018	5	12.7	9.96	94.2	93.5	8.47
175-03	10-Aug-2018	0.3	13.11	9.77	93.3	88.8	8.5
175-03	10-Aug-2018	1	13.07	9.86	94	90.1	8.49
175-03	10-Aug-2018	2	12.98	9.92	94.5	91.2	8.49
175-03	10-Aug-2018	3	12.93	9.96	94.7	90.5	8.49
175-03	10-Aug-2018	4	12.87	9.99	94.9	87.1	8.5
175-03	10-Aug-2018	5	12.72	9.99	94.6	86.8	8.49
175-03	10-Aug-2018	6	12.65	9.95	94	87	8.48
175-03	10-Aug-2018	7	12.6	9.92	93.6	87.2	8.47
175-03	10-Aug-2018	8	12.52	9.88	93	87.3	8.47
175-03	10-Aug-2018	9	12.48	9.82	92.5	87	8.46
175-03	10-Aug-2018	10	12.48	9.76	92	87.1	8.45
250-01	10-Aug-2018	0.3	12.95	9.87	93.9	88.1	8.42
250-01	10-Aug-2018	1	12.91	9.9	94.1	88.2	8.42
250-01	10-Aug-2018	2	12.88	9.9	94.1	87.7	8.42
250-01	10-Aug-2018	3	12.69	9.95	94.1	87.3	8.42
250-01	10-Aug-2018	4	12.55	9.96	93.9	86.7	8.42

Table 1: Field Data in the Near-field Exposure Area at Meliadine Lake Under the Plume Delineation Study, 2018

Sample Name	Sample Date	Sample Depth	Temperature (°C)	DO (mg/L)	DO (% saturation)	Specific Conductivity (µS/cm)	pH
250-01	10-Aug-2018	5	12.52	9.94	93.7	86.7	8.41
250-03	10-Aug-2018	0.3	13.22	9.92	94.9	86.8	8.53
250-03	10-Aug-2018	1	13.16	9.94	95	87	8.51
250-03	10-Aug-2018	2	13.09	9.98	95.2	88.6	8.5
250-03	10-Aug-2018	3	12.95	9.99	95.1	88.2	8.49
250-03	10-Aug-2018	4	12.93	9.99	95	87.4	8.49
250-03	10-Aug-2018	5	12.86	10	95	87	8.49
250-03	10-Aug-2018	6	12.66	9.95	94.1	86.7	8.49
250-03	10-Aug-2018	7	12.54	9.9	93.4	87.2	8.47
250-05	10-Aug-2018	0.3	13.16	9.81	93.6	86.9	8.59
250-05	10-Aug-2018	1	13.08	9.89	94.3	87	8.56
250-05	10-Aug-2018	2	13.04	9.92	94.6	86.9	8.54
250-05	10-Aug-2018	3	12.99	9.96	94.7	86.8	8.53
250-05	10-Aug-2018	4	12.66	10	94.6	87.5	8.51
250-05	10-Aug-2018	5	12.65	9.94	93.9	87.4	8.51
250-05	10-Aug-2018	6	12.63	9.89	93.5	87.7	8.5
250-05	10-Aug-2018	7	12.62	9.86	93.4	87.8	8.48
250-06	10-Aug-2018	0.3	13.04	9.83	93.6	86.6	8.49
250-06	10-Aug-2018	1	12.89	9.96	94.6	86.7	8.5
250-06	10-Aug-2018	2	12.77	9.99	94.7	86.9	8.49
250-06	10-Aug-2018	3	12.73	9.99	94.6	86.9	8.49
250-06	10-Aug-2018	4	12.71	9.99	94.5	86.9	8.48
250-06	10-Aug-2018	5	12.7	9.98	94.4	86.9	8.48

Jul = July; Aug = August; °C = degrees Celsius; mg/L = milligrams per litre; DO = dissolved oxygen; µS/cm = microsiemens per centimetre.

APPENDIX 2H

Spill Reports, 2018

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **2-2-2018**	REPORT TIME **14:30**	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER **18 - 029**
B	OCCURRENCE DATE: MONTH – DAY – YEAR **2-2-2018**	OCCURRENCE TIME **13:00**		

C	LAND USE PERMIT NUMBER (IF APPLICABLE) **KVPL11D01**	WATER LICENCE NUMBER (IF APPLICABLE) **2AM-MEL1631**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **Meliadine Gold Project**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES **63** MINUTES **1** SECONDS **43**	LONGITUDE DEGREES **92** MINUTES **10** SECONDS **9**
F	RESPONSIBLE PARTY OR VESSEL NAME **Agnico Eagle Mines Ltd.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Meliadine, Rankin Inlet, Nunavut, X0C 0G0**
G	ANY CONTRACTOR INVOLVED **None**	CONTRACTOR ADDRESS OR OFFICE LOCATION

H	PRODUCT SPILLED **Sewage**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **~120000 L**	U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE) **None**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER **NA**
I	SPILL SOURCE **Retention Tank**	SPILL CAUSE **Human Error**	AREA OF CONTAMINATION IN SQUARE METRES
J	FACTORS AFFECTING SPILL OR RECOVERY **Cold weather, accessibility**	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

On February 2nd, during an inspection of the exploration camp retention tanks it was noticed by a member of the Site Services team that water was flowing on to Meliadine Lake near the discharge area of the sewage treatment plant. The environment department and site services supervisor were notified immediately and an inspection was conducted to determine the source of the water. it was discovered that a valve at the base of one of the retention tanks had been left open, resulting in the draining of the contents of all 4 tanks (connected in series). Discharge from the sewage treatment plant had been suspended since November 2017 due to exceedances. The quality of the substance is to be verified and is likely not deleterious.

Sr. Environmental Coordinator - Dan Gorton: Ext 3996
Sr. Environmental Technician - Justin MacMillan: Ext 3903 or 3925

L	REPORTED TO SPILL LINE BY **Dan Gorton**	POSITION **Sr. Env Coordinator**	EMPLOYER **Agnico Eagle**	LOCATION CALLING FROM **Meliadine Project**	TELEPHONE **8197593555**
M	ANY ALTERNATE CONTACT **Justin MacMillan**	POSITION **Sr. Env Technician**	EMPLOYER **Agnico Eagle**	ALTERNATE CONTACT LOCATION **Meliadine Project**	ALTERNATE TELEPHONE **8197593555**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC

SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN

FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

Follow Up Report – February 2nd 2018 MEL-07 Treated Water Discharge

Description of Exceedance:

On February 2nd, during an inspection of the exploration camp retention tanks it was noticed by a member of the Site Services team that water was flowing on to Meliadine Lake near the discharge area of the sewage treatment plant. The environment department and site services supervisor were notified immediately and an inspection was conducted to determine the source of the water. It was discovered that a valve at the base of one of the retention tanks had been left open, resulting in the draining of the contents of all four tanks, which are connected in series. Discharge from the sewage treatment plant had been suspended since November 2017 due to exceedances.

Samples were collected from a melt channel in the ice, and sent for laboratory analysis. A spill report was issued on February 2nd 2018 through the NT-NU Spill Report. As a response to the spill report issued, Christine Wilson (INAC) visited the Meliadine Exploration Camp on February 2nd 2018, and was unable to collect a representative sample, as there was no pooling on the surface of the ice.

Jeff Tulugak (KIA) also inspected the spill area on February 2nd, 2018. A telephone inquiry was received by Craig Broom (Environment Canada) and Dan Gorton provided an account of the spill information available to date on February 5th, 2018.



Picture 1: Channel formed by release water flowing through ice into Meliadine Lake.



Picture 2: Release valve left open causing the spill.



Picture 3: Discharge hose connected to retention tank release valve.

Samples were collected from the STP release valve on February 2nd, shortly after the release occurred. The samples did not arrive at the laboratory within the recommended 24 hours timeframe for fecal coliform analysis. The delay was due to the delivery not being picked up at the airport by the receiving party. Total coliforms were expressed in MPN as opposed to CFU, which are the recommended units in the water license. Although these are not the preferred units, they can be converted.

Table 1: Laboratory analysis of retention tank treated water samples collected at spill site.

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2052826-1 RETENTION TANK							
Sampled By: CLIENT on 02-FEB-18 @ 01:45							
Matrix: WATER							
Miscellaneous Parameters							
Fecal Coliforms	214		1	MPN/100mL		05-FEB-18	R3955854
Heterotrophic Plate Count	>3000		10	CFU/mL		05-FEB-18	R3956754
Total Coliform and E.coli by MPN QT97							
Total Coliforms	>2420		1	MPN/100mL		05-FEB-18	R3955855
Escherichia Coli	285		1	MPN/100mL		05-FEB-18	R3955855

Table 2: Laboratory analysis of retention tank treated water in months leading up to the event.

Station: STP-FINAL (MEL-7)	December				January						February					
DATE	12/4/2017	12/12/2017	12/14/2017	12/18/2017	1/2/2018	1/4/2018	1/8/2018	1/15/2018	1/22/2018	1/29/2018	2/5/2018	2/12/2018	2/19/2018			
Ammonia as N (mg/L)					4.5	3.3	7.3	25	26	14	16	0.05				
Biochemical Oxygen Demand					12	11	6	5	9	4	9	13				
Kjeldahl nitrogen					6	3.7	7.4	25	29	15	17	<2				
pH					6.94	7.15	7.49	6.87	7.72	7.18	6.75	6.82				
Phosphorus (P)-Total					8.5	7.8	6.9	10	11	9.5	10	9.8				
Total Suspended Solids					8	5	7	9	14	5	6	8				
Transmitance %					37	37	39	31	20	36	37	34				
Nitrite-N					0.359	0.332	0.522	0.307	0.173	0.588	0.372	0.312				
Nitrate-N					22.5	20.8	23.5	33.8	36.1	39.5	47.2	41.4				
Nitrate and Nitrite as N					22.9	21.2	24	34.1	36.3	40.1	47.6	41.8				
Oil & Grease-(IR)					1.9	0.6	<0.50	0.6	<0.50	**1.8**	0.6	<0.50				
Total Nitrogen (N)					-	-	-	-	-	-	-	-				
Total Chemical Oxygen Demand (COD)					82	83	83	98	110	68	73	34				
Total Dissolved Solids					430	-	565	495	**710**	465	475	505				
Alkalinity					36	54	74	41	**320**	47	27	37				
Atypical	950	30	170	180	66000		<10	1020	530	10	330	5800	490			
Fecal Coliforms (CFU/100mL)	20	<2	<2	<10	<10		<10	<10	<2	<2	<10	<10	<2			
Heterotrophic Plate Count (AAHB) (CFU/100mL)	4,300	450	500.00	209	21,000		360	1,000	820	430	260	1,330	560			
Total Coliforms (CFU/100mL)	30	90	70	90	<1000		<10	200	10	10	<10	<100	<10			

The sample collected from the retention tank discharge had **214 MPN/100mL fecals** and **285 MPN/100mL E.coli.**

Spill Discharge Location:

The MEL-07 effluent discharges to land at a location situated approximately 65 m from the ordinary high water mark of Meliadine Lake (see Figure 1). Once the effluent reaches the end of the pipe, it travels along a rock channel intended to reduce the flow and prevent erosion. The effluent will then follow the rock channel to Meliadine Lake. It is expected that with the extreme cold temperatures on February 2nd, and the fact that the effluent discharges to land first, the bacteria would likely not have survived.



Figure 1: View from above - MEL-07 discharge configuration with rock channel and flow path to Meliadine Lake

Spill cause:

Investigation into the release was inconclusive. However, it is believed that a water truck operator failed to close the release valve after transferring water to a truck.

Spill response:

The release was deemed to be caused by human error. The release valve is now fitted with a locking mechanism. A supervisor now keeps a register to record which operator is in possession of the key.

Dan Gorton, Environmental Coordinator, AEM

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **10-01-2018**	REPORT TIME **10:41**	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER **18 - 409**
B	OCCURRENCE DATE: MONTH – DAY – YEAR **07-23-2018**	OCCURRENCE TIME **15:00**		

C	LAND USE PERMIT NUMBER (IF APPLICABLE) **KVPL11D01**	WATER LICENCE NUMBER (IF APPLICABLE) **2AM-MEL1631**
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **Meliadine Gold Project**	REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN
E	LATITUDE DEGREES **63** MINUTES **2** SECONDS **15**	LONGITUDE DEGREES **92** MINUTES **13** SECONDS **06**
F	RESPONSIBLE PARTY OR VESSEL NAME **Agnico Eagle Mines Ltd.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Meliadine, Rankin Inlet, Nunavut, X0C 0G0**
G	ANY CONTRACTOR INVOLVED **None**	CONTRACTOR ADDRESS OR OFFICE LOCATION **NA**

H	PRODUCT SPILLED **Treated effluent**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **4.39 mg/L (~15,691 m3/d)**	U.N. NUMBER **NA**
	SECOND PRODUCT SPILLED (IF APPLICABLE) **None**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **NA**	U.N. NUMBER **NA**
I	SPILL SOURCE **Mel-14**	SPILL CAUSE **NWB Licence Criteria Exceeded**	AREA OF CONTAMINATION IN SQUARE METRES **NA**
J	FACTORS AFFECTING SPILL OR RECOVERY **NA**	DESCRIBE ANY ASSISTANCE REQUIRED **NA**	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT **NA**

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

A sample of treated water from Mel-14 (final discharge point to Meliadine Lake) was collected on July 23, 2018. Upon receiving the sampling results, the total aluminum concentration was found to be 4.39 mg/L which exceeded the permitted discharge limit of 2 mg/L. When the exceedance was observed, the lab was requested to re-analyze the sample to determine if the result was an outlier; however, the sample had been disposed of and re-analysis was not possible at the date of the request.

This spill is being reported as per the 2AM-MEL1631 Nunavut Water Board License, part F item 3.

A follow up report will be issued.

Environmental Coordinator - Dan Gorton/Jennifer Brown: Ext 4603996

L	REPORTED TO SPILL LINE BY **Jennifer Brown**	POSITION **Sr.Environment Coord**	EMPLOYER **Agnico Eagle**	LOCATION CALLING FROM **Meliadine Project**	TELEPHONE **8198565097**
M	ANY ALTERNATE CONTACT **Dan Gorton**	POSITION **Environment Coord**	EMPLOYER **Agnico Eagle**	ALTERNATE CONTACT LOCATION **Meliadine Project**	ALTERNATE TELEPHONE **8197593555**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

AGNICO EAGLE
MELIADINE

Follow Up Report: #18-409
July 23, 2018 MEL-14 Aluminum Concentration Criteria Exceeded

Description of Incident:

A sample of treated water from MEL-14 (final effluent sampling port prior to discharge to Meliadine Lake) was collected on July 23, 2018. Upon review of the laboratory analysis results, the total aluminum concentration was found to be 4.39 mg/L which exceeded the permitted discharge limit of 2 mg/L.
As per the obligations under the Nunavut Water Board License 2AM-MEL1631, Part F, item 3 pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act., samples were collected for laboratory analysis to assess the total metal concentrations and other water quality parameters during final effluent discharge at MEL-14. The laboratory results were received on August 8, 2018, however, the exceeded criteria for the total aluminum concentration was not observed at the initial time of the data review and data input. During the quarterly reporting for MDMER-EEM (RIIS) on October 1, 2018, the exceeded concentration was observed and reported immediately.

Exceedance Cause and Corrective Measures

The exceeded criteria for final effluent discharge criteria for total aluminum concentrations is assumed to be a laboratory error. When the exceeded criteria was observed, the lab was requested to re-analyze the sample to determine if the reported concentration was a result of laboratory error; however, the sample had been disposed of and re-analysis was not possible at the date of the request.

When comparing the total aluminum concentrations from a sample collected and analyzed on the same day from MEL-13 (the discharge location at Meliadine Lake), total aluminum concentrations were also elevated (6.64 mg/L). Results for total aluminum concentration were then compared to results from 2018 sampling events. The results from July 23, 2018 had the maximum concentrations for both MEL-13 and MEL-14. Table 1 presents a summary of laboratory analysis for MEL-13 and MEL-14 in 2018 and includes the minimum, maximum and average total aluminum concentrations for samples collected in 2018. Figure 1 shows the aluminum concentrations for MEL-13 and MEL-14 in 2018. No other samples collected and analyzed in 2018 have exceeded criteria concentrations for total aluminum at MEL-14.

The Environment Department at Meliadine is currently implementing a data management system for laboratory results. Once it has been fully commissioned, it should mitigate delays with reporting criteria exceedances and improve the timing for requests that may be made if re-analysis is required at the laboratory.

Table 1 Summary of MEL-13 and MEL-14 Total Aluminum Analysis:

MEL 13										
Date	**23-Jul-18**	**20-Aug-18**	**26-Aug-18**	**4-Sep-18**						
Total Aluminum (mg/L)	6.64	0.0118	0.0098	0.0083						
Average	1.6675									
Max	6.64									
Min	0.0083									
MEL 14										
Date	**24-Jun-18**	**1-Jul-18**	**10-Jul-18**	**15-Jul-18**	**23-Jul-18**	**29-Jul-18**	**5-Aug-18**	**13-Aug-18**	**19-Aug-18**	**26-Aug-18**
Total Aluminum (mg/L)	0.134	1.22	0.518	1.23	4.39	0.811	0.784	0.705	1.03	0.005
Average	1.0827									
Max	4.39									
Min	0.005									

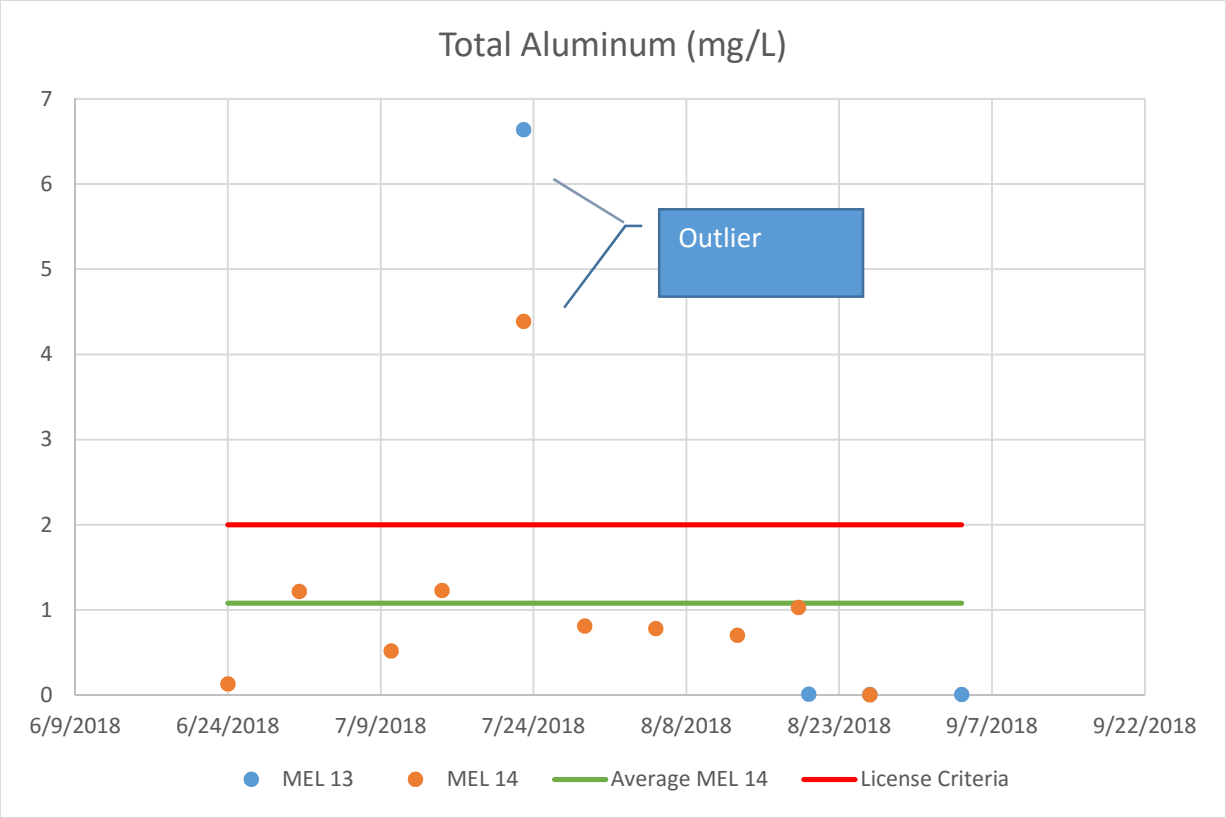


Figure 1: 2018 total aluminum concentrations at MEL-13 and MEL-14

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR **09-15-2018**	REPORT TIME **15:00**	[X] ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER **18 - 378**
B	OCCURRENCE DATE: MONTH – DAY – YEAR **8-19-2018**	OCCURRENCE TIME **8:00**		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) **KVPL11D01**	WATER LICENCE NUMBER (IF APPLICABLE) **2AM-MEL1631**		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION **Meliadine Gold Project**	REGION ☐ NWT [X] NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES **63** MINUTES **2** SECONDS **15**	LONGITUDE DEGREES **92** MINUTES **13** SECONDS **06**		
F	RESPONSIBLE PARTY OR VESSEL NAME **Agnico Eagle Mines Ltd.**	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION **Meliadine, Rankin Inlet, Nunavut, X0C 0G0**		
G	ANY CONTRACTOR INVOLVED **None**	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED **Treated effluent**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES **1430 mg/L (~3600 m3/d)**	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE) **None**	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER **NA**	
I	SPILL SOURCE **Mel-14**	SPILL CAUSE **saline water**	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY **N/A**	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT	

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

A sample of treated water from Mel-14 (final discharge point to Meliadine Lake) was collected on August 19th 2018. Upon receiving the sampling results, the TDS was found to be 1430 mg/L which exceeded the permitted discharge limit of 1400 mg/L.

This spill is being reported as per the 2AM-MEL1631 Nunavut Water Board License, part F item 3.

A follow up report will be issued.

Sr. Environmental Coordinator - Dan Gorton/Jennifer Brown: Ext 3996
Environmental Technician - Laura Hanson: Ext 3903 or 3925

L	REPORTED TO SPILL LINE BY **Jessica Huza**	POSITION **Gen. Supervisor Env**	EMPLOYER **Agnico Eagle**	LOCATION CALLING FROM **Meliadine Project**	TELEPHONE **8198565097**
M	ANY ALTERNATE CONTACT **Dan Gorton**	POSITION **Enviro Coordinator**	EMPLOYER **Agnico Eagle**	ALTERNATE CONTACT LOCATION **Meliadine Project**	ALTERNATE TELEPHONE **8197593555**

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

AGNICO EAGLE
MELIADINE

Follow Up Report: #18-378
August 19, 2018 MEL-14 TDS Concentration Criteria Exceeded

Description of Incident:

A sample of treated water from MEL-14 (final effluent sampling port prior to discharge to Meliadine Lake) was collected on August 19, 2018. Upon review of the laboratory analysis results, the total dissolved solids (TDS) concentration was found to be 1,430 mg/L which exceeded the permitted discharge limit of 1,400 mg/L.

As per the obligations under the Nunavut Water Board License 2AM-MEL1631, Part F, item 3 pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act., samples were collected for laboratory analysis to assess TDS concentrations and other water quality parameters during final effluent discharge at MEL-14. The laboratory results were received on September 13, 2018 and reviewed and reported on September 15, 2018. With regards to your question on reporting delay, due to the remote location and the extensive list of parameters that we sample for the Mel-14 sample, the delay in receiving results from the lab is generally 3-4 weeks. This is because the lab sub-contracts part of the analysis to their sister lab in Burnaby BC, so it can take a while for the sample to be received and processed.

Cause and Corrective Measures

The sample was collected at 10:30 am on August 19, 2018. During this time, there was an unscheduled power outage and effluent release had stopped at the effluent water treatment plant (EWTP). Water was not pumped through the sampling port located at MEL-14 during this time. The person that conducted the sampling was a summer intern student who has returned to school and the sampling conditions and confirmation of the location that the sample was collected has not been verified. Based on the field parameter monitoring, the power outage, review of laboratory results from previous and post sampling events, the TDS concentrations reported from the laboratory analysis for MEL-14 on August 19, 2019 are assumed to be not representative for the final effluent discharged the sampling port for MEL-14 to Meliadine Lake. It is possible that it was sampled from a port that was not treated and not discharging to Meliadine Lake.

Table 1 presents the operational report, which summarizes the monitoring results at the EWTP on August 19, 2018. Table 2 presents the daily volume effluents discharged at MEL-14 to Meliadine Lake in August 2018.

Training for all personnel responsible has been conducted to ensure that future MEL-14 sampling is always collected from the same location, after treatment when the power and pumps are working. In addition,

the Environment Department at Meliadine is currently implementing a data management system for laboratory results. Once it has been fully commissioned, it should mitigate delays with reporting criteria exceedances and improve the timing for requests that may be made if re-analysis is required at the laboratory.

Agnico eagle understands the importance to meet water quality discharge criteria without exceedances. All departments involved discussed the EWTP changes or updates daily in a morning water management meeting and the monitoring and comparisons of data was an important part of a decision-making process.

Table 1: August 19 EWT Operational Report:

AGNICO EAGLE NUNAVUT

EWTP DAILY OPERATIONAL REPORT

Day Shift Operator:	J. Roussy			**Date:**		Aug 19 2018	
Night Shift Operator:				**Weather Conditions D/S:**			
				Weather Conditions N/S:			
ACTIFLO #1	**7:00**	**8:00**	**10:00**	**12:00**	**14:00**	**16:00**	**18:00**
Flowrate (m3/hr)	400	400	D	250	200	170	
Total Suspended Solids (TSS) (mg/l) Actiflo discharge (limit 15 mg/l)	3.43	4.25	O	3.7	3.6	4.44	
Feed Turbidity (NTU)	50.93	43.9	W	29.18	25.45	23.45	
pH	6.83	6.82	N	6.77	6.67	6.68	
. Turbidity (NTU) Actiflo discharge	3.68	3.83		4.83	3.4	4.51	
Conductivity (ms/cm) EWTP Discharge pump	2073	2078	D	2173	2098	2142	
Cationic Polymer Set Point (mg/l)	1	1	O	1	1	1	
Coagulant Set Point (mg/l)	35	35	W	37	42	50	
Micro-Sand Quantity (g/l)			N				

Production – ACTIFLO #1	**6:00**	**18:00**	**Variances**
Totaliser Flowrate (m3)	726700	729400	2700

D/S COMMENTS :

Unscheduled power outage in the morning.

Cleaned conductivity probe.

Table 2: EWT Volume Compilation for August 2018

AGNICO EAGLE NUNAVUT

EWTP DAILY OPERATIONAL REPORT

Day	D/S Volume			N/S Volume			Day Total Volume			
	CP1 Total Actiflo (m3)	CP1 recirculated	Meliadine Lake (m3)	CP1 Total Actiflo (m3)	CP1 recirculated	Meliadine Lake (m3)	CP1 Total Actiflo (m3)	CP1 recirculated (m3)	Meliadine Lake Dicharge (m3)	
1-Aug	7,397			8,265			15,662		15,662	
2-Aug	7,105			7,885			14,990		14,990	
3-Aug	6,658			6,252			12,910		12,910	
4-Aug	7,075			7,968			15,043		15,043	
5-Aug	7,532			7,314			14,846		14,846	
6-Aug	6,725			6,151			12,876		12,876	
7-Aug	1,000			7,162			8,162		8,162	Numbers are estimated from time running at flow setpoints. Ran for 2 hours at ~ 500m3/hr
8-Aug	0			0			0		0	
9-Aug	5,006	4,013	993	0	0	0	5,006	4,013	993	Total flow for the day was 5006m3 but only 993m3 reported to Meliadine in the afternoon. There was a bit that was discharged in the morning but could not be recorded.
10-Aug	5,305	1,035	4,270	7,490	7,490	0	12,795	8,525	4,270	
11-Aug	3,360	3,360	0	4,621	18	4,603	7,981	3,378	4,603	
12-Aug	4,729	4,148	581	4,756	2,696	2,060	9,485	6,844	2,641	
13-Aug	4,194	2,863	1,331	4,200	1,229	2,971	8,394	4,092	4,302	
14-Aug	5,100	3,993	1,107	2,001	594	1,407	7,101	4,587	2,514	
15-Aug	3,099	1,909	1,190	3,070	1,284	1,786	6,169	3,193	2,976	
16-Aug	2,830	2,234	596	1,126	897	229	3,956	3,131	825	
17-Aug	2,105	1,283	822	6,406	22	6,384	8,511	1,305	7,206	
18-Aug	2,798	728	2,070	5,000	0	5,000	7,798	728	7,070	
19-Aug	2,783	1,076	1,707	2,543	616	1,927	5,326	1,692	3,634	
20-Aug	3,725	383	3,342	3,710	210	3,500	7,435	593	6,842	
21-Aug	3,081	1,062	2,019	3,050	1,062	1,988	6,131	2,124	4,007	Flow totalizer now programmed to reset every morning. 24hr result taken from totalizer Low production on D/S due to RO cleaning and conductivity riding the limit
22-Aug	2,775	899	1,876	2,958	1,251	1,707	5,733	2,150	3,583	RO cleaning 5hrs, CP1 conductivity above 2,300, need both RO's constantly for EWTP to discharge in Mel
23-Aug	1,613	961	652	2,329	1,438	891	3,942	2,399	1,543	RO cleaning 5hrs, CP1 conductivity above 2,300, Actiflow input flow down to 180m3/h
24-Aug	1,772	1,192	580	1,775	1,775	0	3,547	2,967	580	CP1 conductivity 2400, very low permeate production from RO, windy, poor water quality at MF
25-Aug	764	325	439	0	0	0	764	325	439	NO water from CP1, all water reporting to lake is from RO discharge
26-Aug	537	434	103	0	0	0	537	434	103	RO to MEL 103m3/d, Changed to pump RO to CP1 via EWTP pump. Waiting for samples on RO discharge toxicity
27-Aug	301	301	0	301	301	0	601	601	0	RO to CP1 using EWTP discharge pump (recirc) pipe
28-Aug	192	192	0	192	192	0	384	384	0	RO 2 down for ~14hrs,
29-Aug	181	181	0	181	181	0	362	362	0	
30-Aug	59	59	0	59	59	0	117	117	0	Shutdow both RO 8am, permeate conductivity too high. Did not run overnight
31-Aug	638.5	570	68.5	638.5	570	68.5	1,277	1,140	137	
Total Volume (m3	99,800				21,314		207,841	55,084	152,757	Both RO online 4:30pm, Both RO down at 8:30pm issues.

APPENDIX 2I

Summary of Treated Sewage Discharge Quality from MEL-07, 2016 to 2018

Table 1: Summary of Treated Sewage Discharge Quality from MEL-07, 2016 to 2018

Parameter	Unit	Median	Mean	Min	Max	SD	nd	Count
Conventional Parameters								
pH	-	7.2	7.2	5.7	7.9	0.39	0	125
Total alkalinity, as $CaCO_3$	mg/L	80	95	3.6	320	57	0	51
TDS	mg/L	315	326	275	400	56	0	4
TDS (calculated)	mg/L	470	522	265	1,120	236	0	24
TSS	mg/L	5.0	5.9	<1.0	22	3.8	10	125
Nutrients and Biological Indicators								
Nitrate	mg-N/L	22	22	<0.01	69	11	1	125
Nitrite	mg-N/L	1.2	1.6	<0.01	11	1.7	1	125
Nitrate + nitrite	mg-N/L	24	24	0.020	69	11	0	124
Total ammonia	mg-N/L	18	19	<0.01	66	16	9	125
Total Kjeldahl Nitrogen	mg-N/L	22	25	1.8	89	15	0	125
Total nitrogen (calculated)	mg-N/L	47	49	11	98	16	0	124
Total nitrogen	mg-N/L	52	-	-	-	-	0	1
Total phosphorus	mg-P/L	12	12	4.0	17	2.3	0	123
BOD	mg/L	12	17	2.0	58	14	0	120
COD	mg/L	67	68	46	110	12	0	50
General Organics								
Total oil and grease	mg/L	<1.0	-	<0.5	782	-	61	125
Ungrouped Analytes								
Total coliform	CFU/100mL	300	-	5.0	290,000	-	39	103
Fecal coliform	CFU/100mL	<2.0	-	0	7,000	-	88	113
Heterotrophic plate count	CFU/100mL	11,300	41,567	36	400,000	84,583	2	76
BOD, 5 day	mg/L	7.5	14	6.0	33	13	0	4
Transmittance at 254 nm	%	41	40	35	43	3.8	0	4
Heterotrophic bacteria	CFU/100mL	910	-	-	-	-	0	1
Atypical colonies	CFU/100mL	120	-	-	-	-	0	1

Note: In cases where 25% or more of data were <DL, no mean or standard deviation was calculated.

mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; + = plus; nm = nanometre;
CFU = colony forming units; mL = millilire; / = per; $CaCO_3$ = calcium carbonate; TDS = total dissolved solids; TSS = total suspended solids;
BOD = biochemical oxygen demand; COD = chemical oxygen demand; min = minimum; max = maximum; SD = standard deviation;
nd = not detected; < = less than; DL = detection limit; % = percent; - = no data or not applicable

APPENDIX 2J

Monthly Loadings of Select Sewage Quality Parameters Discharged from MEL-07, 2013 and 2015 to 2018

Table 1: Monthly Loadings of Select Sewage Quality Parameters Discharged from MEL-07, 2013 and 2015 to 2018

		Concentration (mg/L)					Volume	Monthly Loading (kg)				
Year	Month	Nitrate	Nitrite	TKN	TN	TP	(m^3)	Nitrate	Nitrite	TKN	TN	TP
2013	January	16.8	0.1	10.5	27.3	6.8	170.38	2.9	0.014	1.8	4.7	1.2
	February	11.6	0.1	11.6	23.3	8.0	137.8	1.6	0.016	1.6	3.2	1.1
	March	12.2	1.3	30.8	44.3	9.4	436.8	5.3	0.581	13.4	19.4	4.1
	April	16.5	0.8	26.2	43.5	12.1	587	9.7	0.471	15.4	25.5	7.1
	May	11.5	1.3	23.6	36.4	11.0	501	5.7	0.661	11.8	18.2	5.5
	June	4.6	3.2	29.7	37.5	11.5	493	2.3	1.583	14.6	18.5	5.7
	July	9.2	2.6	18.7	30.5	12.2	615	5.7	1.602	11.5	18.8	7.5
	August	13.5	0.3	3.9	17.7	11.4	506	6.8	0.138	2.0	9.0	5.8
	September	5.5	0.2	6.5	12.2	7.7	556	3.1	0.107	3.6	6.8	4.3
	October	16.8	0.3	5.6	22.7	10.0	312	5.3	0.081	1.7	7.1	3.1
	November	27.3	0.2	8.5	36.0	10.6	292.8	8.0	0.057	2.5	10.5	3.1
	December	6.2	0.2	17.1	23.6	10.2	392.3	2.4	0.098	6.7	9.3	4.0
2015	January	22.5	0.3	8.1	30.9	8.5	343.4	7.7	0.100	2.8	10.6	2.9
	February	8.7	5.2	25.1	39.0	9.1	252.2	2.2	1.308	6.3	9.8	2.3
	March	14.5	1.8	9.5	25.8	9.9	409.2	5.9	0.735	3.9	10.6	4.0
	April	10.5	0.8	11.0	22.3	8.9	420.6	4.4	0.348	4.6	9.4	3.8
	May	10.6	5.5	15.7	31.8	8.9	417.3	4.4	2.297	6.6	13.3	3.7
	June	9.8	2.4	8.0	20.2	9.1	380.3	3.7	0.906	3.1	7.7	3.4
	July	5.7	0.5	31.8	38.0	13.7	449.8	2.6	0.203	14.3	17.1	6.2
	August	9.5	1.6	32.0	43.0	10.5	468.8	4.4	0.768	15.0	20.2	4.9
	September	5.8	1.0	52.1	58.9	10.6	531.1	3.1	0.542	27.6	31.3	5.6
	October	7.9	2.5	30.2	40.6	12.6	620.5	4.9	1.566	18.7	25.2	7.8
	November	7.9	2.5	40.4	50.8	13.4	611	4.8	1.509	24.7	31.0	8.2
	December	-	-	-	-	-	653.9	-	-	-	-	-
2016	January	18.7	0.2	5.6	24.5	9.5	480.6	9.0	0.078	2.7	11.8	4.6
	February	23.1	0.4	12.6	36.1	10.1	572.7	13.2	0.246	7.2	20.7	5.8
	March	22.6	0.5	6.8	29.9	10.2	545.6	12.4	0.251	3.7	16.3	5.6
	April	18.9	0.7	12.5	32.1	8.7	630.6	11.9	0.444	7.9	20.2	5.5
	May	29.2	1.1	22.2	52.5	13.2	608.2	17.8	0.642	13.5	32.0	8.0
	June	30.5	1.1	17.6	49.2	10.8	452	13.8	0.492	8.0	22.2	4.9
	July	14.9	1.5	28.2	44.5	15.5	620.7	9.2	0.942	17.5	27.6	9.6
	August	11.8	1.7	35.5	49.1	14.1	672.6	7.9	1.176	23.9	33.0	9.5
	September	18.3	1.7	24.0	44.0	13.3	845.4	15.4	1.463	20.3	37.2	11.2
	October	18.7	3.4	29.2	51.3	12.6	850.2	15.9	2.899	24.8	43.6	10.7
	November	14.5	4.4	48.0	66.9	15.4	876.4	12.7	3.853	42.1	58.6	13.5
	December	19.2	1.8	47.8	68.7	14.3	831.8	15.9	1.497	39.7	57.2	11.9

Table 1: Monthly Loadings of Select Sewage Quality Parameters Discharged from MEL-07, 2013 and 2015 to 2018

		Concentration (mg/L)					Volume	Monthly Loading (kg)				
Year	Month	Nitrate	Nitrite	TKN	TN	TP	(m^3)	Nitrate	Nitrite	TKN	TN	TP
2017	January	22.6	2.6	44.0	69.2	13.6	692.7	15.7	1.783	30.5	47.9	9.4
	February	19.2	1.9	46.3	67.3	13.5	888.1	17.1	1.676	41.1	59.8	12.0
	March	19.3	2.7	42.8	64.7	13.0	785.5	15.2	2.099	33.6	50.9	10.2
	April	23.7	2.3	18.4	44.4	12.2	908	21.5	2.101	16.7	40.3	11.1
	May	31.3	3.9	27.2	62.3	13.8	875.7	27.4	3.420	23.8	54.6	12.1
	June	29.7	3.6	16.8	50.1	11.5	710.2	21.1	2.582	11.9	35.6	8.2
	July	21.6	1.9	15.8	39.4	10.4	686.2	14.8	1.336	10.9	27.0	7.2
	August	20.0	2.0	18.3	40.3	12.3	772.4	15.5	1.525	14.1	31.1	9.5
	September	14.5	0.5	18.5	33.5	11.9	630	9.2	0.284	11.7	21.1	7.5
	October	19.6	1.4	35.0	56.0	10.8	409	8.0	0.563	14.3	22.9	4.4
	November	12.6	0.4	27.0	40.0	9.7	466	5.9	0.194	12.6	18.6	4.5
	December	-	-	-	-	-	-	-	-	-	-	-
2018	July	4.8	0.18	2.1	7.1	0.045	425562	2041.8	77.62	893.7	3013.0	19.065
	August	6.3	0.23	1.8	8.3	0.025	153066	961.3	35.36	274.8	1272.0	3.750
	September	5.7	0.33	1.3	7.4	0.023	2632	15.1	0.87	3.4	19.4	0.061

mg/L = milligrams per litre; m^3 = cubic metres; kg = kilograms; TKN = total Kjeldahl nitrogen; TN = total nitrogen; TP = total phosphorus; - = no data

APPENDIX 6A

Water Quality – Quality Assurance and Quality Control

APPENDIX 6A

Water Quality – Quality Assurance and Quality Control

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1.0 INTRODUCTION

Quality assurance and quality control (QA/QC) practices determine data integrity and are relevant to all aspects of the Meliadine AEMP water quality monitoring component. Golder Associates Ltd. (Golder) applied QA/QC practices throughout the program, from sample collection to data analysis and reporting. Quality assurance (QA) is the set of procedures incorporated into standard procedures, so that field sample collection is carried out to an acceptable standard and does not introduce errors or bias; quality control (QC) refers to the system of validation checks performed to measure data quality, to evaluate whether data quality objectives are met. The QA/QC procedures in 2018 followed relevant requirements outlined in the Meliadine AEMP Design Plan (Golder 2016).

This appendix describes QA/QC practices applied during this study, evaluates QC data, and describes the implications of QC results to the interpretation of study results.

2.0 QUALITY ASSURANCE PROCEDURES

Quality assurance applicable to this program covers three areas of internal and external management: field work, laboratory analysis, and office operations.

2.1 Field Work

Golder field crews are trained to be proficient in standardized field sampling procedures, data recording, and equipment operations applicable to water quality sampling. Field work was completed according to approved specific work instructions to field crews and established internal technical procedures. Specific work instructions are standardized forms that reference appropriate technical procedures and provide specific sampling instructions for the work to be undertaken. For example, specific work instructions provide field staff with descriptions of exact sampling locations, equipment needs and calibration requirements, sample handling and storage requirements, sample labelling and shipping protocols, and internal and laboratory contacts. The specific work instructions also provide specific guidelines for field record keeping and sample tracking. Golder technical procedures are consistent with information described in the relevant scientific literature (e.g., Environment Canada 1993; APHA 2012), and outline relevant information regarding protocols for field sample collection and in situ field measurements.

One crew member was responsible for managing the sample documentation process so that:

- required samples are collected or reasons are documented as to why a sample was not collected
- chain-of-custody and analytical request forms are filled out appropriately
- established labelling and documentation procedures are followed

2.2 Laboratory Analyses

ALS Environmental (ALS; Edmonton location), an analytical laboratory accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA), was used for the analysis of water samples collected during the 2018 field programs. Under CALA's accreditation program, performance evaluations are conducted for laboratory procedures, methods, and internal QC. Therefore, the analytical data reported by ALS were considered reliable.

One member of the water quality monitoring team from Golder was designated as the laboratory liaison to streamline communications with the laboratory.

2.3 Office Operations

Relevant elements of office-based QA were:

- using appropriately trained personnel for each data management, analysis, and reporting task
- using standardized data manipulation and summary tools, where applicable
- filing hard-copy, electronic data, and project information according to standardized protocols
- using a data management system to maintain an organized, consistent system to store, check and export field and laboratory data field and laboratory data storage, QC, and retrieval
- senior review of work at appropriate steps during the data analysis and reporting process

3.0 QUALITY CONTROL PROCEDURES

3.1 Field Procedures

Four types of QC samples were used in this program to evaluate data quality:

- **Field blanks** consist of deionized water provided by the analytical laboratory that is transferred to sample bottles in the field. Field blanks are handled the same way and analyzed for the same constituents as the water samples collected during the field program (e.g., preserved, filtered). Field blanks are used to detect potential sample contamination during sample collection, handling, shipping, and analysis.
- **Equipment blanks** consist of deionized water provided by the analytical laboratory that is transferred into equipment that comes into contact with samples (e.g., the Kemmerer sampler). After being run through the equipment, the water is then transferred into sample bottles. The equipment blanks are handled in the same way (e.g., preserved and filtered) and analyzed for the same constituents as the water samples collected during the field program. Equipment blanks are used to detect potential sample contamination from equipment used during sample collection.
- **Travel blanks** consist of deionized water provided in sampling bottles by the analytical laboratory. Travel blanks accompany the field samples through collection and transportation. They are shipped, handled, stored, and treated in the same way as the collected samples. For this program, travel blanks were opened in the field for the amount of time taken to collect a sample, and then closed. Travel blanks are used to detect potential sample contamination related to ambient conditions or shipping and laboratory analysis.
- **Duplicate samples** are additional samples collected at the same time and location as surface water samples collected during a field program, using the same sampling methods. They are used to check within-station variation, and the precision of field sampling methods and laboratory analysis.

QC samples accounted for approximately 16% of the total number of water samples submitted for analysis. All QC samples were submitted “blind” (i.e., so as to not to identify them as QC samples) to the laboratory to test the validity of the analysis process and were analyzed for the same set of parameters as the collected water samples.

3.2 Field and Laboratory Data Quality Control Procedures

Field-collected data, datasheets and the field notebook were reviewed for completeness and unexpected values and trends. Upon receipt of water quality data from the laboratory, a series of standard checks were performed to screen for potential data quality issues (Sections 3.2.1 to 3.2.8):

- screening of laboratory and field results
- review of detection limits (DLs)
- review of units
- review of holding time exceedances
- checking for contamination in blank samples
- comparison of duplicate samples

3.2.1 Screening of Laboratory and Field Results

The following screening procedures were completed on laboratory and field results in 2018:

- project chain-of-custody (COC) forms and analytical request forms were compared to sampling records, to confirm sampling locations matched assigned sample control numbers and analyses were requested for all required parameters
- laboratory results were reviewed to confirm analysis of all required parameters
- field and laboratory data from the same sample were reviewed to check that data were similar for common parameters
- logic checks were conducted, including checking for presence of zero values, comparisons of TDS and specific conductivity, hardness and alkalinity, total and dissolved phosphorus, total and dissolved organic carbon, and total and dissolved metals
- unusual data relative to previously collected data were identified through a visual comparison of 2018 data to historical data

Laboratory results were considered for re-analyses if:

- values were assessed as substantially higher or lower than expected, based on comparisons to historical concentrations
- parameters were detected in concentrations above five times the DL in a field blank, but similar concentrations were not measured in the travel blank or in samples analyzed during the same sampling event (i.e., contamination during laboratory analyses may have occurred)

If re-analysis confirmed the original analysis result (i.e., RPD less than 20%), the original result was retained. If the re-analysis was notably different than the original result (i.e., RPD greater than 20%), then a decision was made to keep the original or re-analyzed result based on discussions with the laboratory regarding any QC issues of the original and re-analyzed results, holding time exceedances, historical concentrations, concentrations of other parameters within the same sample, and results of the QC samples. The rationale for requesting re-analyses or revising the original result to the re-analyzed result was documented.

3.2.2 Detection Limits

Detection limits were specified for all chemical analyses for the Meliadine AEMP water quality program. The project standard DLs and the DLs provided by the laboratory for individual samples were compared.

If laboratory DLs were higher than the project standard DLs, the laboratory was notified and requested to provide an explanation for the change in DLs. If possible, a parameter was re-analyzed at the project standard DL. Changes in DLs by the laboratory during the program could cause limitations when comparing results with different DLs and results to water quality guidelines. An increase in DL above measured concentrations reduces the ability to detect spatial and temporal patterns; an increase in DL above a water quality guideline reduces the ability to detect guideline exceedances when concentrations are below DLs.

3.2.3 Units

The units reported by the laboratory were compared against the expected units, as coded into the database, for each parameter.

3.2.4 Holding Time

Holding times between sample collection and analysis for each parameter are specified by the laboratory, based on Table 1060: I – Summary of Special Sampling and Handling Requirements, *The Standard Methods for the Examination of Water and Wastewater* (APHA 2012). The laboratory reviews holding times for exceedances and identifies data that may be unreliable due to holding time exceedances. Holding time exceedances are considered when determining the validity of re-analyzed results from the laboratory.

3.2.5 Blank Samples

Concentrations in travel and field blanks were considered notable if they were greater than or equal to five times the corresponding DL. This threshold takes into account the potential for reduced precision when concentrations approach or are below DLs (AENV 2006; APHA 2012). This criterion does not apply to pH, however, because DLs are not applicable to the pH scale.

3.2.6 Duplicate Samples

Differences between concentrations measured in duplicate water samples were calculated as the RPD for each parameter. Before calculating the RPD, concentrations below the DL were replaced with the DL value in cases when only one of the concentrations for a given parameter was detectable. The RPD was calculated as per Equation 1:

$$RPD = (|difference\ in\ concentration\ between\ two\ of\ the\ duplicate\ samples|/mean\ concentration)\ x\ 100$$

[Equation 1]

The RPD value for a given parameter was notable if both conditions apply:

- the RPD was greater than 20%
- concentrations in one or both samples were greater than five times the DL

The number of parameters with exceedances of the evaluation criteria was compared with the total number of parameters analyzed to evaluate analytical precision.

Within-site variability and field sampling precision of duplicate sample results were rated as:

- **low and high**, respectively, if less than 10% of the parameters included in the duplicate sample analysis were notably different from one another
- **moderate**, if 10% to 30% of the parameters included in the duplicate sample analysis were notably different from one another
- **high and low**, respectively, if more than 30% of the parameters included in the duplicate sample analysis were notably different from one another

3.2.7 Comparison of Dissolved and Total Concentrations

Dissolved concentrations were compared to their corresponding total concentrations for nutrient and metal constituents. If the dissolved concentration was 20% greater than the corresponding total concentration, and both (total and dissolved) concentrations were greater than five times the DL, the dissolved concentration was considered notable.

3.3 Office Quality Control Procedures

Office-based QC procedures were as follows:

- saving unaltered field datasheets, field notebooks, and laboratory files (e.g., COC forms, analysis request forms, certificates of analysis) in the Meliadine AEMP water quality monitoring program directory, to document the original and final sources of laboratory and field water quality data from each program
- comparing sample field and laboratory data entered into the Meliadine AEMP water quality monitoring program data management system against field datasheets and final laboratory reports to confirm data accuracy
- creating backup files before each major data processing step
- verifying the accuracy of calculations performed to generate summary statistics and complete guideline comparisons
- documenting the final results for the QA/QC assessment annually in an appendix to the annual report

4.0 2018 FIELD AND LABORATORY DATA QUALITY RESULTS

4.1 Screening of Individual Laboratory and Field Results

4.1.1 Chain-of-Custody Review

A review of the COC forms indicated that Radium-226 was not requested for analysis for the travel blank (T-18-07-01) sample collected on 23 July 2018. The Radium-226 analysis was erroneously omitted from the COC form.

4.1.2 Parameters Requested for Analysis

All requested parameters were analyzed by the laboratory.

4.1.3 Field Data Review

Based on the review of the field data, all field dissolved oxygen (DO) measurements collected in March were further evaluated because the values were outside the expected range. Winkler titrations were performed alongside field measurements at two stations: MEL-01-02 and MEL-02-01. At MEL-01-02 and MEL-02-01, Winkler dissolved oxygen measurements were 6.62 and 5.94 mg/L, compared to corresponding probe measurements of 18.5 and 18.8 mg/L, respectively. As a result, DO meter data were deemed unreliable and excluded from analysis.

Two field pH values in July and twenty field pH values in August were different than expected, relative to laboratory values (Table 6A-1). On 30 August 2018, the field crew noted an issue with the calibration of the field water quality meter and re-calibrated the meter, at which point pH values returned to within the normal range for subsequently samples stations. No issues with the field water quality meter were noted by the field crew during the July program. In all cases, the field values were invalidated because field pH values were outside the range of historical values at these locations, whereas laboratory pH values were within the range of historical values. However, as laboratory pH was measured outside the holding time requirement, it is acknowledged that these laboratory pH data have corresponding uncertainty. Corresponding field pH profile values were also invalidated.

4.1.4 Laboratory Data Review

Thirty-nine laboratory results, which represented less than 1.5% of the 2018 laboratory data, in 65 samples were further evaluated because of reasons outlined in Table 6A-1. Re-analysis of samples for certain parameters was requested when data logic checks indicated a potential problem with the data. In all cases, reanalysis confirmed the original result and the original result was retained, with the following exception. The concentration of dissolved nickel in sample D7-03 collected on 1 September 2018 was notably different upon reanalysis (0.776 µg/L) relative to the original result (1.97 µg/L). The reanalyzed result was closer to the expected value based on comparison to the total nickel concentration (0.88 µg/L); therefore, the original results was revised by the laboratory.

4.2 Analytical Methods

All required parameters under the AEMP Design Plan (Golder 2016) were analyzed by the laboratory using the standard analytical methods requested during the program (Table 6A-2).

4.3 Detection Limits

A few parameters were analyzed by the laboratory using DLs higher than the requested DL (Table 6A-2). Requested DLs were met for most parameters, with the exception of total dissolved solids (70 samples), reactive

silica (17 samples), sodium (2 samples), total vanadium (2 samples), dissolved selenium (20 samples), dissolved thallium (four samples), dissolved tin (13 samples), and dissolved vanadium (2 samples). Generally, detection limits were adjusted due to sample matrix effects (e.g., chemical interference, colour, turbidity).

4.4 Units

The laboratory reported the expected units for each parameter in 2018.

4.5 Holding Time

To maintain sample integrity, water samples for laboratory analyses were submitted as soon as possible after collection. Holding times may be exceeded for samples if there are delays in sample delivery to the laboratory, or if the laboratory is unable to initiate testing promptly following sample receipt. Analytical holding times were met for most constituents, with the exception of laboratory pH (76 samples), total dissolved solids (59 samples), total suspended solids (70 samples), turbidity (76 samples), nitrate (78 samples), nitrite (78 samples), orthophosphate (78 samples), total Kjeldahl nitrogen (11 samples), total dissolved phosphorus (3 samples), total mercury (1 sample), dissolved mercury (3 samples), and total cyanide (17 samples).

Holding times for laboratory pH (15 minutes), turbidity, nitrate, nitrite and orthophosphate (three days) were exceeded in the majority of samples during each program, because the holding times are very short for these constituents. Holding times for the other parameters were exceeded due to a sample backlog at the laboratory that resulted in a delay in initiation of analysis.

Holding time exceedances for pH, nutrients and turbidity are not uncommon. A study on holding time exceedances for these parameters conducted by the Department of Environment and Conservation in Newfoundland and Labrador (2010) found that although parameters concentrations differed between samples processed within and outside recommended holding times (by up to 21 days), the results were not significantly different (at $P<0.05$). Therefore, they concluded that the data were still valid, even with a delay in processing beyond the holding time. Holding times for the 2018 Meliadine dataset for these parameters were not exceeded by more than 21 days. Holding times for total and dissolved mercury and total cyanide were only exceeded by one day, and therefore data quality was considered acceptable.

4.6 Blank Samples

Six blank samples (four travel blanks and two equipment blanks) were collected and analyzed during the 2018 program (Table 6A-3). The frequency of detectable concentrations (i.e., above the DL) in the blank samples was 13%. However, only 1% of concentrations in blank samples were reportable detections (i.e., greater than five times the DL); therefore, no parameters were detected at a frequency or magnitude that were likely to influence the results of the water quality samples.

4.7 Duplicate Samples

Six duplicate water quality samples were collected during the 2018 program: two replicates were collected for each program (Table 6A-4).

A small percentage (i.e., 3%) of the paired duplicate concentrations had an RPD of more than 20% when one or both concentrations were above five times the DL (Table 6A-5). The site variability and field precision for the 2018 dataset was rated as low and high, respectively.

4.8 Internal Laboratory Quality Control

No issues were identified in the review of internal laboratory quality control results.

5.0 SUMMARY OF DATA QUALITY

The results of the review of field and laboratory data indicated that field measurements and laboratory data were of acceptable quality. Key findings from the 2018 QA/QC results are:

- In general, field measurements and results of laboratory samples collected during the 2018 sampling program were within the ranges that would be expected for the Meliadine water quality program, with the exception of two field pH measurements collected in July and several field pH measurements collected in August. These field pH measurements were invalidated, because the values were far outside the range of historical variation at these stations.
- No issues were identified in analytical methods used or units reported by the laboratory.
- Holding times recommended by the laboratory were exceeded for some parameters. Holding time exceedances were not expected to have affected data quality for the Meliadine water quality program.
- Evaluation of the water quality QC samples indicated that:
  - No notable contamination occurred in the blank samples.
  - Site variability and field precision for the 2018 dataset were rated as low and high, respectively.

The overall quality of the water quality data was rated high. Therefore, the results reported in the report are considered reliable and meet the needs of the program.

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TABLES

Table 6A-1: Summary of Re-evaluated Data for Field and Laboratory Results, Meliadine, 2018

Station Name	Station Sample ID	Lab ID	Sample Date	Parameter	Reason for Evaluation	Result	Unit	Decision
Field Data								
MEL-01-01	MEL-01-01	-	02-Mar-18	Dissolved oxygen	Outside of acceptable range	18.4	mg/L	Winkler titration data were reviewed because dissolved oxygen probe measurements fell outside of the acceptable range. Winkler titration measurements collected alongside field probe measurements for March 2018 were much lower than probe readings (5.94 mg/L at MEL-02-01 and 6.62 mg/L at MEL-01-02). As result, dissolved oxygen measurements were invalidated.
MEL-01-02	MEL-01-02	-	05-Mar-18			18.5		
MEL-01-03	MEL-01-03	-	02-Mar-18			18.0		
MEL-01-04	MEL-01-04	-	05-Mar-18			19.4		
MEL-01-05	MEL-01-05	-	02-Mar-18			18.5		
MEL-02-01	MEL-02-01	-	06-Mar-18			18.8		
MEL-02-02	MEL-02-02	-	05-Mar-18			20.0		
MEL-02-03	MEL-02-03	-	05-Mar-18			19.1		
MEL-02-04	MEL-02-04	-	06-Mar-18			19.3		
MEL-02-05	MEL-02-05	-	06-Mar-18			18.9		
Lake B7	B-07-01	-	22-Jul-18	Field pH	Field pH was higher than expected relative to laboratory pH (7.54)	8.63	unitless	Field pH data invalidated. Field pH was greater than one pH unit different from laboratory pH and outside of the historical field pH range at this station.
	B-07-02	-	22-Jul-18		Field pH was higher than expected relative to laboratory pH (7.53)	8.56		
Lake A8	A8-01	-	17-Aug-18		Field pH was higher than expected relative to laboratory pH (7.80)	9.08		
	A8-02	-	17-Aug-18		Field pH was higher than expected relative to laboratory pH (7.82)	9.09		
	A8-03	-	17-Aug-18		Field pH was higher than expected relative to laboratory pH (7.85)	9.13		
Lake B7	B7-01	-	17-Aug-18		Field pH was higher than expected relative to laboratory pH (7.67)	8.87		
	B7-02	-	17-Aug-18		Field pH was higher than expected relative to laboratory pH (7.79)	8.9		
	B7-03	-	17-Aug-18		Field pH was higher than expected relative to laboratory pH (7.67)	8.93		
MEL-01-01	MEL-01-01	-	22-Aug-18		Field pH was higher than expected relative to laboratory pH (7.35)	8.64		
MEL-01-06	MEL-01-06	-	22-Aug-18		Field pH was higher than expected relative to laboratory pH (7.36)	8.63		
MEL-01-07	MEL-01-07	-	21-Aug-18		Field pH was higher than expected relative to laboratory pH (7.36)	8.59		
MEL-01-08	MEL-01-08	-	22-Aug-18		Field pH was higher than expected relative to laboratory pH (7.36)	8.62		
MEL-01-09	MEL-01-09	-	22-Aug-18		Field pH was higher than expected relative to laboratory pH (7.36)	8.62		
MEL-02-03	MEL-02-03	-	18-Aug-18		Field pH was higher than expected relative to laboratory pH (7.43)	8.57		
MEL-02-05	MEL-02-05	-	18-Aug-18		Field pH was higher than expected relative to laboratory pH (7.46)	8.63		
MEL-03-01	MEL-03-01	-	20-Aug-18		Field pH was higher than expected relative to laboratory pH (7.42)	8.52		
MEL-03-02	MEL-03-02	-	26-Aug-18		Field pH was higher than expected relative to laboratory pH (7.48)	8.51		
MEL-03-03	MEL-03-03	-	20-Aug-18		Field pH was higher than expected relative to laboratory pH (7.42)	8.64		
MEL-03-04	MEL-03-04	-	26-Aug-18		Field pH was higher than expected relative to laboratory pH (7.44)	8.47		
MEL-03-05	MEL-03-05	-	26-Aug-18		Field pH was higher than expected relative to laboratory pH (7.45)	8.56		
MEL-05-03	MEL-05-03		29-Aug-18		Field pH was higher than expected relative to laboratory pH (7.46)	8.62		
MEL-05-05	MEL-05-05		29-Aug-18		Field pH was higher than expected relative to laboratory pH (7.51)	8.63		

Table 6A-1: Summary of Re-evaluated Data for Field and Laboratory Results, Meliadine, 2018

Station Name	Station Sample ID	Lab ID	Sample Date	Parameter	Reason for Evaluation	Result	Unit	Decision
Water Chemistry Data								
MEL-01-02	MEL-01-02	L2064973-4	05-Mar-18	Total lead	Greater than 20% RPD between replicates	0.055	µg/L	Concentrations were confirmed by re-analysis; original result was retained.
MEL-01-02	R-18-01	L2064973-11	05-Mar-18	Total lead	Greater than 20% RPD between replicates	0.074	µg/L	
MEL-03-03	MEL-03-03	L2139293-3	25-Jul-18	Total nickel	Concentration was greater than five times the method detection limit and exceeded their relative total/dissolved metal concentration by more than 20%.	0.46	µg/L	
				Dissolved nickel		0.70	µg/L	
MEL-03-01	MEL-03-01	L2139293-1	25-Jul-18	Total dissolved solids	Non-linear relationship between TDS and laboratory specific conductivity	33	mg/L	
				Laboratory specific conductivity		68	µS/cm	
MEL-02-05	MEL-02-05	L2137049-2	21-Jul-18	Total dissolved solids	Non-linear relationship between TDS and laboratory specific conductivity	35	mg/L	
				Laboratory specific conductivity		74.3	µS/cm	
MEL-01-09	MEL-01-09	L2139293-7	24-Jul-18	Total aluminum	Greater than 20% RPD between replicates	29.1	µg/L	
				Dissolved aluminum		22.2	µg/L	
				Radium-226		100	Bq/L	
	R-18-07-02	L2139293-12	24-Jul-18	Total aluminum		20.6	µg/L	
				Dissolved aluminum		17.1	µg/L	
				Radium-226		<4.1	Bq/L	
MEL-01-07	MEL-01-07	L2139293-6	24-Jul-18	Dissolved manganese		2.71	µg/L	
	R-18-07-01	L2139293-8				1.73	µg/L	
MEL-03-01	MEL-03-01	L2153439-2	20-Aug-18	Total nickel	Concentration was greater than five times the method detection limit and exceeded their relative total/dissolved metal concentration by more than 20%.	0.412	µg/L	
				Dissolved nickel		0.499	µg/L	
MEL-03-01	MEL-03-01	L2153439-2	20-Aug-18	Total dissolved solids	Greater than 20% RPD between replicates	48	mg/L	
				Total iron		17.8	µg/L	
				Dissolved iron		4.2	µg/L	
	R-18-01	L2153439-1		Total dissolved solids		35	mg/L	
				Total iron		12	µg/L	
				Dissolved iron		6.1	µg/L	
Lake B7	B-07-01	L2137049-11	22-Jul-18	Total aluminum	Concentration was greater than five times the method detection limit and exceeded their relative total/dissolved metal concentration by more than 20%.	3.33	µg/L	
				Dissolved aluminum		4.33	µg/L	
Lake A8	A8-02	L2139293-10	24-Jul-18	Total nickel		0.69	µg/L	
				Dissolved nickel		0.90	µg/L	
Lake A8	A8-03	L2139293-11		Total nickel		0.86	µg/L	Concentrations were confirmed by re-analysis; original result was retained.
				Dissolved nickel		1.14	µg/L	
Lake D7	D7-03	L2161089-3	01-Sep-18	Total copper		0.89	µg/L	
				Dissolved copper		1.4	µg/L	
		L2161089-3		Total nickel		0.88	µg/L	
				Dissolved nickel		1.97	µg/L	Result revised to 0.776 µg/L upon reanalysis
	D7-01	L2161089-1		Total lead		0.019	µg/L	Concentrations were confirmed by re-analysis; original result was retained.
				Dissolved lead		0.083	µg/L	
	D7-02	L2161089-2		Total uranium		0.066	µg/L	
				Dissolved uranium		0.081	µg/L	

µg/L = micrograms per litre; µS/cm = microSiemens per centimeter; mg/L = milligrams per litre; Bq/L = Becquerels per litre.

Table 6A-2: Summary of Analytical Methods and Detection Limits, Meliadine Mine, 2018

Parameter	Unit	Total Number of Samples	Standard Project Analytic Methodologies	Method Description	Standard ALS Detection Limit	MDMER Required Detection Limit
Conventional Parameters						
pH (laboratory)	unitless	65	APHA 4500H	Meter	0.1	n/a
Specific conductivity	µS/cm	65	APHA 2510B	Meter	1	1
Hardness (as $CaCO_3$)	mg/L	65	APHA 2340B	Calculation	0.2	1
Total alkalinity (as $CaCO_3$)	mg/L	65	APHA 2320B	Potentiometric titration; Colourimetric	1	2
Total dissolved solids	mg/L	65	APHA 2540 SOLIDS C,E	Gravimetric	4	n/a
Total suspended solids	mg/L	65	APHA 2540D		1	2
Turbidity (laboratory)	NTU	65	APHA 2130B (modified)	Meter	0.1	n/a
Major Ions						
Bicarbonate	mg/L	65	Calculation	Calculation	1.2	n/a
Carbonate	mg/L	65	Calculation		0.6	n/a
Calcium	mg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	n/a
Chloride	mg/L	65	EPA 300.1 (mod)	Ion chromotography	0.1	60
Fluoride	mg/L	65	EPA 300.1 (mod)	Ion chromotography	0.02	n/a
Magnesium	mg/L	65	APHA 3125 ICP-MS	ICPMS	0.004	n/a
Potassium	mg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	n/a
Reactive silica, as SiO_2	mg/L	65	APHA 4500	Colourimetric	0.01	n/a
Sodium	mg/L	65	APHA 3125 ICP-MS	ICPMS	0.005	n/a
Sulphate	mg/L	65	EPA 300.1 (mod)	Ion chromotography	0.3	0.6
Nutrients						
Nitrate	mg-N/L	65	EPA 300.1 (mod)	Ion chromotography	0.005	1.5
Nitrite	mg-N/L	65	EPA 300.1 (mod)	Ion chromotography	0.005	n/a
Nitrate and nitrite	mg-N/L	65	APHA 4500	Calculation	0.005	n/a
Total ammonia	mg-N/L	65	APHA 4500	Colourimetric	0.005	0.05
Total Kjeldahl nitrogen	mg-N/L	65	APHA 4500	Fluorescence	0.05	n/a
Total nitrogen	mg-N/L	65	APHA 4500	Fluorescence	0.05	n/a
Total phosphorus	mg-P/L	65	APHA 4500	Colourimetric	0.001	0.05
Dissolved phosphorus	mg-P/L	65	APHA 4500	Colourimetric	0.001	n/a
Orthophosphate	mg-P/L	65	APHA 4500	Colourimetric	0.001	n/a
Total organic carbon	mg/L	65	APHA 5310 B-WP	Combustion-infrared	0.5	n/a
Dissolved organic carbon	mg/L	65	APHA 5310 B-WP	Combustion-infrared	0.5	n/a
Total Metals[(b)]						
Aluminum	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.3	5
Antimony	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	n/a
Arsenic	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	10
Barium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Beryllium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Bismuth	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Boron	µg/L	65	APHA 3125 ICP-MS	ICPMS	1	n/a
Cadmium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.005	0.045

Table 6A-2: Summary of Analytical Methods and Detection Limits, Meliadine Mine, 2018

Parameter	Unit	Total Number of Samples	Standard Project Analytic Methodologies	Method Description	Standard ALS Detection Limit	MDMER Required Detection Limit
Total Metals[(b)] (cont'd)						
Chromium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.06	4.45
Cobalt	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	1.25
Copper	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.1	10
Iron	µg/L	65	APHA 3125 ICP-MS	ICPMS	1	150
Lead	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	30
Lithium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.5	n/a
Manganese	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	5
Mercury	µg/L	65	EPA 1631 T (mod)	CVAFS	0.0005	0.01
Molybdenum	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	36.5
Nickel	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.06	20
Selenium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	0.5
Silver	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.005	n/a
Strontium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Thallium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.005	0.4
Tin	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Titanium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.1	n/a
Uranium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	7.5
Vanadium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Zinc	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.8	10
Dissolved Metals[(b)]						
Aluminum	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.3	n/a
Antimony	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	n/a
Arsenic	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	n/a
Barium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Beryllium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Bismuth	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Boron	µg/L	65		ICPMS	1.0	n/a
Cadmium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.005	n/a
Chromium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.06	n/a
Cobalt	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Copper	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.1	n/a
Iron	µg/L	65	APHA 3125 ICP-MS	ICPMS	1.0	n/a
Lead	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Lithium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Manganese	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Mercury	µg/L	65	EPA 1631 D (mod)	CVAFS	0.0005	n/a
Molybdenum	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Nickel	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.06	n/a
Selenium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.02	n/a

Table 6A-2: Summary of Analytical Methods and Detection Limits, Meliadine Mine, 2018

Parameter	Unit	Total Number of Samples	Standard Project Analytic Methodologies	Method Description	Standard ALS Detection Limit	MDMER Required Detection Limit
Dissolved Metals[(b)] (cont'd)						
Silver	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.005	n/a
Strontium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Thallium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.005	n/a
Titanium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.10	n/a
Tin	µg/L	65		ICPMS	0.05	n/a
Uranium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.01	n/a
Vanadium	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.05	n/a
Zinc	µg/L	65	APHA 3125 ICP-MS	ICPMS	0.8	n/a
Other						
Total cyanide	mg/L	65	ISO 14403-2	Colourimetric	0.001	n/a
Free cyanide	mg/L	65	ASTM D7237		0.001	n/a
Weak acid dissolved cyanide	mg/L	65	APHA 4500-CN-I		0.001	n/a
Radium-226	Bq/L	65	EPA8260B	Alpha-spectrometry of Gross-Alpha Counting	0.01	n/a

(a) As per Schedule 3 of the MDMER (Government of Canada 2002).

(b) The list of elements reported for metals analysis includes metalloids such as arsenic and non-metals such as selenium, which are collectively referred to as "metals" in this table.

µS/cm = microSiemens per centimetre; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; µg/L = micrograms per litre; Bq/L = Becquerels per litre; NTU = nephelometric turbidity unit; ICPMS = Inductively Coupled Plasma Mass Spectrometry; CVAFS = Cold Vapour Atomic Fluorescence Spectrophotometry.

Table 6A-3: Quality Control Blank Samples Results, Meliadine, 2018

Parameter	Unit	Travel Blanks				Equipment Blanks	
		F-18-01	T-18-07-01	BLANK[a]	T-18-08-01	E18-07-01	E-18-08-01
		5-Mar-18	23-Jul-18	26-Jul-18	20-Aug-18	22-Jul-18	20-Aug-18
Conventional Parameters							
pH (laboratory)	µS/cm	5.87	5.72	5.76	5.61	5.57	6.08
Specific conductivity (laboratory)	unitless	7	<1	<1	<1	<1	1.8
Hardness (as $CaCO_3$)	mg/L	0.42	<0.053	<0.2	<0.2	<0.053	<0.2
Total alkalinity (as $CaCO_3$)	mg/L	<1	<1	<1	<1	<1	<1
Total dissolved solids	mg/L	6.3	<4	<4	<4	<4	<4
Total suspended solids	mg/L	<1	<1	<1	<1	<1	<1
Turbidity (laboratory)	NTU	0.25	<0.1	<0.1	<0.1	<0.1	<0.1
Major Ions							
Bicarbonate	mg/L	<1.2	<1.2	<1.2	<1.2	<1.2	<1.2
Calcium	mg/L	0.162	<0.02	<0.02	<0.02	<0.02	<0.02
Carbonate	mg/L	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoride	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Magnesium	mg/L	0.0047	<0.004	<0.004	<0.004	<0.004	<0.004
Potassium	mg/L	0.051	<0.02	<0.02	<0.02	<0.02	<0.02
Reactive silica, as SiO_2	mg/L	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	mg/L	0.025	<0.008	<0.014	<0.005	0.0084	<0.005
Sulphate	mg/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Nutrients							
Nitrate	mg-N/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.0095
Nitrite	mg-N/L	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrate and nitrite	mg-N/L	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	0.0095
Total ammonia	mg-N/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Kjeldahl nitrogen	mg-N/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total phosphorus	mg-P/L	0.0017	<0.001	<0.001	<0.001	<0.001	<0.001
Dissolved phosphorus	mg-P/L	0.0012	<0.001	<0.001	<0.001	<0.001	<0.001
Orthophosphate	mg-P/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total organic carbon	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved organic carbon	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Metals[b]							
Aluminum	µg/L	2.71	0.83	<0.3	0.96	0.88	<0.3
Antimony	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Barium	µg/L	<0.05	0.051	<0.05	<0.05	<0.05	<0.05
Beryllium	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	<1	1.9	2.1	1.3	2.2	<1

Table 6A-3: Quality Control Blank Samples Results, Meliadine, 2018

Parameter	Unit	Travel Blanks				Equipment Blanks	
		F-18-01	T-18-07-01	BLANK[a]	T-18-08-01	E18-07-01	E-18-08-01
		5-Mar-18	23-Jul-18	26-Jul-18	20-Aug-18	22-Jul-18	20-Aug-18
Total Metals[b] (cont'd)							
Cadmium	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	<0.06	<0.06	<0.06	0.081	<0.06	<0.06
Cobalt	µg/L	<0.01	<0.01	<0.01	0.011	<0.01	<0.01
Copper	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	µg/L	<1	<1	<1	6.2	1.6	3
Lead	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Lithium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	µg/L	<0.05	<0.05	<0.05	0.114	0.051	0.073
Mercury	µg/L	<0.0005	<0.0005	0.0009	<0.0005	0.0005	<0.0005
Molybdenum	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	µg/L	<0.06	<0.06	<0.06	0.189	<0.06	0.097
Selenium	µg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	0.057	<0.05	<0.05	<0.05	0.059	<0.05
Thallium	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Zinc	µg/L	<0.8	<0.8	<0.8	<0.8	<0.8	0.86
Dissolved Metals[b]							
Aluminum	µg/L	0.65	1.09	<0.3	0.83	<0.3	<0.3
Antimony	µg/L	0.119	<0.02	0.082	<0.02	0.268	<0.02
Arsenic	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Barium	µg/L	0.191	0.053	<0.05	0.123	<0.05	<0.05
Beryllium	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Cobalt	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	µg/L	<1	1.2	1.3	2.7	<1	1.7
Lead	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Manganese	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury	µg/L	<0.005	<0.005	0.009	<0.0005	0.005	0.0005
Molybdenum	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Table 6A-3: Quality Control Blank Samples Results, Meliadine, 2018

Parameter	Unit	Travel Blanks				Equipment Blanks	
		F-18-01	T-18-07-01	BLANK[a]	T-18-08-01	E18-07-01	E-18-08-01
		5-Mar-18	23-Jul-18	26-Jul-18	20-Aug-18	22-Jul-18	20-Aug-18
Dissolved Metals[b] (cont'd)							
Nickel	µg/L	<0.06	<0.06	<0.06	<0.06	<0.06	0.071
Selenium	µg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	0.124	<0.05	<0.05	<0.05	<0.05	0.059
Thallium	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Titanium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium	µg/L	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05
Zinc	µg/L	1.6	<0.8	<0.8	<0.8	<0.8	<0.8
Other							
Cyanide	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Radium-226	Bq/L	-[c]	-[d]	<6.4	<0.006	<4.7	<0.0045

(a) Field crew confirmed this sample was collected as a travel blank.

(b) The list of elements reported for metals analysis includes metalloids such as arsenic and non-metals such as selenium, which are collectively referred to as "metals" in this table.

(c) Radium-226 was not included in analysis during the under-ice program.

(d) Due to a technical error by the field crew, Radium-226 was not requested for analysis.

Grey shading indicates the concentration was greater than 5 times the detection limit.

All results that exceeded their detection limit by greater than 5-times were confirmed by reanalysis.

µS/cm = microSiemens per centimetre; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; µg/L = micrograms per litre; Bq/L = Becquerels per litre; NTU = nephelometric turbidity unit; < = less than.

Table 6A-4: Quality Control Duplicate Sample Results, Meliadine, 2018

Parameter	Unit	MEL-01-02		MEL-02-02		MEL-01-07		MEL-01-09		MEL-03-01		MEL-01-09	
		Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate
		05-Mar-18		05-Mar-18		23-Jul-18		24-Jul-18		20-Aug-18		22-Aug-18	
Conventional Parameters													
pH (laboratory)	µS/cm	7.27	7.38	7.22	7.27	7.36	7.39	7.41	7.41	7.42	7.38	7.36	7.35
Specific conductivity (laboratory)	unitless	117	117	98.7	98.5	89.1	90.9	86.0	86.4	71.7	73.0	84.1	83.6
Hardness (as $CaCO_3$)	mg/L	34.6	35.1	30.1	29.3	25.7	26.3	26	25.5	20.4	20.9	23.8	23.9
Total alkalinity (as $CaCO_3$)	mg/L	27.2	27	24.9	24.8	15.8	15.7	15.1	15.5	17.5	16.9	16.7	16.2
Total dissolved solids	mg/L	68	69	58	56	55	53	51	53	48	35	53	49
Total suspended solids	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Turbidity (laboratory)	NTU	0.24	0.2	0.12	0.12	0.4	0.39	0.43	0.39	0.23	0.27	0.59	0.42
Major Ions													
Bicarbonate	mg/L	33.2	32.9	30.4	30.3	19.3	19.2	18.4	18.9	21.4	20.6	20.4	19.8
Calcium	mg/L	10.8	11	9.51	9.06	7.92	8.1	7.99	7.9	6.40	6.56	7.32	7.35
Carbonate	mg/L	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	14.7	14.7	11.6	11.5	13.7	14.2	13.1	13.1	8.28	8.29	12.3	12.3
Fluoride	mg/L	0.028	0.028	0.025	0.025	0.021	0.021	0.021	0.021	0.024	0.026	0.024	0.023
Magnesium	mg/L	1.86	1.87	1.54	1.64	1.45	1.48	1.46	1.4	1.08	1.09	1.34	1.35
Potassium	mg/L	1.44	1.38	1.27	1.26	0.984	1.01	1.01	0.987	0.900	0.914	0.993	0.993
Reactive silica, as SiO_2	mg/L	0.706	0.696	0.485	0.496	0.423	0.42	0.411	0.402	0.233	0.234	0.356	0.352
Sodium	mg/L	7.72	7.18	6.15	6.19	6.1	6.22	6.15	5.78	4.63	4.47	5.66	5.59
Sulphate	mg/L	5.82	5.79	4.46	4.42	4.27	4.31	4.19	4.2	3.75	3.83	4.33	4.31
Nutrients													
Nitrate	mg-N/L	0.0054	0.005	0.0156	0.0166	0.0223	0.0274	0.0117	0.0123	<0.005	<0.005	<0.005	<0.005
Nitrite	mg-N/L	<0.001	0.001	<0.001	<0.001	0.0016	0.002	0.0012	0.0012	<0.001	<0.001	<0.001	<0.001
Nitrate and nitrite	mg-N/L	0.0054	0.006	0.0156	0.0166	0.0239	0.0294	0.0129	0.0135	<0.0051	<0.0051	<0.0051	<0.0051
Total ammonia	mg-N/L	<0.005	<0.005	0.0106	0.0104	<0.005	<0.005	<0.005	0.0055	<0.005	<0.005	<0.005	<0.005
Total Kjeldahl nitrogen	mg-N/L	0.117	0.215	0.067	0.106	0.175	0.246	0.236	0.235	0.226	0.276	0.223	0.221
Total nitrogen	mg-N/L	0.123	0.221	0.082	0.122	0.199	0.275	0.249	0.249	0.199	0.275	0.249	0.249
Total phosphorus	mg-P/L	0.0057	0.0056	0.0032	0.0030	0.0021	0.0032	0.0025	0.002	0.0042	0.0045	0.0075	0.0083

Table 6A-4: Quality Control Duplicate Sample Results, Meliadine, 2018

Parameter	Unit	MEL-01-02		MEL-02-02		MEL-01-07		MEL-01-09		MEL-03-01		MEL-01-09	
		Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate
		05-Mar-18		05-Mar-18		23-Jul-18		24-Jul-18		20-Aug-18		22-Aug-18	
Nutrients (cont'd)													
Dissolved phosphorus	mg-P/L	0.0027	0.0025	0.0022	0.0017	<0.001	<0.001	<0.001	<0.001	0.0021	0.0021	0.0029	0.0033
Orthophosphate	mg-P/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total organic carbon	mg/L	3.97	3.98	3.00	3.01	2.96	2.99	2.95	3.01	2.20	2.24	3.18	3.02
Dissolved organic carbon	mg/L	3.85	3.89	2.9	2.91	2.92	2.93	2.97	3.00	2.32	2.25	3.06	3.04
Total Metals[(a)]													
Aluminum	µg/L	0.50	0.63	0.64	0.46	23.2	28	29.1	20.6	2.83	3.28	8.21	6.60
Antimony	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	0.542	0.541	0.281	0.314	0.364	0.319	0.342	0.346	0.209	0.213	0.42	0.402
Barium	µg/L	11.5	11.7	11.2	10.9	8.66	8.88	8.88	8.53	8.21	7.36	7.88	7.78
Beryllium	µg/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
Bismuth	µg/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
Boron	µg/L	5.4	5.8	4.8	5.5	5.1	5.2	5.0	4.6	3.0	3.2	5.1	5.0
Cadmium	µg/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
Calcium	µg/L	10,900	11,400	9,300	10,500	8,060	8,080	8,080	7,670	6,400	6,610	7,550	7,760
Chromium	µg/L	<0.06	<0.06	<0.06	<0.06	<0.06	0.069	<0.06	<0.06	0.555	<0.06	<0.06	<0.06
Cobalt	µg/L	0.012	0.013	<0.01	<0.01	0.027	0.03	0.027	0.027	0.015	0.011	0.019	0.023
Copper	µg/L	1.08	1.13	0.89	0.86	0.82	0.73	0.86	0.70	0.64	0.63	0.83	0.76
Iron	µg/L	6	5.8	2.8	2.8	27.1	28.6	26.3	23.3	17.8	12.0	19.9	21.2
Lead	µg/L	0.055	0.074	0.039	0.033	0.010	<0.01	0.01	<0.01	0.01	<0.01	0.018	0.016
Lithium	µg/L	<0.5	<0.5	<0.5	0.52	1.83	1.94	1.82	1.76	0.64	0.7	1.32	1.33
Magnesium	µg/L	1,910	1,930	1,590	1,650	1,450	1,460	1,460	1,380	1,090	1,100	1,330	1,310
Manganese	µg/L	2.14	2.04	1.21	1.23	7.11	7.70	7.27	6.70	2.58	2.66	4.31	4.60
Mercury	µg/L	0.001	0.001	0.0008	0.0013	0.0011	0.0011	0.0010	0.0015	0.0006	0.0007	0.0008	0.0006
Molybdenum	µg/L	0.096	0.194	0.083	0.079	0.059	0.078	0.067	0.057	0.064	0.073	0.081	0.085
Nickel	µg/L	0.79	0.77	0.576	0.569	0.707	0.738	0.694	0.639	0.412	0.394	0.607	0.578
Potassium	µg/L	1440	1450	1280	1280	998	999	1010	992	902	900	934	947

Table 6A-4: Quality Control Duplicate Sample Results, Meliadine, 2018

Parameter	Unit	MEL-01-02		MEL-02-02		MEL-01-07		MEL-01-09		MEL-03-01		MEL-01-09	
		Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate
		05-Mar-18		05-Mar-18		23-Jul-18		24-Jul-18		20-Aug-18		22-Aug-18	
Total Metals[a] (cont'd)													
Selenium	µg/L	0.058	0.045	0.049	0.047	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/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
Sodium	µg/L	7,580	7,530	6,100	6,050	5,920	6,060	6,000	5,700	4,500	4,470	5,360	5,500
Strontium	µg/L	49.5	53.7	42.5	49	58.2	61.4	59.0	55.9	30.5	32.1	45.1	45.7
Thallium	µg/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
Tin	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.13	0.18	<0.1	<0.1	<0.1	0.22	0.22
Uranium	µg/L	0.018	0.018	0.015	0.016	0.021	0.019	0.018	0.016	0.014	0.013	0.017	0.015
Vanadium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.051	<0.05	<0.05	<0.1	<0.1	<0.05	<0.05
Zinc	µg/L	0.85	1.33	<0.8	<0.8	<0.8	<0.8	<0.8	1.4	<0.8	<0.8	<0.8	<0.8
Dissolved Metals[a]													
Aluminum	µg/L	<0.3	<0.3	0.35	0.44	18.7	21.8	22.2	17.1	1.43	1.34	3.23	2.73
Antimony	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.104	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	0.53	0.499	0.334	0.303	0.341	0.33	0.329	0.323	0.204	0.201	0.403	0.413
Barium	µg/L	11.5	11.5	11.0	10.9	8.8	8.65	8.37	8.58	7.7	7.43	8.03	8.24
Beryllium	µg/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
Bismuth	µg/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
Cadmium	µg/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
Chromium	µg/L	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.083	<0.06	0.173	<0.06	<0.06
Cobalt	µg/L	<0.01	<0.01	<0.01	<0.01	0.022	0.015	0.012	0.011	<0.01	<0.01	<0.01	<0.01
Copper	µg/L	1.02	1.00	0.86	0.85	0.65	0.69	0.64	0.7	0.57	0.62	0.89	0.70
Iron	µg/L	1.7	1.8	<1	<1	9.3	8.8	8.5	10.3	4.2	6.1	5.7	4.9
Lead	µg/L	0.039	0.041	0.035	0.035	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	0.86	1.06	0.67	0.69	1.86	2.06	2.01	2.01	0.64	0.78	1.23	1.29
Manganese	µg/L	0.215	0.195	0.224	0.232	2.71	1.73	1.37	1.4	0.442	0.453	0.366	0.325
Mercury	µg/L	0.0005	0.0006	<0.0005	<0.0005	0.0013	0.0013	0.0013	0.0013	0.0005	<0.0005	0.0005	0.0005

Table 6A-4: Quality Control Duplicate Sample Results, Meliadine, 2018

Parameter	Unit	MEL-01-02		MEL-02-02		MEL-01-07		MEL-01-09		MEL-03-01		MEL-01-09	
		Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate	Sample	Duplicate
		05-Mar-18		05-Mar-18		23-Jul-18		24-Jul-18		20-Aug-18		22-Aug-18	
Dissolved Metals[a] (cont'd)													
Molybdenum	µg/L	0.104	0.091	0.075	0.076	0.054	0.064	0.071	0.087	0.064	0.081	0.101	0.101
Nickel	µg/L	0.799	0.736	0.563	0.538	0.647	0.655	0.64	0.669	0.499	0.406	0.562	0.556
Selenium	µg/L	0.057	0.052	<0.04	0.041	0.041	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/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
Strontium	µg/L	51.7	51.4	45.9	42.4	55.6	60.4	56.4	52.5	32.5	32.6	44.6	45.1
Thallium	µg/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
Titanium	µg/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
Uranium	µg/L	0.018	0.018	0.014	0.015	0.019	0.019	0.020	0.015	0.011	0.014	0.014	0.014
Vanadium	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.05	<0.05
Zinc	µg/L	<0.8	0.98	<0.8	<0.8	<0.8	<0.8	<0.8	1.55	<0.8	<0.8	<0.8	<0.8
Other													
Cyanide	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Radium-226	Bq/L	-[b]	-[b]	-[b]	-[b]	<0.0078	<0.0072	0.1	<0.0041	<0.0074	<0.0057	<0.0063	<0.0053

(a) The list of elements reported for metals analysis includes metalloids such as arsenic and non-metals such as selenium, which are collectively referred to as "metals" in this table.
(b) Radium-226 analysis was not included as an analyte for this station.
Grey shading indicates a greater than 20% relative percent difference between replicates, when both sample concentrations were 5-times greater than the detection limit.
Light grey shading indicates a greater than 20% relative percent difference between replicates, when at least one sample concentration was 5-times greater than the detection limit.
µS/cm = microSiemens per centimetre; $CaCO_3$ = calcium carbonate; mg/L = milligrams per litre; mg-N/L = milligrams nitrogen per litre; mg-P/L = milligrams phosphorus per litre; µg/L = micrograms per litre; Bq/L = Becquerels per litre; NTU = nephelometric turbidity unit; < = less than.

Table 6A-5: Summary of Relative Percent Differences Between Water Quality Duplicate Samples, Meliadine, 2018

Station Number	Date	Total Number of Parameters	Relative Percent Difference Above 20% (when one parameter was above five times the detection limit)		Relative Percent Difference Above 20% (when both parameters were above five times the detection limit)		Relative Percent Difference Above 20% (when one or both parameters were above five times the detection limit)	
			Number of Parameters	Percent of Total Parameters (%)	Number of Parameters	Percent of Parameter (%)	Number of Parameters	Percent of Parameter (%)
MEL-01-02	05-Mar-18	85	0	0	1	1	1	1
MEL-02-02	5-Mar-18	85	0	0	0	0	0	0
MEL-01-07	23-Jul-18	86	0	0	3	3	3	3
MEL-01-09	24-Jul-18	86	2	2	3	3	5	6
MEL-03-01	20-Aug-18	86	1	1	4	5	5	6
MEL-01-09	22-Aug-18	86	0	0	3	3	3	3
Total		**514**	**3**	**1**	**14**	**3**	**17**	**3**

APPENDIX 6B

Normal Range Data Screening

Data collected between 1995 and 2013 (i.e., pre-2015 data) were compiled and compared to AEMP monitoring data (collected between 2015 to 2018) to evaluate if Near-field and Mid-field area AEMP datasets are suitable for inclusion in normal range calculation. An analysis conducted as part of the FEIS (Agnico Eagle 2014; in Appendix 7.4-A) concluded that the 2013 dataset was comparable to baseline data collected at Meliadine Mine prior to 2013. Prior to pooling the pre-2015 dataset, it was reviewed further to evaluate the suitability of including these data in the normal range calculation. Data were initially assessed for representativeness of the current AEMP sampling areas. During the assessment, sampling station DI4 was (located approximately 10 kilometres southeast of the Mine site removed from the dataset due to its distance from other sampling areas, and limited connection to other areas of Meliadine Lake.

For the historical stations retained in the pre-2015 dataset, the laboratory data were evaluated to determine if the detection limits (DL; where available) were comparable to AEMP detection limits, and if a sufficient percentage of results was above the DL. For conventional parameters, major ions and selected nutrients, the detection limits were similar to the current AEMP DLs, or most of the data were above the detection limit. Metals and nitrogen parameters were not retained due to large number of non-detects, and DLs generally being at least one order of magnitude higher than AEMP DLs. The inclusion of such results would artificially increase the range of baseline results and compromise normal range calculation. Historical field data were retained and included in the normal range calculation.

Sample sizes were comparable among datasets, with a pre-2015 sample size of approximately 21 and AEMP samples sizes ranging between approximately 14 (2015 and 2018) to 25 (2017).

The screening procedure for potential inclusion of data in the normal range calculation for open-water conditions was as follows:

- Near-field area data collected between 2015 and 2017 were qualitatively compared to data (i.e., pre-2015 data) collected at stations located in the vicinity of the AEMP Near-field area between 1995 and 2013). Pre-2015 data were pooled and compared to AEMP Near-field data using box-and-whisker plots. Total metals were excluded from this comparison because the detection limits were not comparable to the AEMP dataset. The 2015 to 2017 Near-field dataset differed from the pre-2015 dataset for several major ions (Figure 6B-1), suggesting that some aspects of water quality in the Near-field area were affected by pre-construction exploration activities.
- Mid-field area data collected between 2016 and 2017 during open-water conditions were compared to Near-field and reference area data collected at the same time, to evaluate whether a spatial pattern among areas was visually evident. Spatial patterns with increasing divergence in concentrations among areas were observed for several ions (Appendix 6F). Therefore, the Mid-field area AEMP data were then qualitatively compared to pre-2015 baseline data collected in the vicinity of the Near-field and reference areas using box-and-whisker plots; baseline data were not collected in the vicinity of the Mid-field area. Total metals were excluded from this analysis because the detection limits were not comparable to the AEMP dataset. A visual difference in the variation of the 2015 to 2017 Mid-field area dataset was observed relative to the pre-2015 pooled dataset for several parameters (Figure 6B-2), suggesting that Mid-field area water quality was also influenced by pre-construction exploration activities.

- Reference area data collected during the AEMP monitoring program (2015 to 2018) did not show the same spatial patterns as the Near-field and Mid-field areas, and so was included in the normal range calculation. Additionally, pre-2015 data were included in the normal range calculation because the FEIS (Agnico Eagle 2014) assessment of the data concluded that the pre-2015 data were appropriate as baseline.

Normal ranges were not calculated for ice-covered conditions for the following reasons:

- During ice-cover conditions, AEMP sampling occurs at the Mid-field and Near-field areas. Therefore, AEMP reference area data were not available for inclusion in the normal range calculation.
- Near-field area data collected under-ice between 2016 and 2018 were not suitable for inclusion in the normal range calculation, because temporal trends were observed for several ions, indicating potential changes in water quality in the Near-field area during pre-construction (Figure 6B-3), which was also suggested by open-water season data.
- Mid-field area data collected under-ice between 2016 and 2018 were also not suitable for inclusion in normal range calculation. Mid-field area data were plotted as box-and-whisker plots alongside pre-2015 data collected in the vicinity of the Near-field and reference areas during winter. The Mid-field area AEMP data visually differed from the pre-2015 dataset for several parameters (Figure 6B-4), resulting in uncertainty in whether this difference was due to a mine-related influence or natural spatial heterogeneity.
- Pre-2015 data were not used to calculate the normal range because after evaluation of the dataset (i.e., DLs) only conventional parameters and major ion data were available and the sample size was limited (n = 4 to 8).

Therefore, due to lack of ice-cover season pre-2015 data, AEMP monitoring program reference area data, and the potential for a mine-related influence on the available pre-construction Near-field and Mid-field area datasets, normal range calculation was not completed for ice-covered conditions.

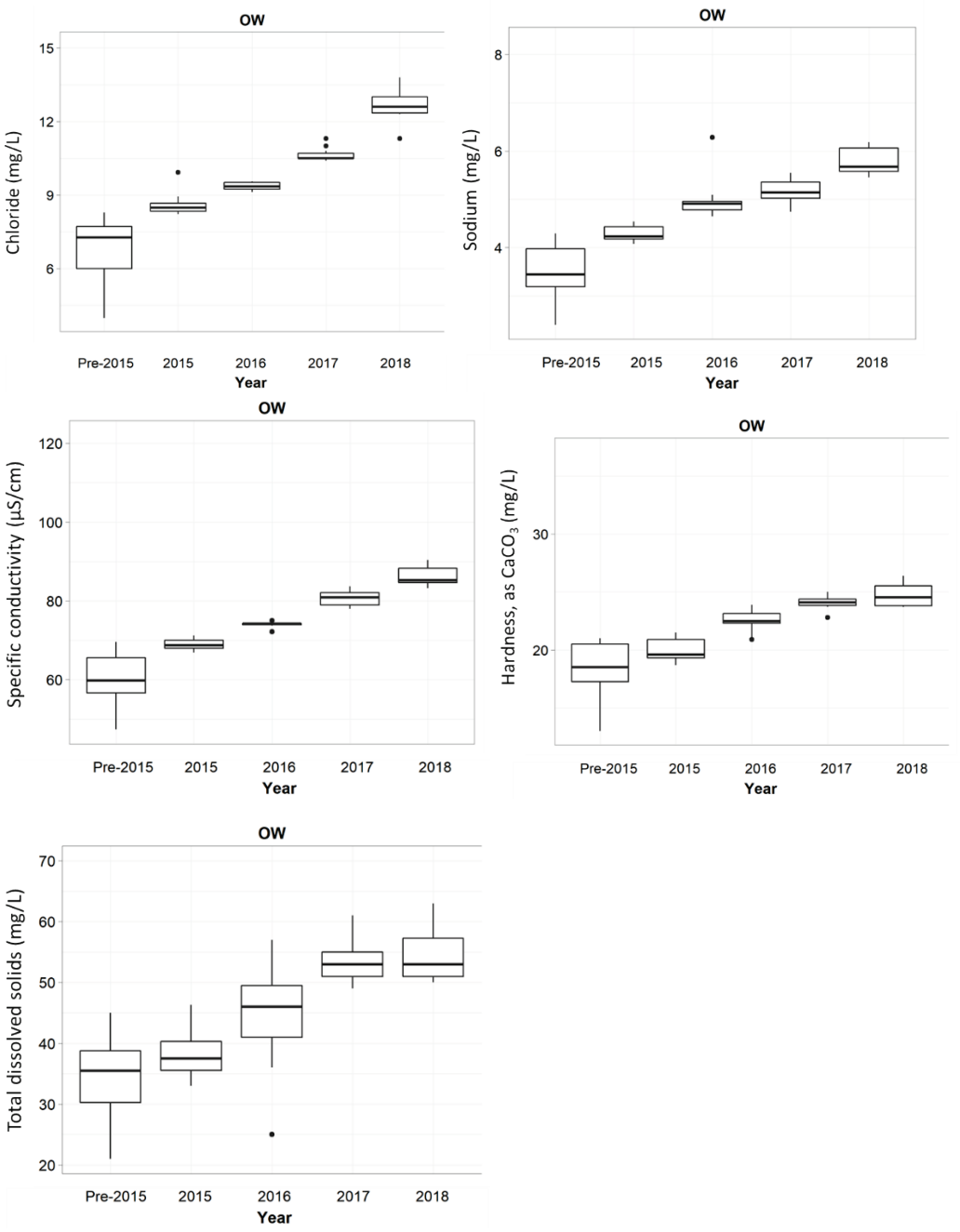


Figure 6B-1: Chloride, Sodium, Specific Conductivity, Hardness and Total Dissolved Solids in the Near-field area between 2015 to 2018 during Open-water Conditions, relative to pre-2015 data

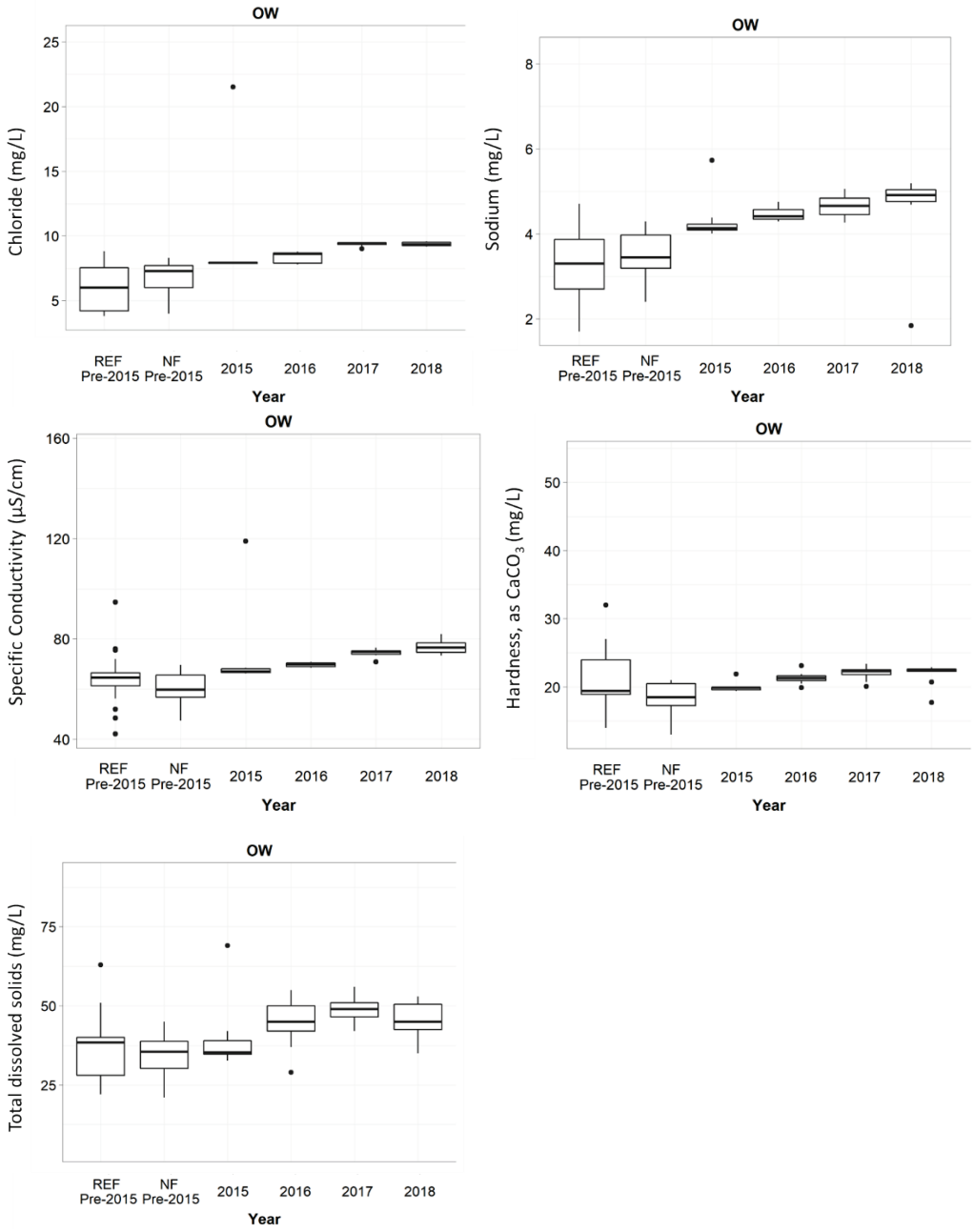


Figure 6B-2: **Chloride, Sodium, Specific Conductivity, Hardness and Total Dissolved Solids in the Mid-field area between 2015 to 2018 during Open-water Conditions, relative to pre-2015 data for the Near-field (NF) and reference areas (REF)**

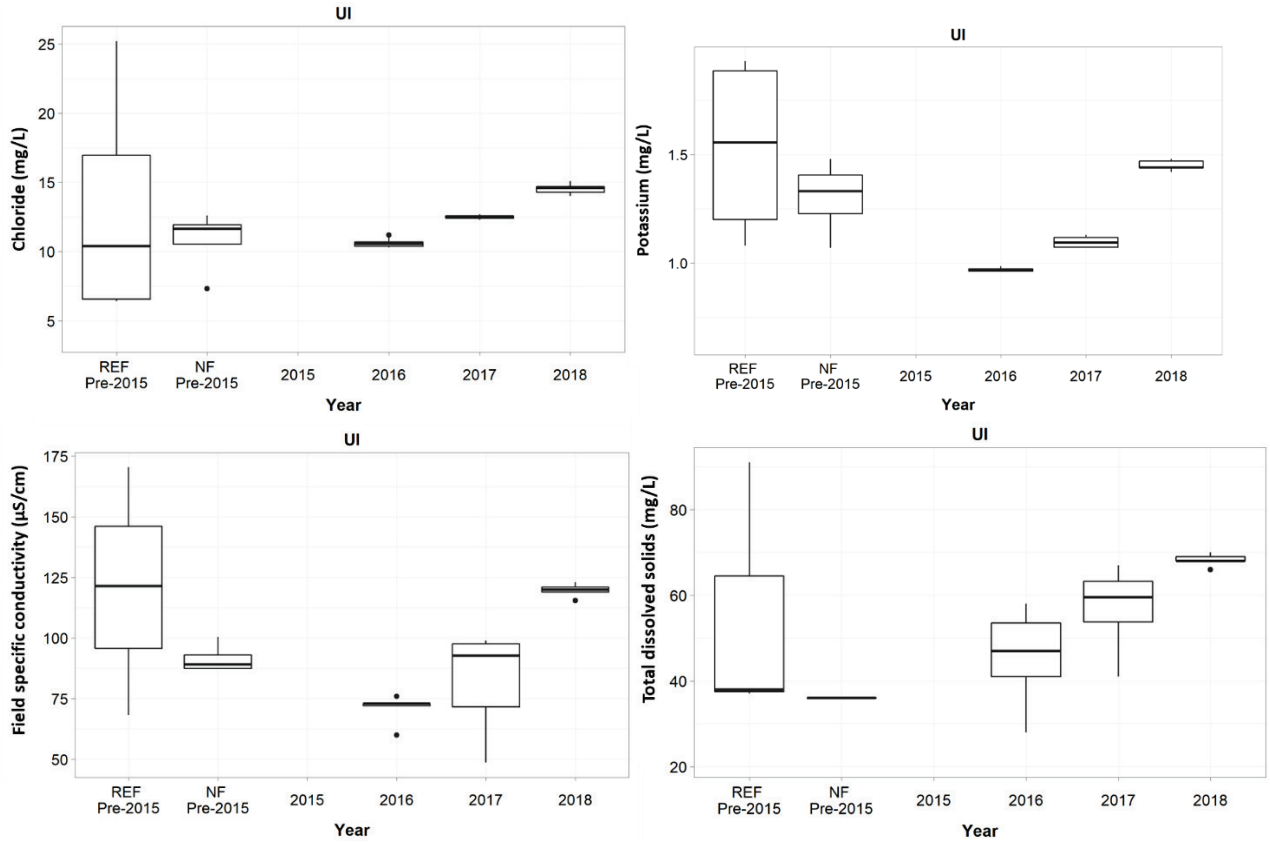


Figure 6B-3: Chloride, Potassium, Specific Conductivity, and Total Dissolved Solids in the Near-field area between 2016 to 2018 during Ice-covered Conditions, relative to pre-2015 data for the Near-field (NF) and reference areas (REF)

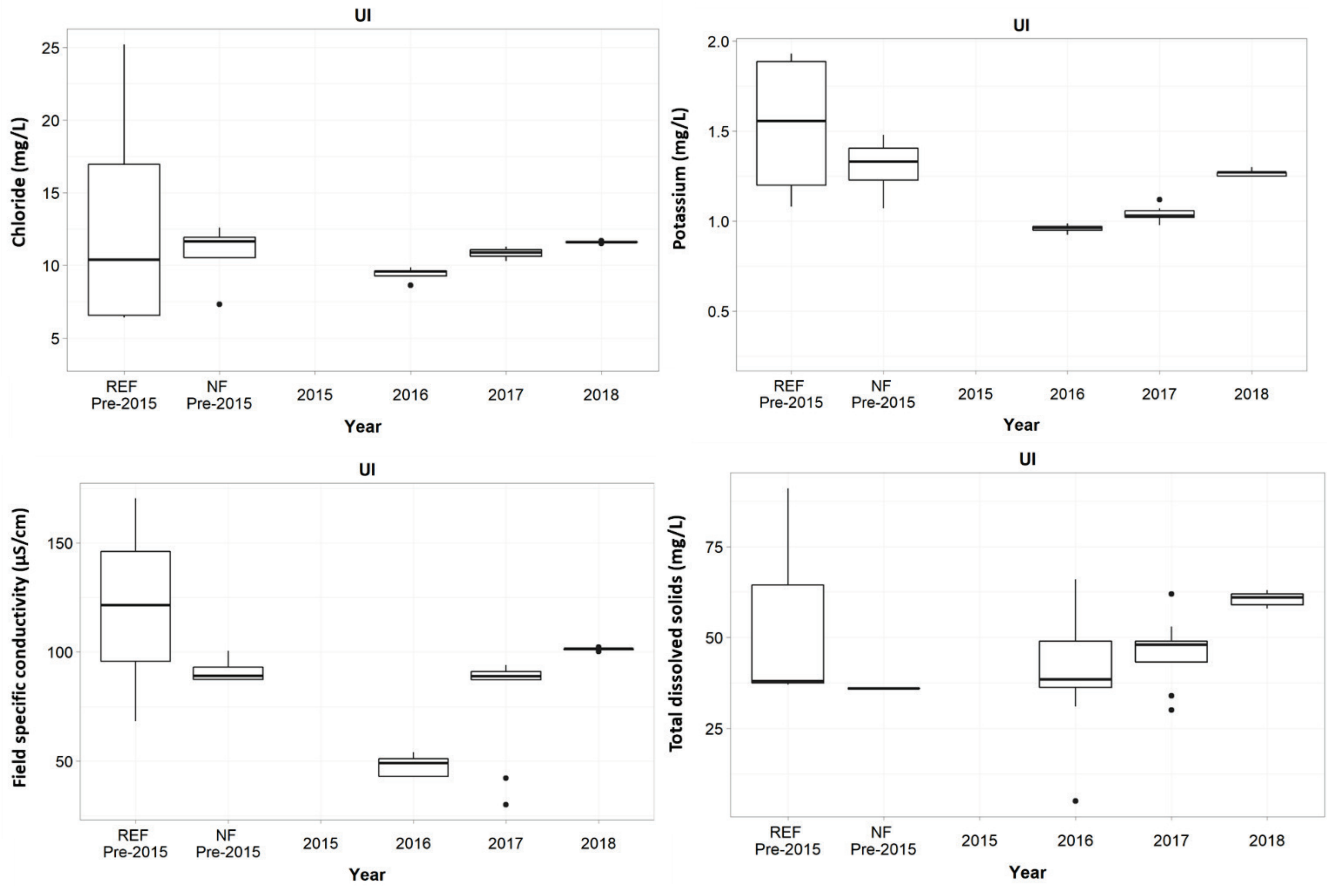


Figure 6B-4: **Chloride, Potassium, Specific Conductivity, and Total Sissolved Solids in the Mid-field area between 2016 to 2018 during Ice-covered Conditions, relative to pre-2015 data for the Near-field (NF) and reference areas (REF)**

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Golder (Golder Associates Ltd.). 2017. Meliadine Gold Mine EEM Cycle 1 Study Design. Submitted to Agnico Eagle Mines Limited. August 2017.

APPENDIX 6C

Field Water Profile Measurements

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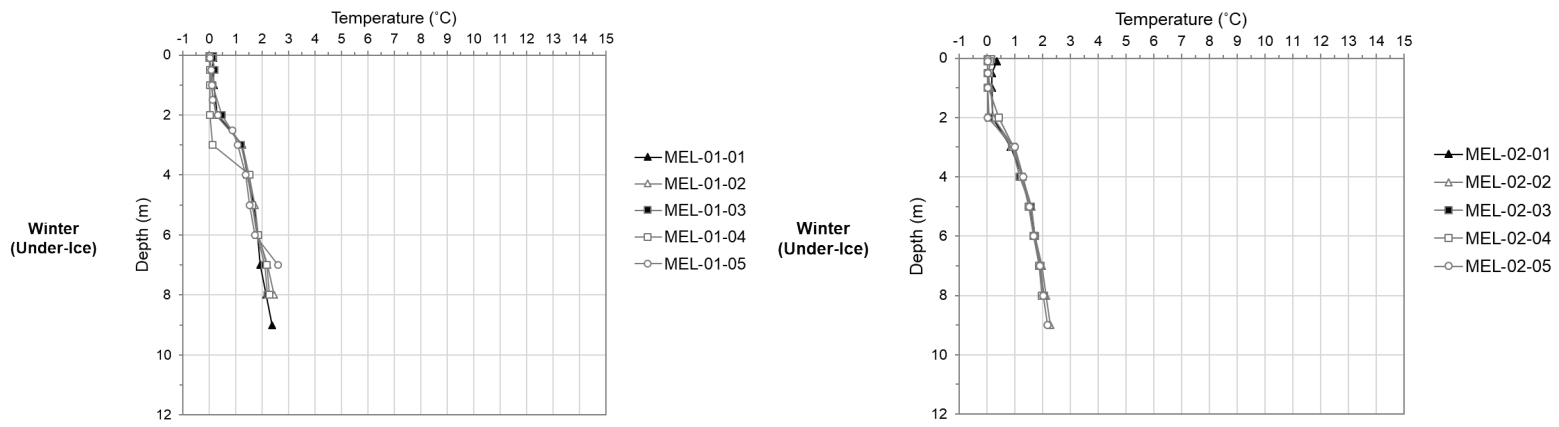
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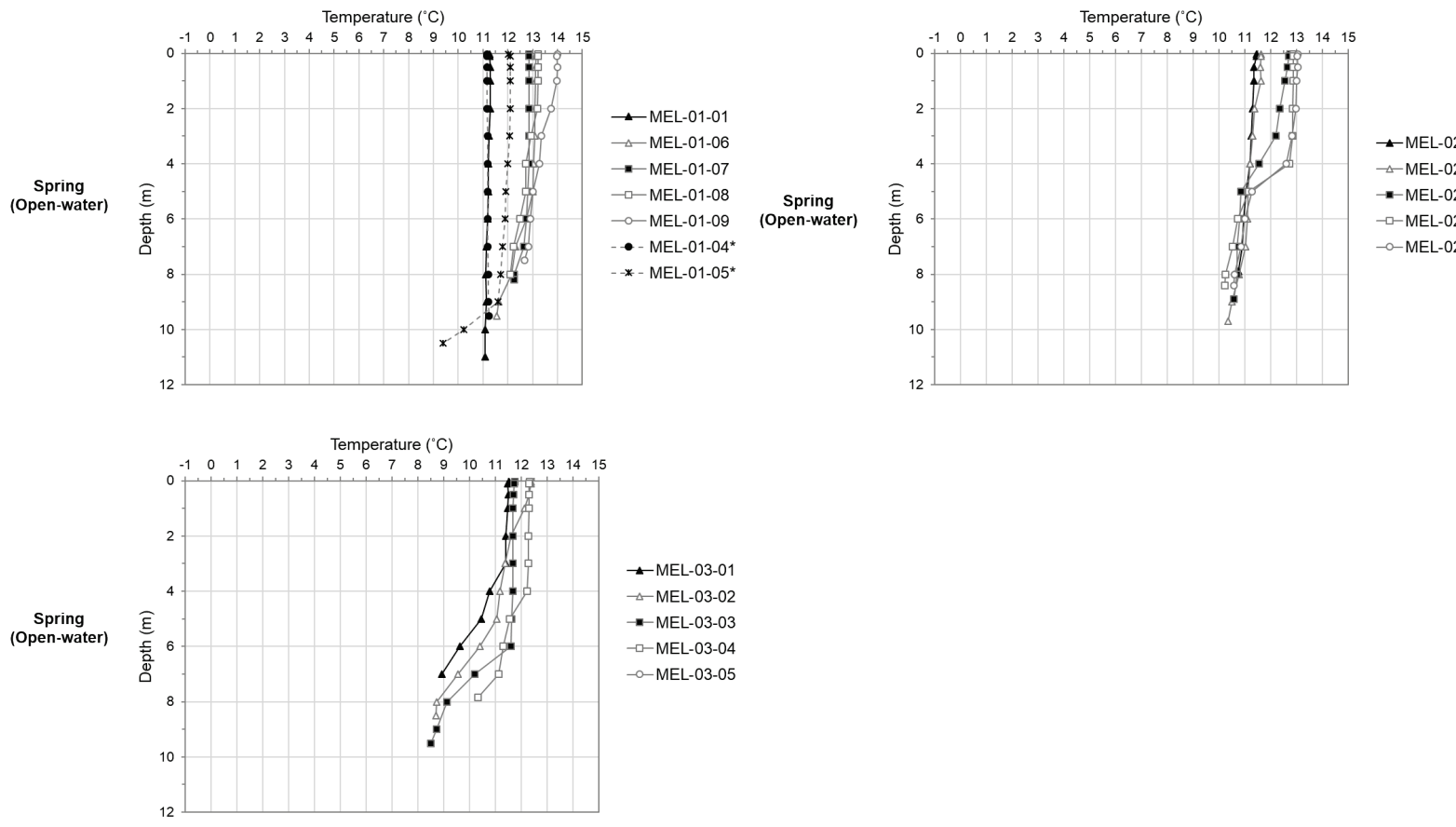
6C.1.0 FIELD PROFILE PLOTS

6C.1.1 Temperature



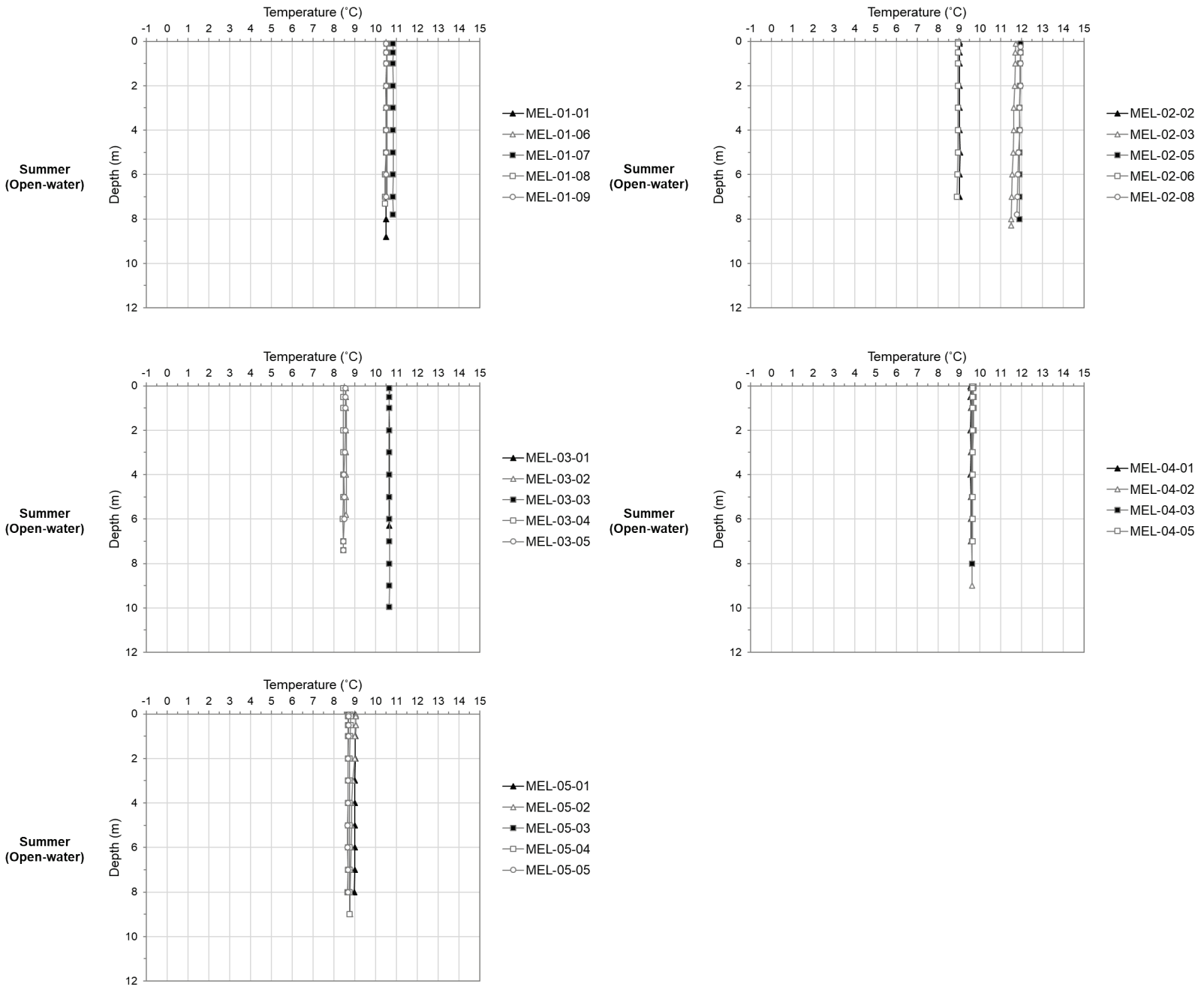
m = metre; °C = degrees Celsius; MEL-01 = Near-field; MEL-02 = Mid-field.

Figure 6C.1-1: Temperature Profiles at Stations on Meliadine Lake, Under-ice (March) 2018



m = metre; °C = degrees Celsius; MEL-01 = Near-field; MEL-02 = Mid-field; MEL-03 = Reference Area 1; * = a field profile was conducted at these stations but water quality samples were not collected.

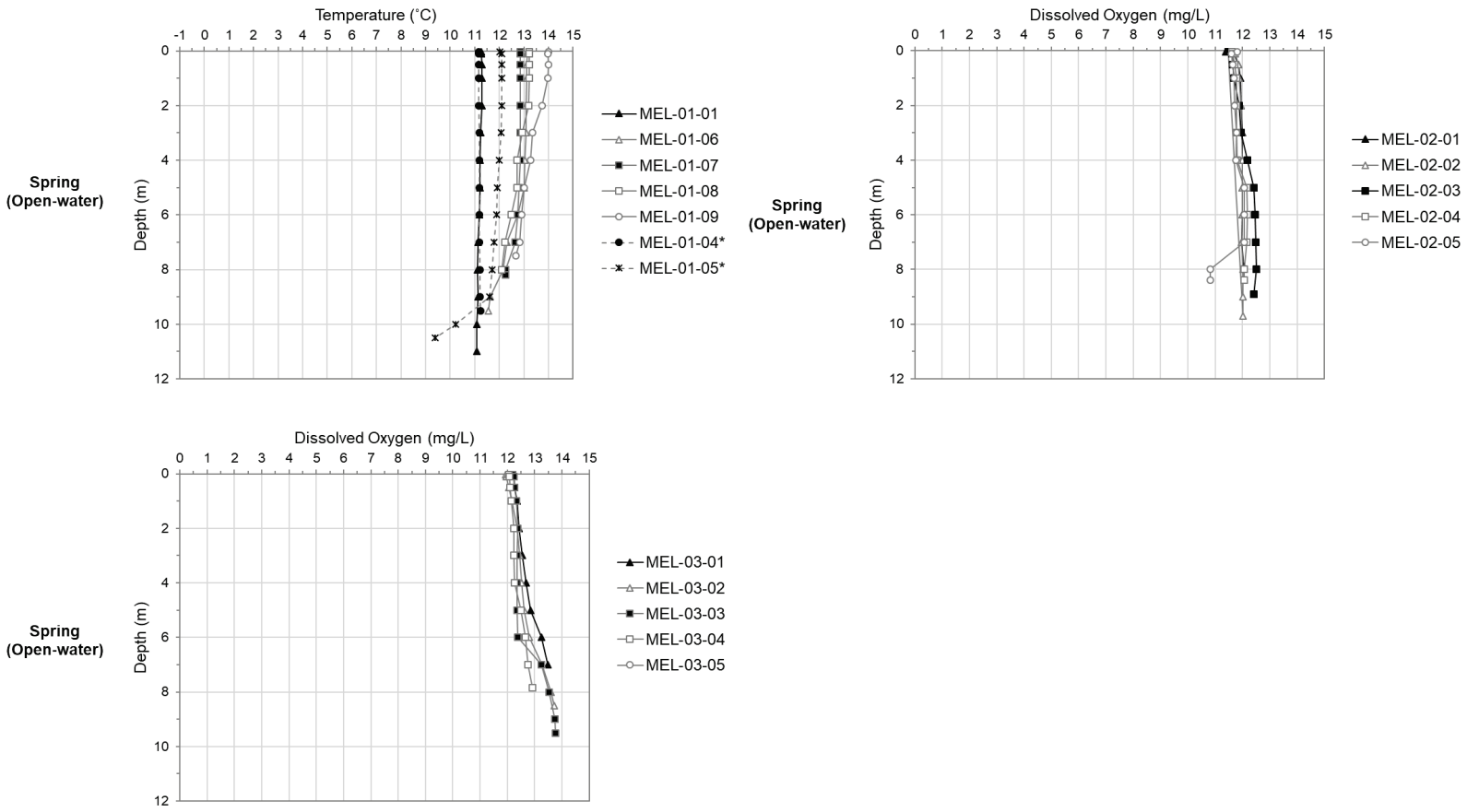
Figure 6C.1-2: Temperature Profiles at Stations on Meliadine Lake, Open-water (July) 2018



m = metre; °C = degrees Celsius; MEL-01 = Near-field; MEL-02 = Mid-field; MEL-03 = Reference Area 1; MEL-04 = Reference Area 2; MEL-05 = Reference Area 3.

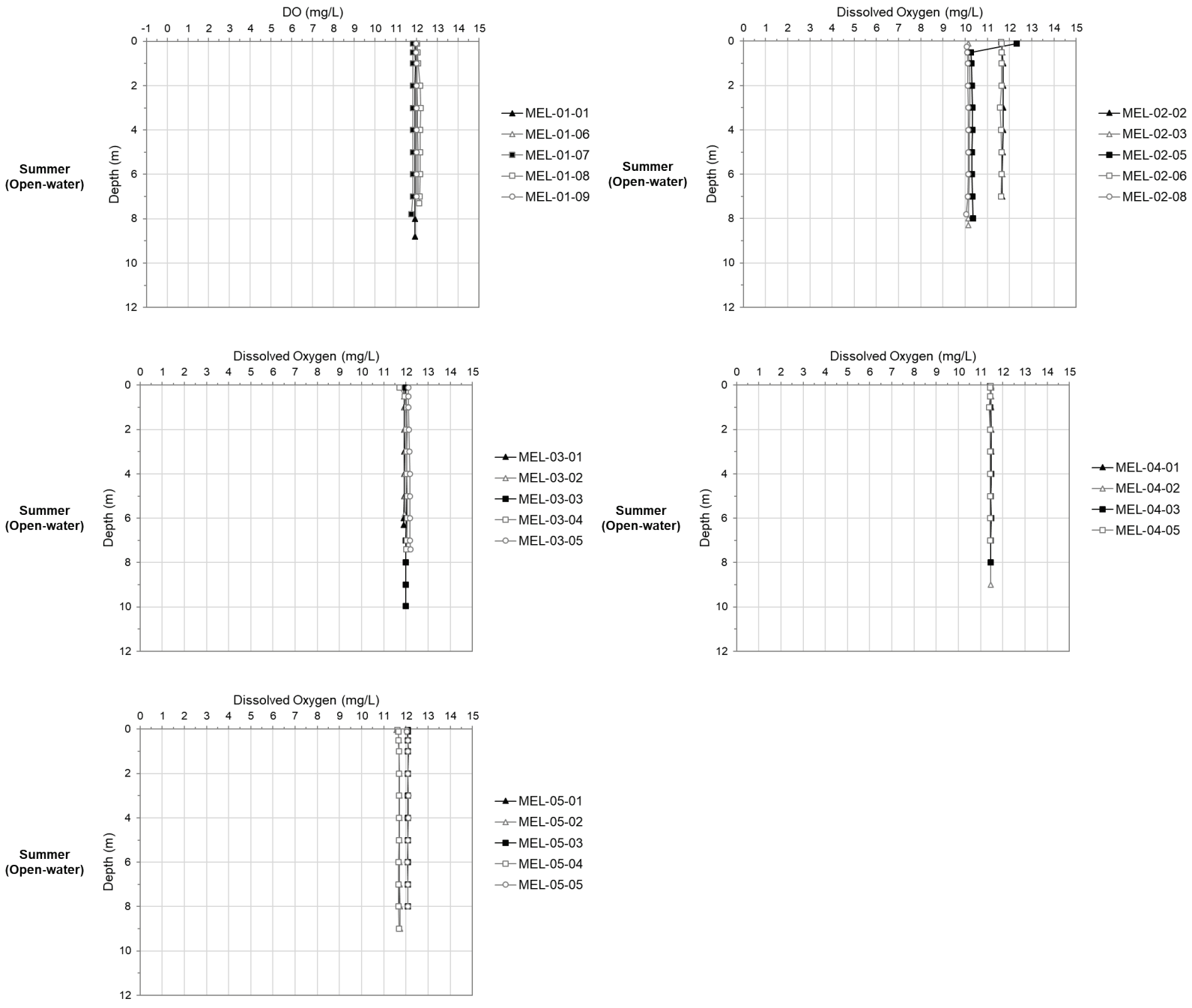
Figure 6C.1-3: Temperature Profiles at Stations on Meliadine Lake, Open-water (August) 2018

6C.1.2 Dissolved Oxygen



m = metre; mg/L = milligrams per litre; MEL-01 = Near-field; MEL-02 = Mid-field; MEL-03 = Reference Area 1; * = a field profile was conducted at these stations but water quality samples were not collected.

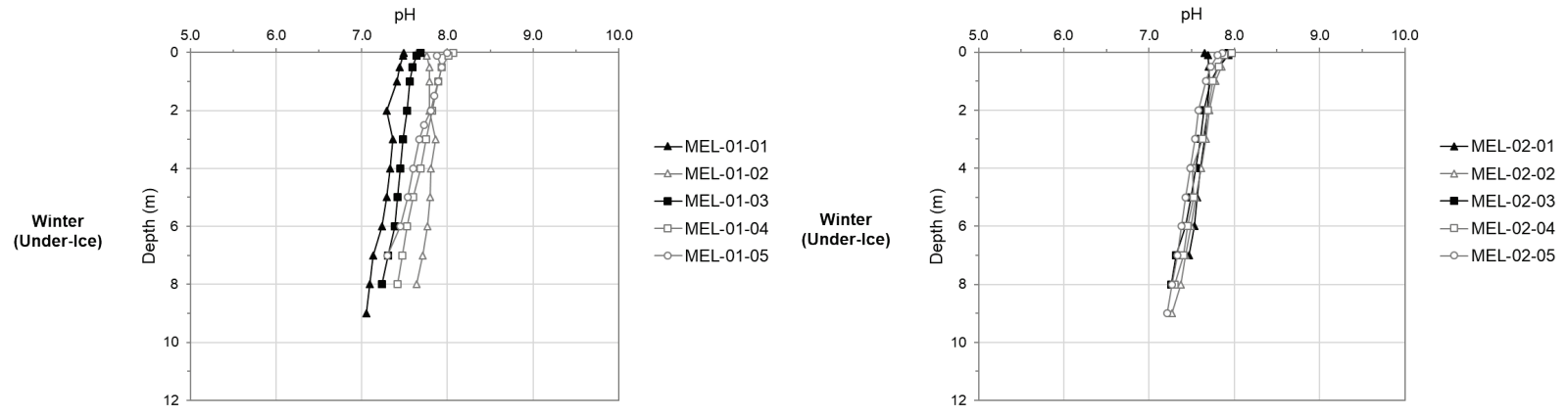
Figure 6C.1-5: Dissolved Oxygen Profiles at Stations on Meliadine Lake, Open-water (July) 2018



m = metre; mg/L = milligrams per litre; MEL-01 = Near-field; MEL-02 = Mid-field; MEL-03 = Reference Area 1; MEL-04 = Reference Area 2; MEL-05 = Reference Area 3.

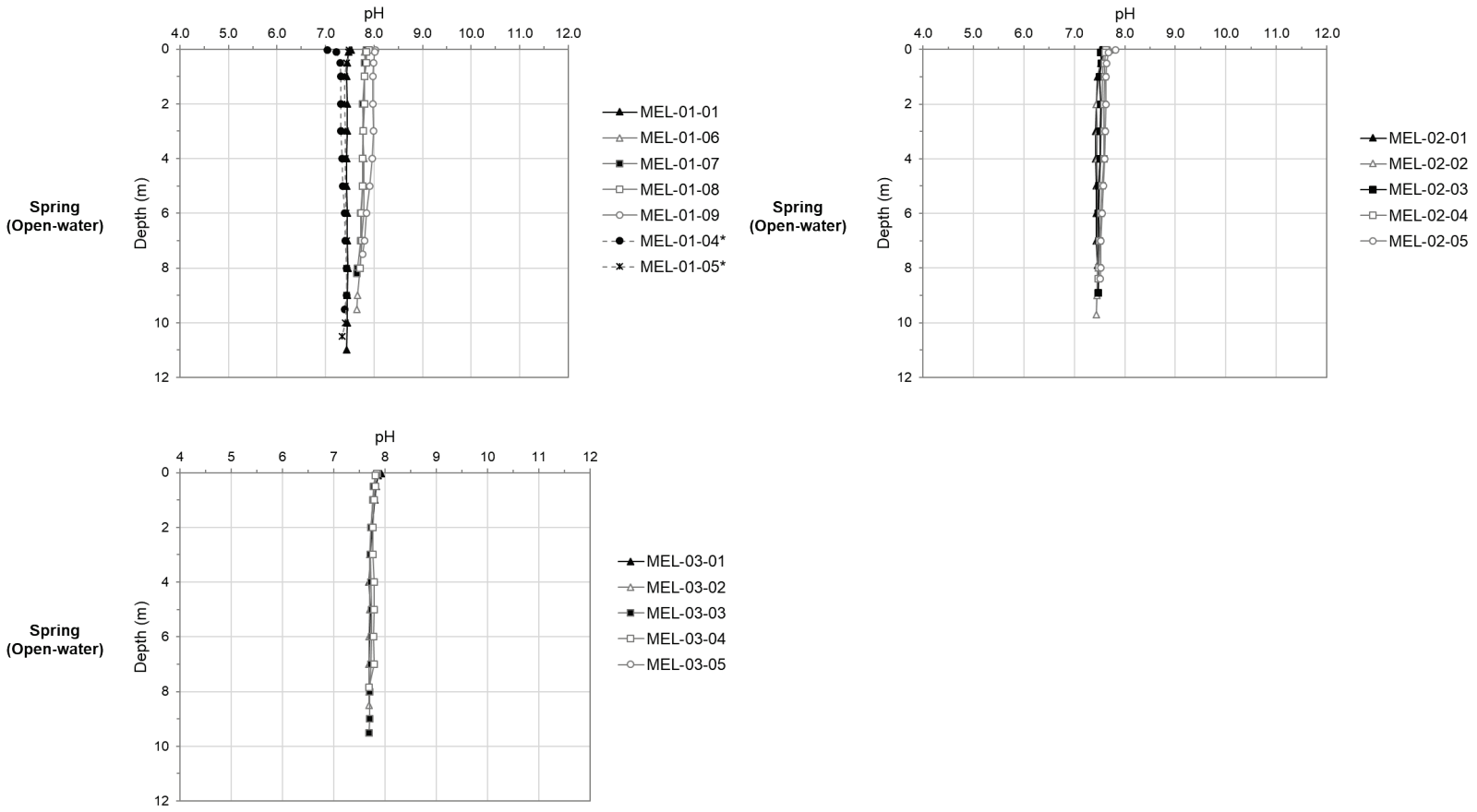
Figure 6C.1-6: Dissolved Oxygen Profiles at Stations on Meliadine Lake, Open-water (August) 2018

6C.1.3 pH



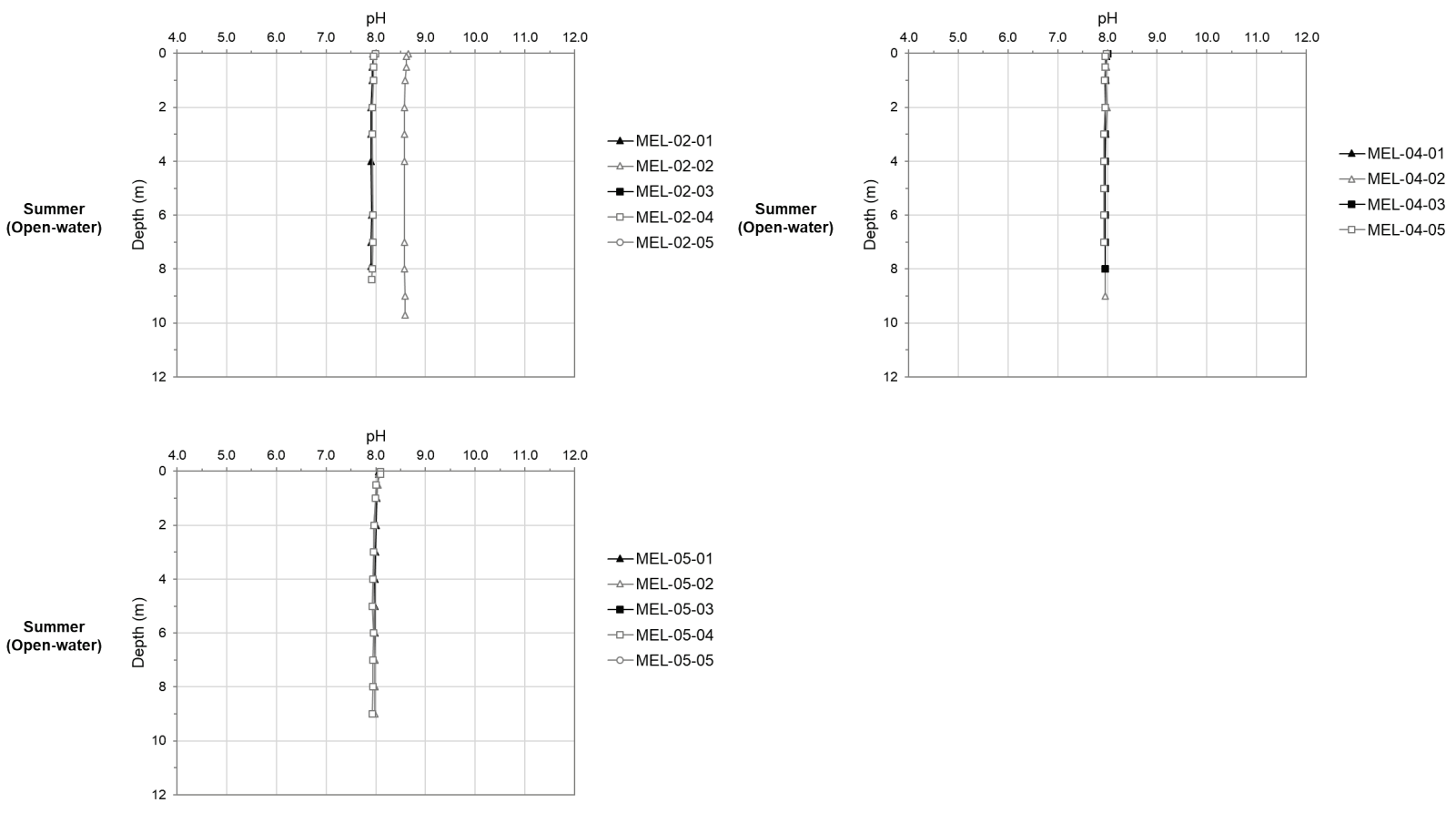
m = metre; MEL-01 = near-field; MEL-02 = mid-field.

Figure 6C.1-7: pH Profiles at Stations on Meliadine Lake, Under-ice (March) 2018



m = metre; MEL-01 = Near-field; MEL-02 = Mid-field; MEL-03 = Reference Area 1; * = a field profile was conducted at these stations but water quality samples were not collected.

Figure 6C.1-8: pH Profiles at Stations on Meliadine Lake, Open-water (July) 2018

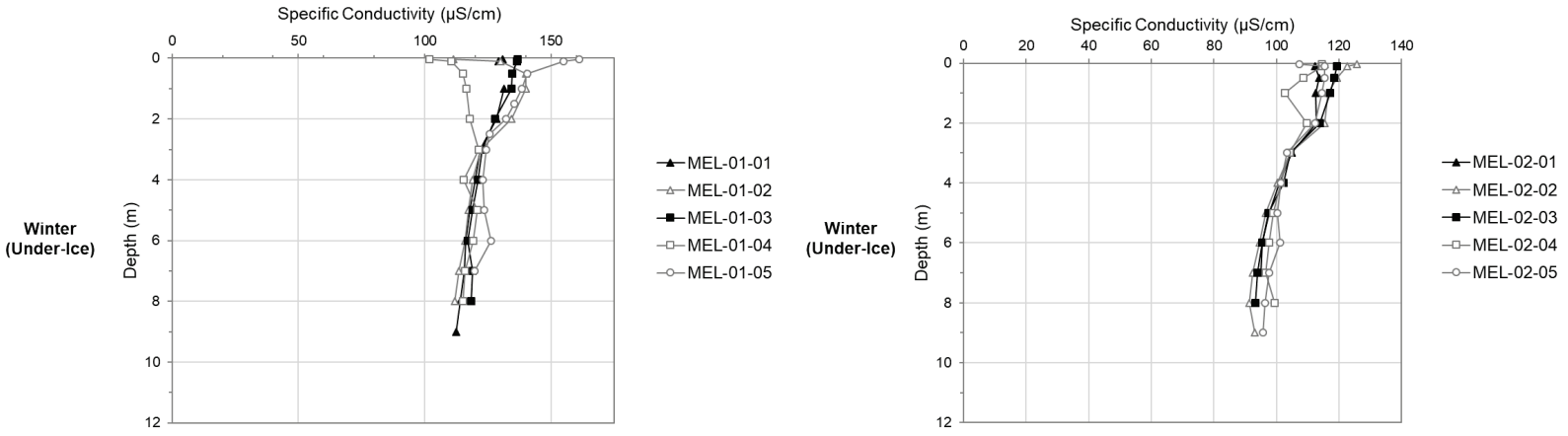


m = metre; MEL-02 = mid-field; MEL-04 = reference area 2; MEL-05 = reference area 3.

Note: pH measured during open-water conditions in August were outside the acceptable range at all MEL-01 (Near-field) and MEL-03 (Reference Area 1) stations as well as at selected MEL-02 (Mid-field), and MEL-05 (Reference Area 3) stations. Data was deemed unreliable and invalidated.

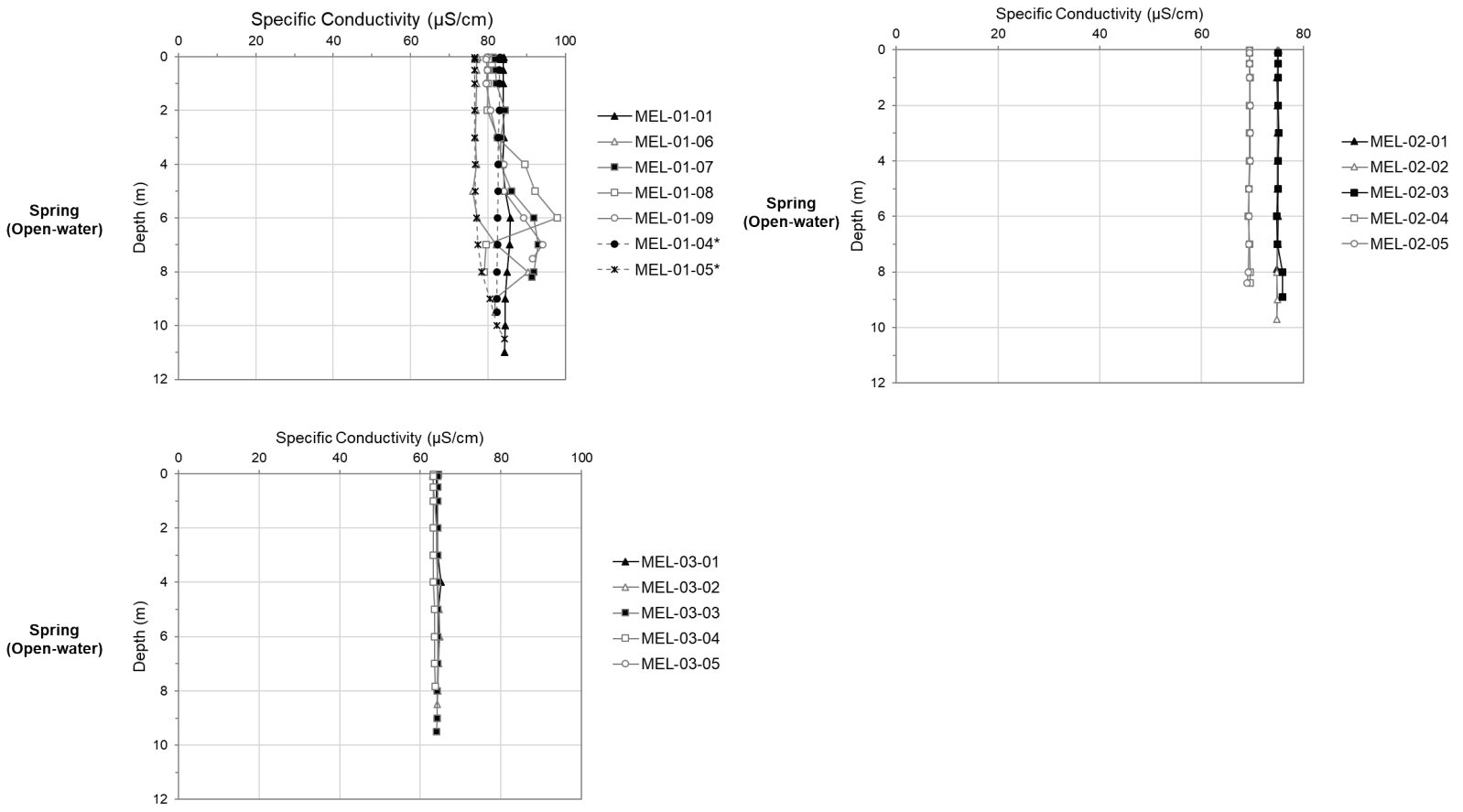
Figure 6C.1-9: pH Profiles at Stations on Meliadine Lake, Open-water (August) 2018

6C.1.4 Specific Conductivity



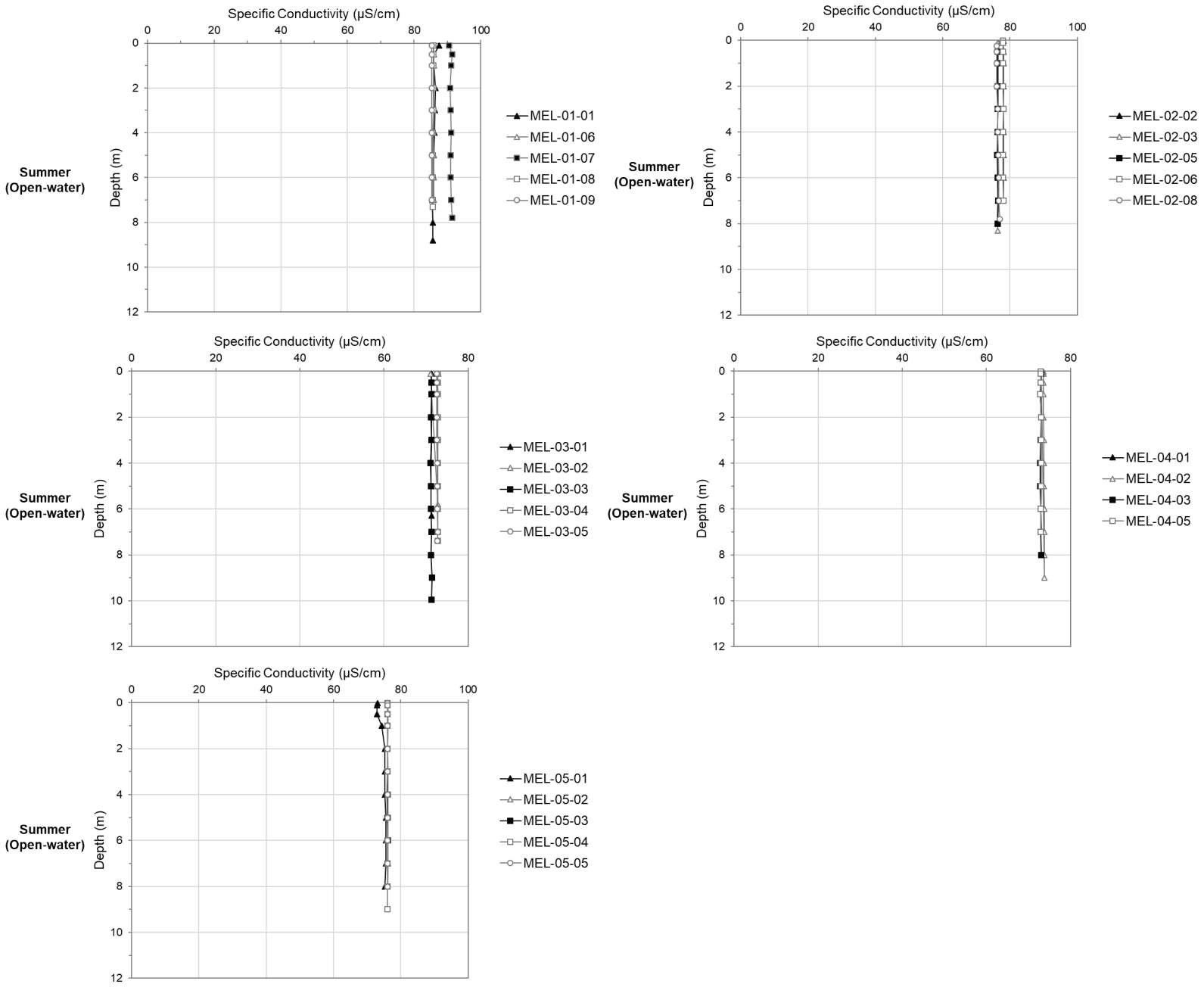
m = metre; µS/cm = microSiemens per centimetre; MEL-01 = Near-field; MEL-02 = Mid-field.

Figure 6C.1-10: Specific Conductivity Profiles at Stations on Meliadine Lake, Under-ice (March) 2018



m = metre; µS/cm = microSiemens per centimetre; MEL-01 = Near-field; MEL-02 = Mid-field; MEL-03 = Reference Area 1; * = a field profile was conducted at these stations but water quality samples were not collected.

Figure 6C.1-11: Specific Conductivity Profiles at Stations on Meliadine Lake, Open-water (July) 2018



m = metre; µS/cm = microSiemens per centimetre; MEL-01 = Near-field; MEL-02 = Mid-field; MEL-03 = Reference Area 1; MEL-04 = Reference Area 2; MEL-05 = Reference Area 3.

Figure 6C.1-12: Specific Conductivity Profiles at Stations on Meliadine Lake, Open-water (August) 2018

6C.2.0 FIELD PROFILE TABLES

6C.2.1 Near-field Field Measurements, 2018

Table 6C.2-1: Field Profiles at Meliadine Near-Field Area, March 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-01-01							
MEL-01-01	2-Mar-18	0.025	0.15	-(a)	-(a)	131	7.5
MEL-01-01	2-Mar-18	0.1	0.14	-(a)	-(a)	129	7.5
MEL-01-01	2-Mar-18	0.5	0.12	-(a)	-(a)	-(a)	7.4
MEL-01-01	2-Mar-18	1.0	0.17	-(a)	-(a)	131	7.4
MEL-01-01	2-Mar-18	2.0	0.30	-(a)	-(a)	128	7.3
MEL-01-01	2-Mar-18	3.0	1.24	-(a)	-(a)	122	7.4
MEL-01-01	2-Mar-18	4.0	1.44	-(a)	-(a)	120	7.3
MEL-01-01	2-Mar-18	5.0	1.70	-(a)	-(a)	118	7.3
MEL-01-01	2-Mar-18	6.0	1.84	-(a)	-(a)	116	7.2
MEL-01-01	2-Mar-18	7.0	1.92	-(a)	-(a)	116	7.1
MEL-01-01	2-Mar-18	8.0	2.16	-(a)	-(a)	114	7.1
MEL-01-01	2-Mar-18	9.0	2.37	-(a)	-(a)	113	7.1
MEL-01-02							
MEL-01-02	5-Mar-18	0.025	0.02	-(a)	-(a)	111	7.6
MEL-01-02	5-Mar-18	0.1	0.02	-(a)	-(a)	130	7.8
MEL-01-02	5-Mar-18	0.5	0.02	-(a)	-(a)	140	7.8
MEL-01-02	5-Mar-18	1.0	0.1	-(a)	-(a)	140	7.8
MEL-01-02	5-Mar-18	2.0	0.3	-(a)	-(a)	134	7.8
MEL-01-02	5-Mar-18	3.0	1.3	-(a)	-(a)	122	7.9
MEL-01-02	5-Mar-18	4.0	1.5	-(a)	-(a)	119	7.8
MEL-01-02	5-Mar-18	5.0	1.7	-(a)	-(a)	117	7.8
MEL-01-02	5-Mar-18	6.0	1.9	-(a)	-(a)	116	7.8
MEL-01-02	5-Mar-18	7.0	2.2	-(a)	-(a)	113	7.7
MEL-01-02	5-Mar-18	8.0	2.5	-(a)	-(a)	112	7.6
MEL-01-03							
MEL-01-03	2-Mar-18	0.025	0.2	-(a)	-(a)	137	7.7
MEL-01-03	2-Mar-18	0.1	0.1	-(a)	-(a)	136	7.6
MEL-01-03	2-Mar-18	0.5	0.2	-(a)	-(a)	135	7.6
MEL-01-03	2-Mar-18	1.0	0.1	-(a)	-(a)	134	7.6
MEL-01-03	2-Mar-18	2.0	0.5	-(a)	-(a)	128	7.5
MEL-01-03	2-Mar-18	3.0	1.2	-(a)	-(a)	123	7.5
MEL-01-03	2-Mar-18	4.0	1.5	-(a)	-(a)	121	7.5
MEL-01-03	2-Mar-18	5.0	1.6	-(a)	-(a)	119	7.4

Table 6C.2-1: Field Profiles at Meliadine Near-Field Area, March 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-01-03	2-Mar-18	6.0	1.8	-(a)	-(a)	117	7.4
MEL-01-03	2-Mar-18	7.0	2.1	-(a)	-(a)	119	7.3
MEL-01-03	2-Mar-18	8.0	2.2	-(a)	-(a)	118	7.2
MEL-01-04							
MEL-01-04	5-Mar-18	0.025	0.01	-(a)	-(a)	102	8.1
MEL-01-04	5-Mar-18	0.1	0.01	-(a)	-(a)	111	8.0
MEL-01-04	5-Mar-18	0.5	0.02	-(a)	-(a)	115	7.9
MEL-01-04	5-Mar-18	1.0	0.02	-(a)	-(a)	116	7.9
MEL-01-04	5-Mar-18	2.0	0.02	-(a)	-(a)	118	7.8
MEL-01-04	5-Mar-18	3.0	0.1	-(a)	-(a)	121	7.8
MEL-01-04	5-Mar-18	4.0	1.5	-(a)	-(a)	116	7.7
MEL-01-04	5-Mar-18	5.0	1.6	-(a)	-(a)	121	7.6
MEL-01-04	5-Mar-18	6.0	1.9	-(a)	-(a)	119	7.5
MEL-01-04	5-Mar-18	7.0	2.2	-(a)	-(a)	116	7.5
MEL-01-04	5-Mar-18	8.0	2.3	-(a)	-(a)	115	7.4
MEL-01-05							
MEL-01-05	2-Mar-18	0.025	0.02	-(a)	-(a)	161	8.0
MEL-01-05	2-Mar-18	0.1	0.02	-(a)	-(a)	155	7.9
MEL-01-05	2-Mar-18	0.5	0.1	-(a)	-(a)	141	7.9
MEL-01-05	2-Mar-18	1.0	0.1	-(a)	-(a)	139	7.9
MEL-01-05	2-Mar-18	1.5	0.1	-(a)	-(a)	136	7.9
MEL-01-05	2-Mar-18	2.0	0.3	-(a)	-(a)	132	7.8
MEL-01-05	2-Mar-18	2.5	0.9	-(a)	-(a)	126	7.7
MEL-01-05	2-Mar-18	3.0	1.1	-(a)	-(a)	124	7.7
MEL-01-05	2-Mar-18	4.0	1.4	-(a)	-(a)	123	7.6
MEL-01-05	2-Mar-18	5.0	1.5	-(a)	-(a)	124	7.5
MEL-01-05	2-Mar-18	6.0	1.7	-(a)	-(a)	126	7.5
MEL-01-05	2-Mar-18	7.0	2.6	-(a)	-(a)	120	7.3

(a) value was invalidated following data quality checks.

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 6.C.2-2: Field Profiles at Meliadine Near-Field Area, July 2018

Station[(a)]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-01-01							
MEL-01-01	19-Jul-18	0.025	11.27	106	11	84	7.5
MEL-01-01	19-Jul-18	0.1	11.27	110	12	84	7.5
MEL-01-01	19-Jul-18	0.5	11.28	111	12	84	7.5
MEL-01-01	19-Jul-18	1.0	11.29	111	12	84	7.4
MEL-01-01	19-Jul-18	2.0	11.29	112	12	84	7.5
MEL-01-01	19-Jul-18	3.0	11.24	112	12	84	7.5
MEL-01-01	19-Jul-18	4.0	11.22	113	12	84	7.4
MEL-01-01	19-Jul-18	5.0	11.21	113	12	84	7.4
MEL-01-01	19-Jul-18	6.0	11.20	113	12	86	7.5
MEL-01-01	19-Jul-18	7.0	11.14	112	12	86	7.5
MEL-01-01	19-Jul-18	8.0	11.12	112	12	85	7.5
MEL-01-01	19-Jul-18	9.0	11.13	111	12	85	7.5
MEL-01-01	19-Jul-18	10.0	11.09	111	12	85	7.5
MEL-01-01	19-Jul-18	11.0	11.09	110	12	84	7.4
MEL-01-04							
MEL-01-04	18-Jul-18	0.025	11.2	110	12	83	7.0
MEL-01-04	18-Jul-18	0.1	11.2	111	12	83	7.2
MEL-01-04	18-Jul-18	0.5	11.2	111	12	83	7.3
MEL-01-04	18-Jul-18	1.0	11.2	112	12	83	7.3
MEL-01-04	18-Jul-18	2.0	11.2	113	12	83	7.3
MEL-01-04	18-Jul-18	3.0	11.2	113	12	83	7.3
MEL-01-04	18-Jul-18	4.0	11.2	113	12	83	7.3
MEL-01-04	18-Jul-18	5.0	11.2	113	12	83	7.4
MEL-01-04	18-Jul-18	6.0	11.2	113	12	83	7.4
MEL-01-04	18-Jul-18	7.0	11.2	112	12	83	7.4
MEL-01-04	18-Jul-18	8.0	11.2	113	12	82	7.4
MEL-01-04	18-Jul-18	9.0	11.2	112	12	82	7.4
MEL-01-04	18-Jul-18	9.5	11.2	111	12	82	7.4
MEL-01-05							
MEL-01-05	18-Jul-18	0.025	12.0	110	12	77	7.5
MEL-01-05	18-Jul-18	0.1	12.1	110	12	77	7.5
MEL-01-05	18-Jul-18	0.5	12.1	111	12	77	7.4
MEL-01-05	18-Jul-18	1.0	12.1	111	12	77	7.4
MEL-01-05	18-Jul-18	2.0	12.1	111	12	77	7.4
MEL-01-05	18-Jul-18	3.0	12.1	111	12	77	7.4
MEL-01-05	18-Jul-18	4.0	12.0	111	12	77	7.4

Table 6.C.2-2: Field Profiles at Meliadine Near-Field Area, July 2018

Station[(a)]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-01-05	18-Jul-18	5.0	11.9	111	12	77	7.4
MEL-01-05	18-Jul-18	6.0	11.9	111	12	77	7.4
MEL-01-05	18-Jul-18	7.0	11.8	111	12	77	7.4
MEL-01-05	18-Jul-18	8.0	11.7	111	12	78	7.4
MEL-01-05	18-Jul-18	9.0	11.6	111	12	81	7.4
MEL-01-05	18-Jul-18	10.0	10.2	110	12	82	7.4
MEL-01-05	18-Jul-18	10.5	9.4	111	13	84	7.3
MEL-01-06							
MEL-01-06	22-Jul-18	0.025	13.1	114	12	77	7.9
MEL-01-06	22-Jul-18	0.1	13.1	115	12	77	7.8
MEL-01-06	22-Jul-18	0.5	13.1	115	12	77	7.8
MEL-01-06	22-Jul-18	1.0	13.1	115	12	77	7.8
MEL-01-06	22-Jul-18	2.0	13.1	115	12	77	7.8
MEL-01-06	22-Jul-18	3.0	13.1	115	12	77	7.8
MEL-01-06	22-Jul-18	4.0	13.0	115	12	77	7.8
MEL-01-06	22-Jul-18	5.0	13.0	115	12	76	7.8
MEL-01-06	22-Jul-18	6.0	12.7	115	12	77	7.8
MEL-01-06	22-Jul-18	7.0	12.3	114	12	82	7.7
MEL-01-06	22-Jul-18	8.0	12.2	114	12	90	7.7
MEL-01-06	22-Jul-18	9.0	11.6	113	12	82	7.7
MEL-01-06	22-Jul-18	9.5	11.6	112	12	82	7.7
MEL-01-07							
MEL-01-07	23-Jul-18	0.025	12.9	112	12	81	7.9
MEL-01-07	23-Jul-18	0.1	12.9	113	12	82	7.8
MEL-01-07	23-Jul-18	0.5	12.9	113	12	82	7.8
MEL-01-07	23-Jul-18	1.0	12.9	113	12	82	7.8
MEL-01-07	23-Jul-18	2.0	12.9	113	12	84	7.8
MEL-01-07	23-Jul-18	3.0	12.9	113	12	83	7.8
MEL-01-07	23-Jul-18	4.0	12.9	113	12	83	7.8
MEL-01-07	23-Jul-18	5.0	12.8	112	12	86	7.8
MEL-01-07	23-Jul-18	6.0	12.7	112	12	92	7.7
MEL-01-07	23-Jul-18	7.0	12.6	112	12	93	7.7
MEL-01-07	23-Jul-18	8.0	12.3	111	12	92	7.7
MEL-01-07	23-Jul-18	8.2	12.3	111	12	91	7.7
MEL-01-08							
MEL-01-08	23-Jul-18	0.025	13.2	113	12	80	7.9
MEL-01-08	23-Jul-18	0.1	13.2	113	12	80	7.8

Table 6.C.2-2: Field Profiles at Meliadine Near-Field Area, July 2018

Station[(a)]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-01-08	23-Jul-18	0.5	13.2	113	12	80	7.8
MEL-01-08	23-Jul-18	1.0	13.2	114	12	80	7.8
MEL-01-08	23-Jul-18	2.0	13.2	114	12	80	7.8
MEL-01-08	23-Jul-18	3.0	12.9	114	12	83	7.8
MEL-01-08	23-Jul-18	4.0	12.7	114	12	90	7.8
MEL-01-08	23-Jul-18	5.0	12.7	113	12	92	7.8
MEL-01-08	23-Jul-18	6.0	12.5	113	12	98	7.7
MEL-01-08	23-Jul-18	7.0	12.2	112	12	80	7.8
MEL-01-08	23-Jul-18	8.0	12.1	112	12	79	7.7
MEL-01-09							
MEL-01-09	23-Jul-18	0.025	14.0	115	12	80	8.0
MEL-01-09	23-Jul-18	0.1	14.0	115	12	80	8.0
MEL-01-09	23-Jul-18	0.5	14.0	115	12	80	8.0
MEL-01-09	23-Jul-18	1.0	14.0	115	12	80	8.0
MEL-01-09	23-Jul-18	2.0	13.8	115	12	81	8.0
MEL-01-09	23-Jul-18	3.0	13.4	115	12	82	8.0
MEL-01-09	23-Jul-18	4.0	13.3	115	12	84	8.0
MEL-01-09	23-Jul-18	5.0	13.0	114	12	84	7.9
MEL-01-09	23-Jul-18	6.0	12.9	113	12	89	7.8
MEL-01-09	23-Jul-18	7.0	12.8	113	12	94	7.8
MEL-01-09	23-Jul-18	8.0	12.7	114	12	92	7.8

(a) Several new stations were added to the near-field exposure area during the July program and MEL-01-02, MEL-01-03, MEL-01-04, and MEL-01-05 were discontinued. However, field measurements were collected at MEL-01-04 and MEL-01-05.

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 6C.2-3: Field Profiles at Meliadine Near-Field Area, August 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-01-01							
MEL-01-01	22-Aug-18	0.1[a]	10.5	109	11.9	88	-[b]
MEL-01-01	22-Aug-18	0.5	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	1.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	2.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	3.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	4.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	5.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	6.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	7.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	8.0	10.5	109	11.9	86	-[b]
MEL-01-01	22-Aug-18	8.8	10.5	109	11.9	86	-[b]
MEL-01-06							
MEL-01-06	22-Aug-18	0.1[a]	10.6	110	12.0	86	-[b]
MEL-01-06	22-Aug-18	0.5	10.6	110	12.0	86	-[b]
MEL-01-06	22-Aug-18	1.0	10.6	110	12.0	86	-[b]
MEL-01-06	22-Aug-18	2.0	10.6	110	12.0	86	-[b]
MEL-01-06	22-Aug-18	3.0	10.6	110	12.0	86	-[b]
MEL-01-06	22-Aug-18	4.0	10.6	110	12.1	86	-[b]
MEL-01-06	22-Aug-18	5.0	10.6	110	12.1	86	-[b]
MEL-01-06	22-Aug-18	6.0	10.6	110	12.1	86	-[b]
MEL-01-06	22-Aug-18	7.0	10.6	110	12.1	86	-[b]
MEL-01-07							
MEL-01-07	21-Aug-18	0.1[a]	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	0.5	10.8	109	11.8	92	-[b]
MEL-01-07	21-Aug-18	1.0	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	2.0	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	3.0	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	4.0	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	5.0	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	6.0	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	7.0	10.8	109	11.8	91	-[b]
MEL-01-07	21-Aug-18	7.8	10.8	108	11.7	92	-[b]
MEL-01-08							
MEL-01-08	22-Aug-18	0.1[a]	10.5	110	12.0	86	-[b]
MEL-01-08	22-Aug-18	0.5	10.5	110	12.0	86	-[b]
MEL-01-08	22-Aug-18	1.0	10.5	110	12.1	86	-[b]
MEL-01-08	22-Aug-18	2.0	10.5	111	12.2	86	-[b]
MEL-01-08	22-Aug-18	3.0	10.5	111	12.2	86	-[b]
MEL-01-08	22-Aug-18	4.0	10.5	111	12.2	86	-[b]
MEL-01-08	22-Aug-18	5.0	10.5	111	12.2	86	-[b]
MEL-01-08	22-Aug-18	6.0	10.5	111	12.2	86	-[b]

Table 6C.2-3: Field Profiles at Meliadine Near-Field Area, August 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-01-08	22-Aug-18	7.0	10.5	111	12.1	86	-[(b)]
MEL-01-08	22-Aug-18	7.3	10.5	110	12.1	86	-[(b)]
MEL-01-09							
MEL-01-09	22-Aug-18	0.1[(a)]	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	0.5	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	1.0	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	2.0	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	3.0	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	4.0	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	5.0	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	6.0	10.5	109	12.0	85	-[(b)]
MEL-01-09	22-Aug-18	7.0	10.5	109	12.0	85	-[(b)]

(a) A depth reading at 0.025 m could not be taken due to wave action.
(b) Data were invalidated based on quality checks (Appendix 6A).
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

6C.2.2 Mid-field Field Measurements, 2018

Table 6C.2-4: Field Profiles at Meliadine Mid-Field Area, March 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-01							
MEL-02-01	06-Mar-18	0.025	0.1	-[(a)]	-[(a)]	115	7.7
MEL-02-01	06-Mar-18	0.1	0.3	-[(a)]	-[(a)]	112	7.7
MEL-02-01	06-Mar-18	0.5	0.2	-[(a)]	-[(a)]	114	7.7
MEL-02-01	06-Mar-18	1.0	0.2	-[(a)]	-[(a)]	113	7.7
MEL-02-01	06-Mar-18	2.0	0.2	-[(a)]	-[(a)]	113	7.7
MEL-02-01	06-Mar-18	3.0	0.8	-[(a)]	-[(a)]	105	7.7
MEL-02-01	06-Mar-18	4.0	1.3	-[(a)]	-[(a)]	101	7.6
MEL-02-01	06-Mar-18	5.0	1.5	-[(a)]	-[(a)]	98	7.6
MEL-02-01	06-Mar-18	6.0	1.7	-[(a)]	-[(a)]	96	7.5
MEL-02-01	06-Mar-18	7.0	1.9	-[(a)]	-[(a)]	95	7.5
MEL-02-02							
MEL-02-02	05-Mar-18	0.025	0.02	-[(a)]	-[(a)]	126	7.9
MEL-02-02	05-Mar-18	0.1	0.02	-[(a)]	-[(a)]	123	7.9
MEL-02-02	05-Mar-18	0.5	0.02	-[(a)]	-[(a)]	119	7.9
MEL-02-02	05-Mar-18	1.0	0.1	-[(a)]	-[(a)]	117	7.8
MEL-02-02	05-Mar-18	2.0	0.2	-[(a)]	-[(a)]	115	7.7
MEL-02-02	05-Mar-18	3.0	0.9	-[(a)]	-[(a)]	104	7.7

Table 6C.2-4: Field Profiles at Meliadine Mid-Field Area, March 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-02	05-Mar-18	4.0	1.3	-[(a)]	-[(a)]	100	7.6
MEL-02-02	05-Mar-18	5.0	1.6	-[(a)]	-[(a)]	97	7.6
MEL-02-02	05-Mar-18	6.0	1.7	-[(a)]	-[(a)]	95	7.5
MEL-02-02	05-Mar-18	7.0	2.0	-[(a)]	-[(a)]	93	7.4
MEL-02-02	05-Mar-18	8.0	2.1	-[(a)]	-[(a)]	91	7.4
MEL-02-02	05-Mar-18	9.0	2.3	-[(a)]	-[(a)]	93	7.3
MEL-02-03							
MEL-02-03	05-Mar-18	0.025	0.01	-[(a)]	-[(a)]	121	7.9
MEL-02-03	05-Mar-18	0.1	0.02	-[(a)]	-[(a)]	119	7.9
MEL-02-03	05-Mar-18	0.5	0.02	-[(a)]	-[(a)]	118	7.8
MEL-02-03	05-Mar-18	1.0	0.02	-[(a)]	-[(a)]	117	7.7
MEL-02-03	05-Mar-18	2.0	0.1	-[(a)]	-[(a)]	114	7.6
MEL-02-03	05-Mar-18	3.0	0.9	-[(a)]	-[(a)]	105	7.6
MEL-02-03	05-Mar-18	4.0	1.2	-[(a)]	-[(a)]	102	7.6
MEL-02-03	05-Mar-18	5.0	1.6	-[(a)]	-[(a)]	97	7.5
MEL-02-03	05-Mar-18	6.0	1.7	-[(a)]	-[(a)]	96	7.4
MEL-02-03	05-Mar-18	7.0	1.9	-[(a)]	-[(a)]	94	7.3
MEL-02-03	05-Mar-18	8.0	2.1	-[(a)]	-[(a)]	93	7.3
MEL-02-04							
MEL-02-04	06-Mar-18	0.025	0.1	-[(a)]	-[(a)]	115	8.0
MEL-02-04	06-Mar-18	0.1	0.1	-[(a)]	-[(a)]	115	7.9
MEL-02-04	06-Mar-18	0.5	0.1	-[(a)]	-[(a)]	109	7.8
MEL-02-04	06-Mar-18	1.0	0.1	-[(a)]	-[(a)]	103	7.8
MEL-02-04	06-Mar-18	2.0	0.4	-[(a)]	-[(a)]	110	7.7
MEL-02-04	06-Mar-18	3.0	0.9	-[(a)]	-[(a)]	104	7.6
MEL-02-04	06-Mar-18	4.0	1.3	-[(a)]	-[(a)]	101	7.5
MEL-02-04	06-Mar-18	5.0	1.5	-[(a)]	-[(a)]	99	7.5
MEL-02-04	06-Mar-18	6.0	1.7	-[(a)]	-[(a)]	98	7.5
MEL-02-04	06-Mar-18	7.0	1.9	-[(a)]	-[(a)]	97	7.4
MEL-02-04	06-Mar-18	8.0	2.0	-[(a)]	-[(a)]	99	7.3
MEL-02-05							
MEL-02-05	06-Mar-18	0.025	0.02	-[(a)]	-[(a)]	107	7.9
MEL-02-05	06-Mar-18	0.1	0.02	-[(a)]	-[(a)]	115	7.8
MEL-02-05	06-Mar-18	0.5	0.02	-[(a)]	-[(a)]	115	7.7
MEL-02-05	06-Mar-18	1.0	0.02	-[(a)]	-[(a)]	115	7.7
MEL-02-05	06-Mar-18	2.0	0.02	-[(a)]	-[(a)]	112	7.6
MEL-02-05	06-Mar-18	3.0	1.0	-[(a)]	-[(a)]	103	7.5

Table 6C.2-4: Field Profiles at Meliadine Mid-Field Area, March 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-05	06-Mar-18	4.0	1.3	-(a)	-(a)	101	7.5
MEL-02-05	06-Mar-18	5.0	1.5	-(a)	-(a)	100	7.4
MEL-02-05	06-Mar-18	6.0	1.7	-(a)	-(a)	101	7.4
MEL-02-05	06-Mar-18	7.0	1.9	-(a)	-(a)	98	7.3
MEL-02-05	06-Mar-18	8.0	2.0	-(a)	-(a)	96	7.3
MEL-02-05	06-Mar-18	9.0	2.2	-(a)	-(a)	96	7.2

(a) value was invalidated following data quality checks.

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 6.C.2-5: Field Profiles at Meliadine Mid-Field Area, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-01							
MEL-02-01	23-Jul-18	0.0	11.4	106	11.4	75	7.6
MEL-02-01	23-Jul-18	0.1	11.4	108	11.7	75	7.6
MEL-02-01	23-Jul-18	0.5	11.3	110	11.9	75	7.5
MEL-02-01	23-Jul-18	1.0	11.4	111	11.9	75	7.5
MEL-02-01	23-Jul-18	2.0	11.3	111	11.9	75	7.4
MEL-02-01	23-Jul-18	3.0	11.2	111	12.0	75	7.4
MEL-02-01	23-Jul-18	4.0	11.2	111	12.0	75	7.4
MEL-02-01	23-Jul-18	5.0	11.0	111	12.0	75	7.4
MEL-02-01	23-Jul-18	6.0	11.0	110	12.0	75	7.4
MEL-02-01	23-Jul-18	7.0	10.9	110	12.0	75	7.4
MEL-02-01	23-Jul-18	7.9	10.7	110	12.1	75	7.5
MEL-02-02							
MEL-02-02	20-Jul-18	0.0	11.6	107	11.5	75	7.7
MEL-02-02	20-Jul-18	0.1	11.6	109	11.7	75	7.6
MEL-02-02	20-Jul-18	0.5	11.6	111	11.9	75	7.5
MEL-02-02	20-Jul-18	1.0	11.6	111	11.9	75	7.5
MEL-02-02	20-Jul-18	2.0	11.4	111	11.9	75	7.4
MEL-02-02	20-Jul-18	3.0	11.3	111	12.0	75	7.5
MEL-02-02	20-Jul-18	4.0	11.2	111	12.0	75	7.5
MEL-02-02	20-Jul-18	5.0	11.1	111	12.0	75	7.5
MEL-02-02	20-Jul-18	6.0	11.1	111	12.0	75	7.5
MEL-02-02	20-Jul-18	7.0	11.0	110	12.0	75	7.5
MEL-02-02	20-Jul-18	8.0	10.8	110	12.0	75	7.5
MEL-02-02	20-Jul-18	9.0	10.5	109	12.0	75	7.5

Table 6.C.2-5: Field Profiles at Meliadine Mid-Field Area, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-02	20-Jul-18	9.7	10.4	109	12.0	75	7.4
MEL-02-03							
MEL-02-03	20-Jul-18	0.0	12.8	104	11.5	75	7.6
MEL-02-03	20-Jul-18	0.1	12.7	104	11.6	75	7.5
MEL-02-03	20-Jul-18	0.5	12.7	104	11.6	75	7.5
MEL-02-03	20-Jul-18	1.0	12.6	104	11.7	75	7.5
MEL-02-03	20-Jul-18	2.0	12.4	104	11.9	75	7.5
MEL-02-03	20-Jul-18	3.0	12.2	105	11.9	75	7.5
MEL-02-03	20-Jul-18	4.0	11.6	105	12.2	75	7.5
MEL-02-03	20-Jul-18	5.0	10.9	105	12.4	75	7.5
MEL-02-03	20-Jul-18	6.0	10.8	105	12.5	75	7.5
MEL-02-03	20-Jul-18	7.0	10.7	114	12.5	75	7.5
MEL-02-03	20-Jul-18	8.0	10.7	114	12.5	76	7.5
MEL-02-03	20-Jul-18	8.9	10.6	113	12.4	76	7.5
MEL-02-04							
MEL-02-04	21-Jul-18	0.0	12.9	112	11.6	70	7.6
MEL-02-04	21-Jul-18	0.1	12.9	112	11.6	70	7.6
MEL-02-04	21-Jul-18	0.5	12.9	113	11.7	70	7.6
MEL-02-04	21-Jul-18	1.0	12.9	113	11.8	70	7.6
MEL-02-04	21-Jul-18	2.0	12.9	113	11.8	70	7.6
MEL-02-04	21-Jul-18	3.0	12.9	113	11.8	69	7.6
MEL-02-04	21-Jul-18	4.0	12.7	113	11.8	70	7.6
MEL-02-04	21-Jul-18	5.0	11.2	112	12.2	69	7.6
MEL-02-04	21-Jul-18	6.0	10.7	111	12.2	69	7.5
MEL-02-04	21-Jul-18	7.0	10.5	111	12.2	69	7.5
MEL-02-04	21-Jul-18	8.0	10.3	109	12.1	70	7.5
MEL-02-04	21-Jul-18	8.4	10.2	109	12.1	70	7.5
MEL-02-05							
MEL-02-05	23-Jul-18	0.0	13.1	106	11.8	69	7.8
MEL-02-05	23-Jul-18	0.1	13.0	112	11.6	69	7.7
MEL-02-05	23-Jul-18	0.5	13.1	112	11.6	69	7.6
MEL-02-05	23-Jul-18	1.0	13.0	113	11.7	70	7.6
MEL-02-05	23-Jul-18	2.0	13.0	113	11.7	70	7.6
MEL-02-05	23-Jul-18	3.0	12.8	113	11.8	70	7.6
MEL-02-05	23-Jul-18	4.0	12.6	112	11.8	70	7.6
MEL-02-05	23-Jul-18	5.0	11.3	112	12.1	69	7.6
MEL-02-05	23-Jul-18	6.0	11.0	111	12.1	69	7.6

Table 6.C.2-5: Field Profiles at Meliadine Mid-Field Area, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-05	23-Jul-18	7.0	10.9	111	12.1	69	7.5
MEL-02-05	23-Jul-18	8.0	10.6	110	10.8	69	7.5
MEL-02-05	23-Jul-18	8.4	10.6	110	10.8	69	7.5

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 6C.2-6: Field Profiles at Meliadine Mid-Field Area, August 2018

Station[a]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-02							
MEL-02-02	31-Aug-18	0.025	9.0	102	11.6	78	7.9
MEL-02-02	31-Aug-18	0.1	9.0	103	11.7	78	8.0
MEL-02-02	31-Aug-18	0.5	9.0	103	11.7	78	7.9
MEL-02-02	31-Aug-18	1.0	9.0	103	11.7	78	7.9
MEL-02-02	31-Aug-18	2.0	9.0	103	11.7	78	7.9
MEL-02-02	31-Aug-18	3.0	9.0	103	11.7	78	7.9
MEL-02-02	31-Aug-18	4.0	9.0	103	11.7	78	7.9
MEL-02-02	31-Aug-18	5.0	9.1	103	11.7	78	7.9
MEL-02-02	31-Aug-18	6.0	9.0	103	11.7	78	7.9
MEL-02-02	31-Aug-18	7.0	9.0	103	11.7	78	7.9
MEL-02-03							
MEL-02-03	18-Aug-18	0.1[b]	11.7	95	10.1	77	-[c]
MEL-02-03	18-Aug-18	0.5	11.7	95	10.2	77	-[c]
MEL-02-03	18-Aug-18	1.0	11.7	95	10.2	77	-[c]
MEL-02-03	18-Aug-18	2.0	11.7	95	10.2	77	-[c]
MEL-02-03	18-Aug-18	3.0	11.6	95	10.2	77	-[c]
MEL-02-03	18-Aug-18	4.0	11.6	95	10.2	76	-[c]
MEL-02-03	18-Aug-18	5.0	11.6	95	10.2	77	-[c]
MEL-02-03	18-Aug-18	6.0	11.6	95	10.2	76	-[c]
MEL-02-03	18-Aug-18	7.0	11.5	94	10.2	76	-[c]
MEL-02-03	18-Aug-18	8.0	11.5	94	10.1	76	-[c]
MEL-02-03	18-Aug-18	8.3	11.5	94	10.1	76	-[c]
MEL-02-05							
MEL-02-05	18-Aug-18	0.1[b]	12.0	96	12.3	76	-[c]
MEL-02-05	18-Aug-18	0.5	11.9	97	10.3	76	-[c]
MEL-02-05	18-Aug-18	1.0	11.9	97	10.3	76	-[c]
MEL-02-05	18-Aug-18	2.0	11.9	97	10.3	76	-[c]
MEL-02-05	18-Aug-18	3.0	11.9	97	10.3	76	-[c]

Table 6C.2-6: Field Profiles at Meliadine Mid-Field Area, August 2018

Station[a]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-02-05	18-Aug-18	4.0	11.9	97	10.3	76	-[c]
MEL-02-05	18-Aug-18	5.0	11.9	97	10.3	76	-[c]
MEL-02-05	18-Aug-18	6.0	11.9	97	10.3	76	-[c]
MEL-02-05	18-Aug-18	7.0	11.9	97	10.3	77	-[c]
MEL-02-05	18-Aug-18	8.0	11.9	97	10.3	76	-[c]
MEL-02-06							
MEL-02-06	31-Aug-18	0.025	9.0	102	11.6	78	8.0
MEL-02-06	31-Aug-18	0.1	9.0	102	11.6	78	8.0
MEL-02-06	31-Aug-18	0.5	9.0	102	11.6	78	8.0
MEL-02-06	31-Aug-18	1.0	9.0	102	11.6	78	8.0
MEL-02-06	31-Aug-18	2.0	9.0	102	11.7	78	7.9
MEL-02-06	31-Aug-18	3.0	9.0	102	11.6	78	7.9
MEL-02-06	31-Aug-18	4.0	9.0	102	11.6	78	7.9
MEL-02-06	31-Aug-18	5.0	9.0	102	11.6	78	7.9
MEL-02-06	31-Aug-18	6.0	8.9	102	11.6	78	7.9
MEL-02-06	31-Aug-18	7.0	8.9	102	11.6	78	7.9
MEL-02-08							
MEL-02-08	15-Aug-18	0.25[b]	12.0	95	10.1	76	8.8
MEL-02-08	15-Aug-18	0.5	12.0	95	10.1	76	8.6
MEL-02-08	15-Aug-18	1	12.0	95	10.1	76	8.6
MEL-02-08	15-Aug-18	2	12.0	95	10.1	76	8.5
MEL-02-08	15-Aug-18	3	11.9	95	10.1	76	8.5
MEL-02-08	15-Aug-18	4	11.9	95	10.1	76	8.6
MEL-02-08	15-Aug-18	5	11.9	95	10.1	77	8.6
MEL-02-08	15-Aug-18	6	11.8	95	10.1	77	8.6
MEL-02-08	15-Aug-18	7	11.8	95	10.1	77	8.5
MEL-02-08	15-Aug-18	7.8	11.8	94	10.0	77	8.5

(a) During the August open water program, water quality samples were not collected at MEL-02-01 or 02-04. Instead, samples were collected at MEL-02-06 and 02-08, which were sediment sample locations.

(b) A depth reading at 0.025 m could not be taken due to wave action.

(c) Data were invalidated based on quality checks (Appendix 6A).

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

6C.2.3 Reference Area 1 Field Measurements, 2018

Table 6.C.2-7: Field Profiles at Meliadine Reference Area 1, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (uS/cm)	pH
MEL-03-01							
MEL-03-01	25-Jul-18	0.025	11.5	114	12.2	64	7.9
MEL-03-01	25-Jul-18	0.1	11.5	114	12.2	64	7.9
MEL-03-01	25-Jul-18	0.5	11.5	113	12.3	64	7.8
MEL-03-01	25-Jul-18	1.0	11.5	115	12.4	64	7.8
MEL-03-01	25-Jul-18	2.0	11.4	115	12.4	64	7.8
MEL-03-01	25-Jul-18	3.0	11.4	116	12.5	64	7.7
MEL-03-01	25-Jul-18	4.0	10.8	116	12.7	65	7.7
MEL-03-01	25-Jul-18	5.0	10.5	117	12.8	65	7.7
MEL-03-01	25-Jul-18	6.0	9.6	118	13.3	65	7.7
MEL-03-01	25-Jul-18	7.0	8.9	118	13.5	64	7.7
MEL-03-02							
MEL-03-02	25-Jul-18	0.025	12.4	113	11.9	63	7.9
MEL-03-02	25-Jul-18	0.1	12.4	114	12.0	63	7.8
MEL-03-02	25-Jul-18	0.5	12.3	114	12.1	63	7.8
MEL-03-02	25-Jul-18	1.0	12.1	115	12.2	64	7.8
MEL-03-02	25-Jul-18	2.0	11.6	115	12.4	64	7.7
MEL-03-02	25-Jul-18	3.0	11.4	116	12.5	64	7.7
MEL-03-02	25-Jul-18	4.0	11.2	116	12.5	64	7.7
MEL-03-02	25-Jul-18	5.0	11.1	116	12.6	65	7.7
MEL-03-02	25-Jul-18	6.0	10.4	116	12.8	65	7.7
MEL-03-02	25-Jul-18	7.0	9.6	117	13.3	65	7.7
MEL-03-02	25-Jul-18	8.0	8.7	118	13.6	64	7.7
MEL-03-02	25-Jul-18	8.5	8.7	119	13.7	64	7.7
MEL-03-03							
MEL-03-03	25-Jul-18	0.025	11.8	114	12.2	65	7.9
MEL-03-03	25-Jul-18	0.1	11.7	114	12.2	64	7.8
MEL-03-03	25-Jul-18	0.5	11.7	115	12.3	64	7.8
MEL-03-03	25-Jul-18	1.0	11.7	115	12.3	64	7.8
MEL-03-03	25-Jul-18	2.0	11.7	116	12.4	64	7.7
MEL-03-03	25-Jul-18	3.0	11.7	116	12.4	64	7.7
MEL-03-03	25-Jul-18	4.0	11.7	115	12.4	64	7.7
MEL-03-03	25-Jul-18	5.0	11.6	115	12.4	64	7.7
MEL-03-03	25-Jul-18	6.0	11.6	115	12.4	64	7.7
MEL-03-03	25-Jul-18	7.0	10.2	119	13.3	64	7.7

Table 6.C.2-7: Field Profiles at Meliadine Reference Area 1, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (uS/cm)	pH
MEL-03-03	25-Jul-18	8.0	9.1	119	13.5	64	7.7
MEL-03-03	25-Jul-18	9.0	8.7	120	13.7	64	7.7
MEL-03-03	25-Jul-18	9.5	8.5	120	13.8	64	7.7
MEL-03-04							
MEL-03-04	25-Jul-18	0.025	12.3	114	12.1	63	7.8
MEL-03-04	25-Jul-18	0.1	12.3	115	12.1	63	7.8
MEL-03-04	25-Jul-18	0.5	12.3	115	12.1	63	7.8
MEL-03-04	25-Jul-18	1.0	12.3	115	12.2	63	7.8
MEL-03-04	25-Jul-18	2.0	12.3	116	12.3	63	7.8
MEL-03-04	25-Jul-18	3.0	12.3	116	12.2	63	7.8
MEL-03-04	25-Jul-18	4.0	12.2	116	12.3	63	7.8
MEL-03-04	25-Jul-18	5.0	11.6	117	12.5	64	7.8
MEL-03-04	25-Jul-18	6.0	11.3	117	12.7	64	7.8
MEL-03-04	25-Jul-18	7.0	11.1	118	12.8	64	7.8
MEL-03-04	25-Jul-18	7.9	10.3	117	12.9	64	7.7
MEL-03-05							
MEL-03-05	26-Jul-18	0.025	14.1	111	11.3	74	7.7
MEL-03-05	26-Jul-18	0.1	14.1	111	11.3	74	7.7
MEL-03-05	26-Jul-18	0.5	14.0	111	11.3	74	7.7
MEL-03-05	26-Jul-18	1.0	14.0	112	11.3	74	7.7
MEL-03-05	26-Jul-18	2.0	14.0	112	11.4	74	7.7
MEL-03-05	26-Jul-18	3.0	13.9	112	11.4	74	7.6
MEL-03-05	26-Jul-18	4.0	13.8	112	11.4	74	7.7
MEL-03-05	26-Jul-18	5.0	13.7	112	11.5	74	7.7
MEL-03-05	26-Jul-18	6.0	13.4	113	11.6	74	7.7
MEL-03-05	26-Jul-18	7.0	13.2	113	11.7	74	7.7
MEL-03-05	26-Jul-18	8.0	12.5	114	12.0	73	7.7
MEL-03-05	26-Jul-18	9.0	11.7	116	12.4	74	7.8

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 6C.2-8: Field Profiles at Meliadine Reference Area 1, August 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-03-01							
MEL-03-01	20-Aug-18	0.1[a]	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	0.5	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	1.0	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	2.0	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	3.0	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	4.0	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	5.0	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	6.0	10.7	109	11.9	71	-[b]
MEL-03-01	20-Aug-18	6.3	10.7	109	11.9	71	-[b]
MEL-03-02							
MEL-03-02	26-Aug-18	0.1[a]	8.6	110	11.9	73	-[b]
MEL-03-02	26-Aug-18	0.5	8.6	104	12.0	72	-[b]
MEL-03-02	26-Aug-18	1.0	8.6	104	12.0	73	-[b]
MEL-03-02	26-Aug-18	2.0	8.6	104	12.0	73	-[b]
MEL-03-02	26-Aug-18	3.0	8.6	104	12.0	73	-[b]
MEL-03-02	26-Aug-18	4.0	8.6	104	12.0	73	-[b]
MEL-03-02	26-Aug-18	5.0	8.6	104	12.0	73	-[b]
MEL-03-02	26-Aug-18	5.8	8.6	104	12.0	73	-[b]
MEL-03-03							
MEL-03-03	20-Aug-18	0.1[a]	10.6	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	0.5	10.6	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	1.0	10.6	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	2.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	3.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	4.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	5.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	6.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	7.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	8.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	9.0	10.7	110	12.0	71	-[b]
MEL-03-03	20-Aug-18	10.0	10.6	110	12.0	71	-[b]
MEL-03-04							
MEL-03-04	26-Aug-18	0.1[a]	8.5	101	11.7	73	-[b]
MEL-03-04	26-Aug-18	0.5	8.5	104	12.0	73	-[b]
MEL-03-04	26-Aug-18	1.0	8.5	104	12.0	73	-[b]
MEL-03-04	26-Aug-18	2.0	8.5	104	12.0	73	-[b]

Table 6C.2-8: Field Profiles at Meliadine Reference Area 1, August 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-03-04	26-Aug-18	3.0	8.4	104	12.0	73	-[b]
MEL-03-04	26-Aug-18	4.0	8.4	105	12.1	73	-[b]
MEL-03-04	26-Aug-18	5.0	8.5	105	12.1	73	-[b]
MEL-03-04	26-Aug-18	6.0	8.4	105	12.1	73	-[b]
MEL-03-04	26-Aug-18	7.0	8.4	105	12.1	73	-[b]
MEL-03-04	26-Aug-18	7.4	8.4	104	12.0	73	-[b]
MEL-03-05							
MEL-03-05	26-Aug-18	0.1[a]	8.6	105	12.1	73	-[b]
MEL-03-05	26-Aug-18	0.5	8.6	106	12.1	73	-[b]
MEL-03-05	26-Aug-18	1.0	8.6	106	12.1	73	-[b]
MEL-03-05	26-Aug-18	2.0	8.5	106	12.1	73	-[b]
MEL-03-05	26-Aug-18	3.0	8.5	106	12.2	73	-[b]
MEL-03-05	26-Aug-18	4.0	8.5	106	12.2	73	-[b]
MEL-03-05	26-Aug-18	5.0	8.5	106	12.2	73	-[b]
MEL-03-05	26-Aug-18	6.0	8.5	106	12.2	73	-[b]
MEL-03-05	26-Aug-18	7.0	8.5	106	12.2	73	-[b]
MEL-03-05	26-Aug-18	7.4	8.5	106	12.2	73	-[b]

(a) A depth reading at 0.025 m could not be taken due to wave action.
(b) Data were invalidated based on quality checks (Appendix 6A).
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

6C.2.4 Reference Area 2 Field Measurements, 2018

Table 6.C.2-9: Field Profiles at Meliadine Reference Area 2, August 2018

Station[a]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-04-01							
MEL-04-01	02-Sep-18	0.025	9.6	103	11.5	73	8.0
MEL-04-01	02-Sep-18	0.1	9.6	102	11.5	73	8.0
MEL-04-01	02-Sep-18	0.5	9.6	102	11.5	73	8.0
MEL-04-01	02-Sep-18	1.0	9.6	102	11.5	73	8.0
MEL-04-01	02-Sep-18	2.0	9.6	102	11.5	73	8.0
MEL-04-01	02-Sep-18	3.0	9.6	102	11.5	73	7.9
MEL-04-01	02-Sep-18	4.0	9.6	102	11.5	73	7.9
MEL-04-01	02-Sep-18	5.0	9.6	102	11.5	73	7.9
MEL-04-01	02-Sep-18	6.0	9.6	102	11.5	73	7.9
MEL-04-01	02-Sep-18	7.0	9.6	102	11.4	73	7.9

Table 6.C.2-9: Field Profiles at Meliadine Reference Area 2, August 2018

Station[a]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-04-02							
MEL-04-02	02-Sep-18	0.025	9.6	103	11.5	74	8.0
MEL-04-02	02-Sep-18	0.1	9.6	103	11.5	74	8.0
MEL-04-02	02-Sep-18	0.5	9.6	103	11.5	74	8.0
MEL-04-02	02-Sep-18	1.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	2.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	3.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	4.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	5.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	6.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	7.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	8.0	9.6	102	11.5	74	8.0
MEL-04-02	02-Sep-18	9.0	9.6	102	11.5	74	8.0
MEL-04-03							
MEL-04-03	02-Sep-18	0.025	9.7	102	11.4	73	8.0
MEL-04-03	02-Sep-18	0.1	9.7	102	11.4	73	8.0
MEL-04-03	02-Sep-18	0.5	9.7	102	11.4	73	8.0
MEL-04-03	02-Sep-18	1.0	9.7	102	11.4	73	8.0
MEL-04-03	02-Sep-18	2.0	9.7	102	11.4	73	8.0
MEL-04-03	02-Sep-18	3.0	9.7	102	11.5	73	8.0
MEL-04-03	02-Sep-18	4.0	9.6	102	11.5	73	8.0
MEL-04-03	02-Sep-18	5.0	9.6	102	11.5	73	8.0
MEL-04-03	02-Sep-18	6.0	9.6	103	11.5	73	8.0
MEL-04-03	02-Sep-18	7.0	9.6	102	11.5	73	8.0
MEL-04-03	02-Sep-18	8.0	9.6	102	11.5	73	8.0
MEL-04-05							
MEL-04-05	02-Sep-18	0.025	9.7	102	11.5	73	8.0
MEL-04-05	02-Sep-18	0.1	9.7	102	11.4	73	8.0
MEL-04-05	02-Sep-18	0.5	9.7	102	11.4	73	8.0
MEL-04-05	02-Sep-18	1.0	9.7	102	11.4	73	7.9
MEL-04-05	02-Sep-18	2.0	9.7	102	11.4	73	8.0
MEL-04-05	02-Sep-18	3.0	9.7	102	11.4	73	7.9
MEL-04-05	02-Sep-18	4.0	9.7	102	11.4	73	7.9
MEL-04-05	02-Sep-18	5.0	9.7	102	11.4	73	7.9
MEL-04-05	02-Sep-18	6.0	9.7	102	11.4	73	7.9
MEL-04-05	02-Sep-18	7.0	9.7	102	11.4	73	7.9

(a) MEL-04-04 was not visited during the August program due to time constraints.

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

6C.2.5 Reference Area 3 Field Measurements, 2018

Table 6.C.2-10: Field Profiles at Meliadine Reference Area 3, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-05-01							
MEL-05-01	26-Jul-18	0.0	14.1	111	11.3	74	7.7
MEL-05-01	26-Jul-18	0.1	14.1	111	11.3	74	7.7
MEL-05-01	26-Jul-18	0.5	14.0	111	11.3	74	7.7
MEL-05-01	26-Jul-18	1.0	14.0	112	11.3	74	7.7
MEL-05-01	26-Jul-18	2.0	14.0	112	11.4	74	7.7
MEL-05-01	26-Jul-18	3.0	13.9	112	11.4	74	7.6
MEL-05-01	26-Jul-18	4.0	13.8	112	11.4	74	7.7
MEL-05-01	26-Jul-18	5.0	13.7	112	11.5	74	7.7
MEL-05-01	26-Jul-18	6.0	13.4	113	11.6	74	7.7
MEL-05-01	26-Jul-18	7.0	13.2	113	11.7	74	7.7
MEL-05-01	26-Jul-18	8.0	12.5	114	12.0	73	7.7
MEL-05-01	26-Jul-18	9.0	11.7	116	12.4	74	7.8
MEL-05-02							
MEL-05-02	26-Jul-18	0.0	14.0	111	11.3	74	7.8
MEL-05-02	26-Jul-18	0.1	14.0	111	11.3	74	7.7
MEL-05-02	26-Jul-18	0.5	20.0	111	11.3	74	7.7
MEL-05-02	26-Jul-18	1.0	14.0	112	11.4	74	7.7
MEL-05-02	26-Jul-18	2.0	14.0	112	11.4	74	7.7
MEL-05-02	26-Jul-18	3.0	13.9	112	11.4	74	7.7
MEL-05-02	26-Jul-18	4.0	13.8	112	11.4	74	7.7
MEL-05-02	26-Jul-18	5.0	13.9	112	11.4	74	7.7
MEL-05-02	26-Jul-18	6.0	13.5	112	11.5	74	7.7
MEL-05-02	26-Jul-18	7.0	13.2	113	11.7	74	7.7
MEL-05-02	26-Jul-18	8.0	12.9	113	11.8	74	7.7
MEL-05-02	26-Jul-18	9.0	11.9	114	12.1	74	7.7
MEL-05-02	26-Jul-18	9.1	11.7	111	11.9	74	7.6
MEL-05-03							
MEL-05-03	26-Jul-18	0.0	14.0	111	11.3	74	7.8
MEL-05-03	26-Jul-18	0.1	14.0	112	11.3	74	7.7
MEL-05-03	26-Jul-18	0.5	14.0	112	11.3	74	7.7
MEL-05-03	26-Jul-18	1.0	14.0	112	11.4	74	7.7
MEL-05-03	26-Jul-18	2.0	13.9	112	11.4	74	7.7
MEL-05-03	26-Jul-18	3.0	13.8	113	11.5	74	7.7
MEL-05-03	26-Jul-18	4.0	13.8	113	11.5	74	7.7

Table 6.C.2-10: Field Profiles at Meliadine Reference Area 3, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-05-03	26-Jul-18	5.0	13.4	113	11.6	73	7.7
MEL-05-03	26-Jul-18	6.0	13.4	113	11.6	73	7.7
MEL-05-03	26-Jul-18	7.0	13.2	113	11.7	74	7.7
MEL-05-03	26-Jul-18	8.0	12.7	115	12.0	74	7.7
MEL-05-03	26-Jul-18	8.2	12.8	112	11.7	74	7.6
MEL-05-04							
MEL-05-04	26-Jul-18	0.0	14.6	108	10.9	74	7.8
MEL-05-04	26-Jul-18	0.1	14.4	110	11.1	74	7.8
MEL-05-04	26-Jul-18	0.5	14.2	111	11.2	74	7.7
MEL-05-04	26-Jul-18	1.0	14.1	111	11.3	74	7.7
MEL-05-04	26-Jul-18	2.0	14.0	112	11.4	74	7.7
MEL-05-04	26-Jul-18	3.0	13.9	112	11.4	74	7.7
MEL-05-04	26-Jul-18	4.0	13.8	112	11.4	74	7.7
MEL-05-04	26-Jul-18	5.0	13.7	112	11.4	74	7.7
MEL-05-04	26-Jul-18	6.0	13.3	112	11.6	73	7.7
MEL-05-04	26-Jul-18	7.0	13.3	112	11.6	74	7.7
MEL-05-04	26-Jul-18	8.0	12.6	113	11.8	74	7.7
MEL-05-04	26-Jul-18	9.0	12.0	115	12.3	74	7.7
MEL-05-04	26-Jul-18	9.8	11.3	116	12.5	73	7.7
MEL-05-05							
MEL-05-05	26-Jul-18	0.0	14.5	110	11.0	74	7.8
MEL-05-05	26-Jul-18	0.1	14.5	112	11.3	74	7.8
MEL-05-05	26-Jul-18	0.5	14.4	112	11.3	74	7.7
MEL-05-05	26-Jul-18	1.0	14.3	112	11.3	74	7.7
MEL-05-05	26-Jul-18	2.0	14.0	113	11.4	74	7.7
MEL-05-05	26-Jul-18	3.0	14.0	113	11.5	74	7.7
MEL-05-05	26-Jul-18	4.0	13.8	113	11.5	74	7.7
MEL-05-05	26-Jul-18	5.0	13.7	113	11.5	73	7.7
MEL-05-05	26-Jul-18	6.0	13.3	113	11.6	74	7.7
MEL-05-05	26-Jul-18	7.0	12.8	113	11.8	74	7.7
MEL-05-05	26-Jul-18	7.4	12.8	113	11.8	74	7.7

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 6.C.2-11: Field Profiles at Meliadine Reference Area 3, August 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-05-01							
MEL-05-01	01-Sep-18	0.025	9.0	103	11.7	73	8.1
MEL-05-01	01-Sep-18	0.1	9.0	103	11.7	73	8.1
MEL-05-01	01-Sep-18	0.5	9.0	103	11.7	73	8.0
MEL-05-01	01-Sep-18	1.0	9.0	103	11.7	74	8.0
MEL-05-01	01-Sep-18	2.0	9.0	103	11.7	75	8.0
MEL-05-01	01-Sep-18	3.0	9.0	103	11.7	75	8.0
MEL-05-01	01-Sep-18	4.0	9.0	103	11.7	75	8.0
MEL-05-01	01-Sep-18	5.0	9.0	103	11.7	76	8.0
MEL-05-01	01-Sep-18	6.0	9.0	103	11.7	76	8.0
MEL-05-01	01-Sep-18	7.0	9.0	103	11.7	76	8.0
MEL-05-01	01-Sep-18	8.0	9.0	103	11.7	75	8.0
MEL-05-02							
MEL-05-02	30-Aug-18	0.025	9.0	102	11.6	76	8.1
MEL-05-02	30-Aug-18	0.1	9.0	102	11.6	76	8.1
MEL-05-02	30-Aug-18	0.5	9.1	102	11.7	76	8.0
MEL-05-02	30-Aug-18	1.0	9.0	103	11.7	76	8.0
MEL-05-02	30-Aug-18	2.0	9.0	103	11.7	76	8.0
MEL-05-02	30-Aug-18	3.0	8.9	103	11.7	76	8.0
MEL-05-02	30-Aug-18	4.0	8.9	103	11.7	76	8.0
MEL-05-02	30-Aug-18	5.0	8.9	103	11.7	76	8.0
MEL-05-02	30-Aug-18	6.0	8.8	103	11.7	76	8.0
MEL-05-02	30-Aug-18	7.0	8.8	103	11.7	76	8.0
MEL-05-02	30-Aug-18	8.0	8.8	103	11.7	76	8.0
MEL-05-02	30-Aug-18	9.0	8.8	103	11.7	76	8.0
MEL-05-03							
MEL-05-03	29-Aug-18	0.025	8.7	106	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	0.1	8.7	106	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	0.5	8.7	106	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	1.0	8.7	105	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	2.0	8.7	106	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	3.0	8.7	106	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	4.0	8.7	105	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	5.0	8.7	106	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	6.0	8.7	105	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	7.0	8.7	106	12.1	76	-[(a)]
MEL-05-03	29-Aug-18	8.0	8.7	105	12.1	76	-[(a)]

Table 6.C.2-11: Field Profiles at Meliadine Reference Area 3, August 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
MEL-05-04							
MEL-05-04	30-Aug-18	0.025	8.8	101	11.6	76	8.1
MEL-05-04	30-Aug-18	0.1	8.8	102	11.7	76	8.1
MEL-05-04	30-Aug-18	0.5	8.8	102	11.7	76	8.0
MEL-05-04	30-Aug-18	1.0	8.8	102	11.7	76	8.0
MEL-05-04	30-Aug-18	2.0	8.8	102	11.7	76	8.0
MEL-05-04	30-Aug-18	3.0	8.8	102	11.7	76	8.0
MEL-05-04	30-Aug-18	4.0	8.8	102	11.7	76	7.9
MEL-05-04	30-Aug-18	5.0	8.8	102	11.7	76	7.9
MEL-05-04	30-Aug-18	6.0	8.8	102	11.7	76	8.0
MEL-05-04	30-Aug-18	7.0	8.8	102	11.7	76	7.9
MEL-05-04	30-Aug-18	8.0	8.8	102	11.7	76	7.9
MEL-05-04	30-Aug-18	9.0	8.7	102	11.7	76	7.9
MEL-05-05							
MEL-05-05	29-Aug-18	0.025	8.7	105	12.0	76	-[(a)]
MEL-05-05	29-Aug-18	0.1	8.7	105	12.0	76	-[(a)]
MEL-05-05	29-Aug-18	0.5	8.7	106	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	1.0	8.7	106	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	2.0	8.7	106	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	3.0	8.7	106	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	4.0	8.7	106	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	5.0	8.7	106	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	6.0	8.7	105	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	7.0	8.7	105	12.1	76	-[(a)]
MEL-05-05	29-Aug-18	8.0	8.7	105	12.1	76	-[(a)]

(a) Data were invalidated based on quality checks (Appendix 6A).
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

APPENDIX 6D

2018 Water Chemistry Tables, Meliadine Lake

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Table 6D-1: Water Quality Results at Meliadine Lake in the Near-Field Area, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations														
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-01-01	MEL-01-01	MEL-01-01	MEL-01-02	MEL-01-03	MEL-01-04	MEL-01-05	MEL-01-06	MEL-01-06	MEL-01-07	MEL-01-07	MEL-01-08	MEL-01-08	MEL-01-09	MEL-01-09
		Acute	Chronic				02-Mar-18	19-Jul-18	22-Aug-18	05-Mar-18	02-Mar-18	05-Mar-18	02-Mar-18	22-Jul-18	22-Aug-18	23-Jul-18	21-Aug-18	23-Jul-18	22-Aug-18	24-Jul-18	22-Aug-18
Field Measured																					
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.4	-	7.8	7.5	7.7	7.6	7.8	-	7.8	-	7.8	-	8.0	-
Specific conductivity	µS/cm	-	-	-	-	-	120	84	86	119	121	116	123	77	86	83	91	90	86	84	85
Temperature	°C	-	-	-	15	-	1.4	11	11	1.5	1.5	1.5	1.4	13	11	13	11	13	11	13	11
Dissolved oxygen	mg/L	-	6.5	-	-	-	18	12	12	19	18	19	19	12	12	12	12	12	12	12	12
Dissolved oxygen	%	-	-	-	-	-	132	113	109	134	130	139	134	115	110	113	109	114	111	115	109
Conventional Parameters																					
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.4	7.4	7.3	7.3	7.2	7.2	7.4	7.4	7.4	7.4	7.5	7.4	7.4	7.4
Specific conductivity	µS/cm	-	-	-	-	-	122	83	85	117	118	115	120	85	85	89	90	90	85	86	84
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	36	25	24	35	36	37	36	24	24	26	25	26	24	26	24
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	28	15	16	27	27	27	28	16	17	16	17	17	16	15	17
Total dissolved solids	mg/L	-	-	-	500	-	66	50	50	68	69	70	68	63	51	55	60	58	53	51	53
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	59	42	42	59	59	59	61	40	42	44	44	43	42	43	42
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	<1.0	<1.0	<1.0	<1.0	<1.0
Turbidity	NTU	-	-	-	-	-	0.28	0.51	0.36	0.24	0.20	0.25	0.20	0.40	0.31	0.40	0.41	0.46	0.38	0.43	0.59
Major Ions																					
Bicarbonate	mg/L	-	-	-	-	-	34	19	20	33	33	32	34	19	20	19	20	20	20	18	20
Calcium	mg/L	-	-	-	-	-	11	7.7	7.3	11	11	12	11	7.5	7.3	7.9	7.6	8.2	7.3	8.0	7.3
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	640	120	-	250	-	15	12	13	15	14	14	15	11	13	14	14	13	13	13	12
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.030	0.021	0.024	0.028	0.029	0.027	0.029	0.021	0.024	0.021	0.024	<0.02	0.024	0.021	0.024
Magnesium	mg/L	-	-	-	-	-	1.9	1.4	1.3	1.9	2.0	2.0	2.0	1.4	1.3	1.5	1.4	1.5	1.4	1.5	1.3
Potassium	mg/L	-	-	-	-	-	1.4	0.95	0.97	1.4	1.5	1.4	1.5	0.95	0.97	0.98	1.0	1.0	0.98	1.0	0.99
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.72	0.43	0.36	0.71	0.68	0.68	0.77	0.43	0.35	0.42	0.37	0.42	0.35	0.41	0.36
Sodium	mg/L	-	-	-	200	-	7.8	5.7	5.5	7.7	8.3	7.7	7.9	5.5	5.6	6.1	5.9	6.2	5.6	6.2	5.7
Sulphate	mg/L	-	-	-	500	-	5.8	4.1	4.4	5.8	5.9	5.7	5.9	4.0	4.4	4.3	4.5	3.8	4.3	4.2	4.3
Nutrients																					
Nitrate	mg-N/L	124	2.9	10	-	-	0.0089	0.017	<0.005	0.0054	0.0061	0.0091	0.012	<0.005	<0.005	0.022	0.011	0.022	<0.005	0.012	<0.005
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	0.0012	<0.001	<0.001	<0.001	<0.001	0.0017	<0.001	<0.001	0.0016	<0.001	0.0017	<0.001	0.0012	<0.001
Nitrate + nitrite	mg-N/L	-	-	-	-	-	0.0089	0.019	<0.0051	0.0054	0.0061	0.0091	0.014	<0.0051	<0.0051	0.024	0.011	0.023	<0.0051	0.013	<0.0051
Total ammonia	mg-N/L	-	0.73 to 7.9[a]	-	-	-	0.0078	0.0094	<0.005	<0.005	0.0063	0.010	0.012	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.14	0.25	0.24	0.12	0.11	0.21	0.15	0.23	0.22	0.18	0.26	0.21	0.30	0.24	0.22
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.15	0.26	0.24	0.12	0.12	0.22	0.17	0.23	0.22	0.20	0.27	0.24	0.30	0.25	0.22
Total nitrogen	mg-N/L	-	-	-	-	-	0.15	-	-	0.12	0.12	0.22	0.17	-	-	-	-	-	-	-	-
Total phosphorus	mg-P/L	-	-	-	-	-	0.0048	0.0025	0.010	0.0057	0.0039	0.0046	0.0044	0.0038	0.0062	0.0021	0.020	0.0022	0.0051	0.0025	0.0075
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0022	<0.001	0.0032	0.0027	0.0021	0.0020	0.0020	<0.001	0.0033	<0.001	0.0031	<0.001	0.0034	<0.001	0.0029
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0010	<0.001	<0.001
Total organic carbon	mg/L	-	-	-	-	-	4.0	3.6	3.5	4.0	4.0	3.9	4.2	2.9	3.2	3.0	3.2	2.9	3.1	3.0	3.2
Dissolved organic carbon	mg/L	-	-	-	-	-	3.7	3.4	3.1	3.9	3.8	3.7	4.0	2.9	3.2	2.9	3.2	3.0	3.0	3.0	3.1

Table 6D-1: Water Quality Results at Meliadine Lake in the Near-Field Area, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations													
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-01-01	MEL-01-01	MEL-01-01	MEL-01-02	MEL-01-03	MEL-01-04	MEL-01-05	MEL-01-06	MEL-01-06	MEL-01-07	MEL-01-07	MEL-01-08	MEL-01-08	MEL-01-09	MEL-01-09
		Acute	Chronic				02-Mar-18	19-Jul-18	22-Aug-18	05-Mar-18	02-Mar-18	05-Mar-18	02-Mar-18	22-Jul-18	22-Aug-18	23-Jul-18	21-Aug-18	23-Jul-18	22-Aug-18	24-Jul-18	22-Aug-18
Total Metals																				
Aluminum	µg/L	-	100[b, c]	-	-	-	0.69	14	7.7	0.50	0.39	0.55	0.49	8.4	7.4	23	7.8	24	7.0	29	8.2
Antimony	µg/L	-	-	6.0	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	5.0	10	-	25	0.53	0.34	0.45	0.54	0.54	0.52	0.52	0.36	0.41	0.36	0.39	0.37	0.42	0.34	0.42
Barium	µg/L	-	-	1,000	-	-	12	9.0	7.9	12	12	11	12	8.2	8.0	8.7	8.2	8.7	7.9	8.9	7.9
Beryllium	µg/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	<0.01	<0.01
Bismuth	µg/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	<0.01	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	5.5	4.8	4.8	5.4	5.1	5.1	5.5	4.5	5.0	5.1	5.3	5.0	4.9	5.0	5.1
Cadmium	µg/L	0.49 to 0.77[d]	0.048 to 0.070[d]	5.0	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	1.0	50[e]	-	-	<0.06	0.10	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	0.013	0.027	0.022	0.012	0.010	0.010	0.013	0.025	0.025	0.027	0.025	0.028	0.019	0.027	0.019
Copper	µg/L	-	2.0[d]	-	1,000	-	1.1	1.3	0.73	1.1	1.1	1.0	1.2	0.70	0.73	0.82	0.75	0.85	0.71	0.86	0.83
Iron	µg/L	-	300	-	300	1,060	5.7	40	21	6.0	5.2	4.4	6.6	28	22	27	20	26	21	26	20
Lead	µg/L	-	1.0[d]	10	-	-	0.057	<0.01	0.016	0.055	0.060	0.035	0.11	<0.01	0.010	0.010	0.024	<0.01	0.019	0.010	0.018
Lithium	µg/L	-	-	-	-	-	0.98	1.6	1.3	<0.5	<0.5	<0.5	<0.5	1.2	1.3	1.8	1.7	1.8	1.3	1.8	1.3
Manganese	µg/L	-	-	-	50	-	2.0	8.6	4.4	2.1	1.8	1.7	2.2	6.7	4.5	7.1	5.1	7.3	4.6	7.3	4.3
Mercury	µg/L	-	0.026	1.0	-	-	0.0010	0.0013	0.00070	0.0010	0.00090	0.00090	0.0011	0.00090	0.00080	0.0011	0.00060	0.0010	0.00090	0.0010	0.00080
Molybdenum	µg/L	-	73	-	-	-	0.098	0.055	0.090	0.096	0.11	0.099	0.11	0.062	0.10	0.059	0.091	0.078	0.087	0.067	0.081
Nickel	µg/L	-	25[d]	-	-	-	0.79	0.69	0.64	0.79	0.81	0.78	0.82	0.75	0.66	0.71	0.64	0.67	0.66	0.69	0.61
Selenium	µg/L	-	1.0	50	-	-	0.057	0.047	<0.04	0.058	0.050	0.041	0.070	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	51	53	45	50	51	48	51	46	45	58	52	58	45	59	45
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	0.15	0.20	<0.1	<0.1	<0.1	<0.1	<0.1	0.23	<0.1	0.21	0.10	0.24	0.18	0.22
Uranium	µg/L	33	15	20	-	-	0.017	0.017	0.016	0.018	0.019	0.017	0.018	0.017	0.016	0.021	0.016	0.019	0.017	0.018	0.017
Vanadium	µg/L	-	-	-	-	-	<0.05	0.057	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.056	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	µg/L	-	-	-	5,000	-	<0.8	1.4	<0.8	0.85	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Dissolved Metals																				
Aluminum	µg/L	-	-	-	-	-	0.42	8.1	3.3	<0.3	2.8	<0.3	<0.3	6.0	3.3	19	4.2	19	2.9	22	3.2
Antimony	µg/L	-	-	-	-	-	<0.02	0.080	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.10	<0.02
Arsenic	µg/L	-	-	-	-	-	0.53	0.32	0.41	0.53	0.56	0.54	0.52	0.33	0.41	0.34	0.41	0.35	0.39	0.33	0.40
Barium	µg/L	-	-	-	-	-	12	8.3	8.0	12	12	12	12	8.1	7.9	8.8	8.4	8.7	8.0	8.4	8.0
Beryllium	µg/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	<0.01	<0.01
Bismuth	µg/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	<0.01	<0.01
Boron	µg/L	-	-	-	-	-	5.4	4.7	4.5	5.4	5.3	5.6	6.3	4.5	4.6	4.8	5.0	5.0	4.4	4.8	4.4
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	-	-	-	-	<0.06	0.079	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.18	<0.06	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	<0.01	0.013	<0.01	<0.01	0.010	<0.01	<0.01	0.010	<0.01	0.022	<0.01	0.010	<0.01	0.012	<0.01

Table 6D-1: Water Quality Results at Meliadine Lake in the Near-Field Area, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations													
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-01-01	MEL-01-01	MEL-01-01	MEL-01-02	MEL-01-03	MEL-01-04	MEL-01-05	MEL-01-06	MEL-01-06	MEL-01-07	MEL-01-07	MEL-01-08	MEL-01-08	MEL-01-09	MEL-01-09
		Acute	Chronic				02-Mar-18	19-Jul-18	22-Aug-18	05-Mar-18	02-Mar-18	05-Mar-18	02-Mar-18	22-Jul-18	22-Aug-18	23-Jul-18	21-Aug-18	23-Jul-18	22-Aug-18	24-Jul-18	22-Aug-18
Dissolved Metals (cont'd)																				
Copper	µg/L	-	-	-	-	-	1.1	1.0	0.68	1.0	1.1	1.0	1.1	0.68	0.70	0.65	0.71	0.82	0.70	0.64	0.89
Iron	µg/L	-	-	-	-	-	2.1	11	5.6	1.7	2.5	1.4	2.1	10	6.0	9.3	10	8.9	5.8	8.5	5.7
Lead	µg/L	-	-	-	-	-	0.056	<0.01	<0.01	0.039	0.072	0.036	0.078	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	0.69	1.7	1.3	0.86	0.77	1.0	0.88	1.4	1.4	1.9	1.6	2.0	1.2	2.0	1.2
Manganese	µg/L	-	-	-	-	-	0.22	2.7	0.38	0.22	0.24	0.28	0.23	1.6	0.43	2.7	0.59	1.6	0.33	1.4	0.37
Mercury	µg/L	-	-	-	-	-	0.00060	0.0015	0.00050	0.00050	0.00050	0.00060	0.00060	0.0012	<0.0005	0.0013	0.00050	0.0012	0.00060	0.0013	0.00050
Molybdenum	µg/L	-	-	-	-	-	0.096	0.066	0.095	0.10	0.10	0.096	0.11	0.063	0.10	0.054	0.10	0.064	0.098	0.071	0.10
Nickel	µg/L	-	-	-	-	-	0.82	0.64	0.56	0.80	0.81	0.77	0.79	0.65	0.55	0.65	0.64	0.62	0.58	0.64	0.56
Selenium	µg/L	-	-	-	-	-	0.051	<0.04	<0.04	0.057	0.060	0.044	0.048	0.042	<0.04	0.041	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	52	52	44	52	52	52	54	46	45	56	51	56	45	56	45
Thallium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/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	<0.1	<0.1
Uranium	µg/L	-	-	-	-	-	0.019	0.016	0.016	0.018	0.016	0.019	0.017	0.018	0.017	0.019	0.014	0.019	0.014	0.020	0.014
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.063	<0.05	<0.05	<0.05	<0.05	0.054	<0.05	<0.05
Zinc	µg/L	31 to 47[f]	5.2 to 13[g]	-	-	-	<0.8	1.6	<0.8	<0.8	0.86	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Other																				
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Radium-226	Bq/L	-	-	-	-	-	-	<0.0053	<0.0062	-	-	-	-	<0.0066	0.0072	<0.0078	0.0057	<0.0081	<0.0076	0.10	<0.0063

(a) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.73 mg-N/L) is based on the combination of field pH (8.0) and water temperature (13.3°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.3 to 8.0). The guideline is calculated based on the individual pH for each sample.

(c) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5.

(d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (23.7 to 37.1 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (23.7 to 37.1 mg/L as $CaCO_3$) and DOC (2.89 to 3.96 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.3 to 8.0), hardness (23.7 to 37.1 mg/L as $CaCO_3$) and DOC (2.89 to 3.96 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range of pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L). When field pH was not available laboratory pH was used.

Note:

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; - = no guideline or data not measured.

Table 6D-2: Water Quality Results at Meliadine Lake in the Mid-Field Area, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations														
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-02-01	MEL-02-01	MEL-02-02	MEL-02-02	MEL-02-02	MEL-02-03	MEL-02-03	MEL-02-03	MEL-02-04	MEL-02-04	MEL-02-05	MEL-02-05	MEL-02-05	MEL-02-06	MEL-02-08	MEL-02-08
		Acute	Chronic				06-Mar-18	23-Jul-18	05-Mar-18	20-Jul-18	31-Aug-18	05-Mar-18	20-Jul-18	18-Aug-18	06-Mar-18	21-Jul-18	06-Mar-18	23-Jul-18	18-Aug-18	31-Aug-18	15-Aug-18	18-Aug-18
Field Measured																					
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.6	7.4	7.6	7.5	7.9	7.6	7.5	-	7.5	7.6	7.5	7.6	-	7.9	8.6	-
Specific conductivity	µS/cm	-	-	-	-	-	101	75	100	75	78	102	75	76	101	70	101	70	76	78	76	77
Temperature	°C	-	-	-	15	-	1.3	11	1.3	11	9.0	1.2	12	12	1.3	13	1.3	13	12	9.0	12	12
Dissolved oxygen	mg/L	-	6.5	-	-	-	19	12	20	12	12	19	12	10	19	12	19	12	10	12	10	10
Dissolved oxygen	%	-	-	-	-	-	135	111	144	111	103	136	105	95	138	113	136	112	97	102	95	96
Conventional Parameters																					
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.4	7.2	7.4	7.5	7.3	7.5	7.4	7.3	7.5	7.3	7.5	7.5	7.5	7.6	-
Specific conductivity	µS/cm	-	-	-	-	-	98	74	99	73	80	100	76	77	99	76	100	74	78	82	79	-
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	29	23	30	23	23	29	22	21	30	22	30	23	18	23	-	-
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	25	17	25	17	17	25	20	17	25	17	25	16	18	18	21	-
Total dissolved solids	mg/L	-	-	-	500	-	61	42	58	49	53	62	41	45	59	44	63	35	51	45	53	-
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	49	37	50	37	38	50	39	37	49	37	50	37	32	38	-	-
Total suspended solids	mg/L	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	-
Turbidity	NTU	-	-	-	-	-	0.16	0.28	0.12	0.38	0.25	0.14	0.30	0.28	0.16	0.46	0.14	0.36	0.30	0.24	0.27	-
Major Ions																					
Bicarbonate	mg/L	-	-	-	-	-	30	20	30	20	21	31	24	21	30	21	30	20	21	22	25	-
Calcium	mg/L	-	-	-	-	-	9.1	7.0	9.5	7.0	7.0	9.2	6.9	6.3	9.5	7.0	9.2	7.0	5.0	7.2	-	7.0
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	-
Chloride	mg/L	640	120	-	250	-	12	9.2	12	9.2	9.5	12	9.3	9.5	12	9.3	12	9.3	9.6	9.4	9.6	-
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.025	0.022	0.025	0.022	0.028	0.025	0.023	0.024	0.025	0.023	0.025	0.022	0.024	0.027	0.024	-
Magnesium	mg/L	-	-	-	-	-	1.6	1.2	1.5	1.3	1.2	1.5	1.3	1.2	1.5	1.2	1.7	1.3	0.45	1.2	-	1.2
Potassium	mg/L	-	-	-	-	-	1.3	0.92	1.3	0.94	0.95	1.3	0.92	0.95	1.3	0.90	1.3	0.92	0.25	0.97	-	0.96
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.45	0.37	0.49	0.37	0.29	0.47	0.37	0.32	0.46	0.36	0.46	0.40	0.32	0.28	0.33	-
Sodium	mg/L	-	-	-	200	-	6.1	5.0	6.2	5.2	4.7	6.2	5.1	4.9	6.2	4.9	6.4	5.1	1.8	4.7	-	4.9
Sulphate	mg/L	-	-	-	500	-	4.4	3.8	4.5	3.8	4.0	4.5	3.8	3.8	4.5	3.8	4.5	3.8	3.8	4.0	4.1	-
Nutrients																					
Nitrate	mg-N/L	124	2.9	10	-	-	0.011	<0.005	0.016	<0.005	<0.005	0.012	<0.005	<0.005	0.012	<0.005	0.012	<0.005	<0.005	<0.005	<0.005	-
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Nitrate + nitrite	mg-N/L	-	-	-	-	-	0.011	<0.0051	0.016	<0.0051	<0.0051	0.012	<0.0051	<0.0051	0.012	<0.0051	0.012	<0.0051	<0.0051	<0.0051	<0.0051	-
Total ammonia	mg-N/L	-	0.22 to 5.7[(a)]	-	-	-	0.014	<0.005	0.011	<0.005	0.0077	0.013	<0.005	0.018	0.012	<0.005	0.012	<0.005	<0.005	0.014	<0.005	-
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.054	0.20	0.067	0.18	0.29	0.055	0.28	0.34	<0.05	0.25	0.23	0.17	0.21	0.27	0.15	-
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.065	0.20	0.083	0.18	0.29	0.067	0.28	0.34	0.037	0.25	0.24	0.17	0.21	0.27	0.15	-
Total nitrogen	mg-N/L	-	-	-	-	-	0.065	-	0.082	-	-	0.067	-	-	<0.05	-	0.24	-	-	-	-	-
Total phosphorus	mg-P/L	-	-	-	-	-	0.0037	0.0011	0.0032	0.0017	0.0040	0.0040	<0.001	0.0061	0.0038	0.0017	0.0046	0.0013	0.0052	0.0033	0.0044	-
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0020	<0.001	0.0022	<0.001	0.0022	0.0020	<0.001	0.0019	0.0016	<0.001	0.0019	<0.001	0.0019	0.0029	0.0023	-

Table 6D-2: Water Quality Results at Meliadine Lake in the Mid-Field Area, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations														
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-02-01	MEL-02-01	MEL-02-02	MEL-02-02	MEL-02-02	MEL-02-03	MEL-02-03	MEL-02-03	MEL-02-04	MEL-02-04	MEL-02-05	MEL-02-05	MEL-02-05	MEL-02-06	MEL-02-08	MEL-02-08
		Acute	Chronic				06-Mar-18	23-Jul-18	05-Mar-18	20-Jul-18	31-Aug-18	05-Mar-18	20-Jul-18	18-Aug-18	06-Mar-18	21-Jul-18	06-Mar-18	23-Jul-18	18-Aug-18	31-Aug-18	15-Aug-18	18-Aug-18
Nutrients (cont'd)																					
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
Total organic carbon	mg/L	-	-	-	-	-	3.0	2.8	3.0	2.8	2.6	3.1	2.8	2.5	3.1	2.8	3.0	2.8	2.5	2.7	2.3	-
Dissolved organic carbon	mg/L	-	-	-	-	-	3.1	2.9	2.9	2.9	2.6	3.0	3.1	2.6	2.9	2.8	3.0	2.9	2.6	2.6	2.3	-
Total Metals																					
Aluminum	µg/L	-	100[b, c]	-	-	-	0.70	3.0	0.64	2.9	2.8	0.69	3.3	3.9	0.87	2.9	0.46	2.6	3.3	2.9	-	3.9
Antimony	µg/L	-	-	6.0	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.02
Arsenic	µg/L	-	5.0	10	-	25	0.31	0.25	0.28	0.26	0.25	0.33	0.27	0.24	0.34	0.25	0.31	0.27	0.25	0.25	-	0.29
Barium	µg/L	-	-	1,000	-	-	11	8.6	11	8.6	7.8	11	8.6	7.6	11	8.6	11	8.5	7.8	7.8	-	7.7
Beryllium	µg/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	<0.01	-	<0.01
Bismuth	µg/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	<0.01	-	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	4.1	4.1	4.8	4.0	4.0	5.3	3.7	4.6	4.5	3.8	5.3	3.9	4.5	4.1	-	4.4
Cadmium	µg/L	0.36 to 0.62[d]	0.038 to 0.059[d]	5.0	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005
Chromium	µg/L	-	1.0	50[e]	-	-	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.065	<0.06	<0.06	0.065	<0.06	<0.06	<0.06	<0.06	-	<0.06
Cobalt	µg/L	-	-	-	-	-	<0.01	0.019	<0.01	0.020	0.013	<0.01	0.027	0.012	<0.01	0.019	<0.01	0.020	0.018	0.013	-	0.015
Copper	µg/L	-	2.0[d]	-	1,000	-	0.86	0.92	0.89	0.70	0.71	0.88	0.81	0.65	0.89	0.76	0.86	0.71	0.66	0.70	-	0.65
Iron	µg/L	-	300	-	300	1,060	2.1	26	2.8	25	10	2.1	32	14	3.2	25	2.2	23	13	9.8	-	14
Lead	µg/L	-	1.0[d]	10	-	-	0.027	<0.01	0.039	0.027	<0.01	0.042	<0.01	<0.01	0.039	<0.01	0.045	<0.01	<0.01	<0.01	-	<0.01
Lithium	µg/L	-	-	-	-	-	<0.5	0.57	<0.5	0.62	0.69	0.63	0.60	1.3	<0.5	0.59	0.61	0.62	1.3	0.65	-	1.3
Manganese	µg/L	-	-	-	50	-	1.0	5.2	1.2	5.1	3.2	1.0	4.8	3.7	1.1	4.7	1.0	4.7	3.7	3.1	-	4.0
Mercury	µg/L	-	0.026	1.0	-	-	0.0010	0.0014	0.00080	0.0013	0.00050	0.00090	0.0013	0.00090	0.00080	0.0013	0.00070	0.0013	0.00090	<0.0005	-	0.0010
Molybdenum	µg/L	-	73	-	-	-	0.12	0.056	0.083	0.055	0.078	0.085	0.083	0.10	0.071	0.061	0.11	0.060	0.11	0.077	-	0.11
Nickel	µg/L	-	25[d]	-	-	-	0.55	0.73	0.58	0.69	0.47	0.59	0.97	0.52	0.57	0.72	0.55	0.65	0.56	0.47	-	0.54
Selenium	µg/L	-	1.0	50	-	-	0.043	<0.04	0.049	<0.04	<0.04	0.064	0.046	<0.04	0.063	<0.04	<0.04	<0.04	<0.04	<0.04	-	<0.04
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005
Strontium	µg/L	-	-	-	-	-	41	35	43	35	35	47	34	44	45	35	49	35	44	36	-	44
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
Uranium	µg/L	33	15	20	-	-	0.015	0.017	0.015	0.014	0.013	0.015	0.016	0.017	0.015	0.016	0.015	0.016	0.016	0.013	-	0.016
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05
Zinc	µg/L	-	-	-	5,000	-	<0.8	<0.8	<0.8	<0.8	<0.8	0.86	<0.8	<0.8	<0.8	<0.8	0.81	<0.8	<0.8	<0.8	-	<0.8
Dissolved Metals																					
Aluminum	µg/L	-	-	-	-	-	0.34	1.5	0.35	1.3	1.5	0.40	1.5	2.7	0.46	1.1	<0.3	1.4	0.68	1.6	-	3.4
Antimony	µg/L	-	-	-	-	-	<0.02	0.025	<0.02	0.024	0.021	<0.02	<0.02	<0.02	<0.02	0.13	<0.02	0.057	<0.02	0.24	-	<0.02
Arsenic	µg/L	-	-	-	-	-	0.30	0.25	0.33	0.25	0.24	0.31	0.25	0.24	0.29	0.24	0.32	0.25	0.10	0.23	-	0.27
Barium	µg/L	-	-	-	-	-	11	8.4	11	8.3	7.5	11	8.4	7.9	11	8.2	11	8.4	3.1	7.4	-	7.6
Beryllium	µg/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	<0.01	-	<0.01

Table 6D-2: Water Quality Results at Meliadine Lake in the Mid-Field Area, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations														
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-02-01	MEL-02-01	MEL-02-02	MEL-02-02	MEL-02-02	MEL-02-03	MEL-02-03	MEL-02-03	MEL-02-04	MEL-02-04	MEL-02-05	MEL-02-05	MEL-02-05	MEL-02-06	MEL-02-08	MEL-02-08
		Acute	Chronic				06-Mar-18	23-Jul-18	05-Mar-18	20-Jul-18	31-Aug-18	05-Mar-18	20-Jul-18	18-Aug-18	06-Mar-18	21-Jul-18	06-Mar-18	23-Jul-18	18-Aug-18	31-Aug-18	15-Aug-18	18-Aug-18
Dissolved Metals (cont'd)																					
Bismuth	µg/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	<0.01	-	<0.01
Boron	µg/L	-	-	-	-	-	4.5	3.9	4.6	4.0	3.9	5.1	3.9	3.0	4.7	3.9	4.4	3.9	2.5	4.1	-	3.8
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005
Chromium	µg/L	-	-	-	-	-	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.084	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	-	<0.06
Cobalt	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	0.011
Copper	µg/L	-	-	-	-	-	0.85	0.92	0.86	0.63	0.75	0.81	0.72	0.68	0.85	0.65	0.89	0.68	0.19	0.73	-	0.68
Iron	µg/L	-	-	-	-	-	<1.0	9.9	<1.0	9.8	5.2	<1.0	12	<1.0	<1.0	8.7	<1.0	8.9	2.0	4.8	-	6.2
Lead	µg/L	-	-	-	-	-	0.029	0.010	0.035	<0.01	<0.01	0.040	<0.01	<0.01	0.044	<0.01	0.043	<0.01	<0.01	<0.01	-	<0.01
Lithium	µg/L	-	-	-	-	-	<0.5	0.71	0.67	0.72	0.94	0.51	0.74	0.93	0.86	0.78	0.59	0.74	0.80	0.94	-	1.0
Manganese	µg/L	-	-	-	-	-	0.23	1.6	0.22	1.3	0.62	0.18	1.5	0.43	0.19	1.2	0.23	1.1	0.24	0.42	-	0.57
Mercury	µg/L	-	-	-	-	-	0.00050	0.0013	<0.0005	0.0012	0.00050	<0.0005	0.0014	0.00050	0.00060	0.0013	0.00050	0.0012	<0.0005	0.00050	-	0.00050
Molybdenum	µg/L	-	-	-	-	-	0.073	0.064	0.075	0.071	0.085	0.080	0.067	0.071	0.080	0.063	0.076	0.062	0.058	0.095	-	0.085
Nickel	µg/L	-	-	-	-	-	0.56	0.68	0.56	0.67	0.50	0.55	0.77	0.54	0.56	0.62	0.56	0.65	0.19	0.49	-	0.52
Selenium	µg/L	-	-	-	-	-	0.051	<0.04	<0.04	<0.04	<0.04	0.055	<0.04	<0.04	<0.04	<0.04	0.051	<0.04	<0.04	0.045	-	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005
Strontium	µg/L	-	-	-	-	-	44	35	46	35	35	45	35	32	44	35	43	36	26	35	-	36
Thallium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05
Titanium	µg/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	<0.1	-	<0.1
Uranium	µg/L	-	-	-	-	-	0.015	0.016	0.014	0.015	0.012	0.016	0.015	0.013	0.015	0.015	0.016	0.016	0.010	0.013	-	0.016
Vanadium	µg/L	-	-	-	-	-	<0.05	0.053	<0.05	<0.05	0.051	<0.05	0.052	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05
Zinc	µg/L	23 to 37[f]	4.6 to 8.9[g]	-	-	-	<0.8	1.5	<0.8	0.92	<0.8	<0.8	1.5	1.4	<0.8	3.0	<0.8	0.86	<0.8	1.2	-	2.2

(a) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.22 mg-N/L) is based on the combination of field pH (8.6) and water temperature (11.9°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.4 to 8.6). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (17.7 to 30.1 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (17.7 to 30.1 mg/L as $CaCO_3$) and DOC (2.28 to 3.07 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.3 to 7.9), hardness (17.7 to 30.1 mg/L as $CaCO_3$) and DOC (2.28 to 3.07 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines that fell outside the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as CaCO3) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated guideline range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

Half of the detection limit value was used for total Kjeldahl nitrogen to calculate total nitrogen concentrations.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; - = no guideline or data not measured.

Reference:

CCME. 2018. Canadian Water Quality Guideline for the Protection of Aquatic Life: Zinc (Dissolved) 2018 Fact Sheet. Canadian Council of Ministers of the Environment. Gatineau, QC.

Table 6D-3: Water Quality Results at Meliadine Lake in Reference Area 1, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations									
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-03-01	MEL-03-01	MEL-03-01	MEL-03-02	MEL-03-02	MEL-03-03	MEL-03-03	MEL-03-04	MEL-03-04	MEL-03-05
		Acute	Chronic				25-Jul-18	20-Aug-18	15-Sep-18	25-Jul-18	26-Aug-18	25-Jul-18	20-Aug-18	25-Jul-18	26-Aug-18	26-Aug-18
Field Measured																
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.7	-	7.3	7.7	-	7.7	-	7.8	-	-
Specific conductivity	µS/cm	-	-	-	-	-	65	71	85	64	73	64	71	63	73	73
Temperature	°C	-	-	-	15	-	11	11	10	11	8.6	12	11	12	8.4	8.5
Dissolved oxygen	mg/L	-	6.5	-	-	-	13	12	12	13	12	12	12	12	12	12
Dissolved oxygen	%	-	-	-	-	-	116	109	-	116	104	115	110	116	105	106
Conventional Parameters																
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.4	7.4	7.4	7.4	7.5	7.5	7.4	7.5	7.4	7.5
Specific conductivity	µS/cm	-	-	-	-	-	68	72	75	67	74	68	70	67	72	71
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	21	20	39	21	21	21	21	21	21	21
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	16	18	18	16	17	17	18	16	17	17
Total dissolved solids	mg/L	-	-	-	500	-	33	48	54	41	20	46	44	42	29	29
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	40	36	37	33	36	34	35	34	36	36
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
Turbidity	NTU	-	-	-	-	-	0.26	0.23	0.23	0.23	0.22	0.22	0.20	0.25	0.22	0.33
Major Ions																
Bicarbonate	mg/L	-	-	-	-	-	20	21	22	20	21	20	21	20	21	21
Calcium	mg/L	-	-	-	-	-	6.6	6.4	12	6.4	6.5	6.7	6.5	6.6	6.4	6.6
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	640	120	-	250	-	8.1	8.3	8.7	8.0	8.7	8.0	8.4	7.9	8.7	8.7
Fluoride	mg/L	-	0.12	1.5	-	2.8	<0.02	0.024	0.026	0.023	0.026	0.023	0.025	0.022	0.026	0.026
Magnesium	mg/L	-	-	-	-	-	1.1	1.1	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Potassium	mg/L	-	-	-	-	-	0.85	0.90	1.3	0.84	0.89	0.87	0.89	0.87	0.90	0.90
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.27	0.23	0.22	0.26	0.23	0.28	0.24	0.26	0.23	0.24
Sodium	mg/L	-	-	-	200	-	4.2	4.6	8.5	4.1	4.3	4.5	4.3	4.4	4.3	4.3
Sulphate	mg/L	-	-	-	500	-	3.6	3.8	3.8	3.3	3.6	3.3	3.5	3.2	3.6	3.6
Nutrients																
Nitrate	mg-N/L	124	2.9	10	-	-	-[a]	<0.005	0.0073	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite	mg-N/L	-	0.060	1.0	-	-	-[a]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrate + nitrite	mg-N/L	-	-	-	-	-	-[a]	<0.0051	0.0073	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Total ammonia	mg-N/L	-	1.2 to 4.6[b]	-	-	-	<0.005	<0.005	<0.005	<0.005	0.019	<0.005	<0.005	<0.005	<0.005	<0.005
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.16	0.23	0.16	0.11	0.17	0.14	0.25	0.19	0.18	0.23
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	1.5	0.23	0.16	0.11	0.17	0.14	0.25	0.19	0.18	0.23
Total phosphorus	mg-P/L	-	-	-	-	-	0.0013	0.0042	0.0044	<0.001	0.0031	0.0021	0.0037	<0.001	0.0039	0.0039
Dissolved phosphorus	mg-P/L	-	-	-	-	-	<0.001	0.0021	0.0028	<0.001	0.0023	0.0016	0.0021	<0.001	0.0025	0.0022
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total organic carbon	mg/L	-	-	-	-	-	2.3	2.2	2.3	2.2	2.4	2.3	2.5	2.2	2.4	2.4
Dissolved organic carbon	mg/L	-	-	-	-	-	2.3	2.3	2.7	2.3	2.4	2.3	2.3	2.2	2.4	2.4

Table 6D-3: Water Quality Results at Meliadine Lake in Reference Area 1, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations									
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-03-01	MEL-03-01	MEL-03-01	MEL-03-02	MEL-03-02	MEL-03-03	MEL-03-03	MEL-03-04	MEL-03-04	MEL-03-05
		Acute	Chronic				25-Jul-18	20-Aug-18	15-Sep-18	25-Jul-18	26-Aug-18	25-Jul-18	20-Aug-18	25-Jul-18	26-Aug-18	26-Aug-18
Total Metals																
Aluminum	µg/L	-	100[c, d]	-	-	-	3.6	2.8	2.9	4.7	3.6	3.0	3.1	2.5	2.7	3.3
Antimony	µg/L	-	-	6.0	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	5.0	10	-	25	0.20	0.21	0.19	0.21	0.19	0.20	0.19	0.20	0.19	0.19
Barium	µg/L	-	-	1,000	-	-	7.9	8.2	7.5	7.8	7.2	7.8	7.4	7.7	7.2	7.1
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	3.9	3.0	2.8	3.5	4.0	3.6	3.9	3.6	3.9	3.8
Cadmium	µg/L	0.42 to 0.80[d]	0.042 to 0.072[e]	5.0	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	1.0	50[f]	-	-	<0.06	0.56	<0.06	0.086	<0.06	<0.06	0.25	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	0.024	0.015	0.024	0.027	0.012	0.015	0.014	0.012	0.011	0.011
Copper	µg/L	-	2.0[e]	-	1,000	-	0.77	0.64	0.88	0.82	0.71	0.62	0.63	0.64	0.64	0.73
Iron	µg/L	-	300	-	300	1,060	24	18	7.1	25	12	15	13	15	11	11
Lead	µg/L	-	1.0[e]	10	-	-	<0.01	0.010	<0.01	0.015	0.015	<0.01	0.012	<0.01	<0.01	0.098
Lithium	µg/L	-	-	-	-	-	0.51	0.64	<0.5	0.55	0.58	<0.5	0.51	<0.5	0.60	0.66
Manganese	µg/L	-	-	-	50	-	3.3	2.6	3.4	3.4	2.3	3.2	2.5	3.0	2.3	2.1
Mercury	µg/L	-	0.026	1.0	-	-	0.00080	0.00060	<0.0005	0.00080	0.00050	0.00070	0.00060	0.00080	0.00050	0.00050
Molybdenum	µg/L	-	73	-	-	-	0.083	0.064	0.067	0.093	0.078	0.058	0.11	0.057	0.078	0.079
Nickel	µg/L	-	25[e]	-	-	-	0.71	0.41	0.54	0.78	0.39	0.46	0.56	0.41	0.37	0.35
Selenium	µg/L	-	1.0	50	-	-	0.050	<0.04	<0.04	<0.04	<0.04	0.049	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	33	31	33	32	32	33	31	33	32	33
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	0.14	<0.1
Uranium	µg/L	33	15	20	-	-	0.016	0.014	0.048	0.017	0.014	0.015	0.012	0.015	0.012	0.013
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	µg/L	-	-	-	5,000	-	1.0	<0.8	<0.8	0.91	<0.8	<0.8	0.84	<0.8	<0.8	<0.8
Dissolved Metals																
Aluminum	µg/L	-	-	-	-	-	1.4	1.4	1.7	0.98	1.4	1.3	1.4	1.2	1.3	1.3
Antimony	µg/L	-	-	-	-	-	<0.02	<0.02	<0.02	0.14	<0.02	0.13	<0.02	0.17	<0.02	<0.02
Arsenic	µg/L	-	-	-	-	-	0.18	0.20	0.24	0.19	0.19	0.19	0.20	0.20	0.19	0.20
Barium	µg/L	-	-	-	-	-	7.6	7.7	11	7.6	7.6	7.6	7.6	7.5	7.4	7.4
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	-	-	-	-	-	3.7	3.0	9.5	3.4	3.3	3.6	3.3	3.5	3.2	3.2
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	-	-	-	-	0.065	<0.06	<0.06	0.068	<0.06	<0.06	0.13	0.076	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	0.013	<0.01	0.076	0.011	<0.01	0.011	<0.01	<0.01	<0.01	<0.01
Copper	µg/L	-	-	-	-	-	0.72	0.57	0.82	0.67	0.63	0.70	0.60	0.63	0.63	0.73
Iron	µg/L	-	-	-	-	-	13	4.2	7.4	11	5.2	13	5.0	6.3	3.5	4.4

Table 6D-3: Water Quality Results at Meliadine Lake in Reference Area 1, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations									
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-03-01	MEL-03-01	MEL-03-01	MEL-03-02	MEL-03-02	MEL-03-03	MEL-03-03	MEL-03-04	MEL-03-04	MEL-03-05
		Acute	Chronic				25-Jul-18	20-Aug-18	15-Sep-18	25-Jul-18	26-Aug-18	25-Jul-18	20-Aug-18	25-Jul-18	26-Aug-18	26-Aug-18
Dissolved Metals (cont'd)																
Lead	µg/L	-	-	-	-	-	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	0.62	0.64	4.4	0.53	<0.5	0.64	<0.5	0.55	<0.5	<0.5
Manganese	µg/L	-	-	-	-	-	1.3	0.44	16	1.2	0.38	1.3	0.48	1.1	0.32	0.40
Mercury	µg/L	-	-	-	-	-	0.0010	0.00050	0.00080	0.0010	0.0015	0.0010	<0.0005	0.0010	0.0010	0.0011
Molybdenum	µg/L	-	-	-	-	-	0.075	0.064	0.18	0.078	0.089	0.074	0.10	0.063	0.075	0.083
Nickel	µg/L	-	-	-	-	-	0.67	0.50	0.67	0.61	0.45	0.70	0.38	0.39	0.36	0.37
Selenium	µg/L	-	-	-	-	-	<0.04	<0.04	0.042	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	32	33	122	31	31	32	31	32	30	31
Thallium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	0.33	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	-	-	-	-	-	0.014	0.011	0.11	0.015	0.013	0.014	0.013	0.015	0.014	0.014
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.1	0.087	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	µg/L	26 to 45[f]	4.8 to 13[h]	-	-	-	<0.8	<0.8	2.9	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Other																
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Radium-226	Bq/L	-	-	-	-	-	<0.0067	<0.0074	<0.0097	<0.0065	<0.0083	<0.0066	<0.0034	0.011	<0.0093	<0.01

(a) Data were invalidated because they fell well outside historical range.

(b) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (1.16 mg-N/L) is based on the combination of field pH (7.8) and water temperature (12.2°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.3 to 7.8). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(d) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(e) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (20.4 to 38.7 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(f) Guideline is for chromium VI.

(g) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (20.4 to 38.7 mg/L as $CaCO_3$) and DOC (2.21 to 2.66 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(h) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.3 to 7.8), hardness (20.4 to 38.7 mg/L as $CaCO_3$) and DOC (2.21 to 2.66 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines that fell outside the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as CaCO3) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated guideline range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

Grey shaded concentrations are higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units;
mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; - = no guideline or data not measured.

Reference:

CCME. 2018. Canadian Water Quality Guideline for the Protection of Aquatic Life: Zinc (Dissolved) 2018 Fact Sheet. Canadian Council of Ministers of the Environment. Gatineau, QC.

Table 6D-4: Water Quality Results at Meliadine Lake in Reference Area 2, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations			
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-04-01	MEL-04-02	MEL-04-03	MEL-04-05
		Acute	Chronic				02-Sep-18	02-Sep-18	02-Sep-18	02-Sep-18
Field Measured										
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.9	8.0	8.0	7.9
Specific conductivity	µS/cm	-	-	-	-	-	73	74	73	73
Temperature	°C	-	-	-	15	-	9.6	9.6	9.6	9.7
Dissolved oxygen	mg/L	-	6.5	-	-	-	11	11	11	11
Dissolved oxygen	%	-	-	-	-	-	102	102	102	102
Conventional Parameters										
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.6	7.5	7.5	7.5
Specific conductivity	µS/cm	-	-	-	-	-	75	75	74	74
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	22	22	21	22
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	20	17	17	17
Total dissolved solids	mg/L	-	-	-	500	-	48	43	48	50
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	37	36	35	35
Total suspended solids	mg/L	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0
Turbidity	NTU	-	-	-	-	-	0.18	0.84	0.16	0.17
Major Ions										
Bicarbonate	mg/L	-	-	-	-	-	24	21	20	21
Calcium	mg/L	-	-	-	-	-	6.9	6.9	6.7	6.8
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	640	120	-	250	-	8.4	8.3	8.3	8.4
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.028	0.028	0.028	0.028
Magnesium	mg/L	-	-	-	-	-	1.2	1.1	1.1	1.1
Potassium	mg/L	-	-	-	-	-	0.95	0.94	0.90	0.93
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.25	0.25	0.24	0.22
Sodium	mg/L	-	-	-	200	-	4.3	4.4	4.4	4.3
Sulphate	mg/L	-	-	-	500	-	3.6	3.6	3.6	3.6
Nutrients										
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	<0.005	<0.005	<0.005
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	<0.001	<0.001	<0.001
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	<0.0051	<0.0051	<0.0051
Total ammonia	mg-N/L	-	0.97 to 1.0[(a)]	-	-	-	<0.005	<0.005	0.0095	<0.005
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.24	0.14	0.22	0.12
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.24	0.14	0.22	0.12
Total phosphorus	mg-P/L	-	-	-	-	-	0.0033	0.0034	0.0035	0.0035
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0022	0.0027	0.0030	0.0025
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	0.0033	<0.001
Total organic carbon	mg/L	-	-	-	-	-	2.2	2.3	2.3	2.2
Dissolved organic carbon	mg/L	-	-	-	-	-	2.3	2.2	2.2	2.3

Table 6D-4: Water Quality Results at Meliadine Lake in Reference Area 2, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations			
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-04-01	MEL-04-02	MEL-04-03	MEL-04-05
		Acute	Chronic				02-Sep-18	02-Sep-18	02-Sep-18	02-Sep-18
Total Metals										
Aluminum	µg/L	-	100[b, c]	-	-	-	2.1	1.8	2.0	1.9
Antimony	µg/L	-	-	6.0	-	-	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	5.0	10	-	25	0.18	0.20	0.20	0.21
Barium	µg/L	-	-	1,000	-	-	7.7	7.6	7.6	7.6
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	4.0	3.9	4.0	3.8
Cadmium	µg/L	0.43 to 0.45[d]	0.044 to 0.045[d]	5.0	-	-	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	1.0	50[e]	-	-	0.096	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Copper	µg/L	-	2.0[d]	-	1,000	-	0.68	0.66	0.64	0.66
Iron	µg/L	-	300	-	300	1,060	7.7	5.5	6.0	6.0
Lead	µg/L	-	1.0[d]	10	-	-	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	0.60	0.59	0.57	0.55
Manganese	µg/L	-	-	-	50	-	2.2	2.1	2.1	2.2
Mercury	µg/L	-	0.026	1.0	-	-	<0.0005	<0.0005	<0.0005	0.00050
Molybdenum	µg/L	-	73	-	-	-	0.072	0.073	0.060	0.070
Nickel	µg/L	-	25[d]	-	-	-	0.35	0.35	0.38	0.37
Selenium	µg/L	-	1.0	50	-	-	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	32	32	32	32
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	0.19	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	33	15	20	-	-	0.011	0.013	0.012	0.014
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05
Zinc	µg/L	-	-	-	5,000	-	<0.8	<0.8	<0.8	<0.8
Dissolved Metals										
Aluminum	µg/L	-	-	-	-	-	1.9	1.4	0.92	1.3
Antimony	µg/L	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	-	-	-	-	0.22	0.19	0.20	0.19
Barium	µg/L	-	-	-	-	-	7.3	7.3	7.3	7.4
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	-	-	-	-	-	3.6	3.5	3.1	3.6
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	-	-	-	-	<0.06	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Copper	µg/L	-	-	-	-	-	0.68	0.65	0.61	0.62
Iron	µg/L	-	-	-	-	-	3.0	3.2	4.2	4.5

Table 6D-4: Water Quality Results at Meliadine Lake in Reference Area 2, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations			
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-04-01	MEL-04-02	MEL-04-03	MEL-04-05
		Acute	Chronic				02-Sep-18	02-Sep-18	02-Sep-18	02-Sep-18
Dissolved Metals (cont'd)										
Lead	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	0.72	0.69	0.66	0.76
Manganese	µg/L	-	-	-	-	-	0.51	0.49	0.54	0.47
Mercury	µg/L	-	-	-	-	-	0.0011	0.0010	<0.0005	<0.0005
Molybdenum	µg/L	-	-	-	-	-	0.082	0.078	0.078	0.085
Nickel	µg/L	-	-	-	-	-	0.37	0.39	0.42	0.42
Selenium	µg/L	-	-	-	-	-	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	32	32	32	32
Thallium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	-	-	-	-	-	0.011	0.013	0.014	0.012
Vanadium	µg/L	-	-	-	-	-	0.052	<0.05	<0.05	<0.05
Zinc	µg/L	26 to 27[f]	4.2 to 4.4[g]	-	-	-	1.0	0.93	<0.8	<0.8
Other										
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001

(a) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.97 mg-N/L) is based on the combination of field pH (8.0) and water temperature (9.6°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.9 to 8.0). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (21.2 to 22 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (21.2 to 22 mg/L as $CaCO_3$) and DOC (2.23 to 2.27 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.9 to 8.0), hardness (21.2 to 22 mg/L as $CaCO_3$) and DOC (2.23 to 2.27 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines that fell outside the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as CaCO3) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated guideline range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

Reference:

CCME. 2018. Canadian Water Quality Guideline for the Protection of Aquatic Life: Zinc (Dissolved) 2018 Fact Sheet. Canadian Council of Ministers of the Environment. Gatineau, QC.

Table 6D-5: Water Quality Results at Meliadine Lake in Reference Area 3, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations				
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-05-01	MEL-05-02	MEL-05-03	MEL-05-04	MEL-05-05
		Acute	Chronic				01-Sep-18	30-Aug-18	29-Aug-18	30-Aug-18	29-Aug-18
Field Measured											
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	8.0	8.0	-	7.9	-
Specific conductivity	µS/cm	-	-	-	-	-	75	76	76	76	76
Temperature	°C	-	-	-	15	-	9.0	8.9	8.7	8.8	8.7
Dissolved oxygen	mg/L	-	6.5	-	-	-	12	12	12	12	12
Dissolved oxygen	%	-	-	-	-	-	103	103	105	102	106
Conventional Parameters											
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.5	7.5	7.5	7.5	7.5
Specific conductivity	µS/cm	-	-	-	-	-	78	81	80	77	77
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	23	22	23	23	23
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	21	20	20	20	18
Total dissolved solids	mg/L	-	-	-	500	-	51	44	50	52	48
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	38	38	38	38	37
Total suspended solids	mg/L	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0
Turbidity	NTU	-	-	-	-	-	0.18	0.21	0.23	0.19	0.19
Major Ions											
Bicarbonate	mg/L	-	-	-	-	-	25	25	25	25	22
Calcium	mg/L	-	-	-	-	-	7.3	7.1	7.2	7.2	7.1
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	640	120	-	250	-	8.5	8.5	8.6	8.3	8.5
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.028	0.028	0.028	0.027	0.028
Magnesium	mg/L	-	-	-	-	-	1.1	1.1	1.2	1.1	1.1
Potassium	mg/L	-	-	-	-	-	0.93	0.91	0.92	0.93	0.94
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.26	0.26	0.26	0.26	0.27
Sodium	mg/L	-	-	-	200	-	4.4	4.3	4.4	4.4	4.6
Sulphate	mg/L	-	-	-	500	-	3.6	3.7	3.6	3.6	3.6
Nutrients											
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Total ammonia	mg-N/L	-	0.97 to 3.3[(a)]	-	-	-	0.029	<0.005	0.012	<0.005	<0.005
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.21	0.12	0.26	0.14	0.15
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.21	0.12	0.26	0.14	0.15
Total phosphorus	mg-P/L	-	-	-	-	-	0.0031	0.0043	0.0033	0.0039	0.0041
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0026	0.0023	0.0019	0.0020	0.0024
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001
Total organic carbon	mg/L	-	-	-	-	-	2.2	2.3	2.6	2.3	2.3
Dissolved organic carbon	mg/L	-	-	-	-	-	2.4	2.3	2.3	2.3	2.4

Table 6D-5: Water Quality Results at Meliadine Lake in Reference Area 3, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations				
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-05-01	MEL-05-02	MEL-05-03	MEL-05-04	MEL-05-05
		Acute	Chronic				01-Sep-18	30-Aug-18	29-Aug-18	30-Aug-18	29-Aug-18
Total Metals											
Aluminum	µg/L	-	100[b, c]	-	-	-	2.5	10	2.3	1.8	2.9
Antimony	µg/L	-	-	6.0	-	-	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	5.0	10	-	25	0.26	0.24	0.24	0.25	0.25
Barium	µg/L	-	-	1,000	-	-	7.8	7.8	7.9	7.7	7.8
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	3.2	3.8	4.0	3.9	3.9
Cadmium	µg/L	0.46 to 0.47[d]	0.046 to 0.046[d]	5.0	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	1.0	50[e]	-	-	<0.06	<0.06	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	0.018	0.010	0.015	0.010	0.014
Copper	µg/L	-	2.0[d]	-	1,000	-	0.86	0.69	0.70	0.71	0.66
Iron	µg/L	-	300	-	300	1,060	14	8.1	7.8	8.0	9.8
Lead	µg/L	-	1.0[d]	10	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	0.55	0.58	0.63	0.61	0.59
Manganese	µg/L	-	-	-	50	-	2.8	2.8	2.8	2.8	2.9
Mercury	µg/L	-	0.026	1.0	-	-	0.00050	0.00050	<0.0005	<0.0005	<0.0005
Molybdenum	µg/L	-	73	-	-	-	0.088	0.083	0.081	0.078	0.086
Nickel	µg/L	-	25[d]	-	-	-	0.59	0.37	0.35	0.39	0.37
Selenium	µg/L	-	1.0	50	-	-	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	28	33	34	33	34
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	33	15	20	-	-	<0.01	0.013	0.013	0.011	0.012
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	µg/L	-	-	-	5,000	-	1.4	<0.8	<0.8	<0.8	<0.8
Dissolved Metals											
Aluminum	µg/L	-	-	-	-	-	1.5	1.4	1.5	0.94	1.2
Antimony	µg/L	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	-	-	-	-	0.23	0.22	0.24	0.22	0.25
Barium	µg/L	-	-	-	-	-	7.4	7.3	7.6	7.4	8.3
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	-	-	-	-	-	3.8	3.8	3.8	3.7	3.5
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	-	-	-	-	<0.06	<0.06	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	µg/L	-	-	-	-	-	0.65	0.65	0.65	0.71	0.71

Table 6D-5: Water Quality Results at Meliadine Lake in Reference Area 3, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations				
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	MEL-05-01	MEL-05-02	MEL-05-03	MEL-05-04	MEL-05-05
		Acute	Chronic				01-Sep-18	30-Aug-18	29-Aug-18	30-Aug-18	29-Aug-18
Dissolved Metals (cont'd)											
Iron	µg/L	-	-	-	-	-	3.5	3.4	3.3	6.1	4.5
Lead	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	0.90	0.91	0.92	0.86	0.67
Manganese	µg/L	-	-	-	-	-	0.40	0.47	0.43	0.45	0.40
Mercury	µg/L	-	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Molybdenum	µg/L	-	-	-	-	-	0.089	0.081	0.088	0.096	0.086
Nickel	µg/L	-	-	-	-	-	0.37	0.34	0.40	0.46	0.44
Selenium	µg/L	-	-	-	-	-	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	33	32	33	32	33
Thallium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	0.11	0.19	0.39
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	-	-	-	-	-	0.012	0.012	0.012	0.012	0.015
Vanadium	µg/L	-	-	-	-	-	<0.05	0.052	<0.05	0.050	<0.05
Zinc	µg/L	28[f]	4.3 to 6.4[g]	-	-	-	1.2	<0.8	<0.8	<0.8	<0.8
Other											
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001	<0.001

(a) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.97 mg-N/L) is based on the combination of field pH (8.0) and water temperature (9.0°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.5 to 8.0). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (22.4 to 22.8 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (22.4 to 22.8 mg/L as $CaCO_3$) and DOC (2.27 to 2.37 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines were calculated within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.5 to 8.0), hardness (22.4 to 22.8 mg/L as $CaCO_3$) and DOC (2.27 to 2.37 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines that fell outside the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as CaCO3) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated guideline range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

Reference:

CCME. 2018. Canadian Water Quality Guideline for the Protection of Aquatic Life: Zinc (Dissolved) 2018 Fact Sheet. Canadian Council of Ministers of the Environment. Gatineau, QC.

APPENDIX 6E

Statistical Outliers

Table 6E-1: Outliers Identified in the Water Quality Datasets during Spatial Statistical Analysis

Parameter	Unit	Year	Month	Area	Station	Outlier	SR Value	P-value with Outlier included
2018 Spatial Analysis Under-ice								
Sodium	mg/L	2018	March	Near-field	MEL-01-03	8.27	4.19	**<0.001**
Reactive silica (as SiO_2)	mg/L	2018	March	Near-field	MEL-01-05	0.767	3.79	**<0.001**
Total Kjeldahl nitrogen	mg/L	2018	March	Mid-field	MEL-02-05	0.227	4.94	0.168
Total lead	µg/L	2018	March	Near-field	MEL-01-05	0.107	5.46	**0.082**
Total uranium	µg/L	2018	March	Near-field	MEL-01-03	0.019	3.55	**<0.001**
2018 Spatial Analysis Open-water								
Total dissolved solids	mg/L	2018	August	Reference 1	MEL-03-02	20	-3.72	**<0.001**
Dissolved organic carbon	mg/L	2018	August	Mid-field	MEL-02-08	2.28	-3.95	**<0.001**
Turbidity	NTU	2018	September	Reference Area 2	MEL-04-02	0.84	10.01	**<0.001**
Calcium	mg/L	2018	August	Mid-field	MEL-02-05	5.03	-6.19	**<0.001**
Chloride	mg/L	2018	July	Near-field	MEL-01-06	11.3	-4.31	**<0.001**
Fluoride	mg/L	2018	July	Near-field	MEL-01-08	0.01[(a)]	-3.60	**0.004**
		2018	July	Reference Area 1	MEL-03-01	0.01[(a)]	-5.55	
Potassium	mg/L	2018	August	Mid-field	MEL-02-05	0.252	-24.24	**<0.001**
Sodium	mg/L	2018	August	Mid-field	MEL-02-05	1.84	-15.55	**<0.001**
Sulphate	mg/L	2018	July	Near-field	MEL-01-08	3.77	-3.66	**<0.001**
Total phosphorus	mg/L	2018	August	Near-field	MEL-01-07	0.0202	7.74	0.223
Total aluminum	µg/L	2018	July	Near-field	MEL-01-09	29.1	4.54	**<0.001**
Total copper	µg/L	2018	July	Near-field	MEL-01-01	1.34	7.53	**0.005**
Total mercury	µg/L	2018	August	Mid-field	MEL-02-06	0.00025[(a)]	-3.53	**<0.001**
Total uranium	µg/L	2018	September	Reference Area 3	MEL-05-01	0.005[(a)]	-5.03	**<0.001**

(a) measurement was less than the detection limit and set as one-half the detection limit for statistical analysis.

Note:

Outliers were identified during statistical testing as those having SR values greater than or equal to an absolute value of 3.5.

Bold values indicate statistical significance. Tests were considered significant at P <0.1.

Underlined values indicate that the results of the analysis were influenced by the outlier.

SR = studentized residual; mg/L = milligrams per litre; µg/L = micrograms per litre; NTU = nephelometric turbidity unit; calc = calculated; $CaCO_3$ = calcium carbonate; SiO_2 = silicon dioxide.

APPENDIX 6F

Time-series Plots

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1.0 ICE-COVERED CONDITIONS

Note: parameters with all samples below detection were not included. An open symbol on the plot represents a measurement that is below detection.

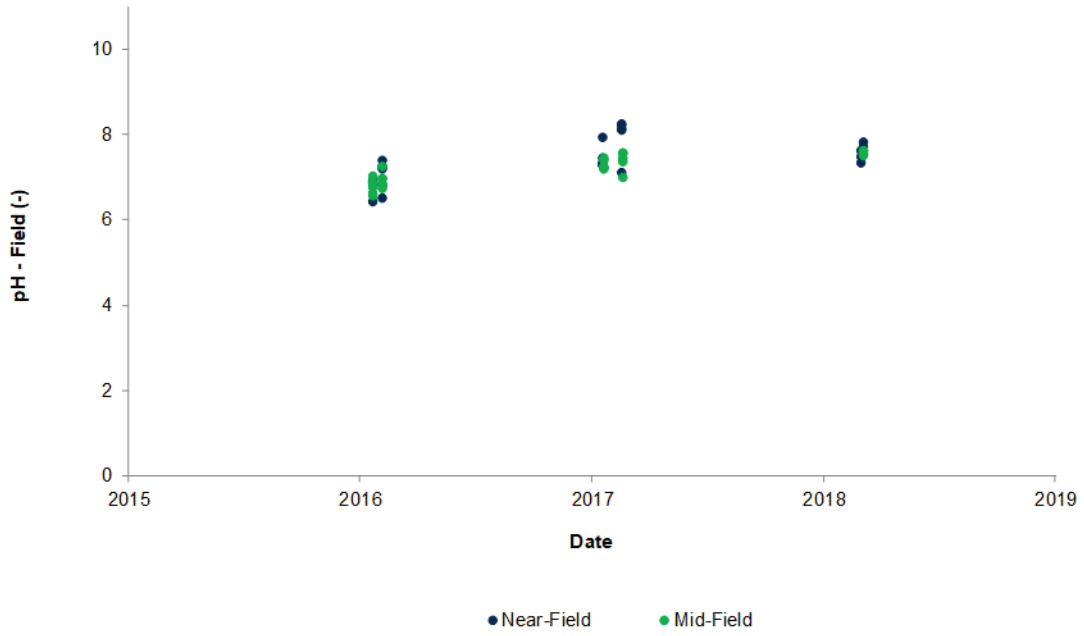


Figure 6F.1-1: Field Ph Under ice In Meliadine Lake, 2016 To 2016

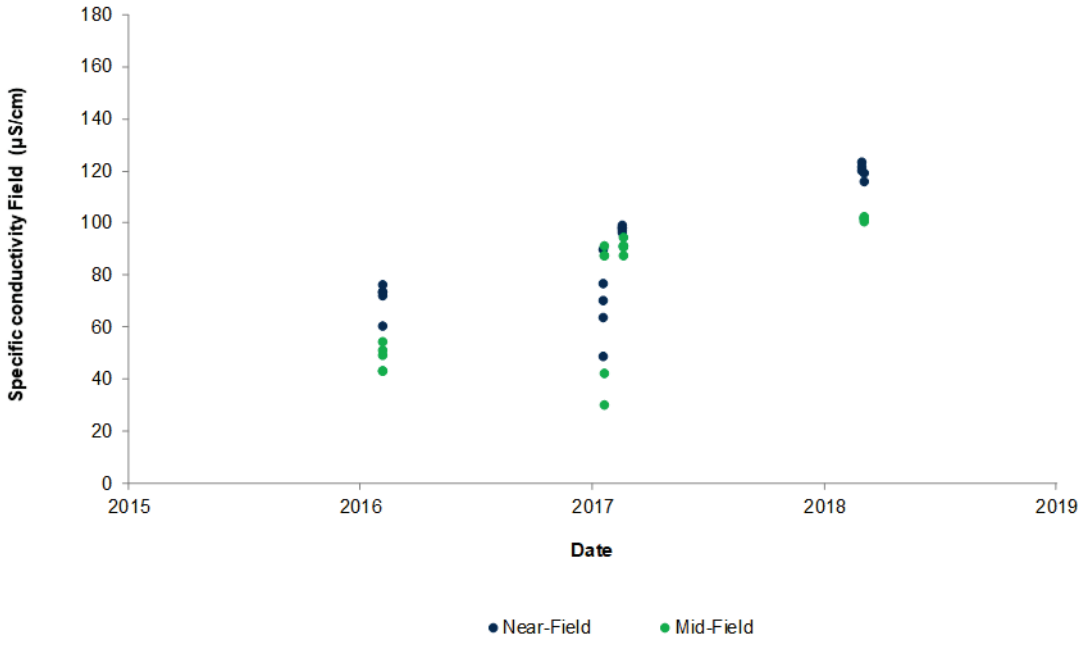


Figure 6F.1-2: Specific Conductivity Under ice In Meliadine Lake, 2016 To 2016

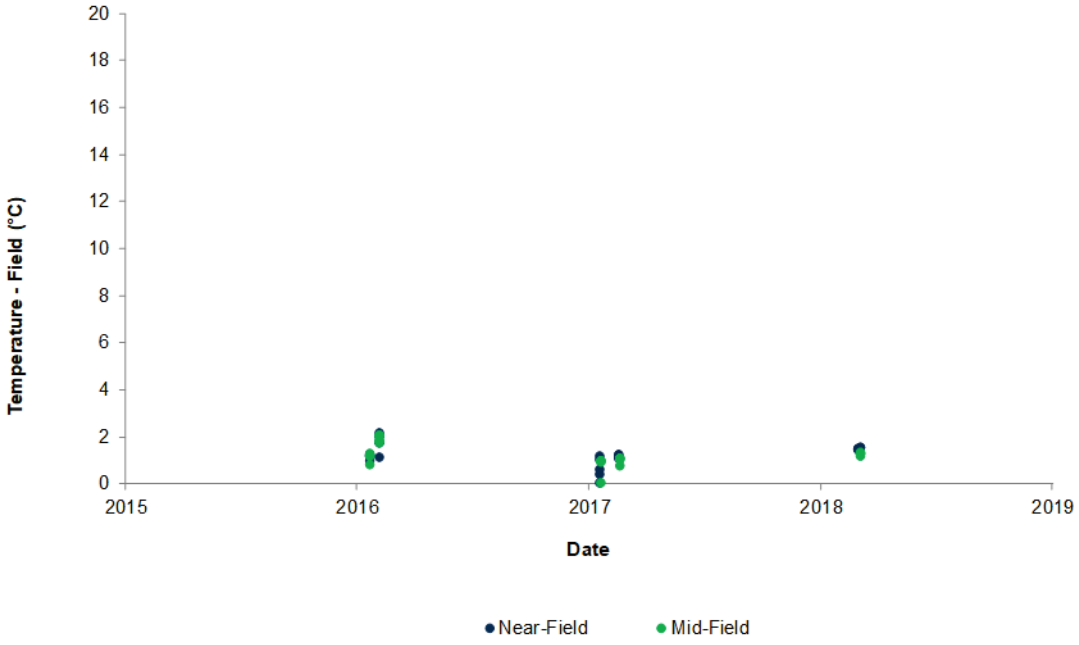


Figure 6F.1-3: Temperature Under ice In Meliadine Lake, 2016 To 2016

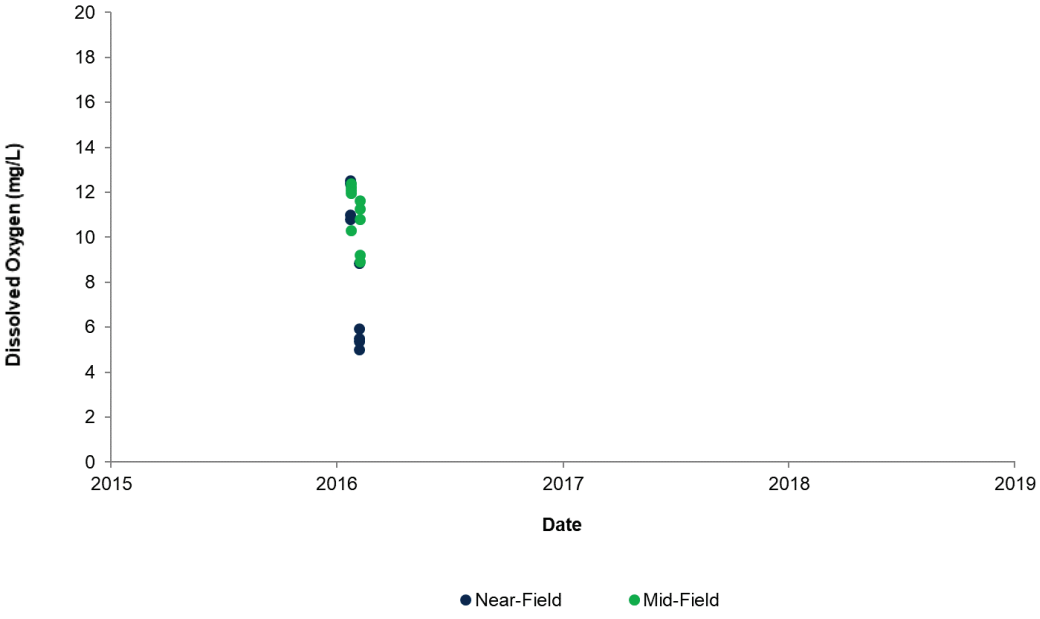


Figure 6F.1-4: Dissolved Oxygen Under ice In Meliadine Lake, 2016 To 2016

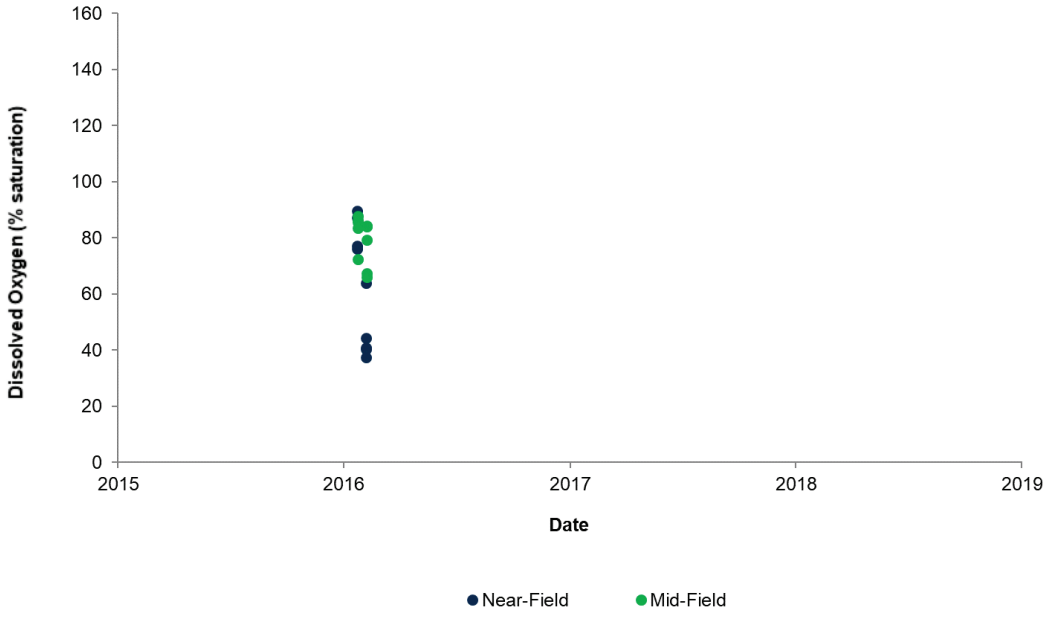


Figure 6F.1-5: Dissolved Oxygen Under ice In Meliadine Lake, 2016 To 2016

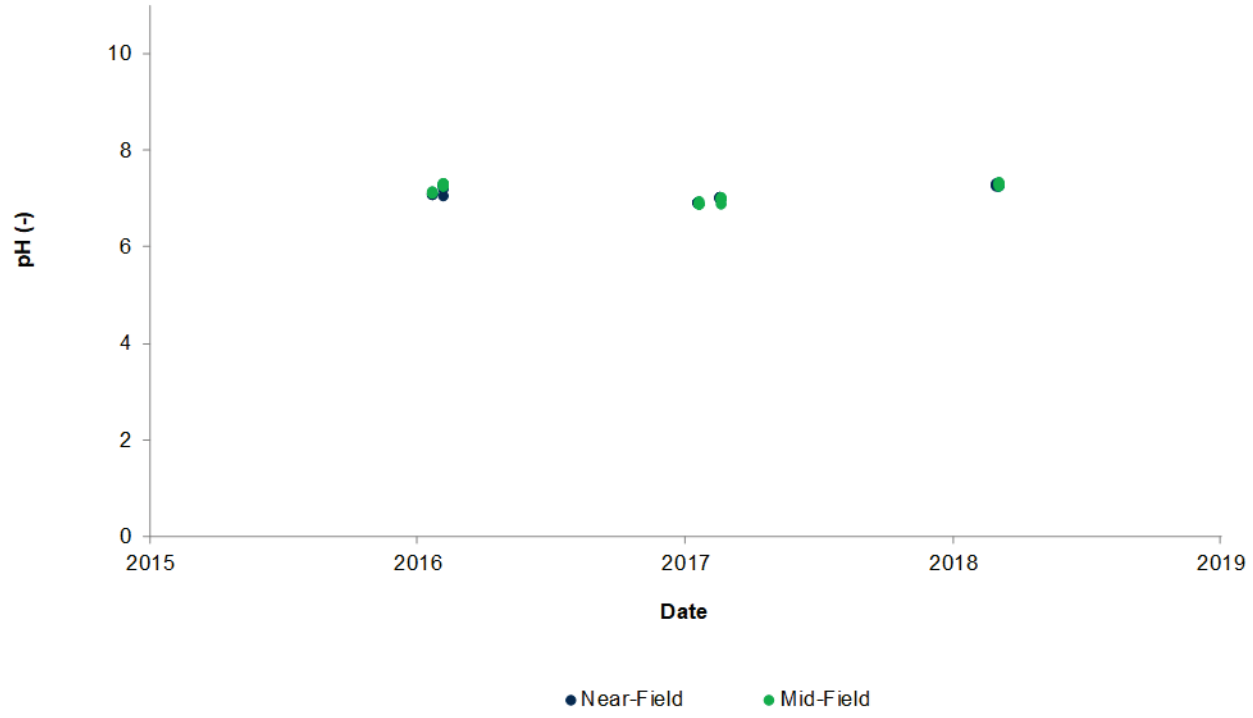


Figure 6F.1-6: Laboratory Ph Under ice In Meliadine Lake, 2016 To 2016

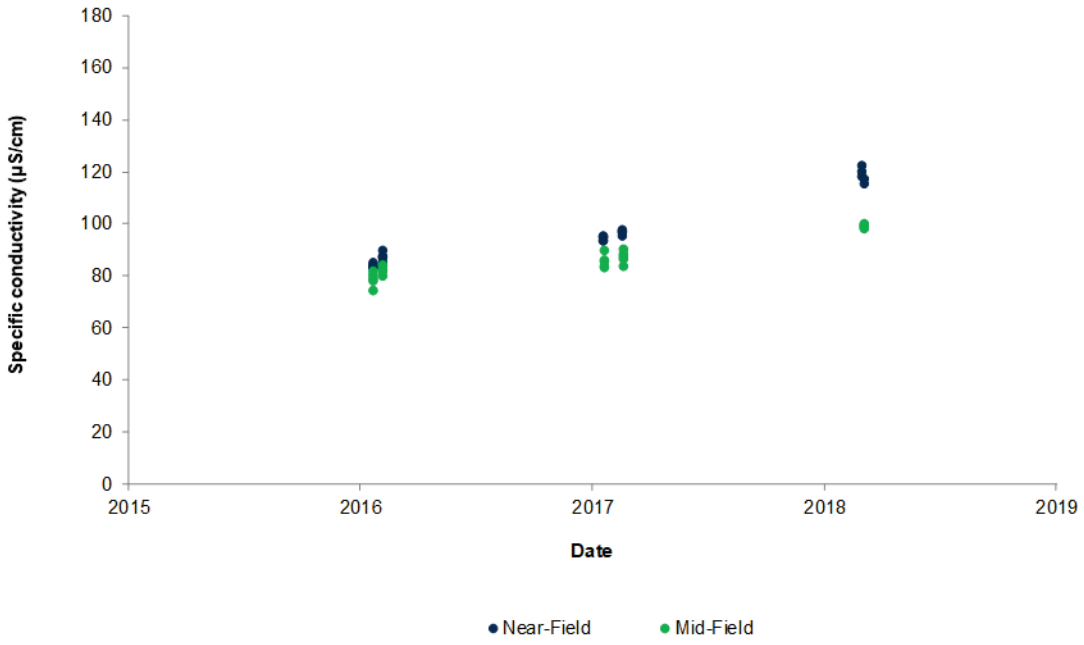


Figure 6F.1-7: Laboratory Specific Conductivity Under ice In Meliadine Lake, 2016 To 2016

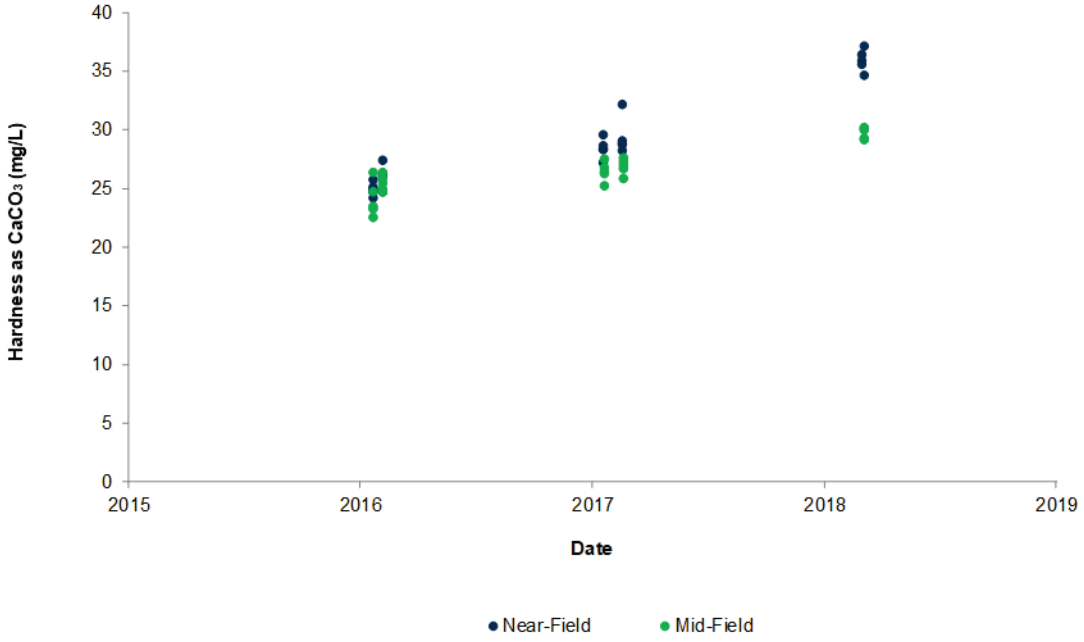


Figure 6F.1-8: Hardness Under ice In Meliadine Lake, 2016 To 2016

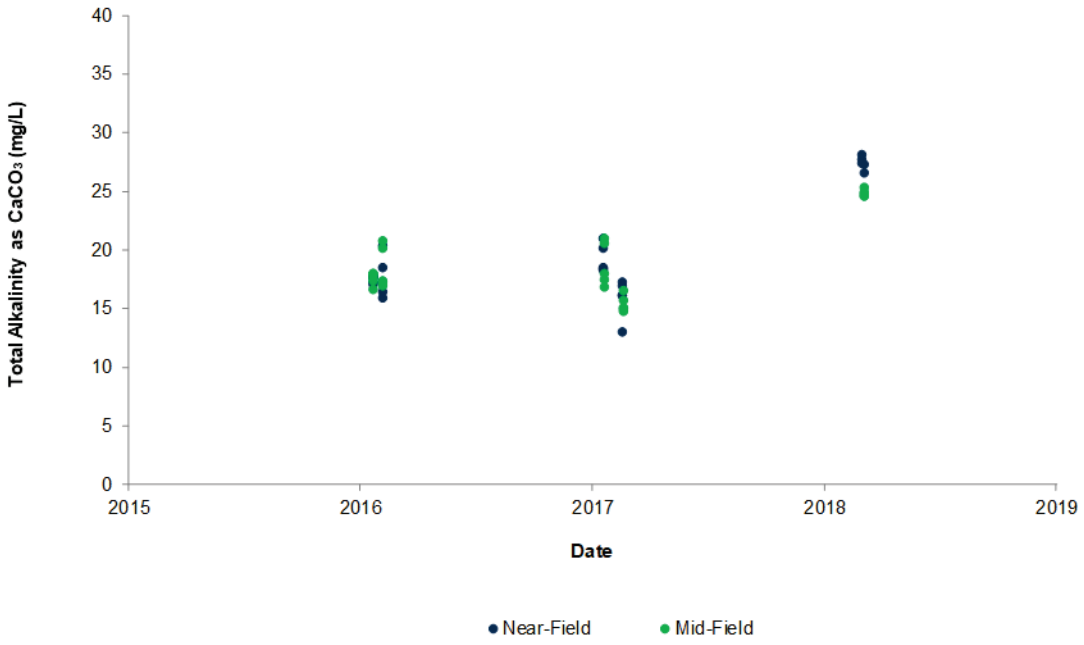


Figure 6F.1-9: Total Alkalinity Under ice In Meliadine Lake, 2016 To 2016

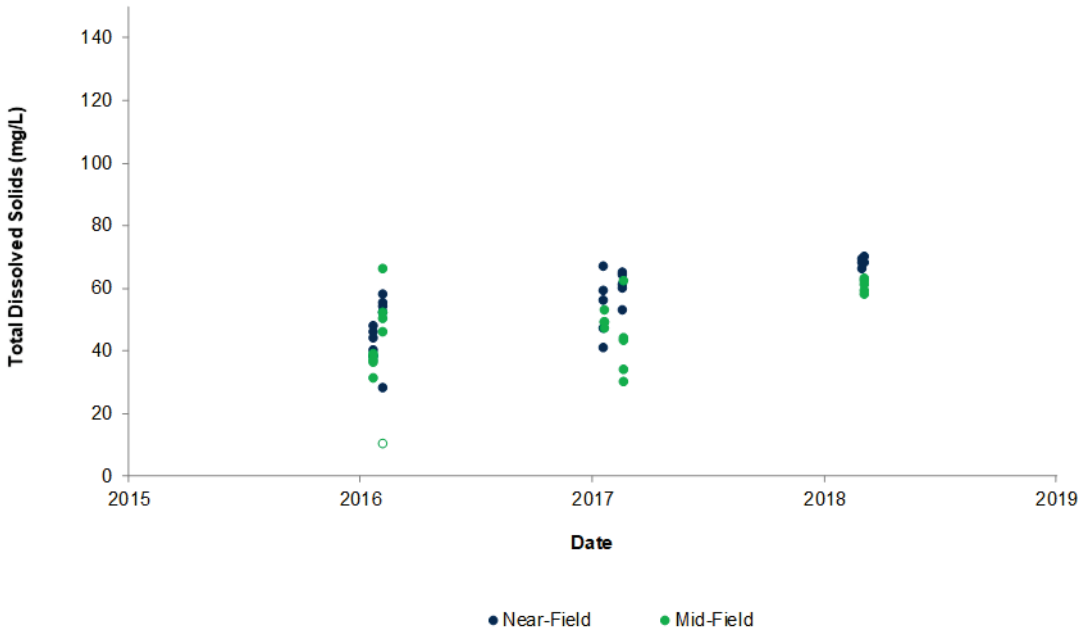


Figure 6F.1-10: Total Dissolved Solids Under ice In Meliadine Lake, 2016 To 2016

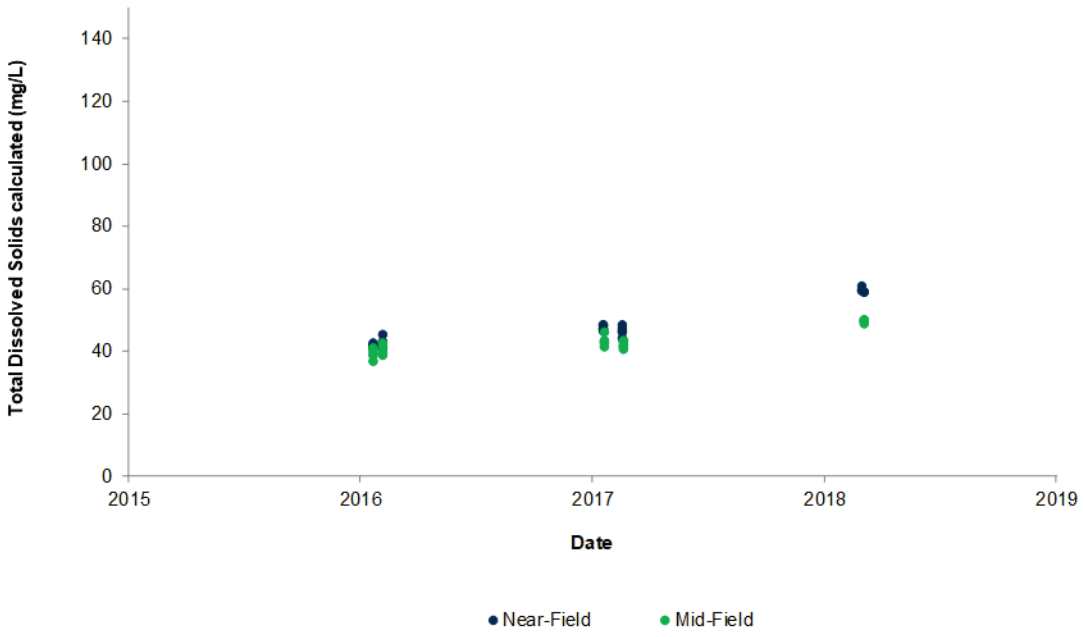


Figure 6F.1-11: Total Dissolved Solids (Calculated) Under ice In Meliadine Lake, 2016 To 2016

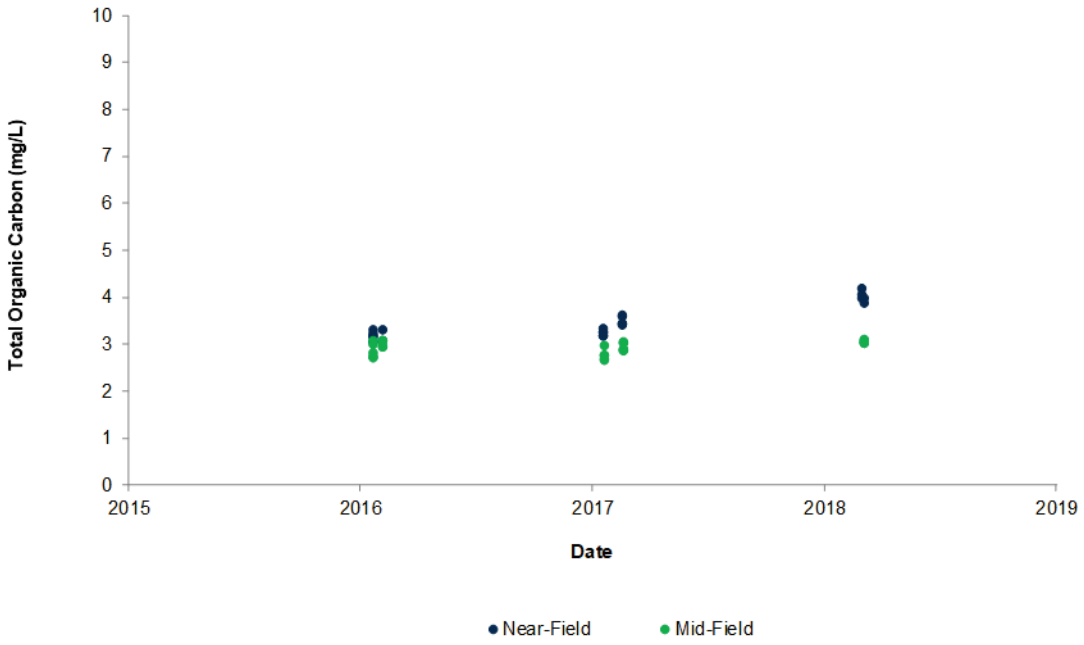


Figure 6F.1-12: Total Organic Carbon Under ice In Meliadine Lake, 2016 To 2016

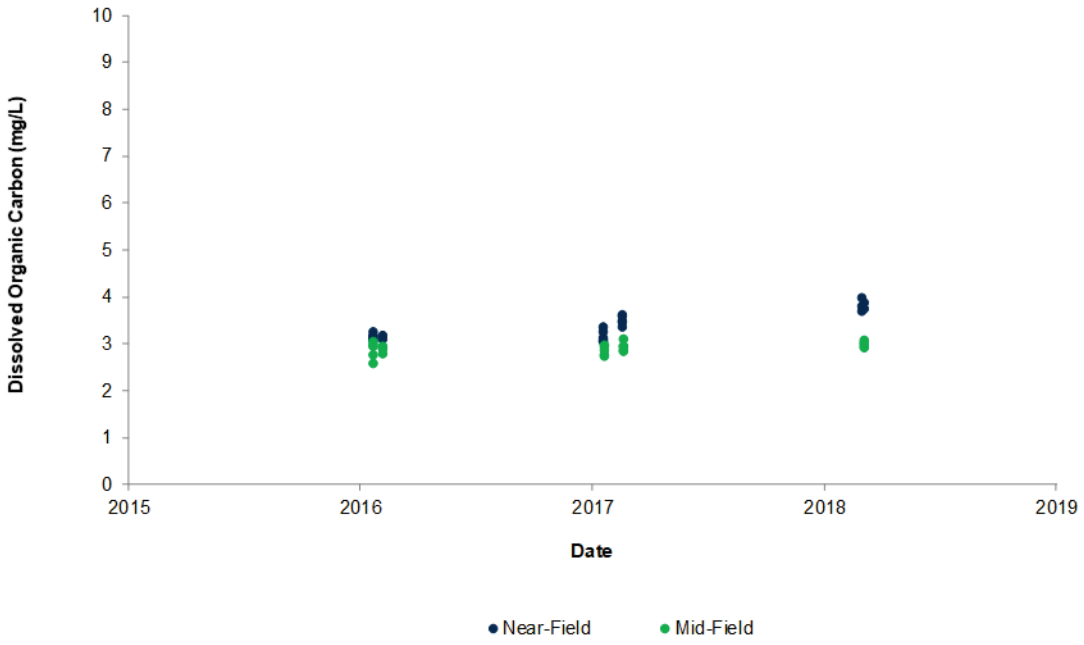


Figure 6F.1-13: Dissolved Organic Carbon Under ice In Meliadine Lake, 2016 To 2016

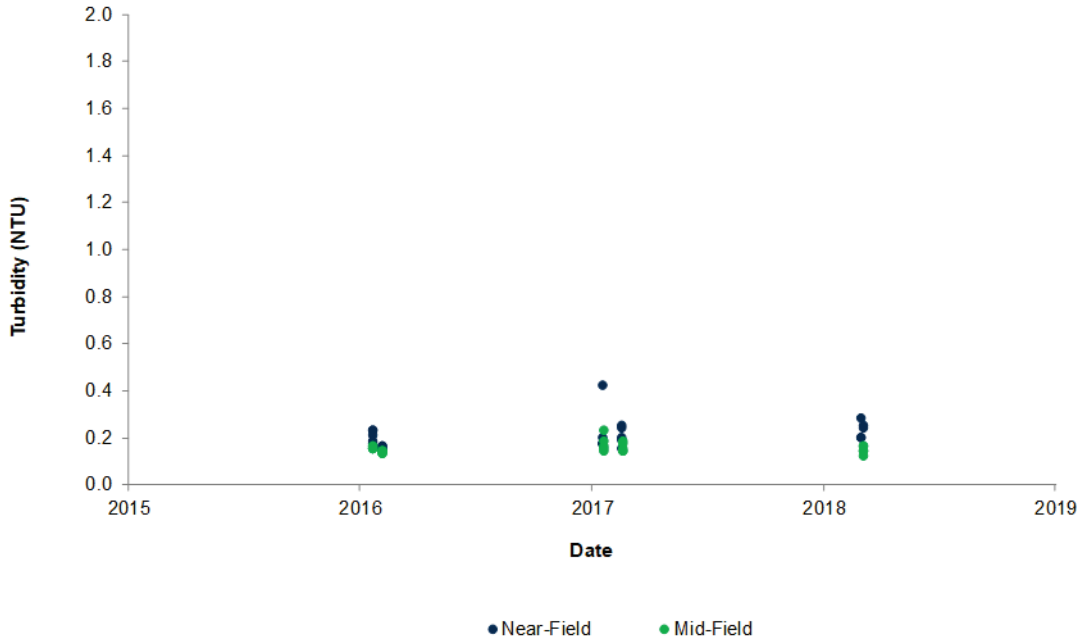


Figure 6F.1-14: Turbidity Under ice In Meliadine Lake, 2016 To 2016

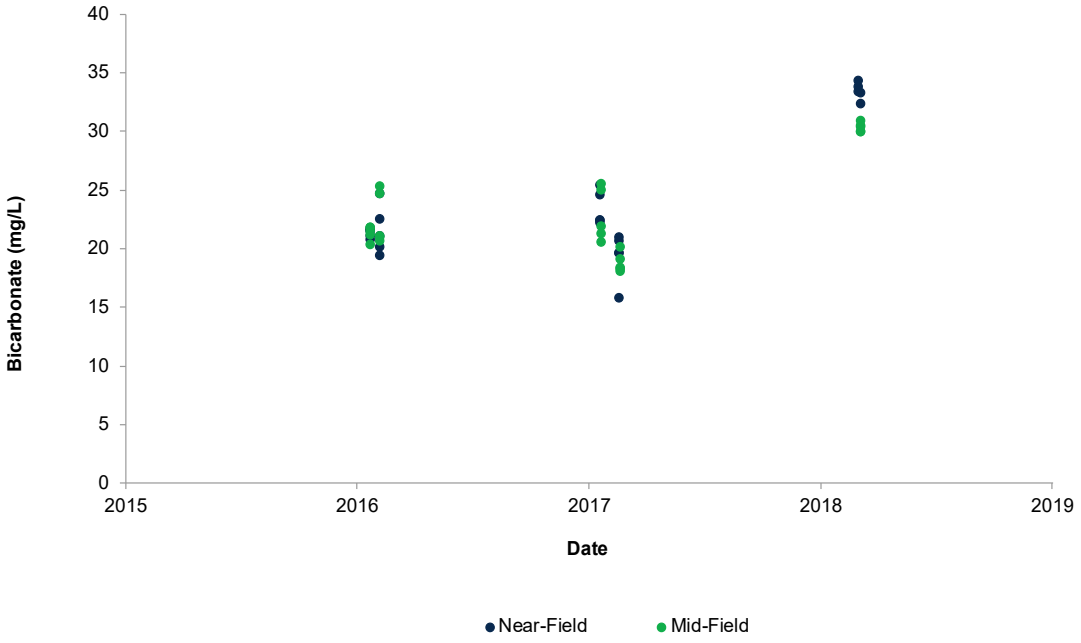


Figure 6F.1-15: Bicarbonate Under ice In Meliadine Lake, 2016 To 2016

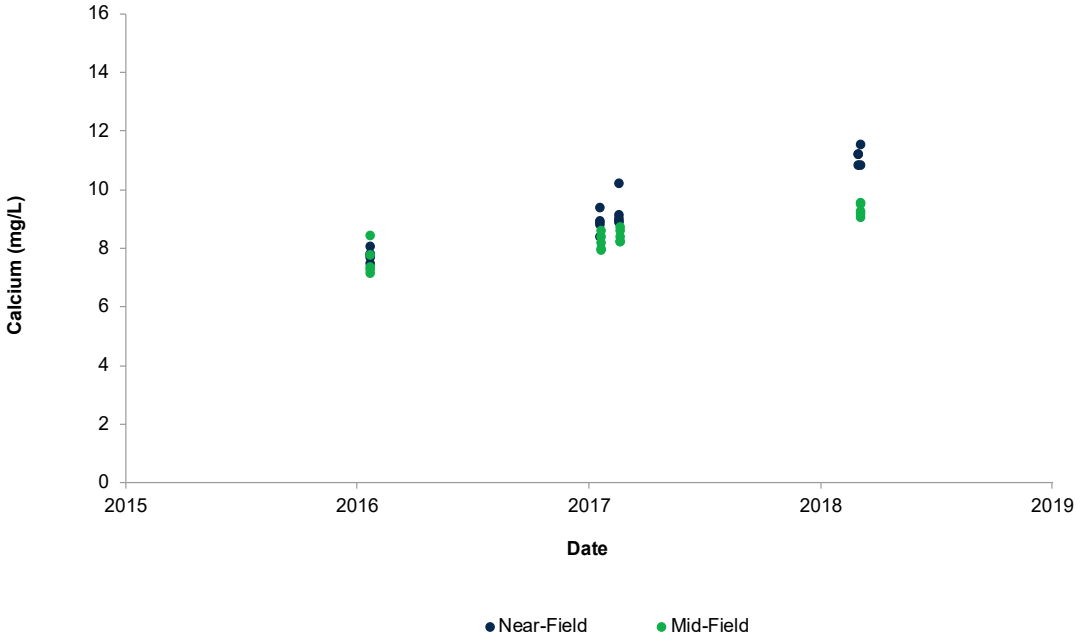


Figure 6F.1-16: Calcium Under ice In Meliadine Lake, 2016 To 2016

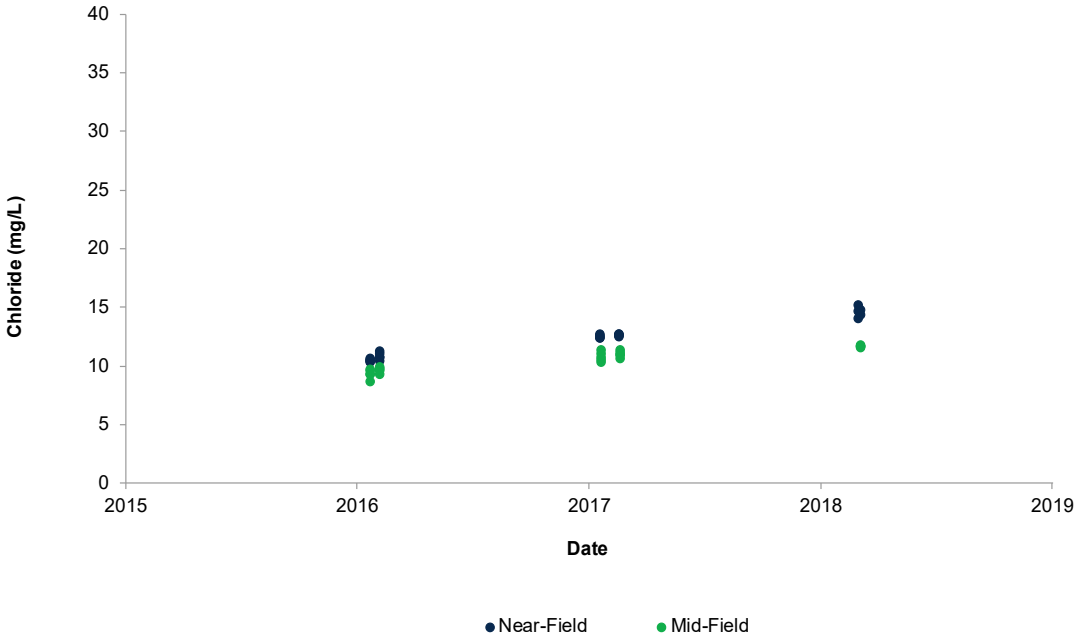


Figure 6F.1-17: Chloride Under ice In Meliadine Lake, 2016 To 2016

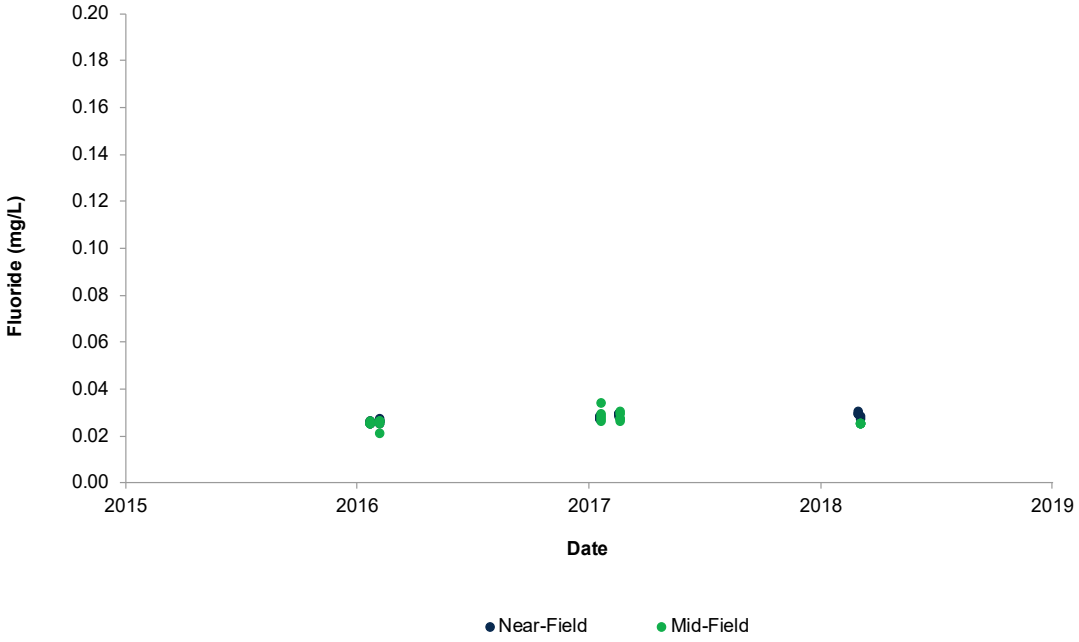


Figure 6F.1-18: Fluoride Under ice In Meliadine Lake, 2016 To 2016

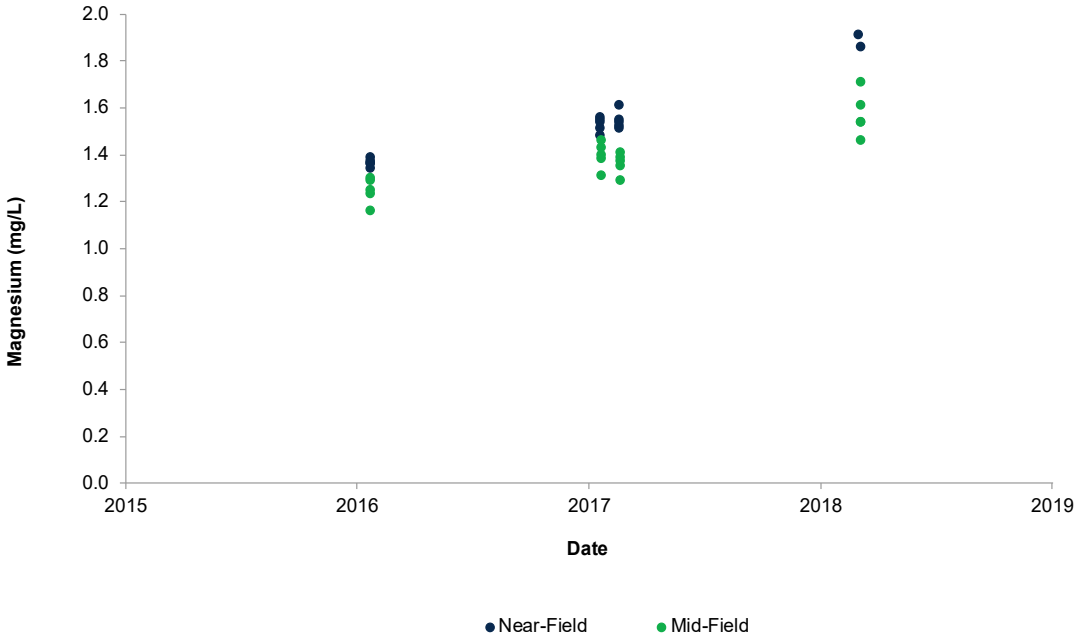


Figure 6F.1-19: Magnesium Under ice In Meliadine Lake, 2016 To 2016

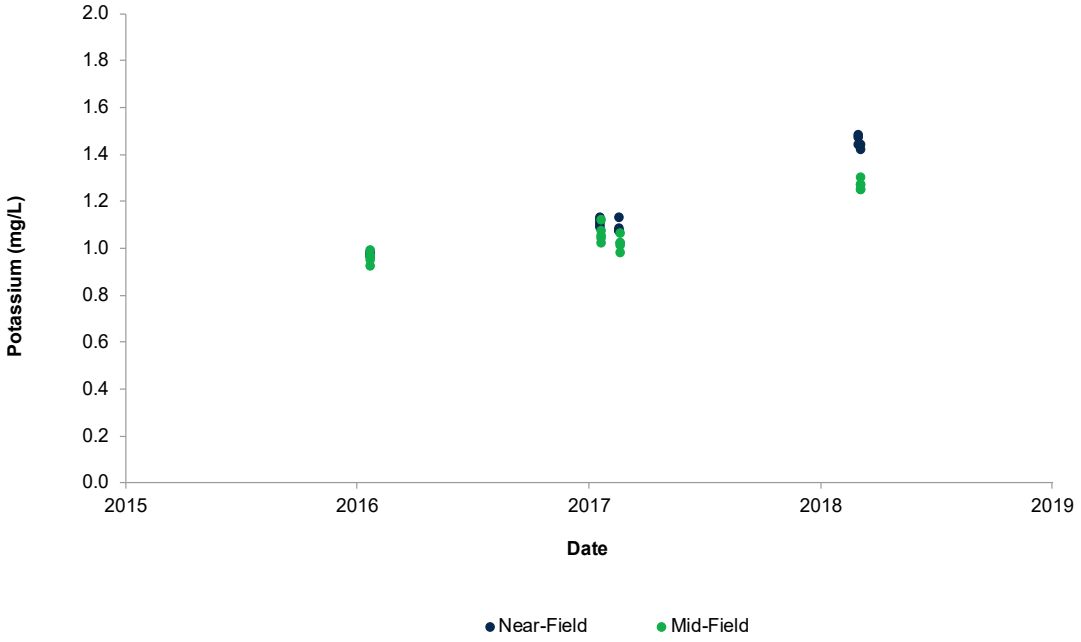


Figure 6F.1-20: Potassium Under ice In Meliadine Lake, 2016 To 2016

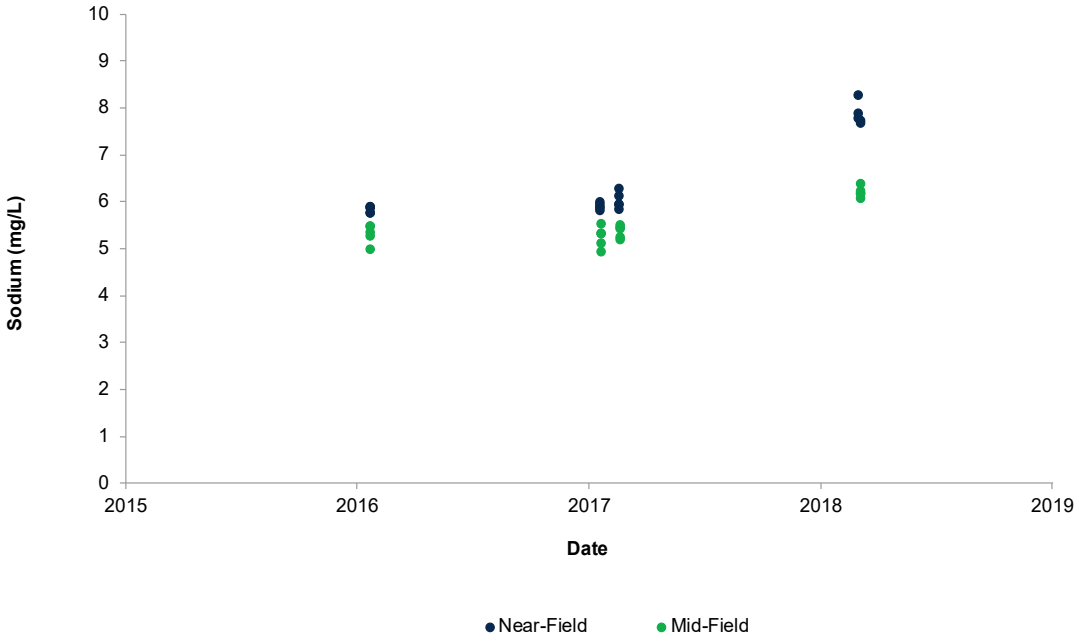


Figure 6F.1-21: Sodium Under ice In Meliadine Lake, 2016 To 2016

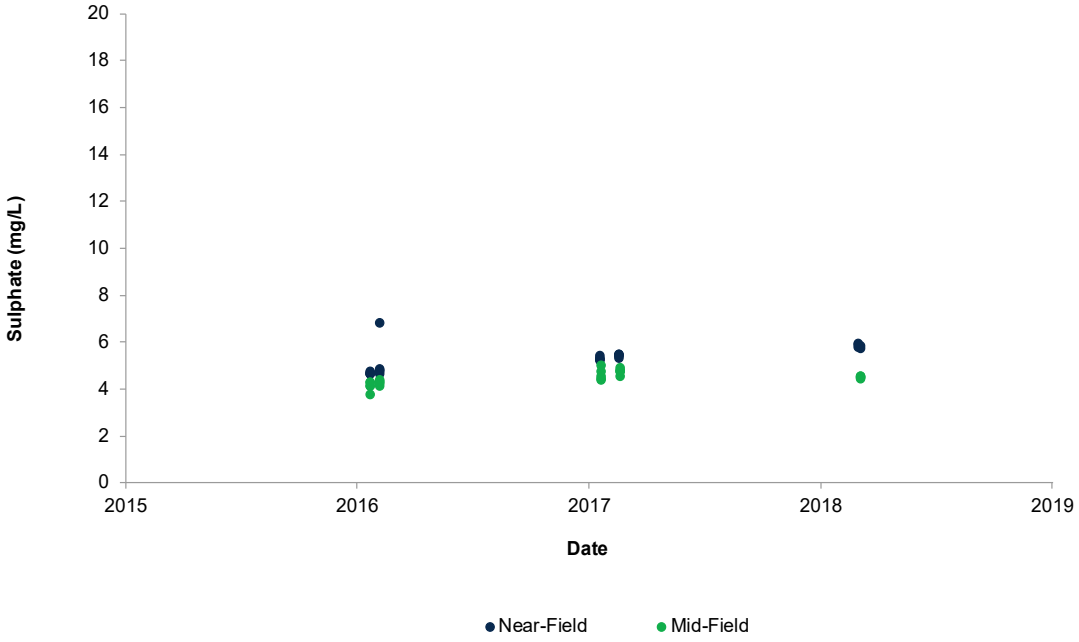


Figure 6F.1-22: Sulphate Under ice In Meliadine Lake, 2016 To 2016

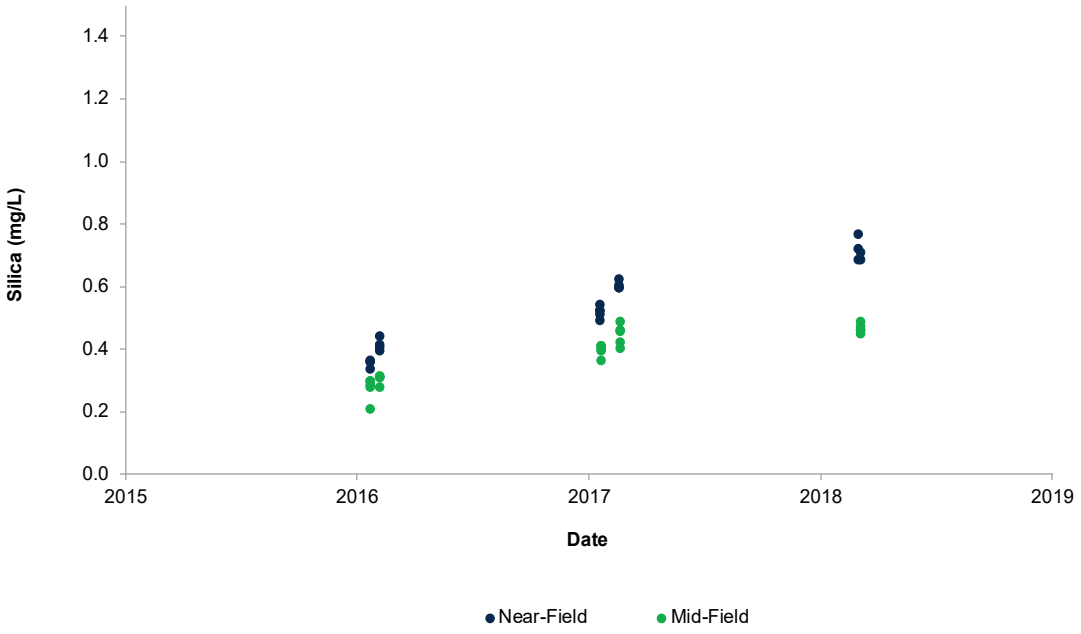


Figure 6F.1-23: Reactive Silica Under ice In Meliadine Lake, 2016 To 2016

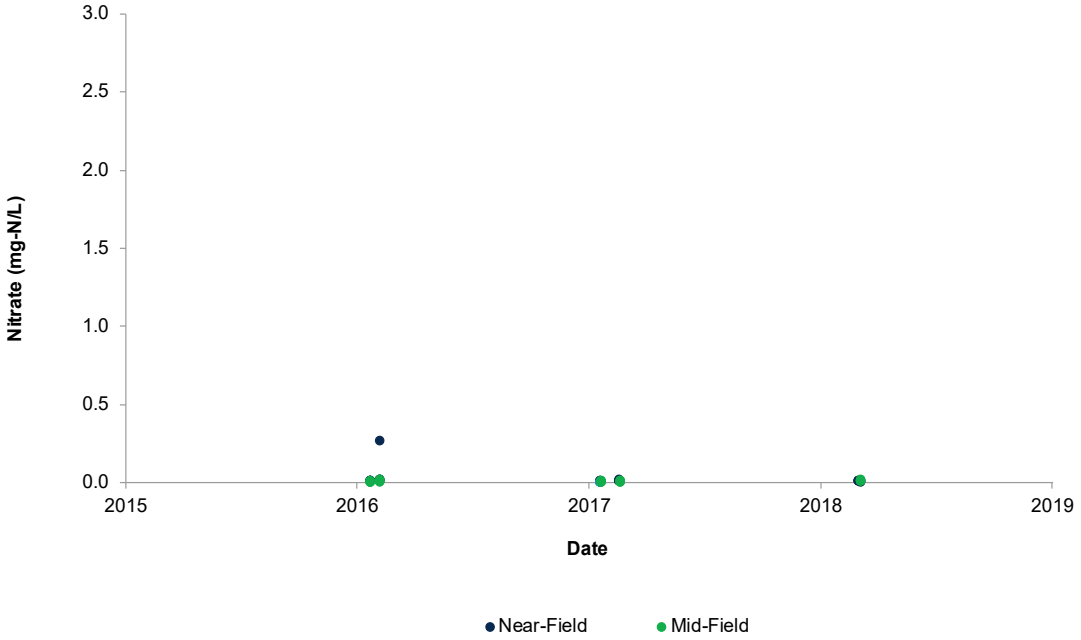


Figure 6F.1-24: Nitrate As N Under ice In Meliadine Lake, 2016 To 2016

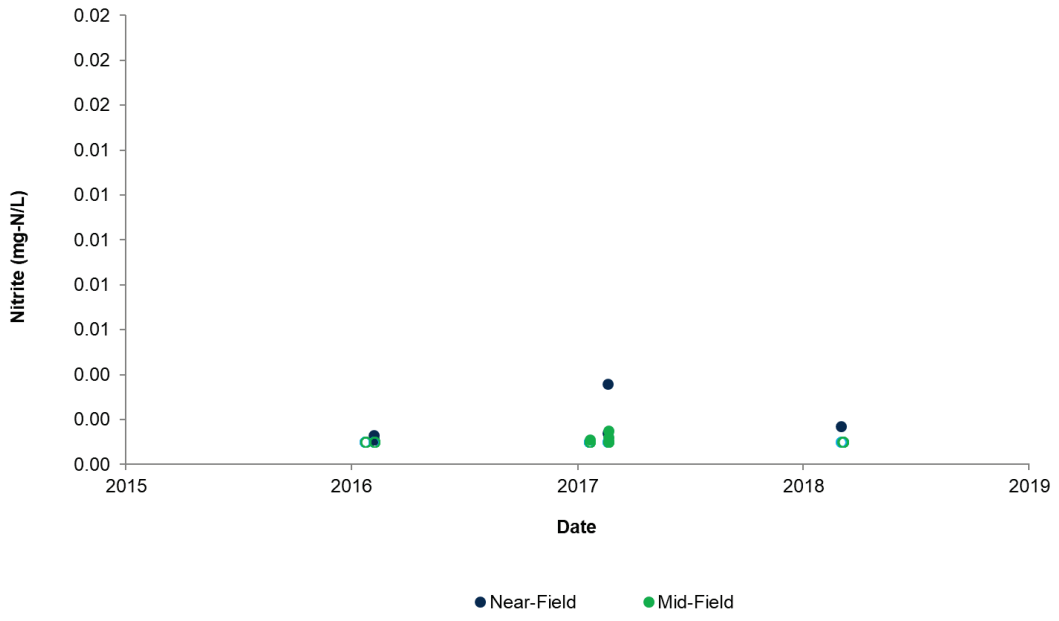


Figure 6F.1-25: Nitrite As N Under ice In Meliadine Lake, 2016 To 2016

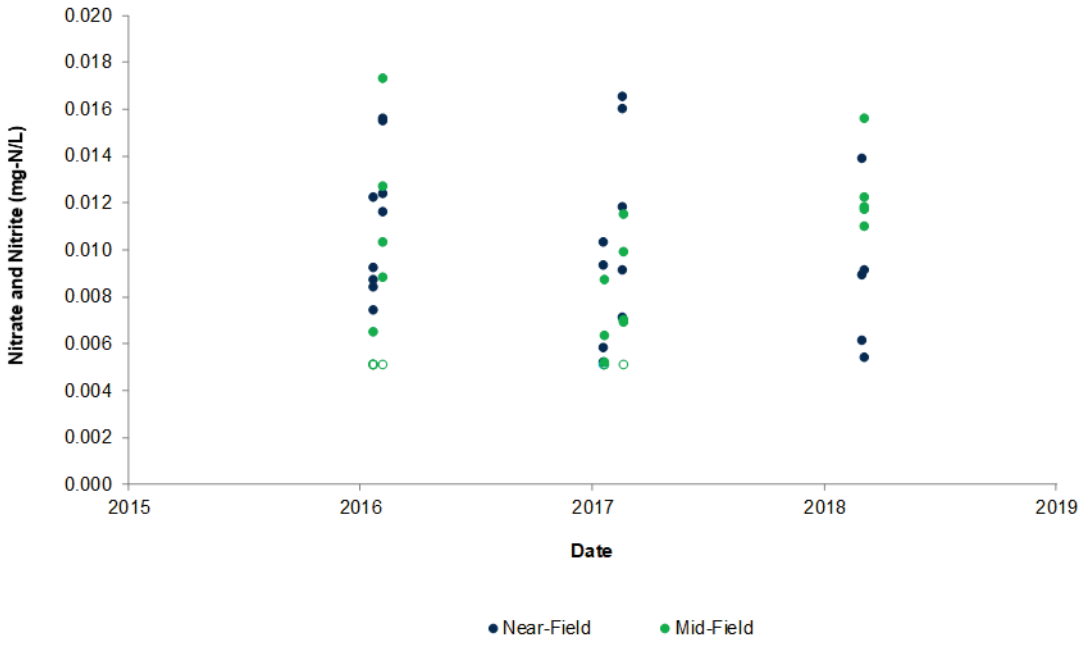


Figure 6F.1-26: Nitrate And Nitrite Under ice In Meliadine Lake, 2016 To 2016

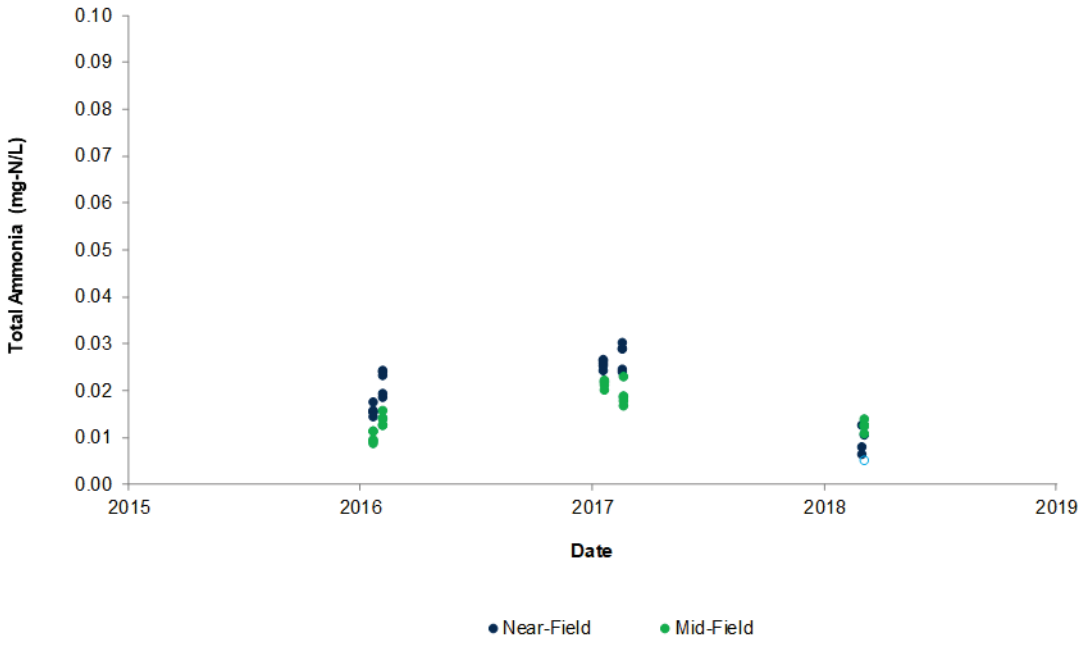


Figure 6F.1-27: Total Ammonia Under ice In Meliadine Lake, 2016 To 2016

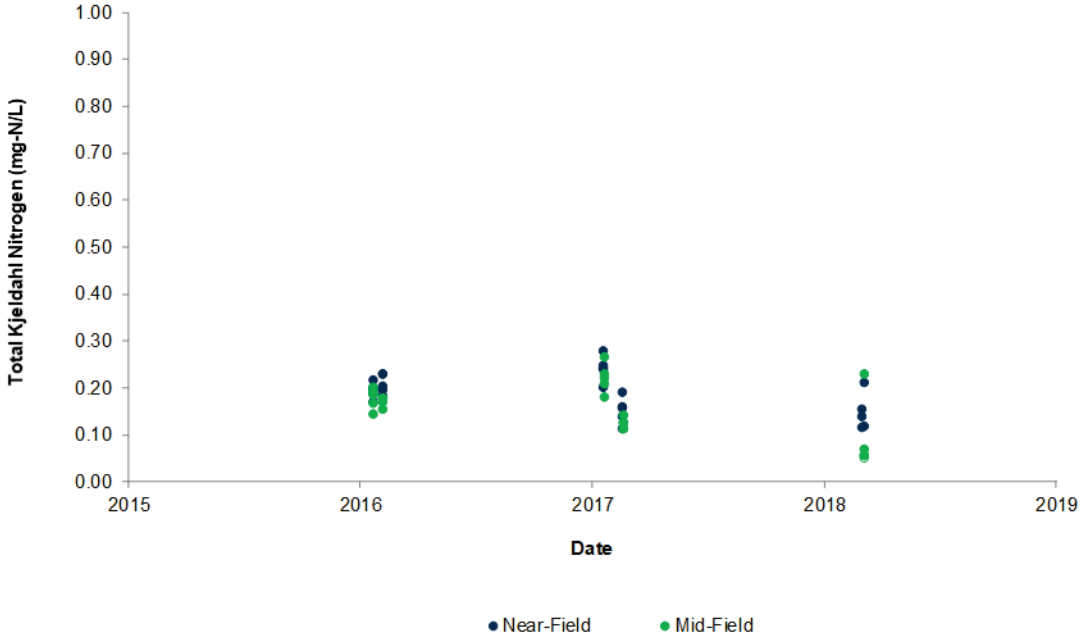


Figure 6F.1-28: Total Kjeldahl Nitrogen Under ice In Meliadine Lake, 2016 To 2016

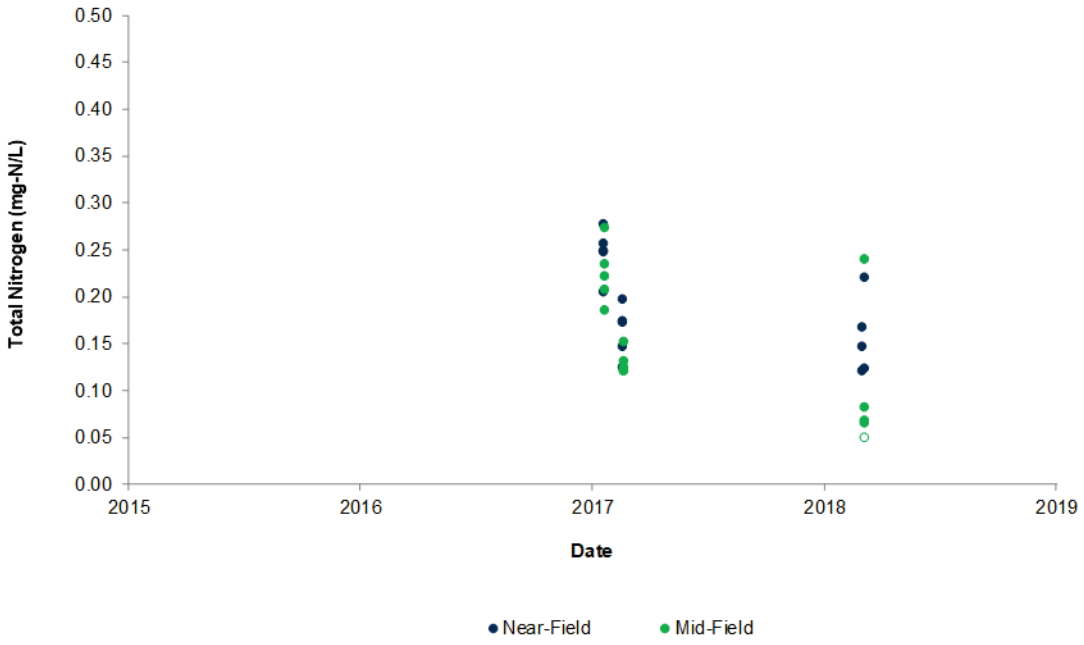


Figure 6F.1-29: Total Nitrogen Under ice In Meliadine Lake, 2016 To 2016

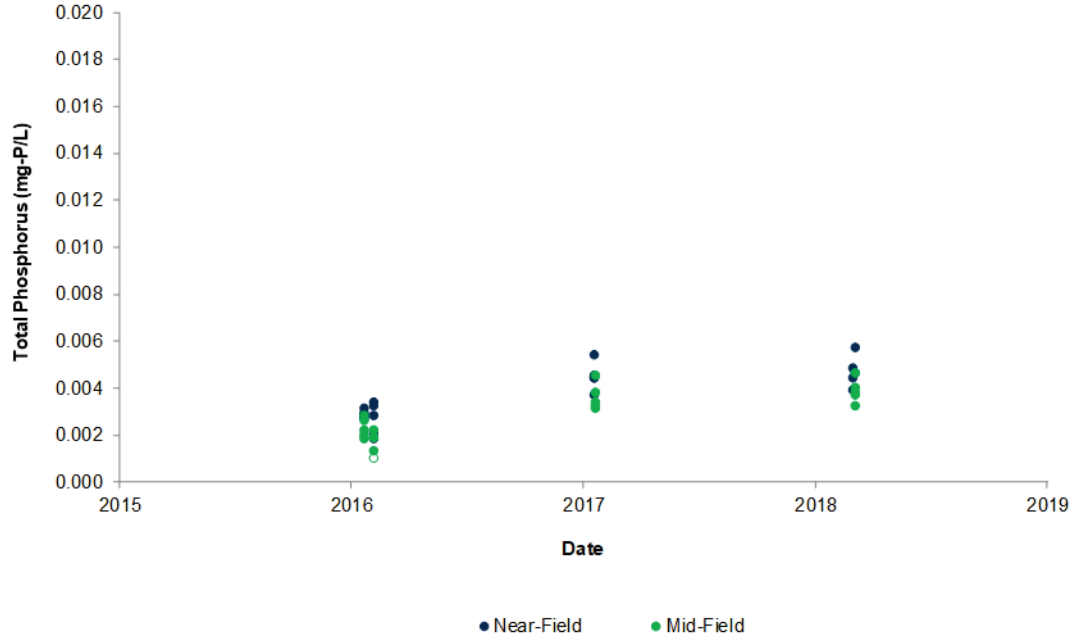


Figure 6F.1-30: Total Phosphorus Under ice In Meliadine Lake, 2016 To 2016

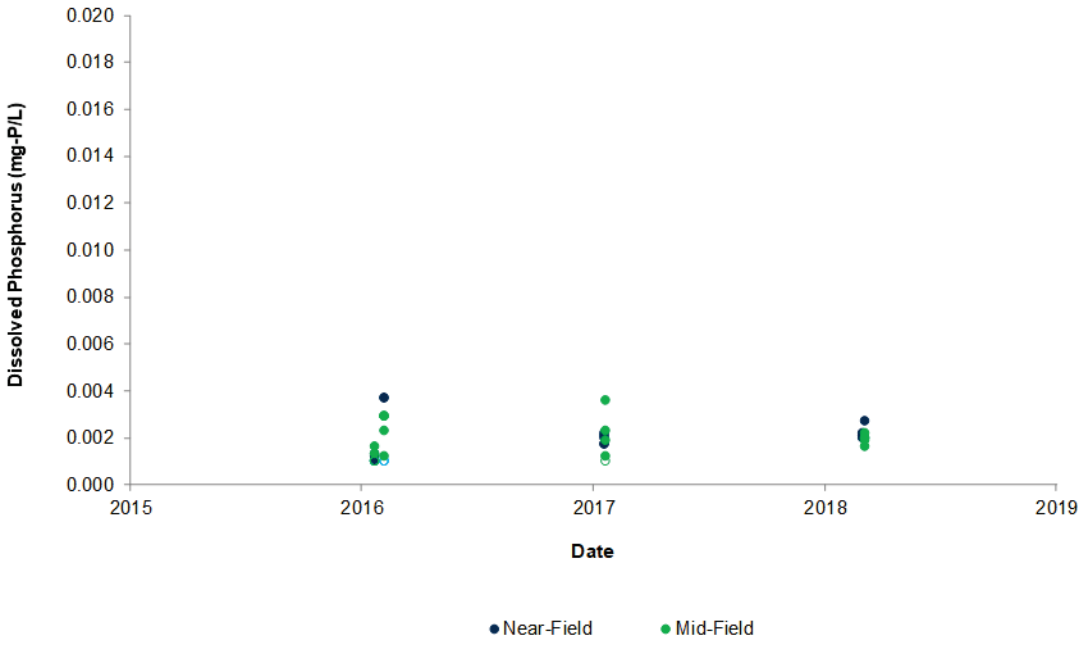


Figure 6F.1-31: Dissolved Phosphorus Under ice In Meliadine Lake, 2016 To 2016

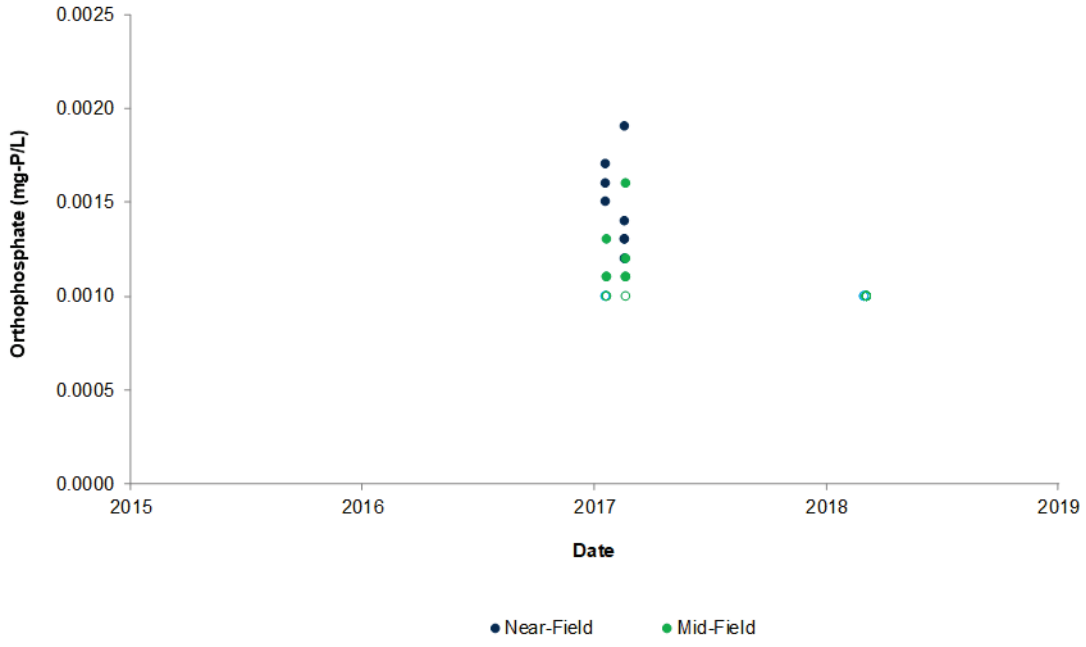


Figure 6F.1-32: Orthophosphate Under ice In Meliadine Lake, 2016 To 2016

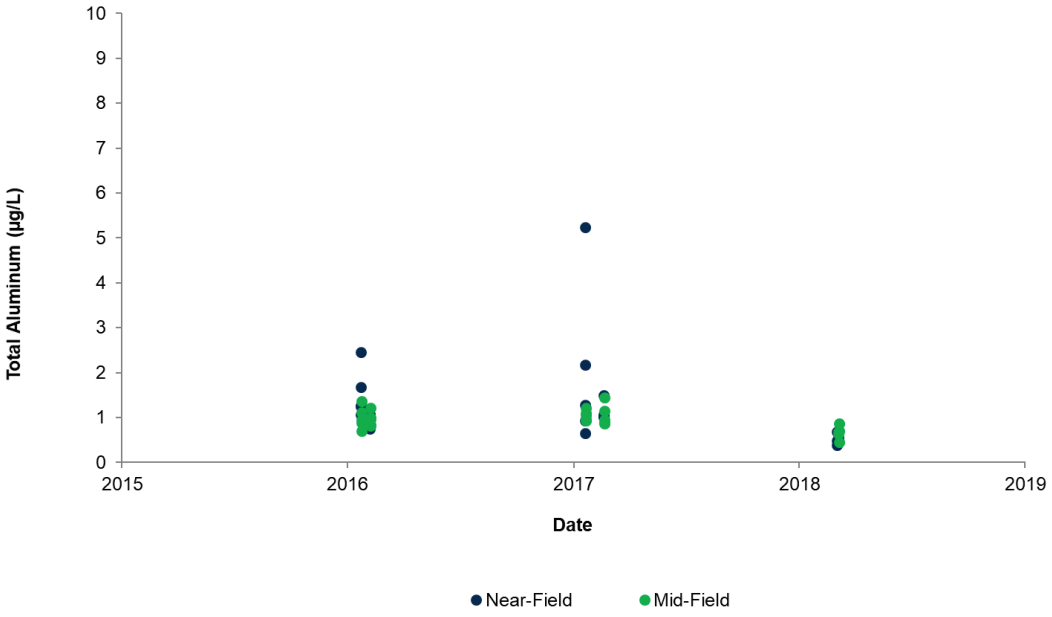


Figure 6F.1-33: Total Aluminum Under ice In Meliadine Lake, 2016 To 2016

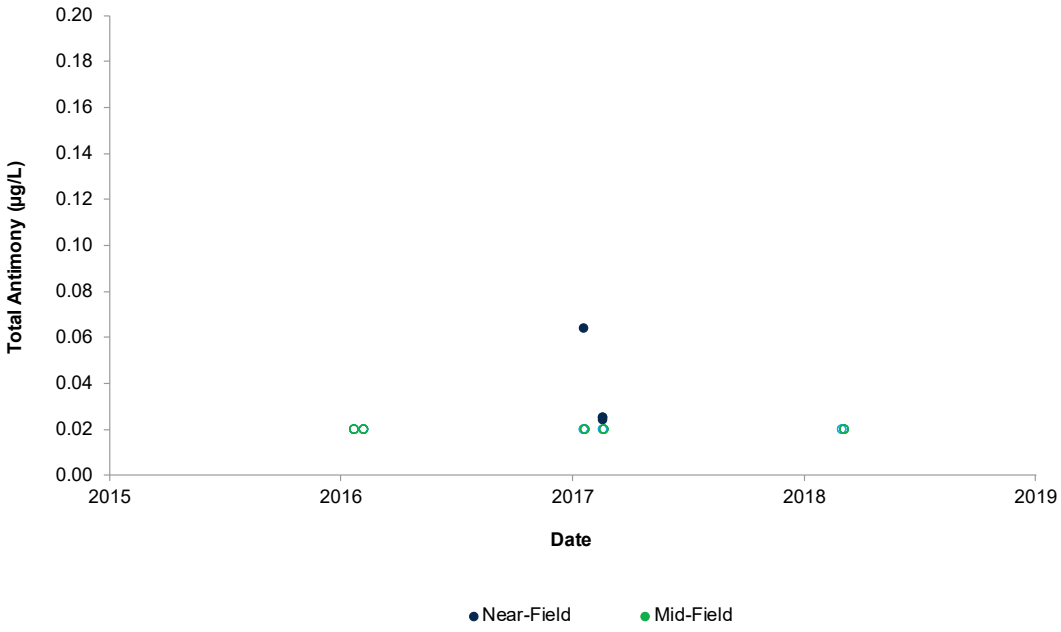


Figure 6F.1-34: Total Antimony Under ice In Meliadine Lake, 2016 To 2016

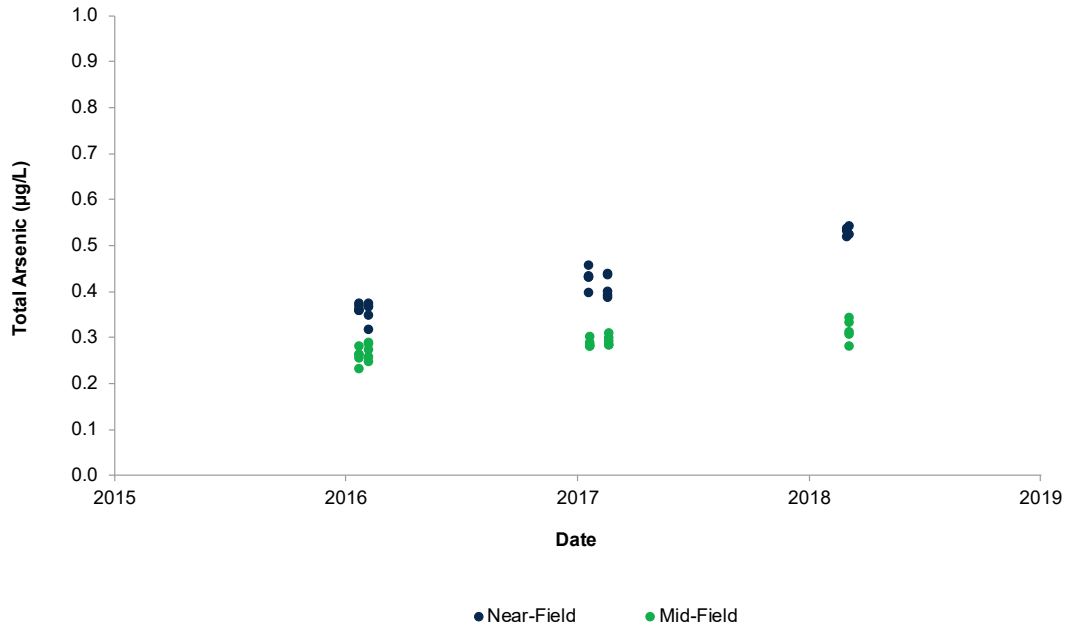


Figure 6F.1-35: Total Arsenic Under ice In Meliadine Lake, 2016 To 2016

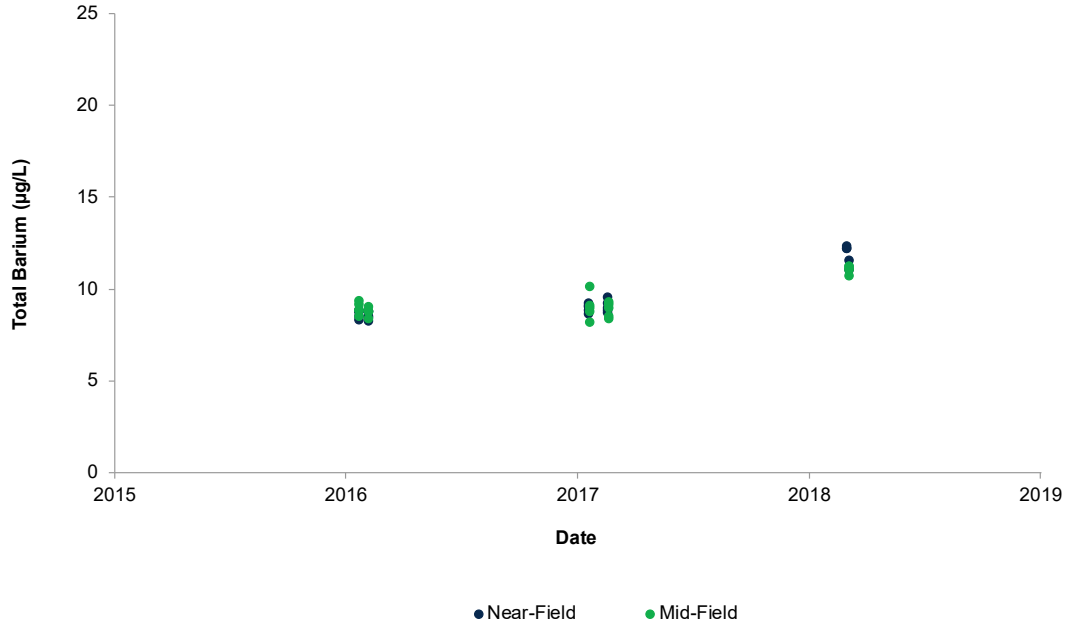


Figure 6F.1-36: Total Barium Under ice In Meliadine Lake, 2016 To 2016

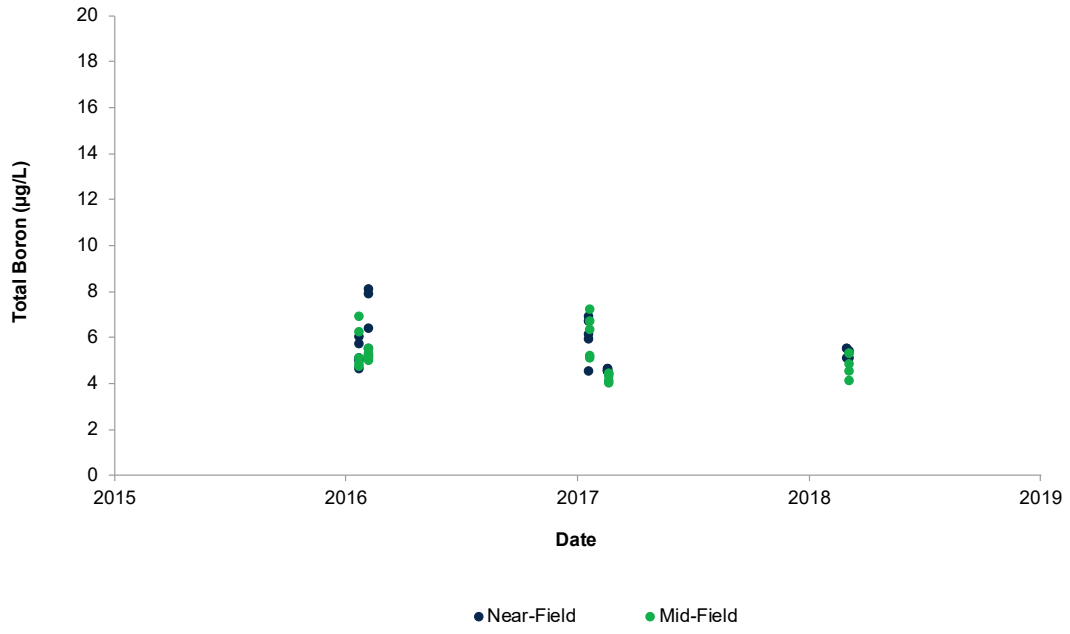


Figure 6F.1-37: Total Boron Under ice In Meliadine Lake, 2016 To 2016

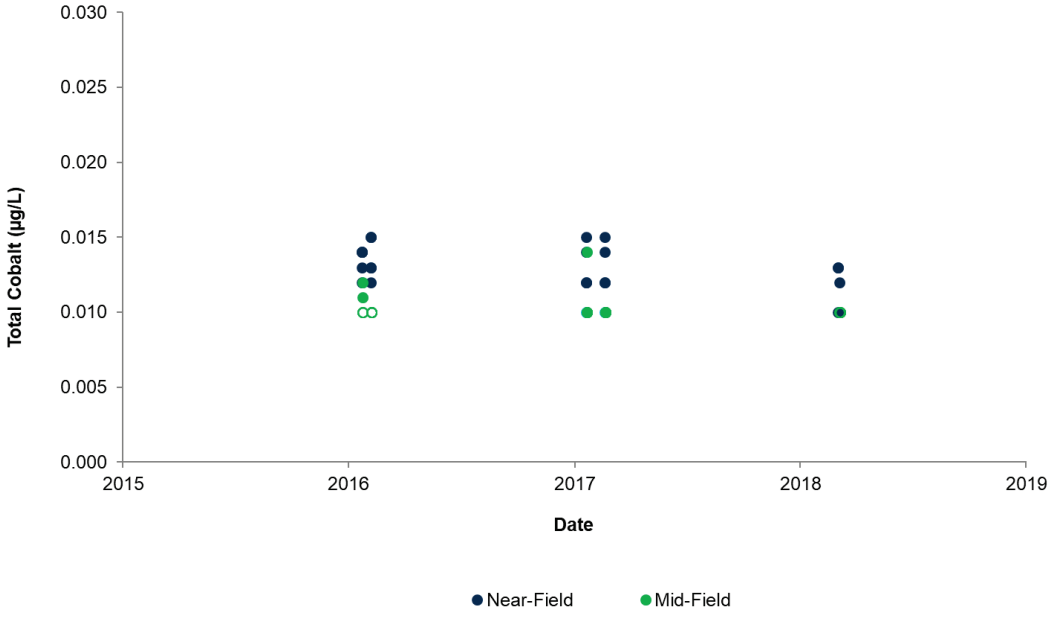


Figure 6F.1-38: Total Cobalt Under ice In Meliadine Lake, 2016 To 2016

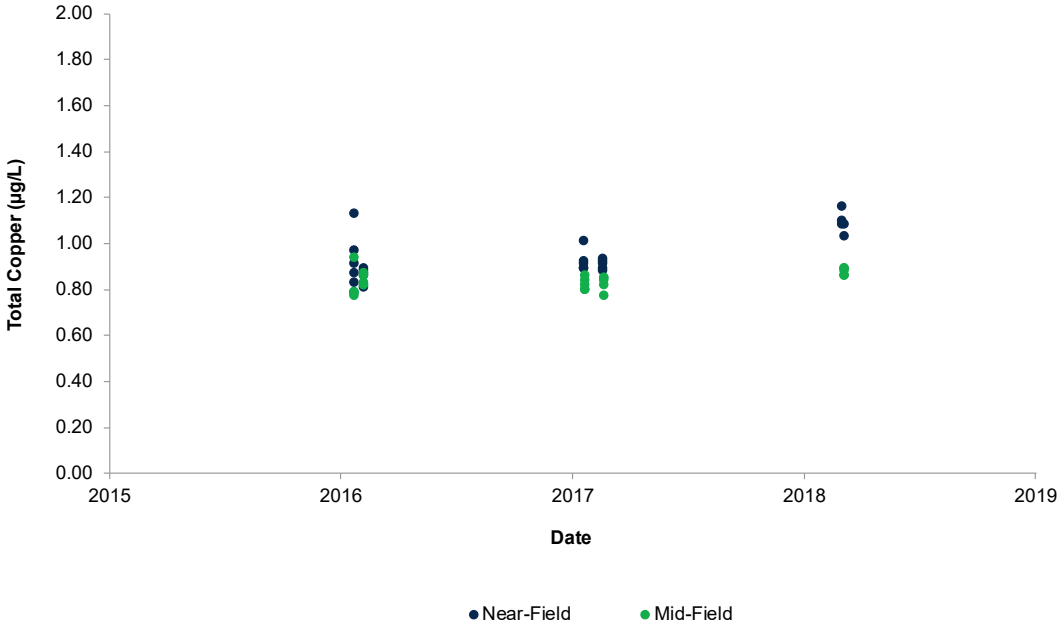


Figure 6F.1-39: Total Copper Under ice In Meliadine Lake, 2016 To 2016

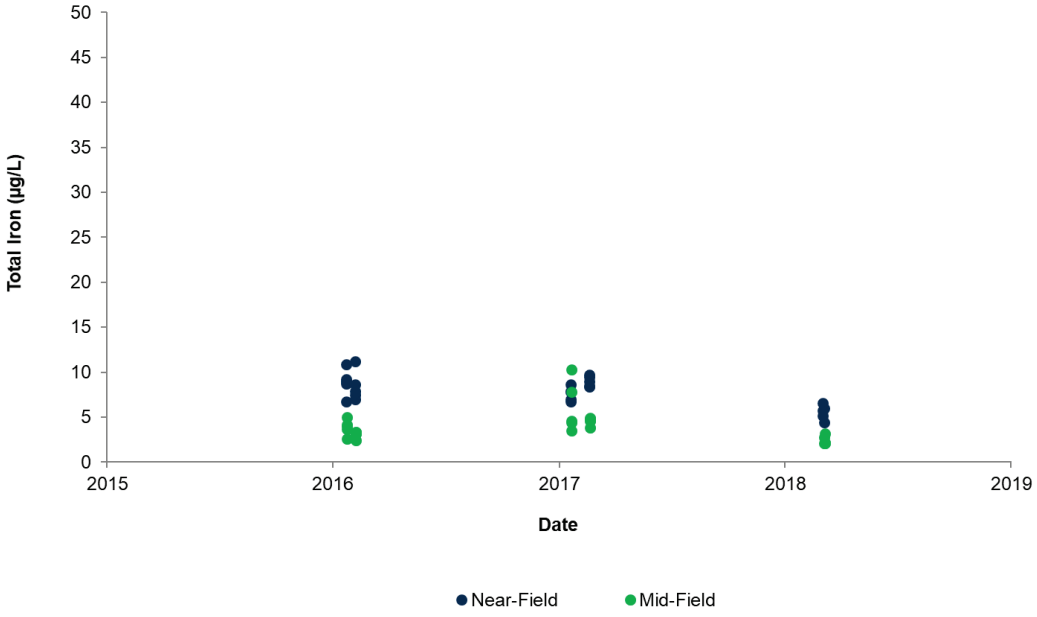


Figure 6F.1-40: Total Iron Under ice In Meliadine Lake, 2016 To 2016

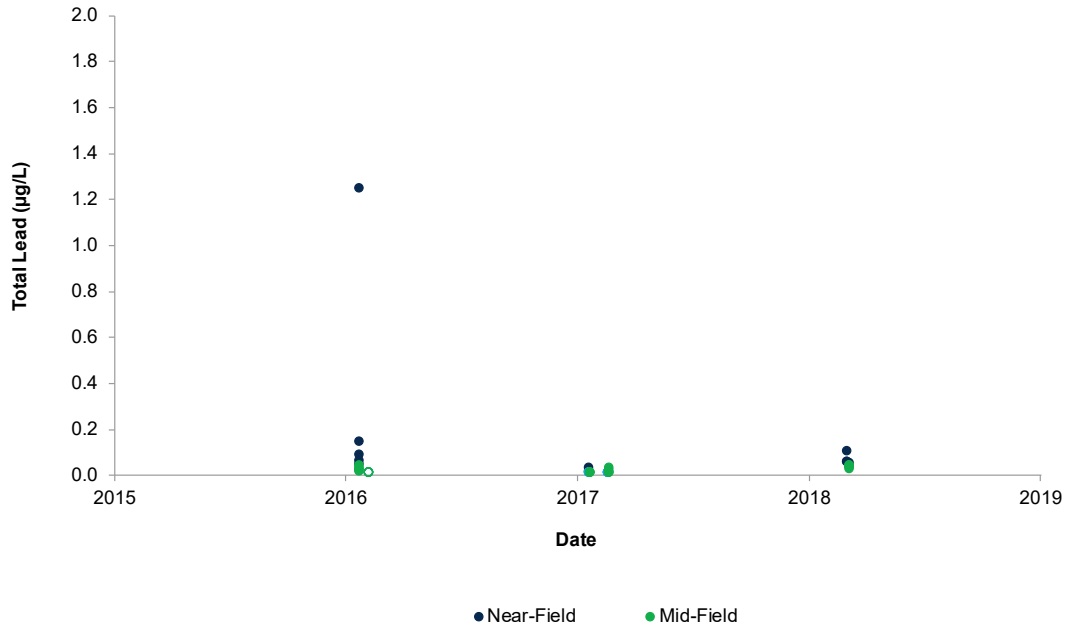


Figure 6F.1-41: Total Lead Under ice In Meliadine Lake, 2016 To 2016

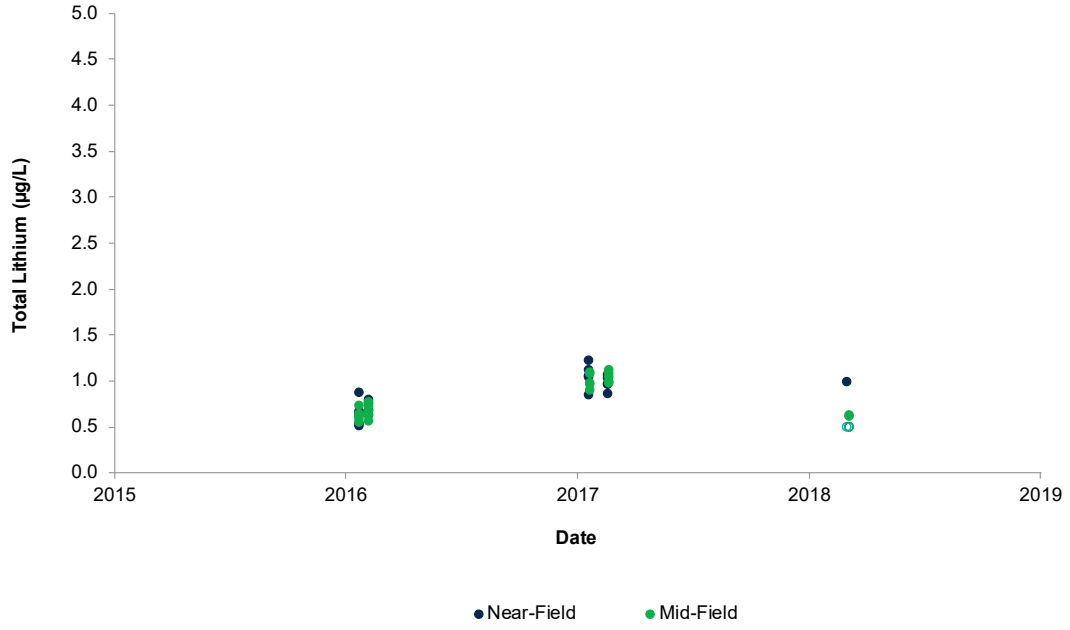


Figure 6F.1-42: Total Lithium Under ice In Meliadine Lake, 2016 To 2016

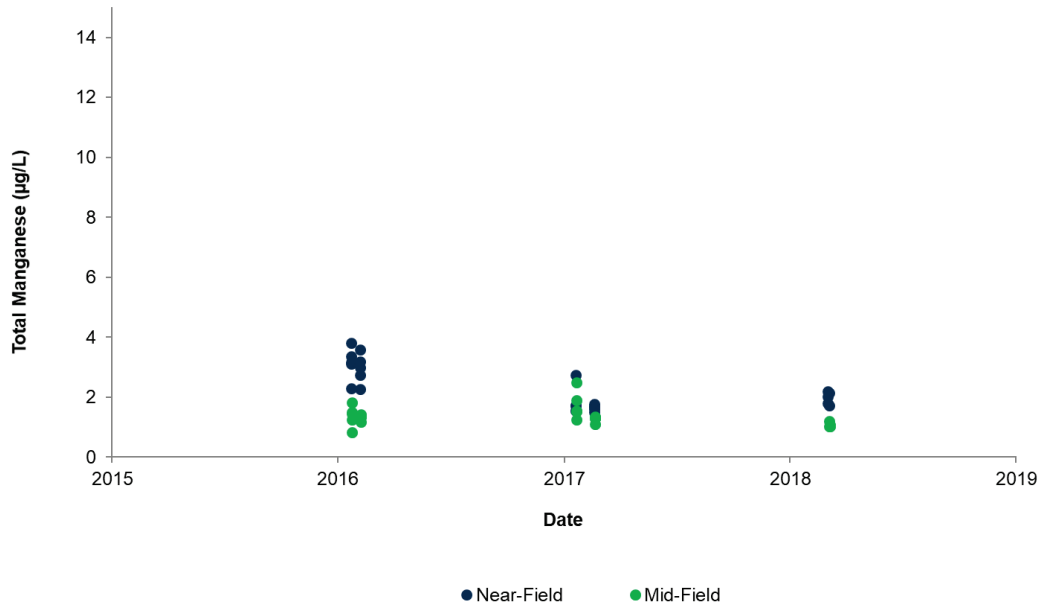


Figure 6F.1-43: Total Manganese Under ice In Meliadine Lake, 2016 To 2016

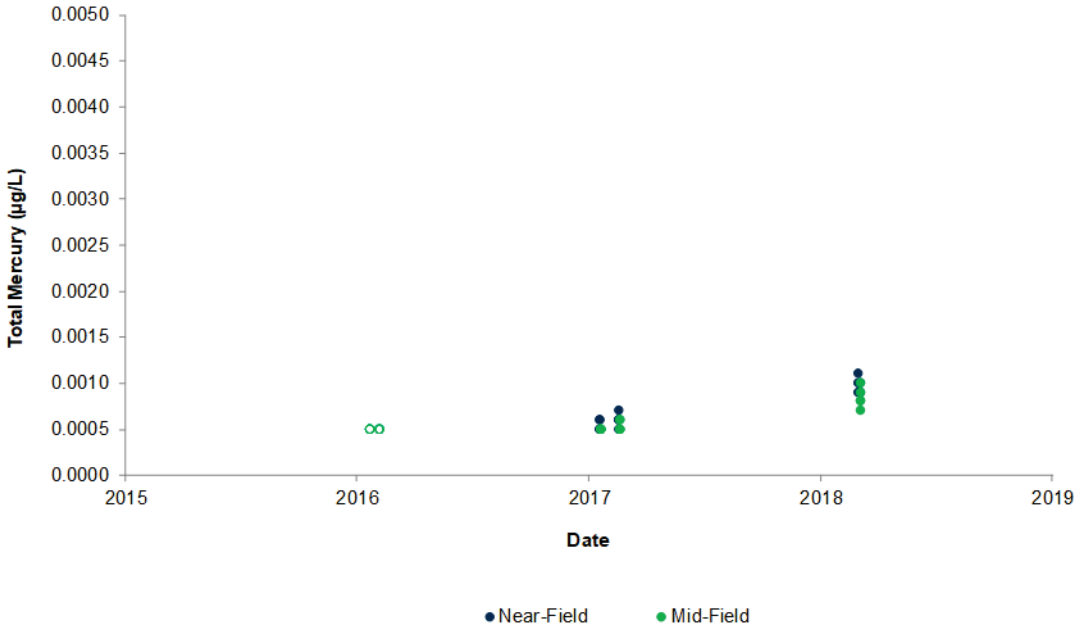


Figure 6F.1-44: Total Mercury Under ice In Meliadine Lake, 2016 To 2016

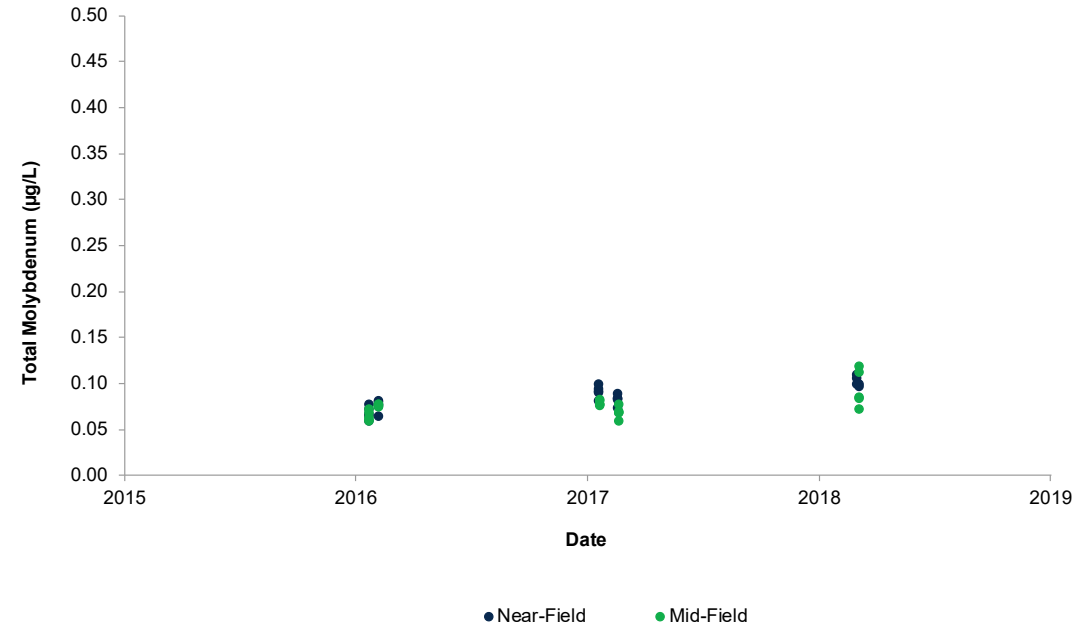


Figure 6F.1-45: Total Molybdenum Under ice In Meliadine Lake, 2016 To 2016

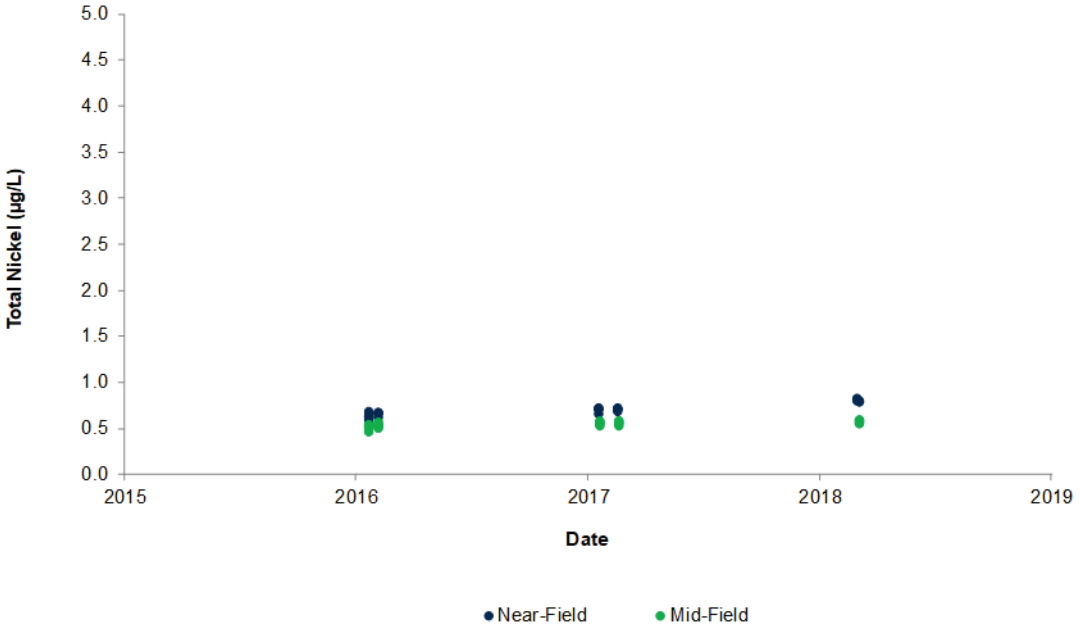


Figure 6F.1-46: Total Nickel Under ice In Meliadine Lake, 2016 To 2016

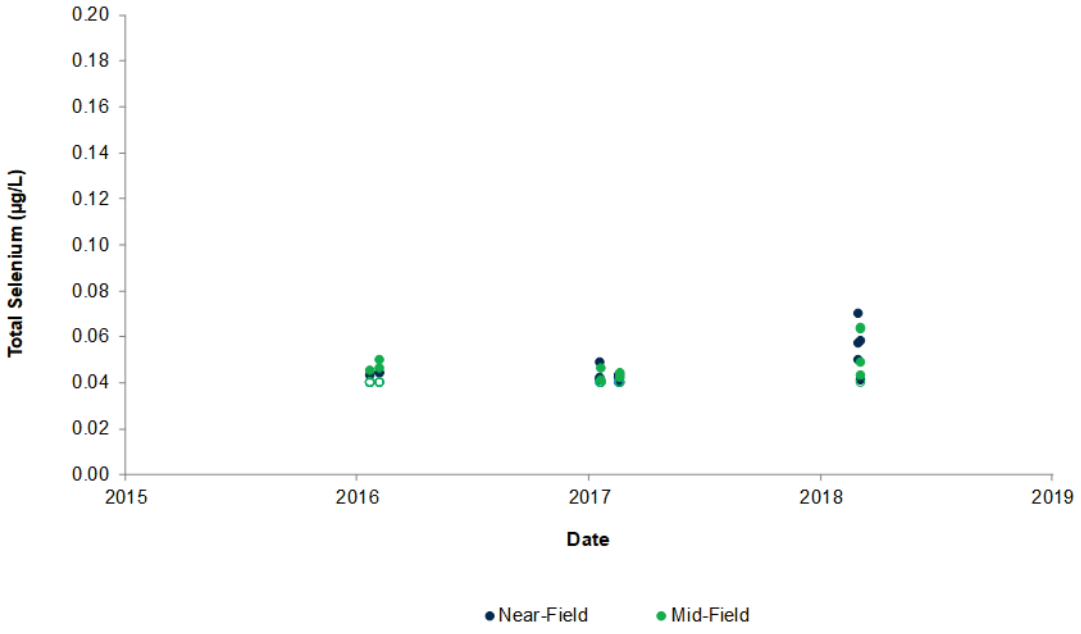


Figure 6F.1-47: Total Selenium Under ice In Meliadine Lake, 2016 To 2016

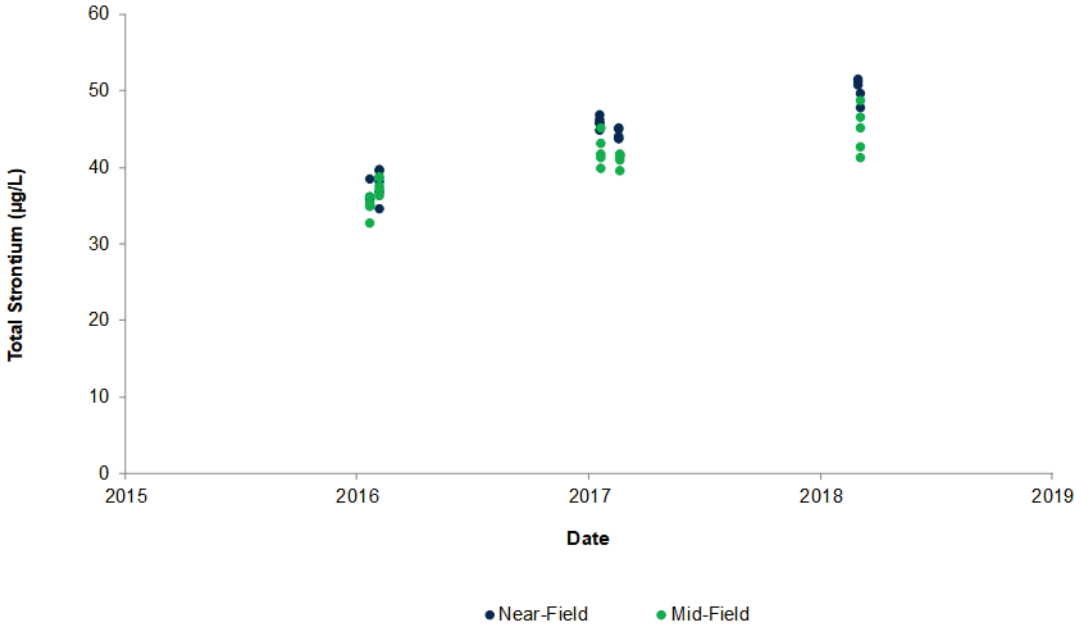


Figure 6F.1-48: Total Strontium Under ice In Meliadine Lake, 2016 To 2016

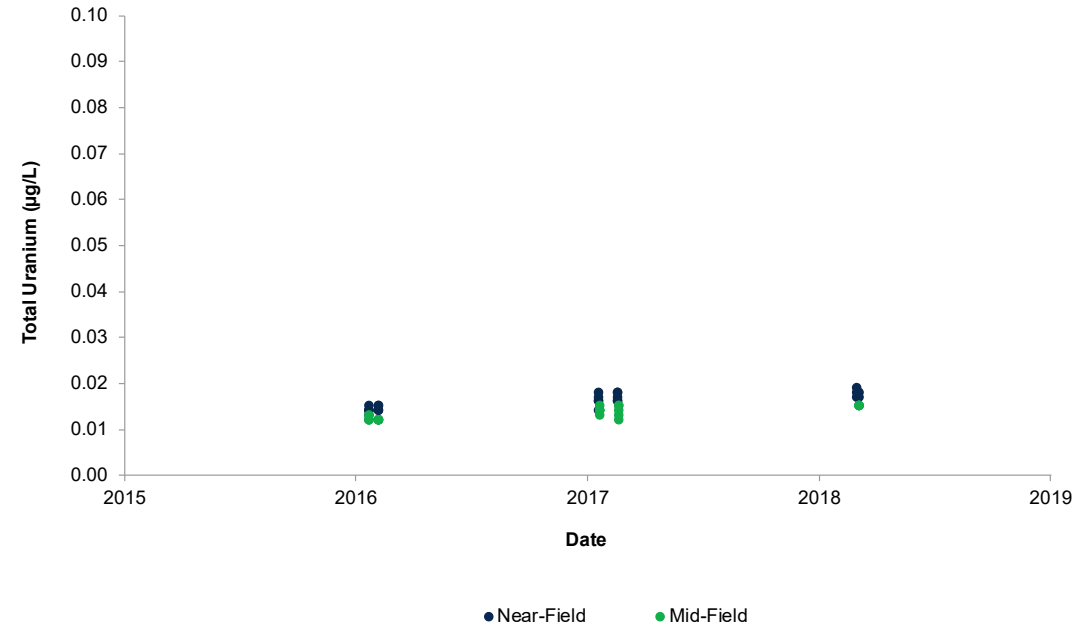


Figure 6F.1-49: Total Uranium Under ice In Meliadine Lake, 2016 To 2016

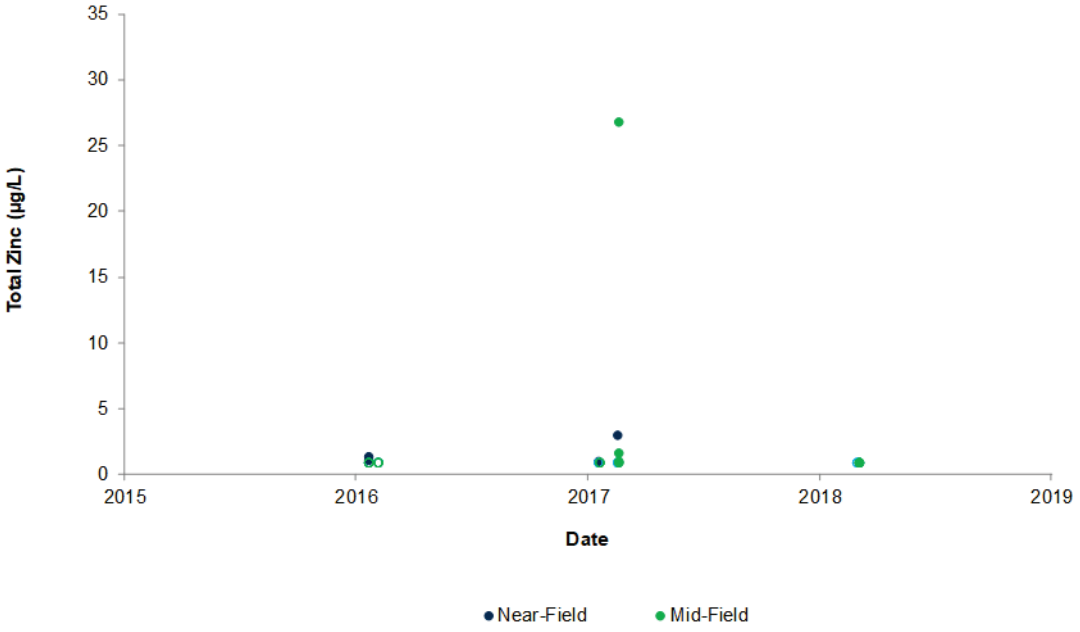


Figure 6F.1-50: Total Zinc Under ice In Meliadine Lake, 2016 To 2016

2.0 OPEN-WATER CONDITIONS

Note: parameters with all samples below detection were not included. An open symbol on the plot represents a measurement that is below detection.

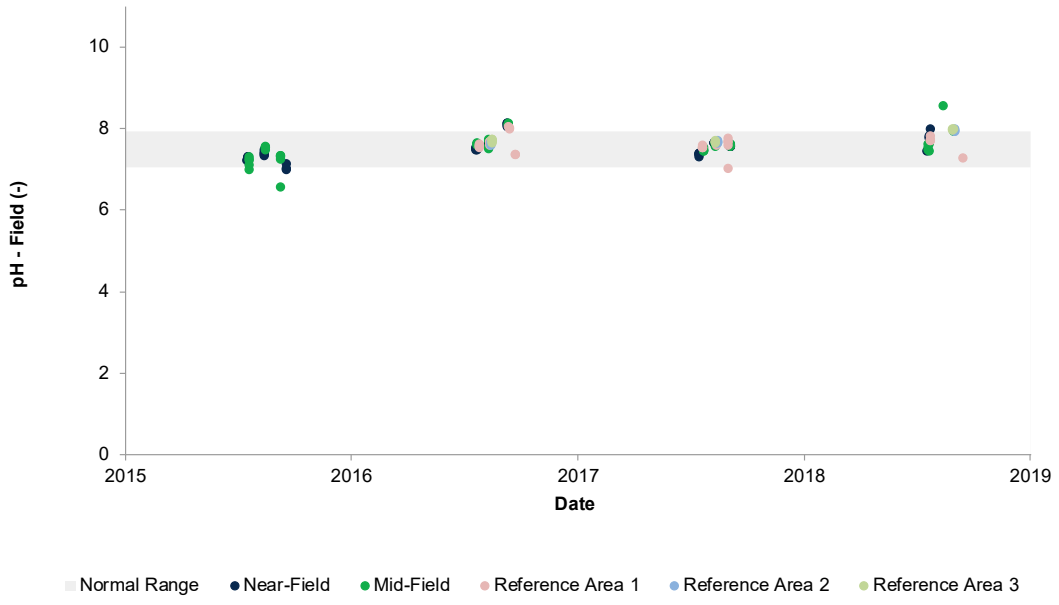


Figure 6F.2-1: Field pH During Open-water Conditions in Meliadine Lake, 2015 to 2018

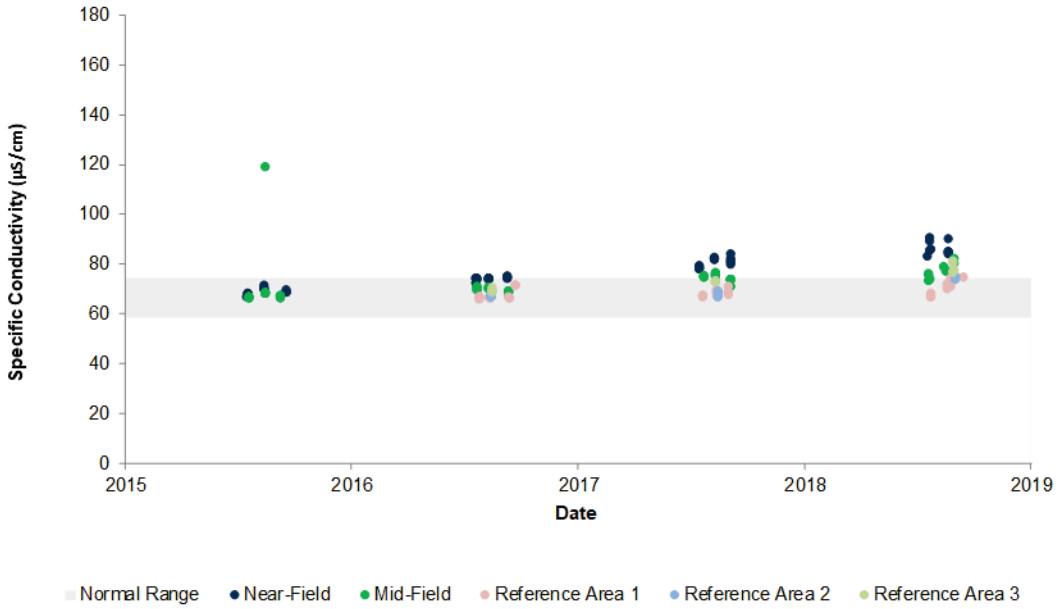
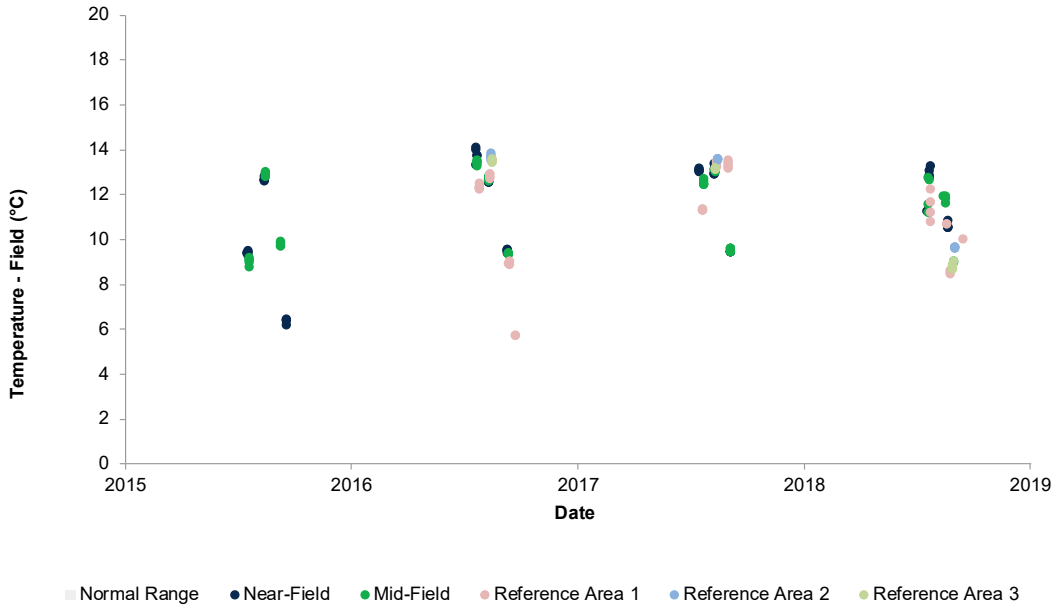
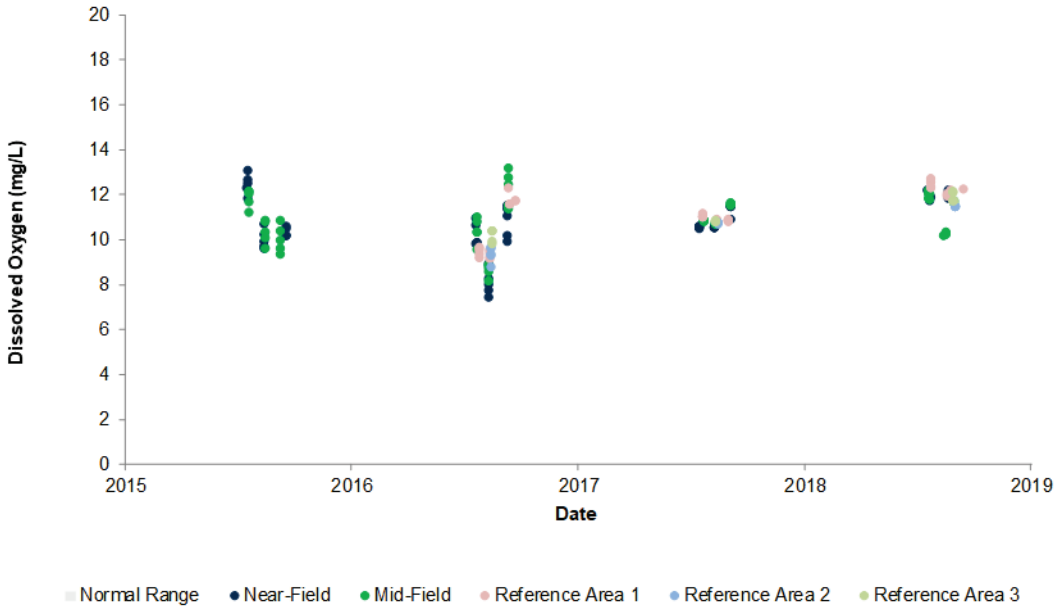


Figure 6F.2-2: Specific Conductivity During Open-water Conditions in Meliadine Lake, 2015 to 2018



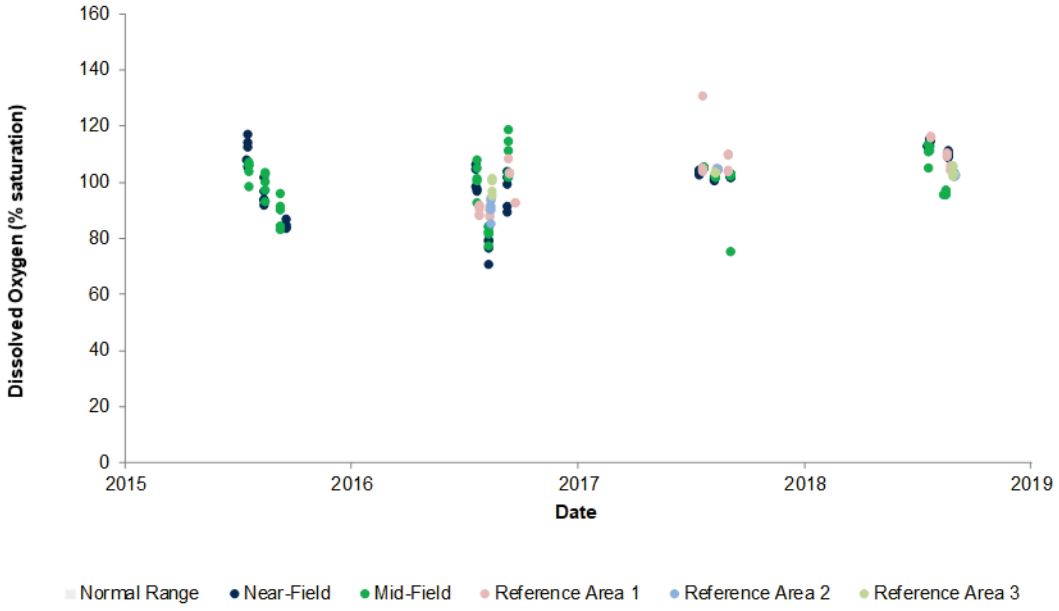
Note: normal range was not calculated for field temperature.

Figure 6F.2-3: Temperature During Open-water Conditions in Meliadine Lake, 2015 to 2018



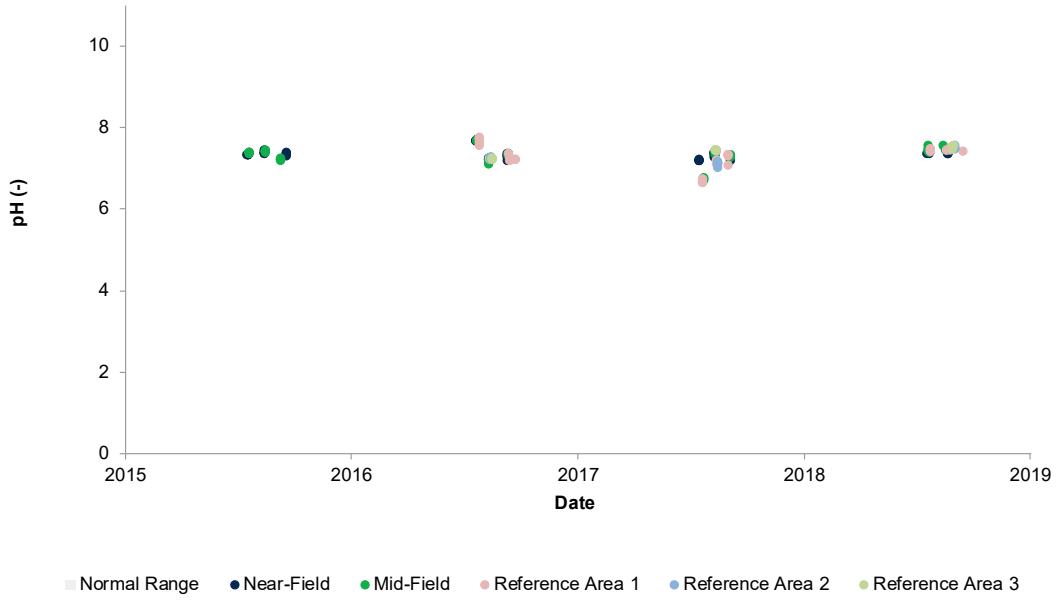
Note: normal range was not calculated for field dissolved oxygen.

Figure 6F.2-4: Dissolved Oxygen During Open-water Conditions in Meliadine Lake, 2015 to 2018



Note: normal range was not calculated for field dissolved oxygen.

Figure 6F.2-5: Dissolved Oxygen During Open-water Conditions in Meliadine Lake, 2015 to 2018



Note: normal range was not calculated for laboratory pH.

Figure 6F.2-6: Laboratory pH During Open-water Conditions in Meliadine Lake, 2015 to 2018

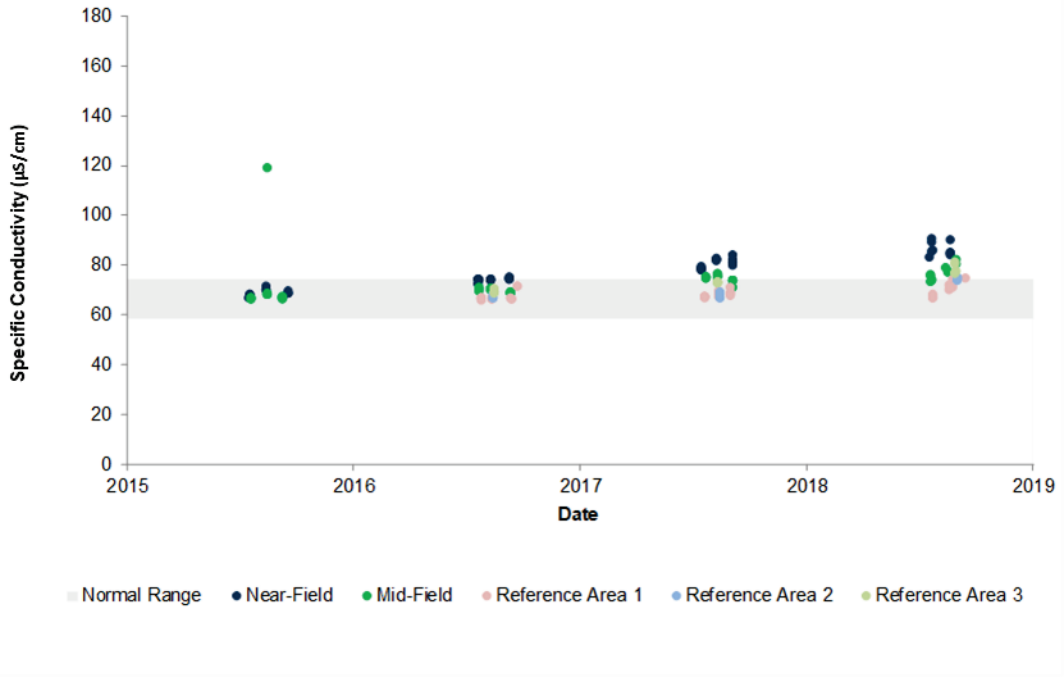


Figure 6F.2-7: Laboratory Specific Conductivity During Open-water Conditions in Meliadine Lake, 2015 to 2018

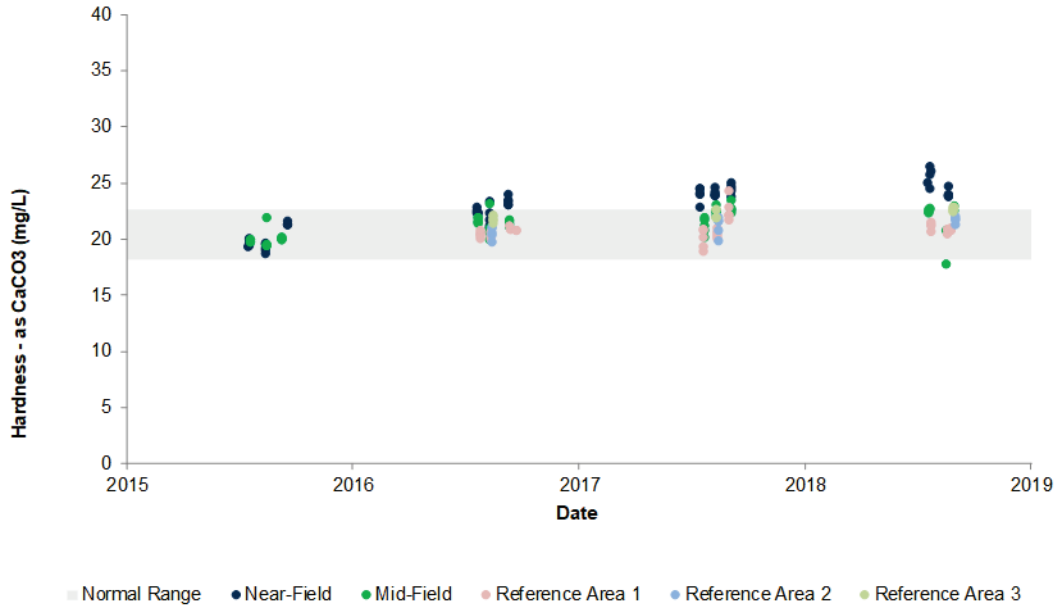


Figure 6F.2-8: Hardness During Open-water Conditions in Meliadine Lake, 2015 to 2018

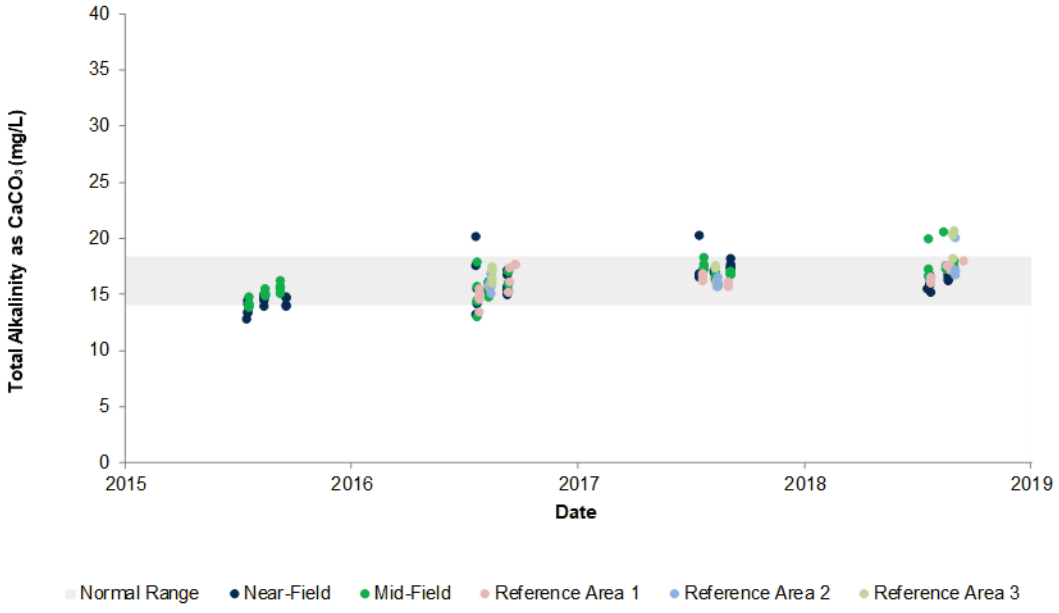


Figure 6F.2-9: Total Alkalinity During Open-water Conditions in Meliadine Lake, 2015 to 2018

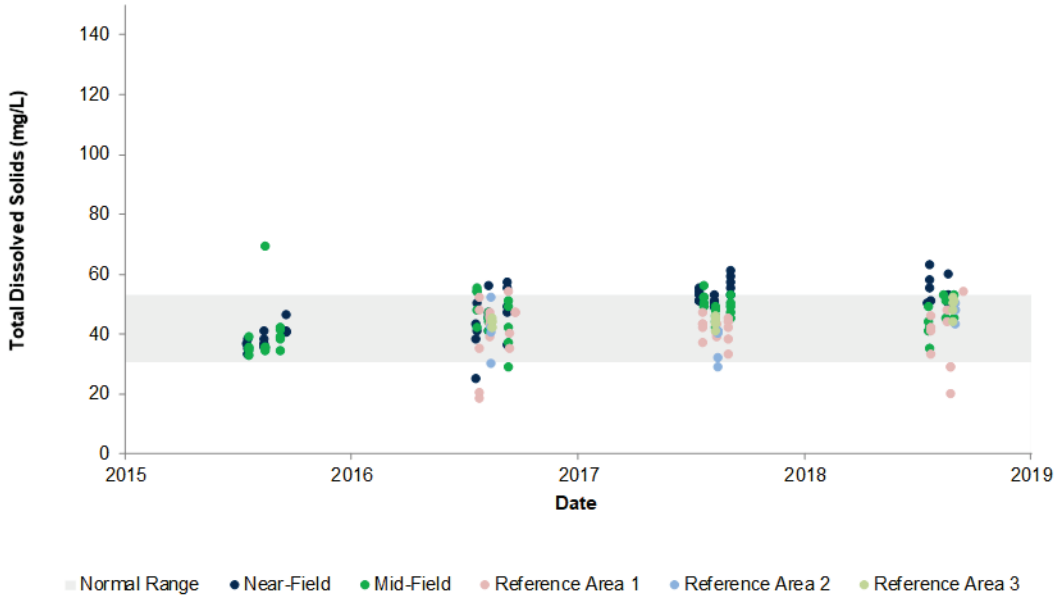


Figure 6F.2-10: Total Dissolved Solids During Open-water Conditions in Meliadine Lake, 2015 to 2018

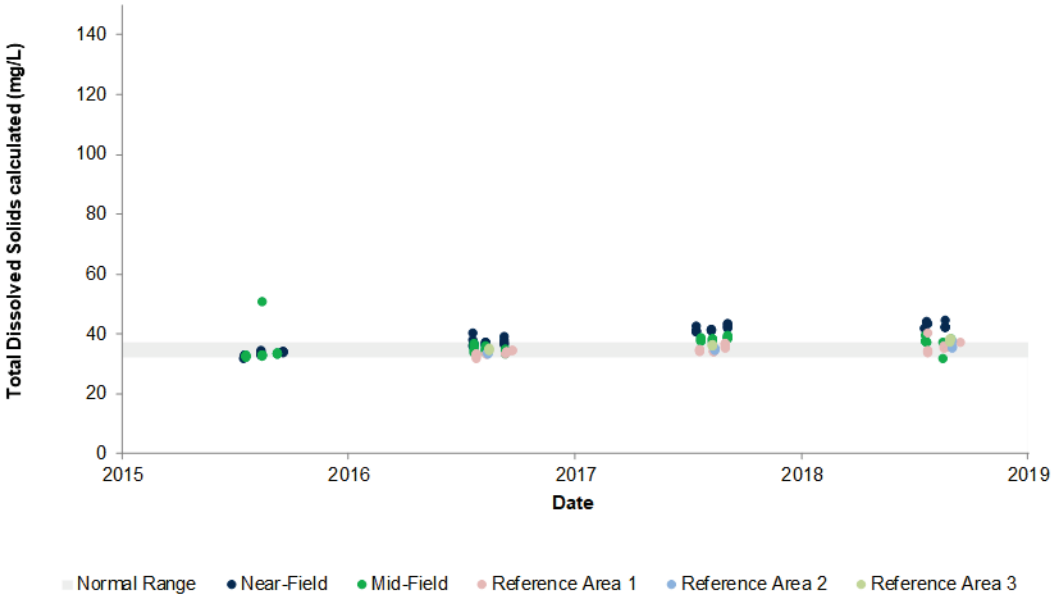


Figure 6F.2-11: Total Dissolved Solids (calculated) During Open-water Conditions in Meliadine Lake, 2015 to 2018

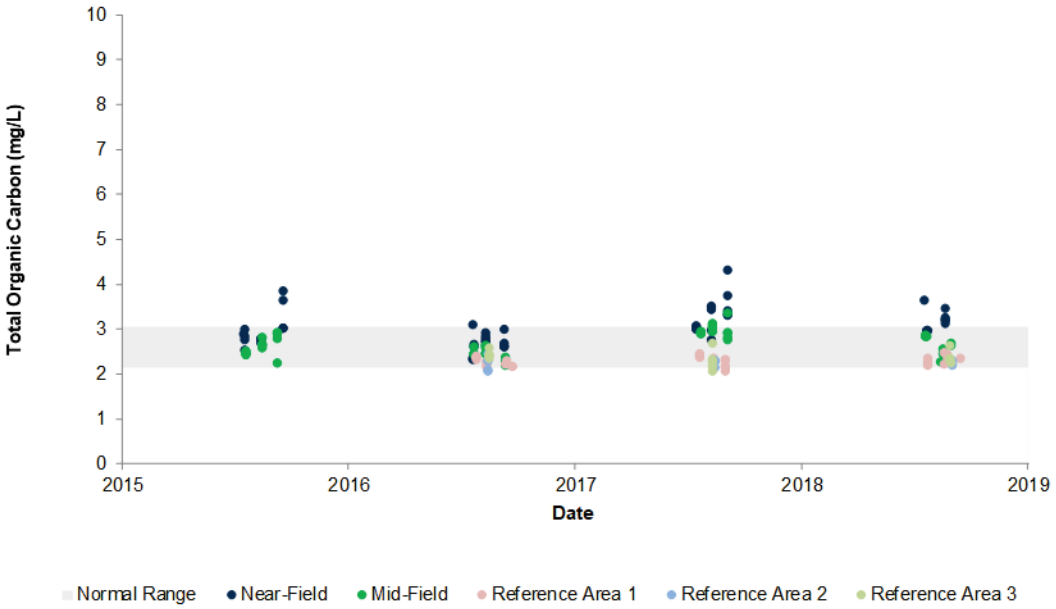


Figure 6F.2-12: Total Organic Carbon During Open-water Conditions in Meliadine Lake, 2015 to 2018

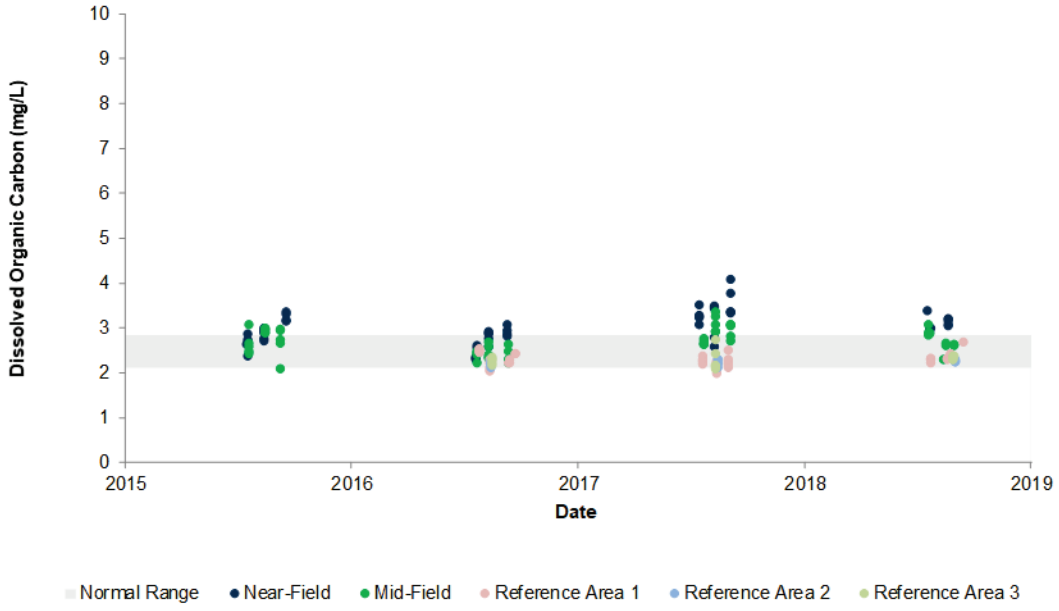
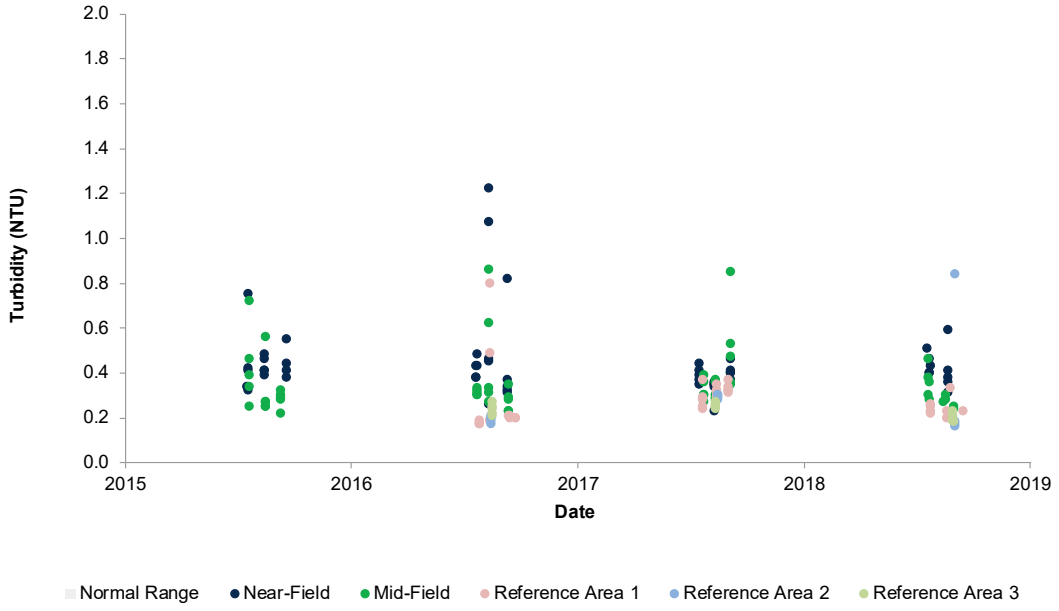


Figure 6F.2-13: Dissolved Organic Carbon During Open-water Conditions in Meliadine Lake, 2015 to 2018



Note: a normal range for turbidity was not calculated because it is represented by Total suspended solids.

Figure 6F.2-14: Turbidity During Open-water Conditions in Meliadine Lake, 2015 to 2018

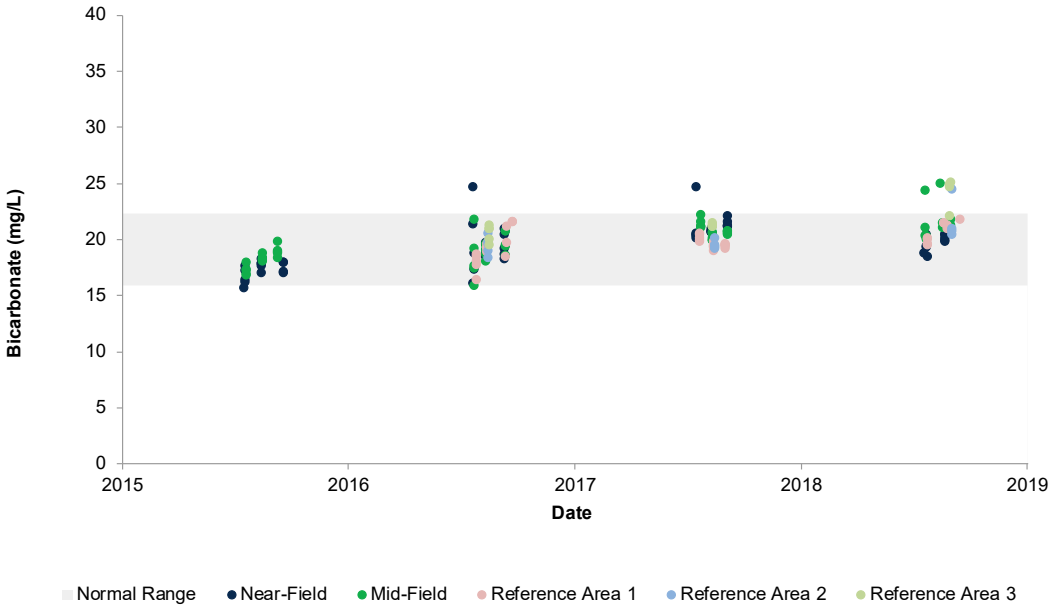


Figure 6F.2-15: Bicarbonate During Open-water Conditions in Meliadine Lake, 2015 to 2018

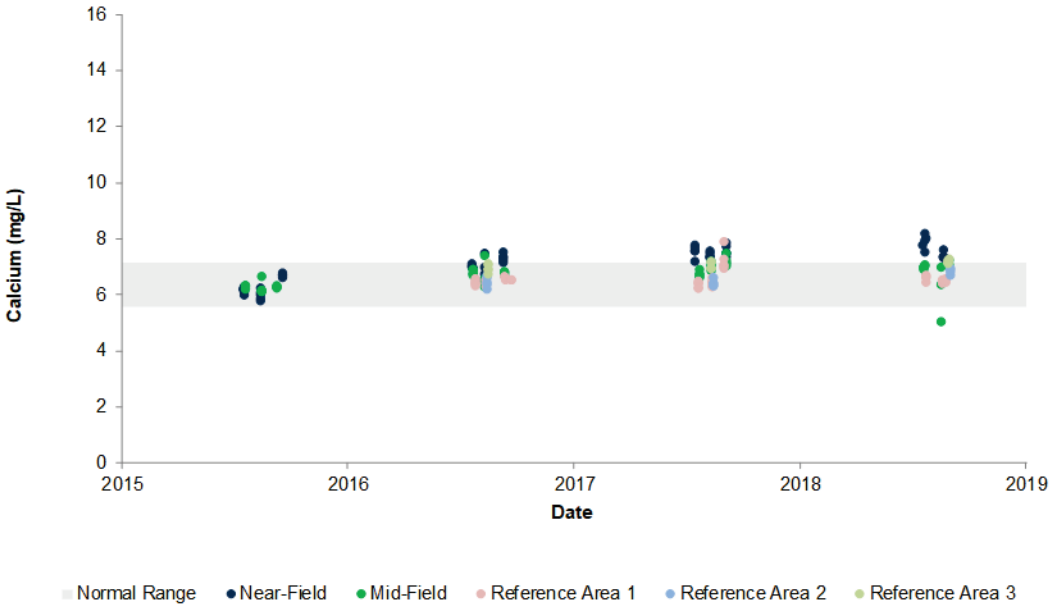


Figure 6F.2-16: Calcium During Open-water Conditions in Meliadine Lake, 2015 to 2018

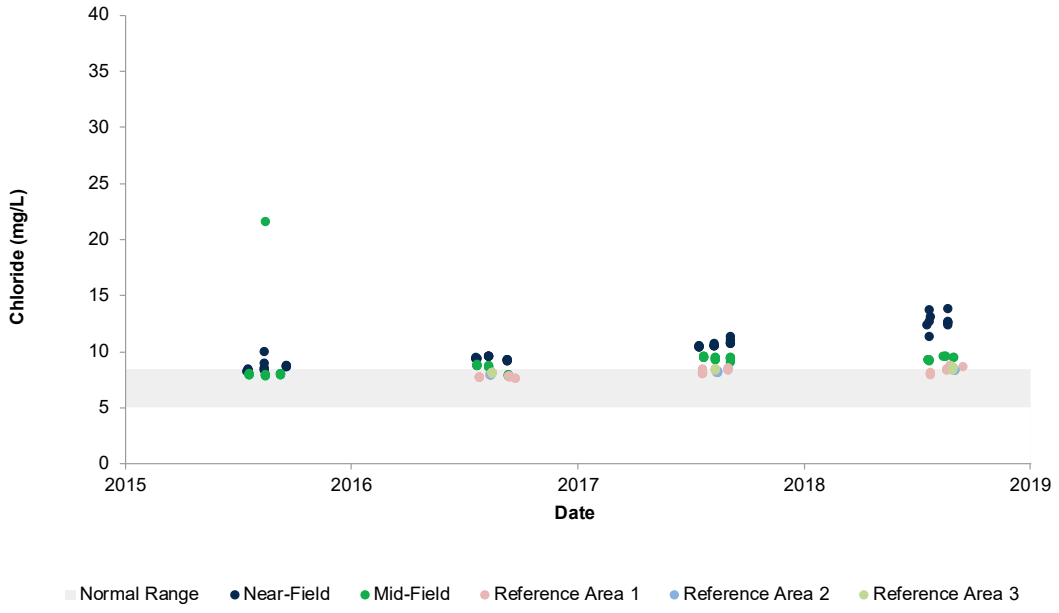


Figure 6F.2-17: Chloride During Open-water Conditions in Meliadine Lake, 2015 to 2018

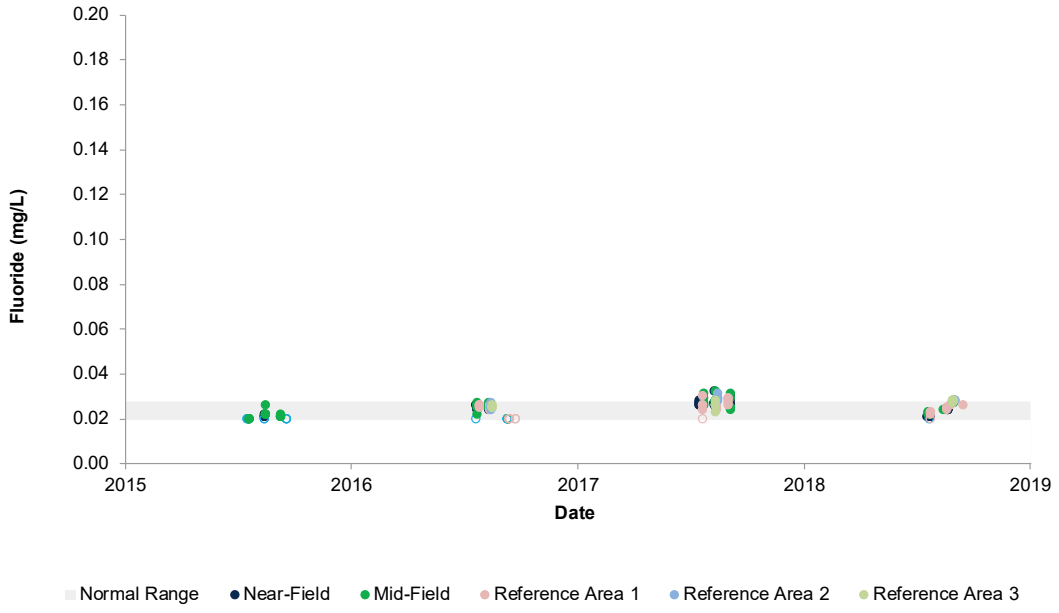


Figure 6F.2-18: Fluoride During Open-water Conditions in Meliadine Lake, 2015 to 2018

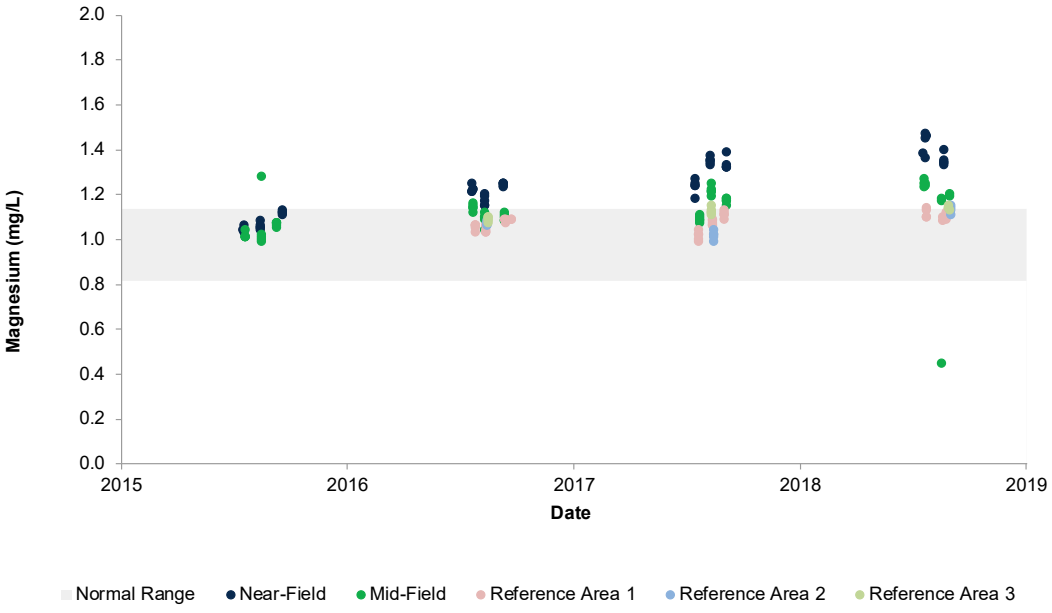


Figure 6F.2-19: Magnesium During Open-water Conditions in Meliadine Lake, 2015 to 2018

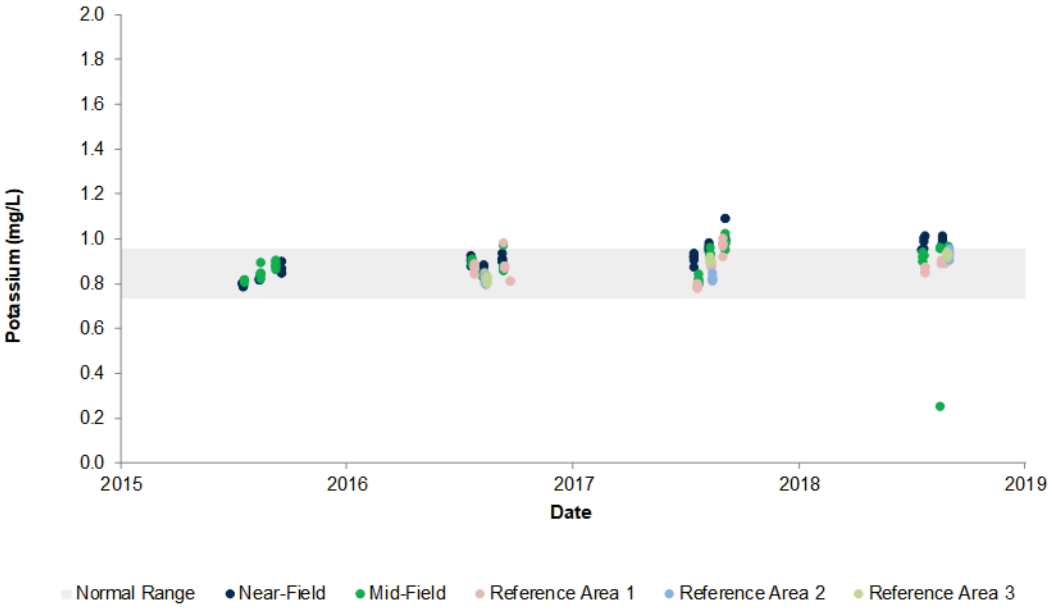


Figure 6F.2-20: Potassium During Open-water Conditions in Meliadine Lake, 2015 to 2018

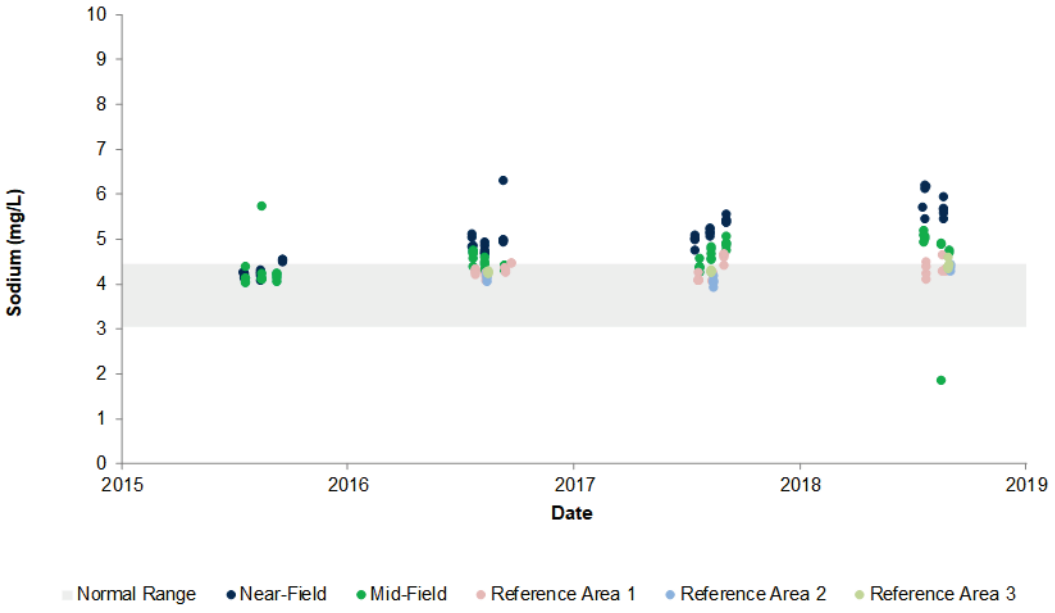


Figure 6F.2-21: Sodium During Open-water Conditions in Meliadine Lake, 2015 to 2018

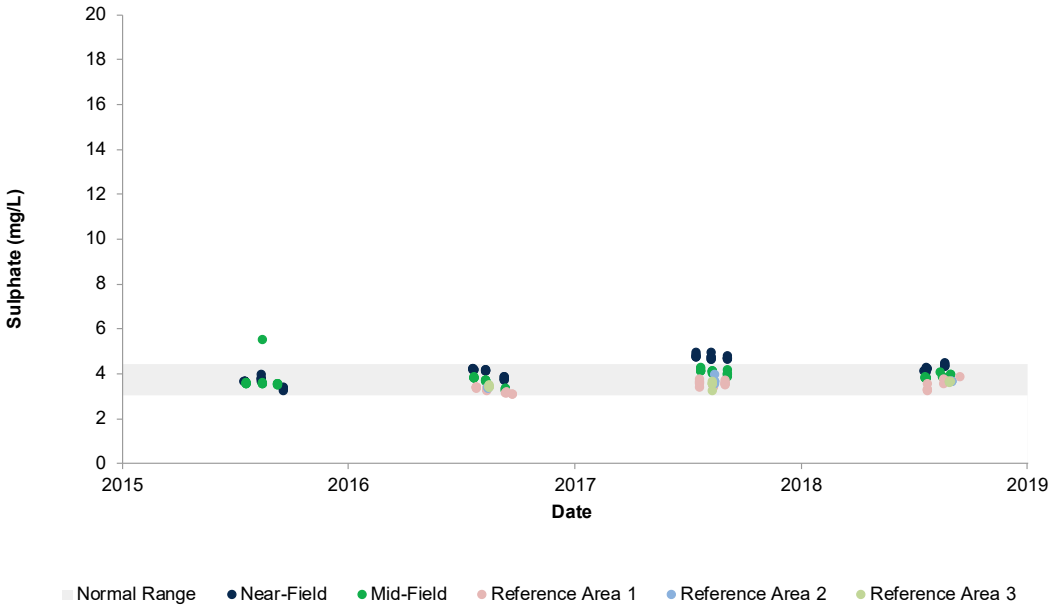


Figure 6F.2-22: Sulphate During Open-water Conditions in Meliadine Lake, 2015 to 2018

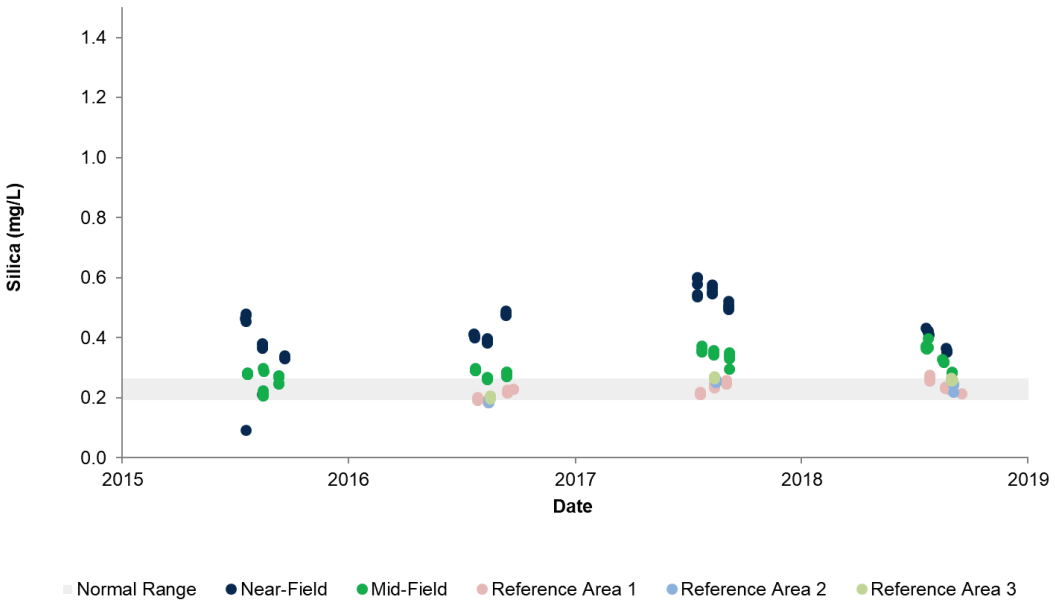


Figure 6F.2-23: Reactive Silica During Open-water Conditions in Meliadine Lake, 2015 to 2018

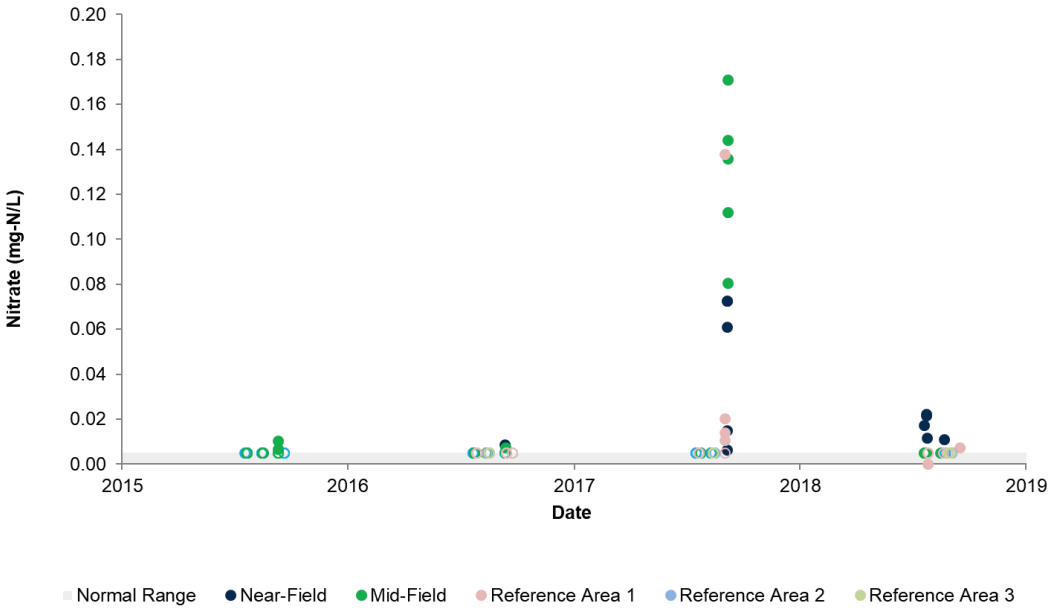


Figure 6F.2-24: Nitrate as N During Open-water Conditions in Meliadine Lake, 2015 to 2018

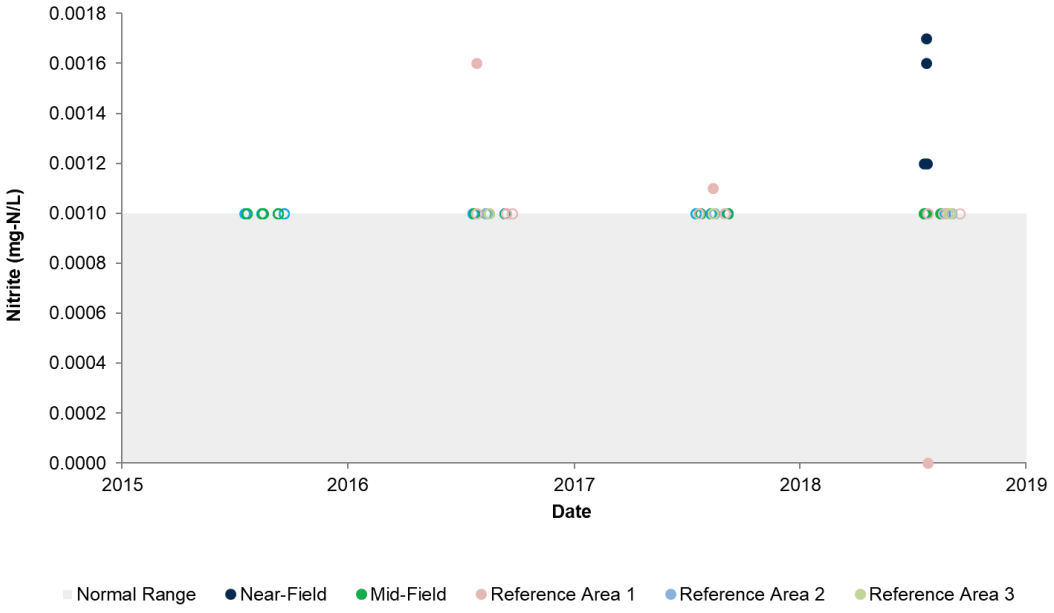
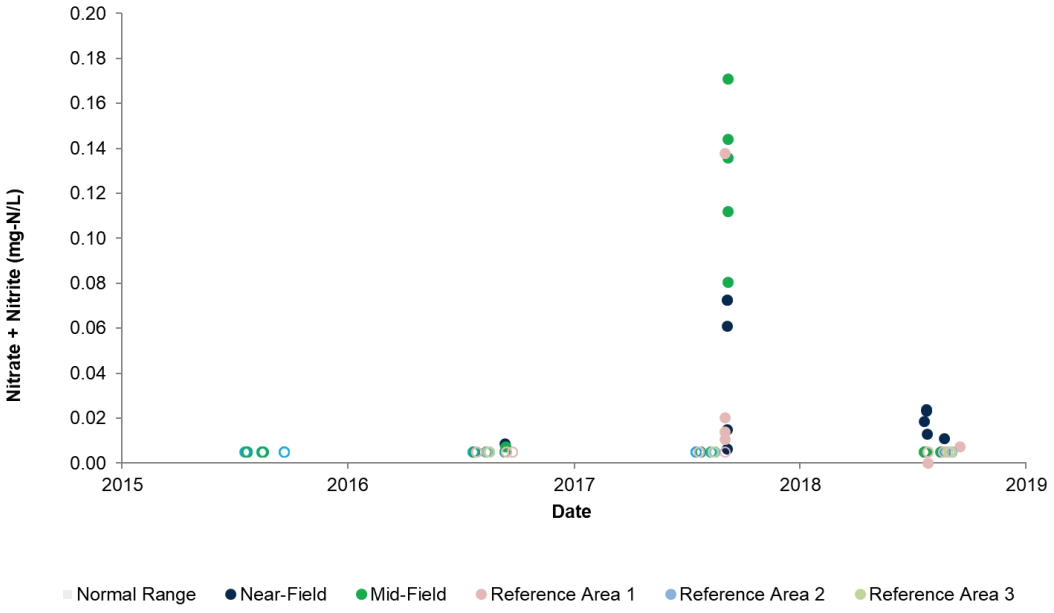


Figure 6F.2-25: Nitrite as N During Open-water Conditions in Meliadine Lake, 2015 to 2018



Note: normal range was not calculated for nitrate + nitrite

Figure 6F.2-26: Nitrate and Nitrite During Open-water Conditions in Meliadine Lake, 2015 to 2018

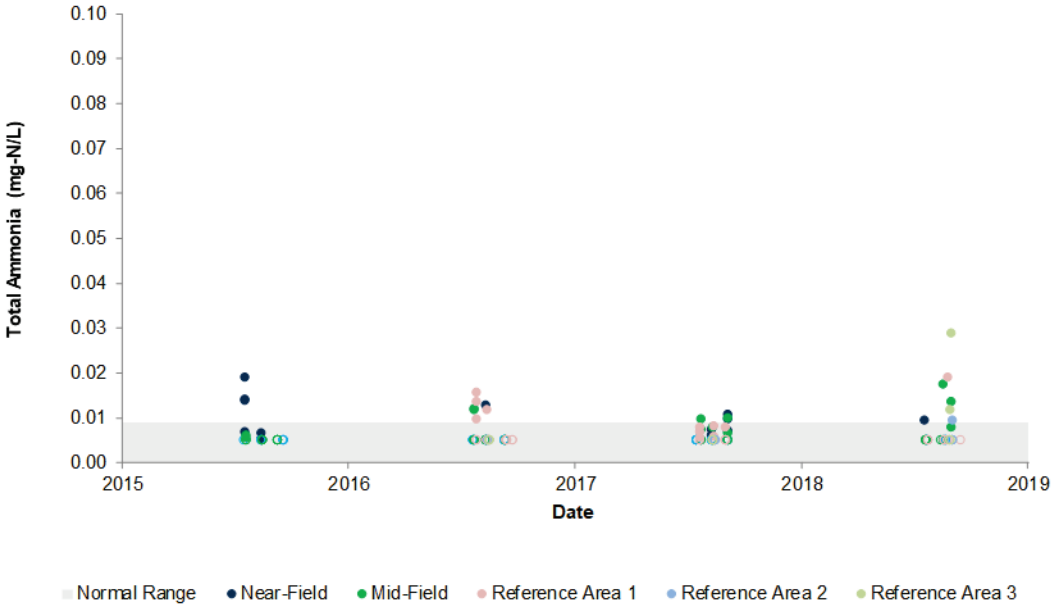


Figure 6F.2-27: Total Ammonia During Open-water Conditions in Meliadine Lake, 2015 to 2018

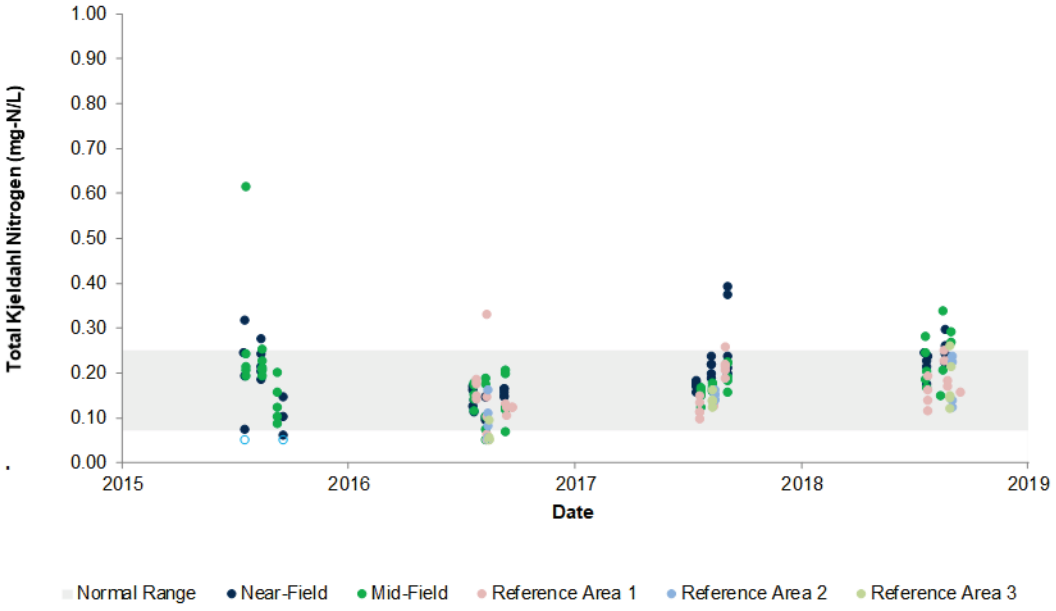


Figure 6F.2-28: Total Kjeldahl Nitrogen During Open-water Conditions in Meliadine Lake, 2015 to 2018

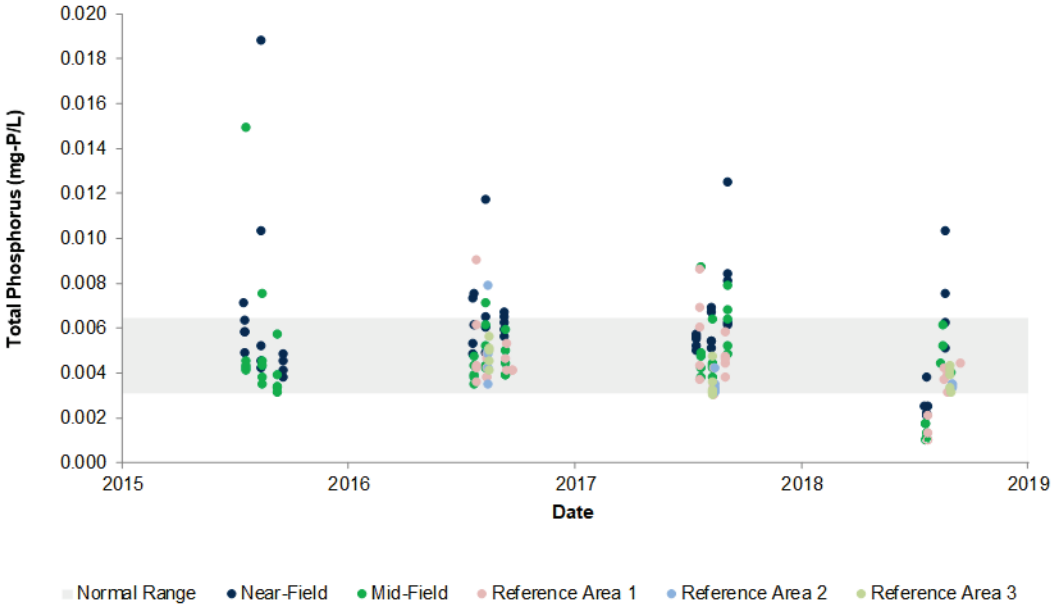


Figure 6F.2-29: Total Phosphorus During Open-water Conditions in Meliadine Lake, 2015 to 2018

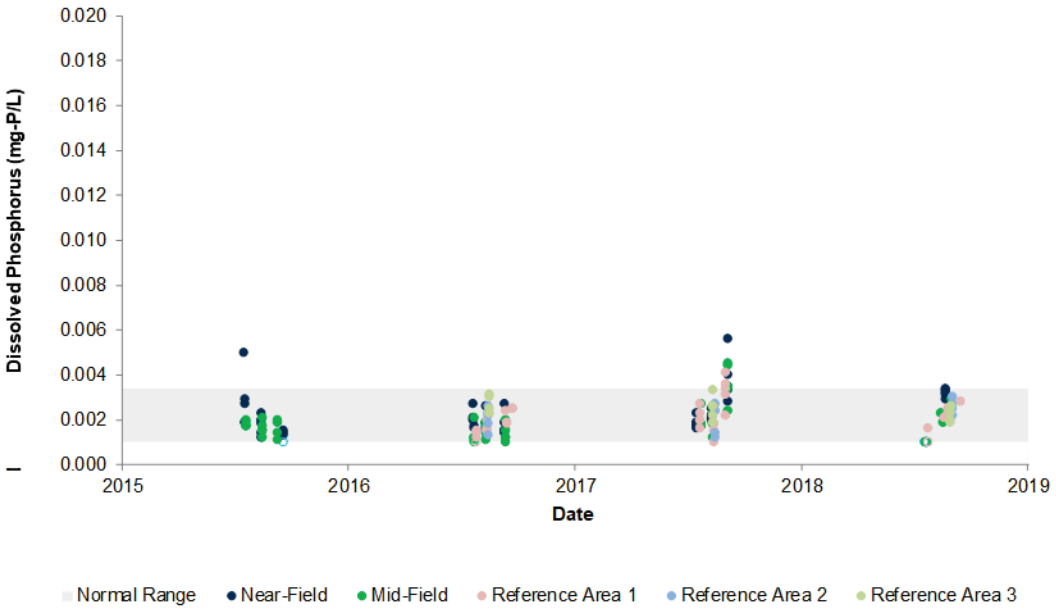


Figure 6F.2-30: Dissolved Phosphorus During Open-water Conditions in Meliadine Lake, 2015 to 2018

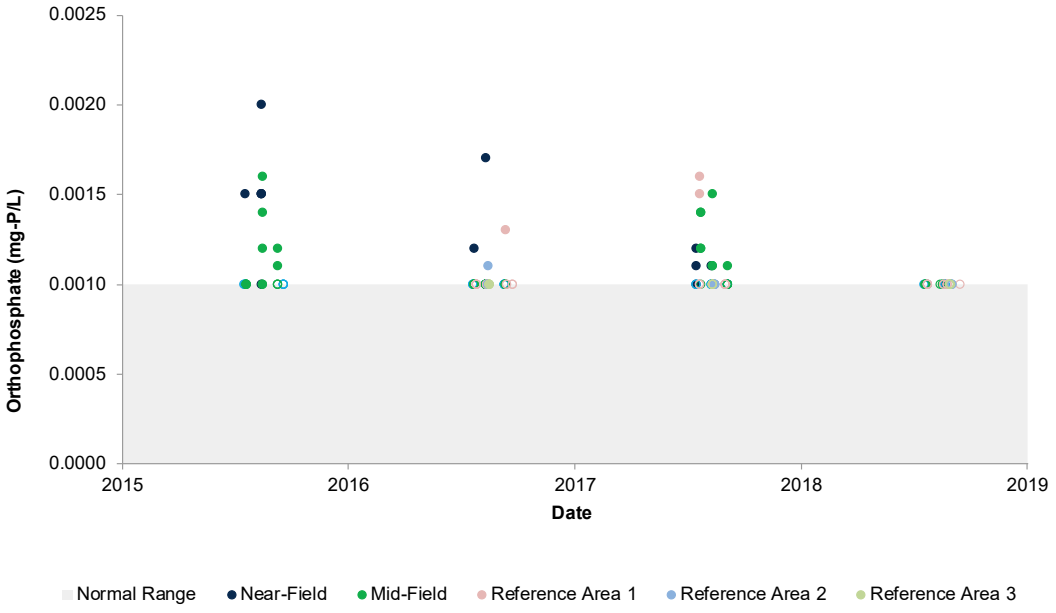


Figure 6F.2-31: Orthophosphate During Open-water Conditions in Meliadine Lake, 2015 to 2018

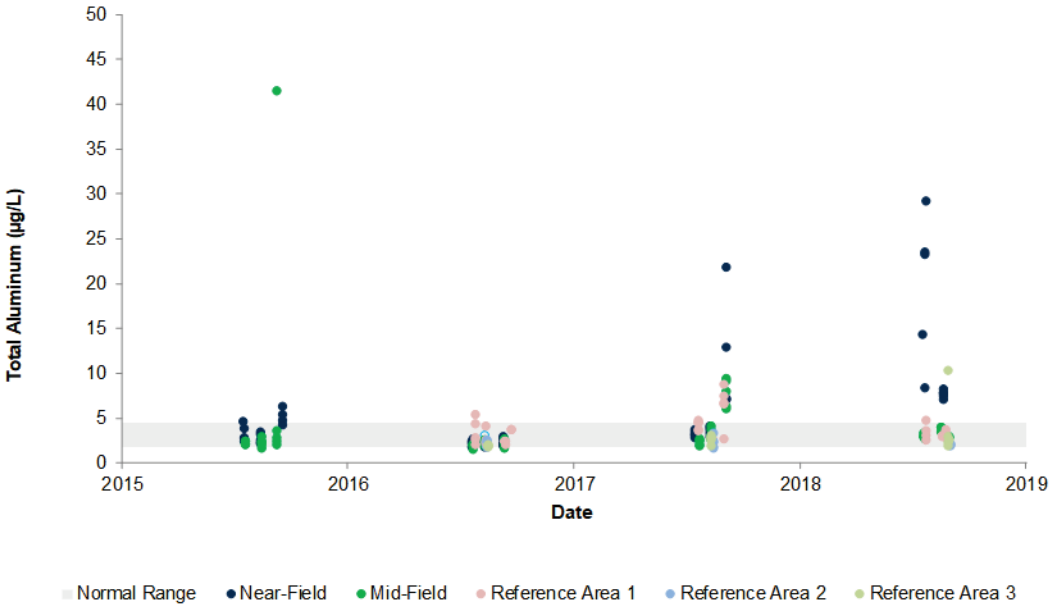


Figure 6F.2-32: Total Aluminum During Open-water Conditions in Meliadine Lake, 2015 to 2018

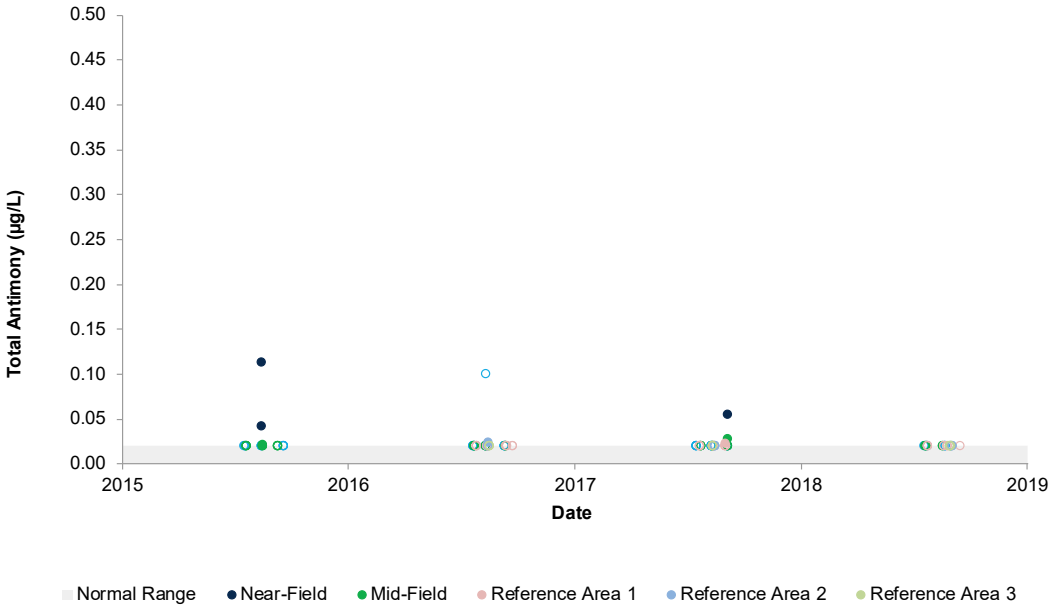


Figure 6F.2-33: Total Antimony During Open-water Conditions in Meliadine Lake, 2015 to 2018

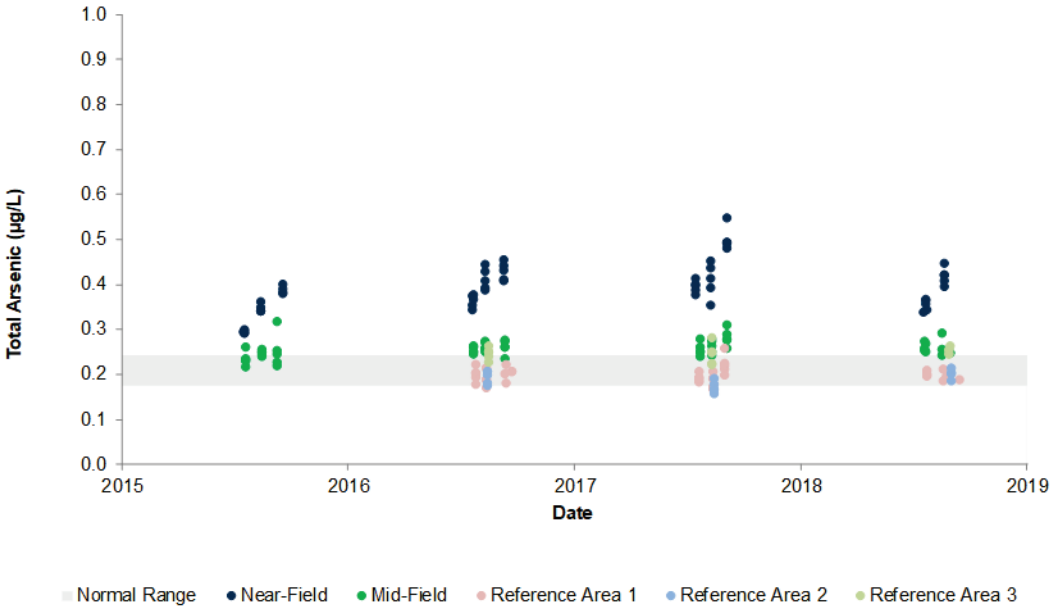


Figure 6F.2-34: Total Arsenic During Open-water Conditions in Meliadine Lake, 2015 to 2018

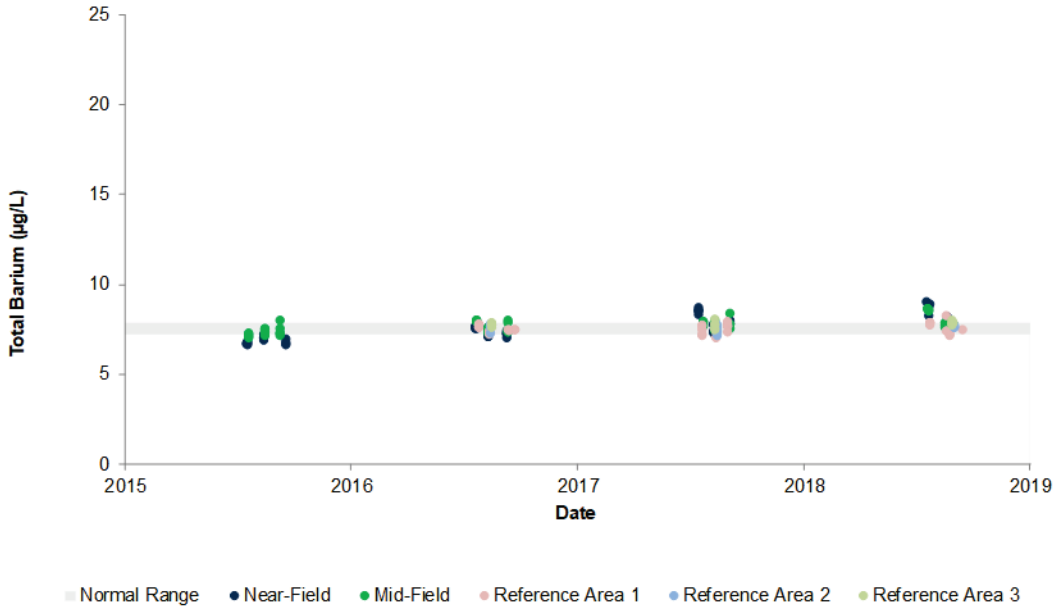


Figure 6F.2-35: Total Barium During Open-water Conditions in Meliadine Lake, 2015 to 2018

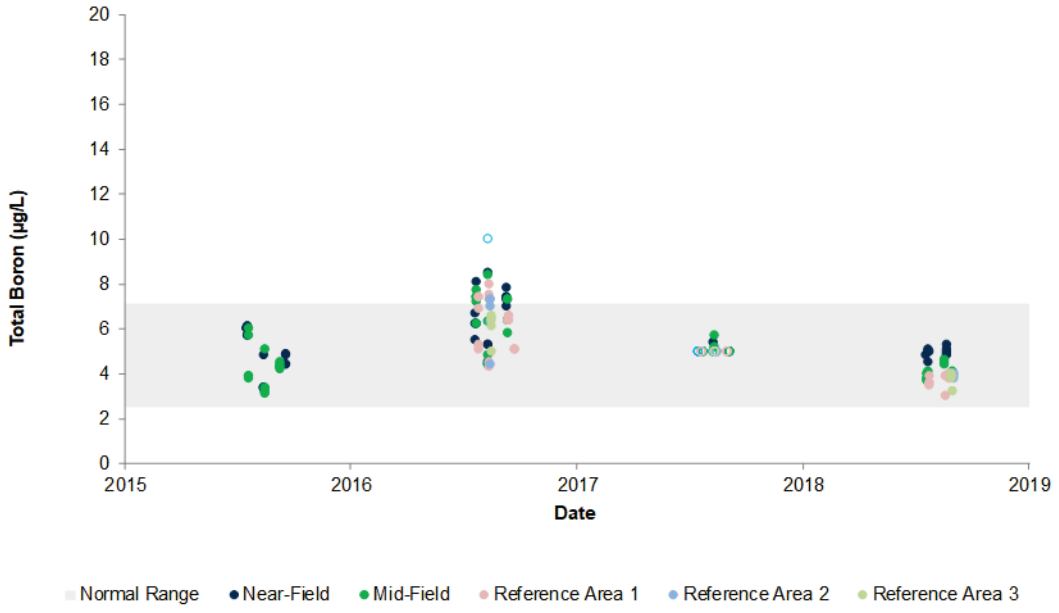


Figure 6F.2-36: Total Boron During Open-water Conditions in Meliadine Lake, 2015 to 2018

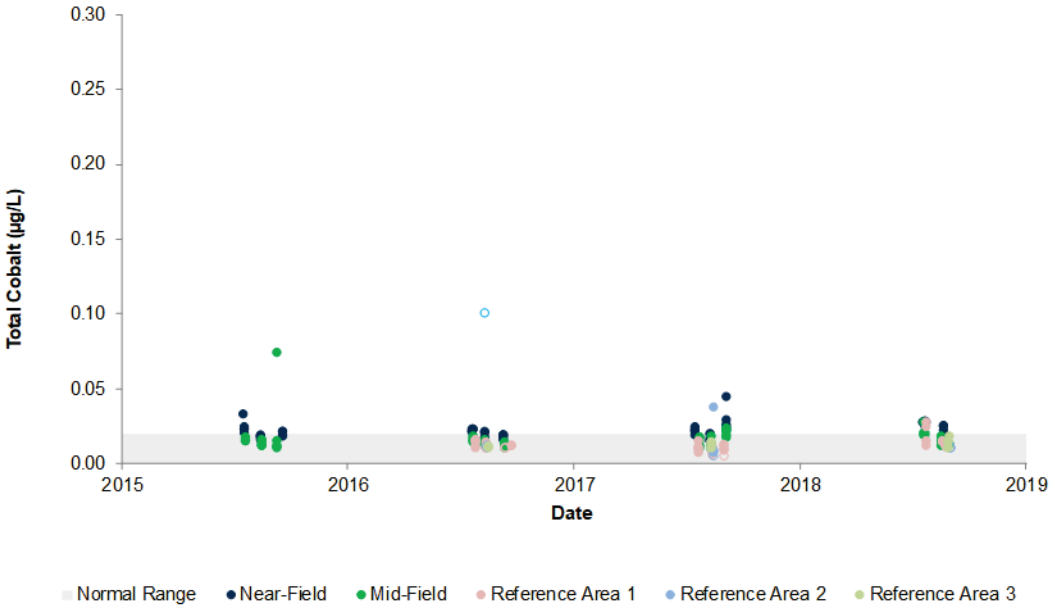


Figure 6F.2-37: Total Cobalt During Open-water Conditions in Meliadine Lake, 2015 to 2018

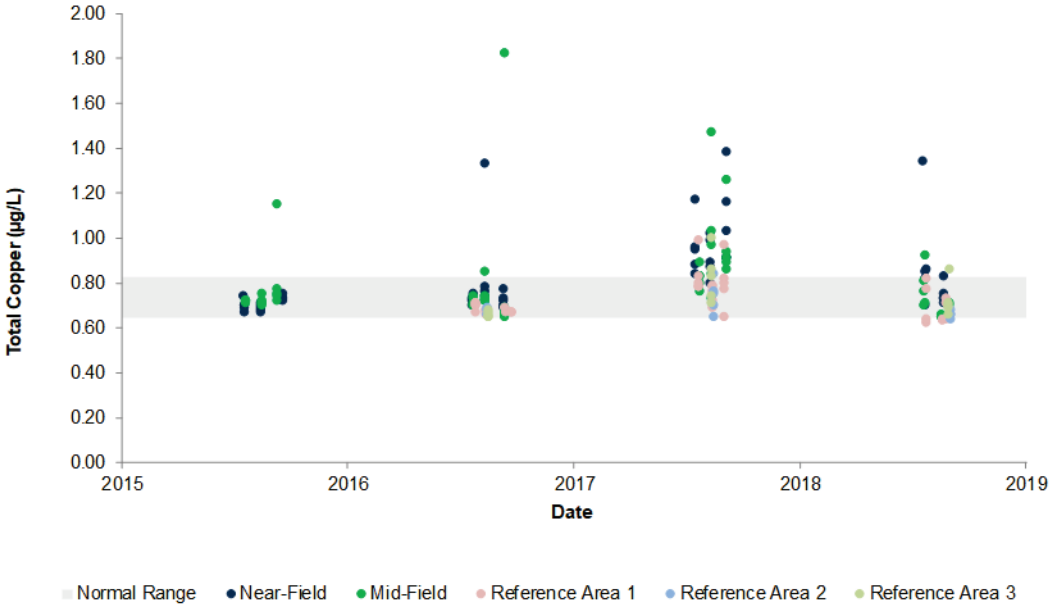


Figure 6F.2-38: Total Copper During Open-water Conditions in Meliadine Lake, 2015 to 2018

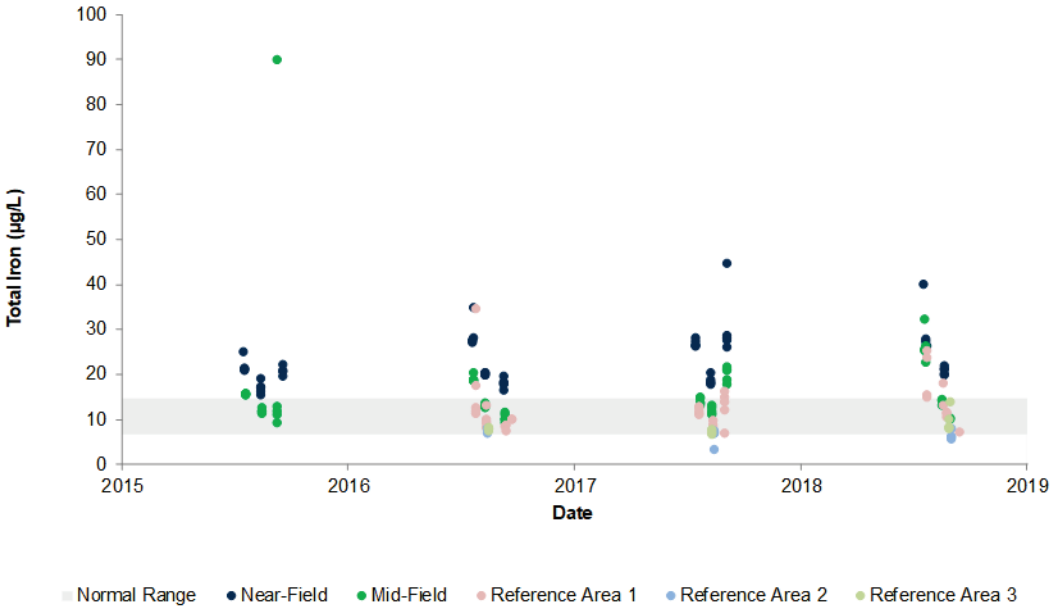


Figure 6F.2-39: Total Iron During Open-water Conditions in Meliadine Lake, 2015 to 2018

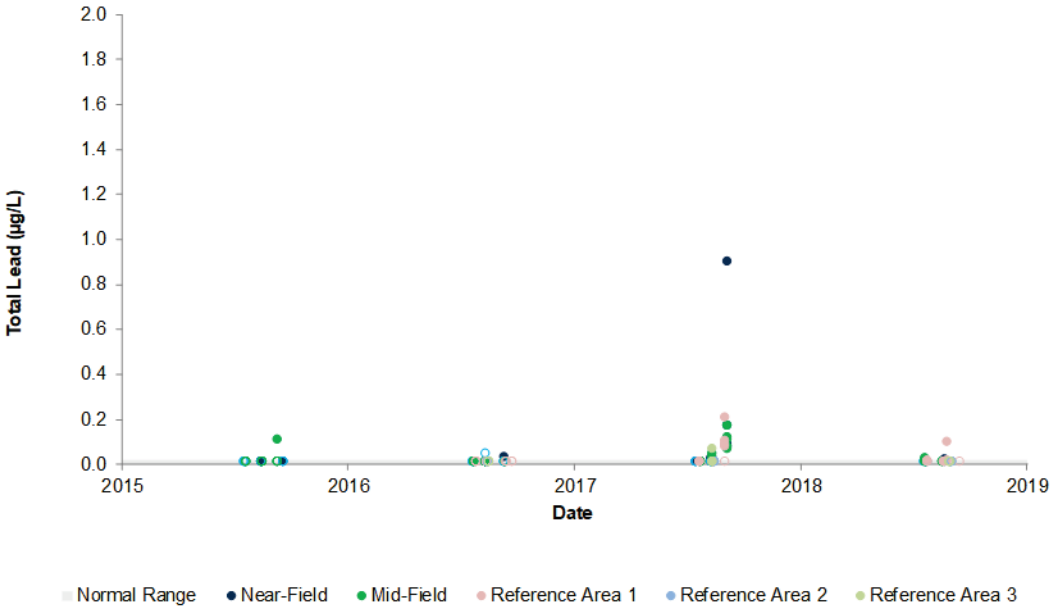


Figure 6F.2-40: Total Lead During Open-water Conditions in Meliadine Lake, 2015 to 2018

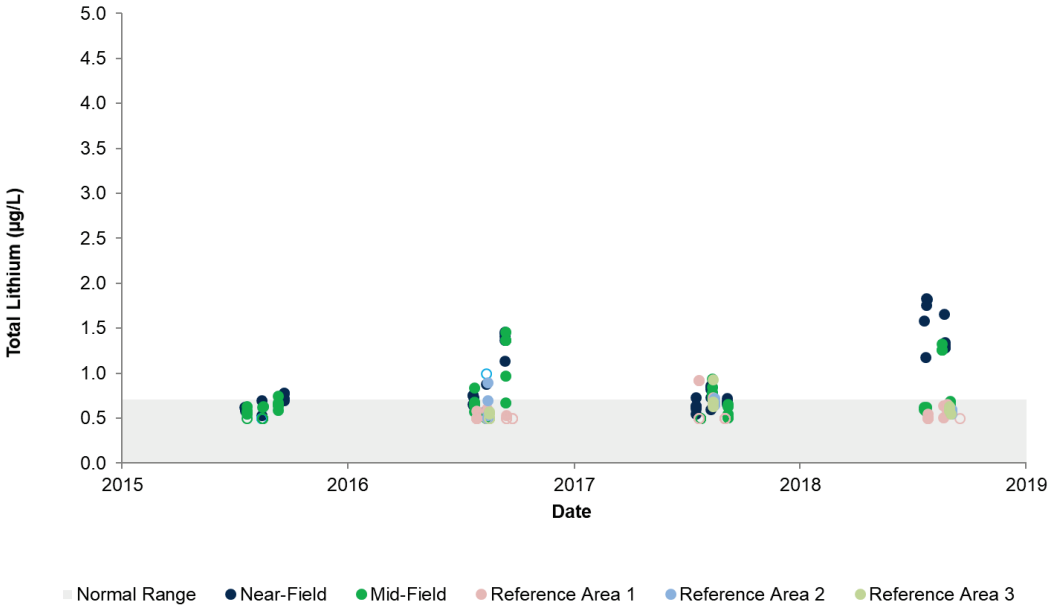


Figure 6F.2-41: Total Lithium During Open-water Conditions in Meliadine Lake, 2015 to 2018

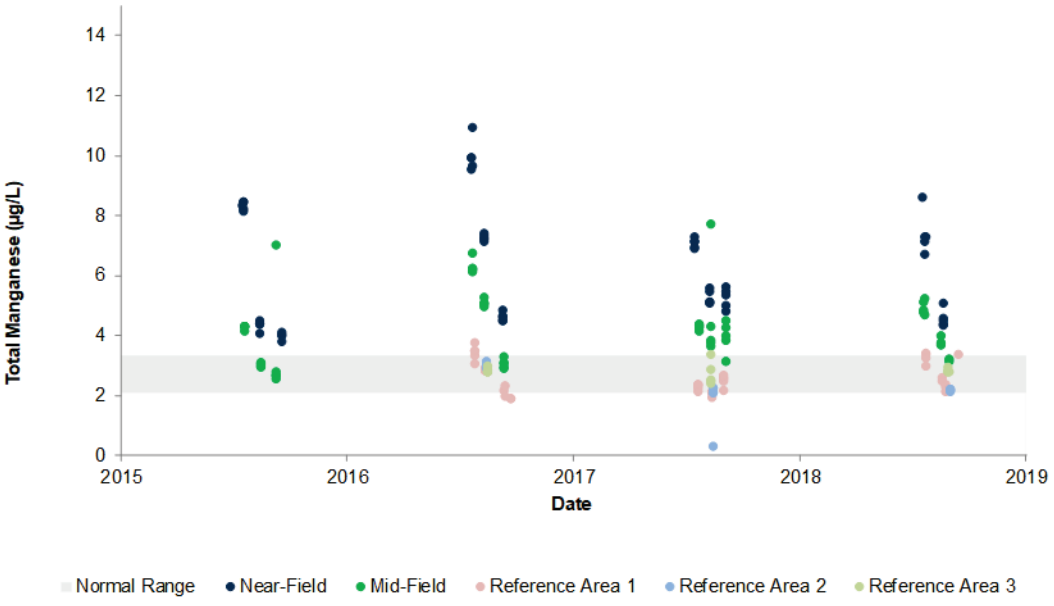


Figure 6F.2-42: Total Manganese During Open-water Conditions in Meliadine Lake, 2015 to 2018

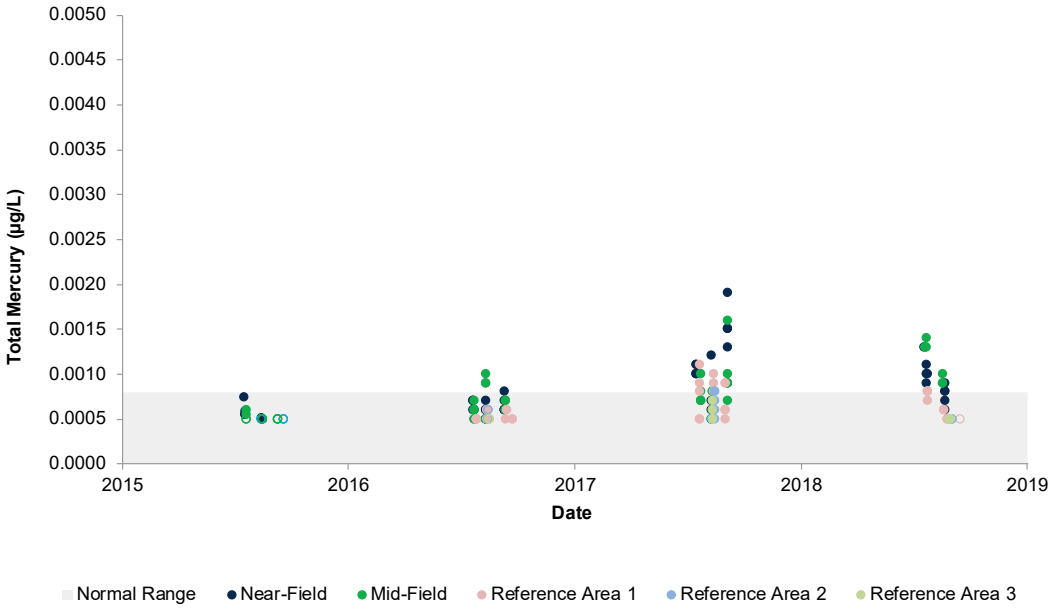


Figure 6F.2-43: Total Mercury During Open-water Conditions in Meliadine Lake, 2015 to 2018

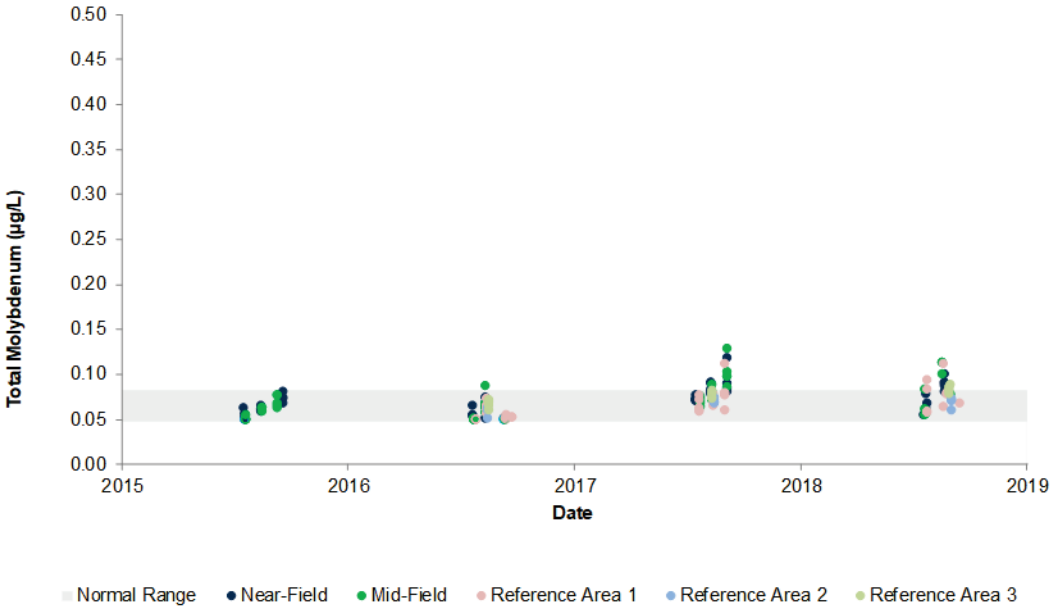


Figure 6F.2-44: Total Molybdenum During Open-water Conditions in Meliadine Lake, 2015 to 2018

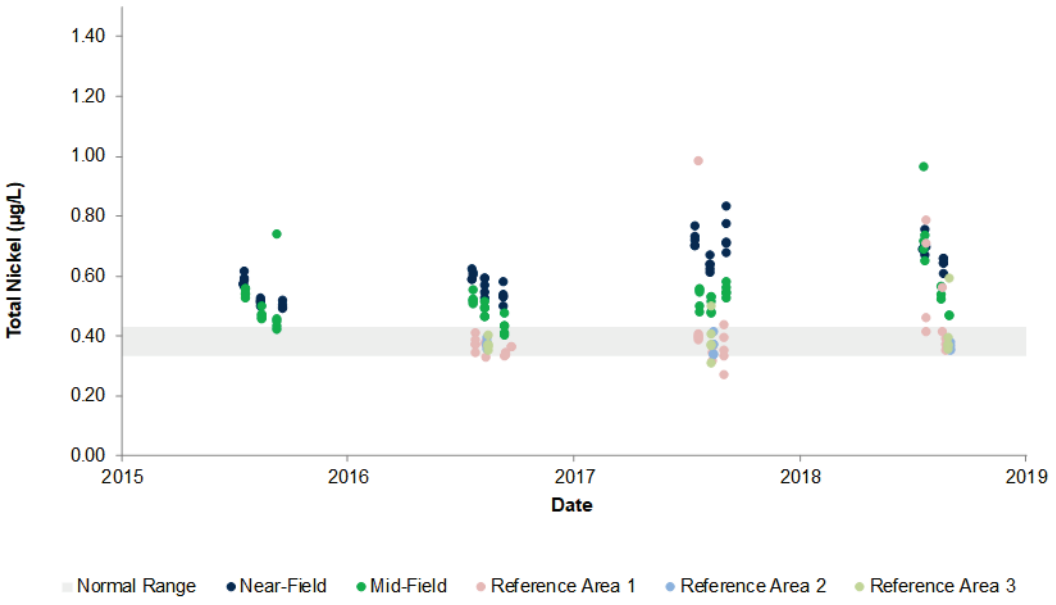


Figure 6F.2-45: Total Nickel During Open-water Conditions in Meliadine Lake, 2015 to 2018

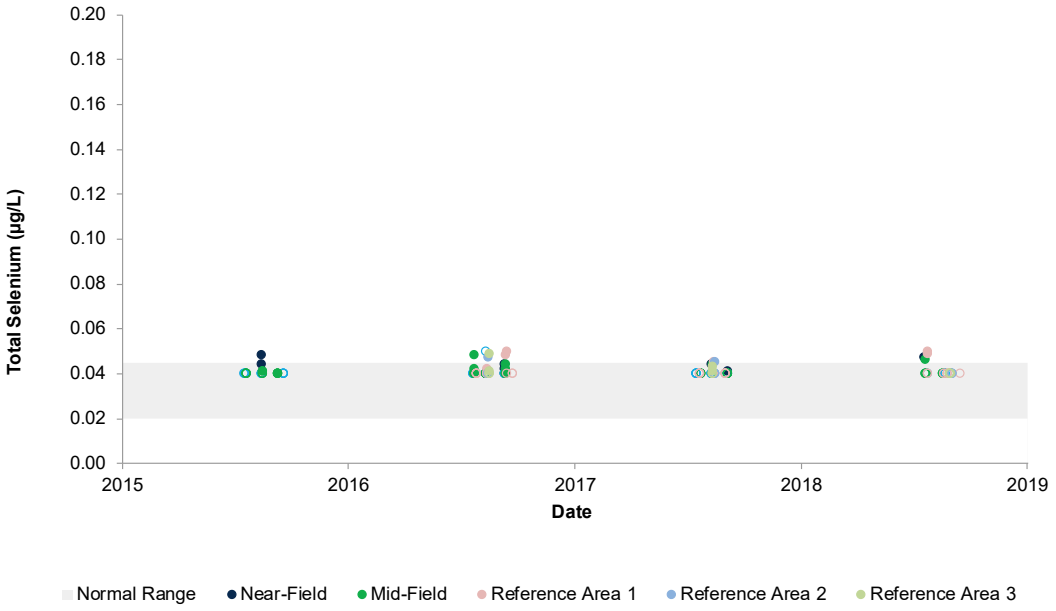


Figure 6F.2-46: Total Selenium During Open-water Conditions in Meliadine Lake, 2015 to 2018

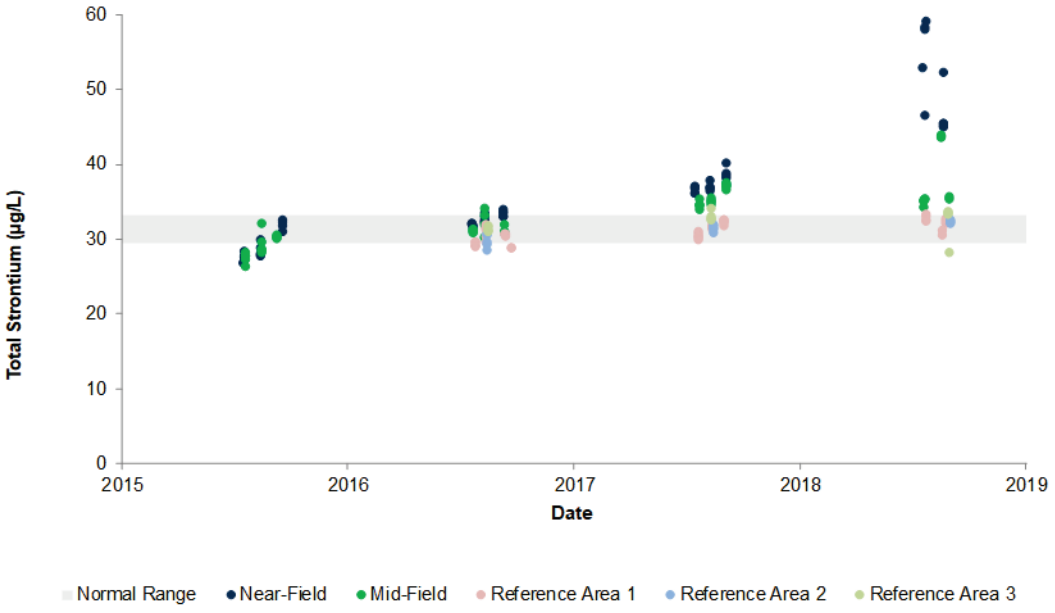


Figure 6F.2-47: Total Strontium During Open-water Conditions in Meliadine Lake, 2015 to 2018

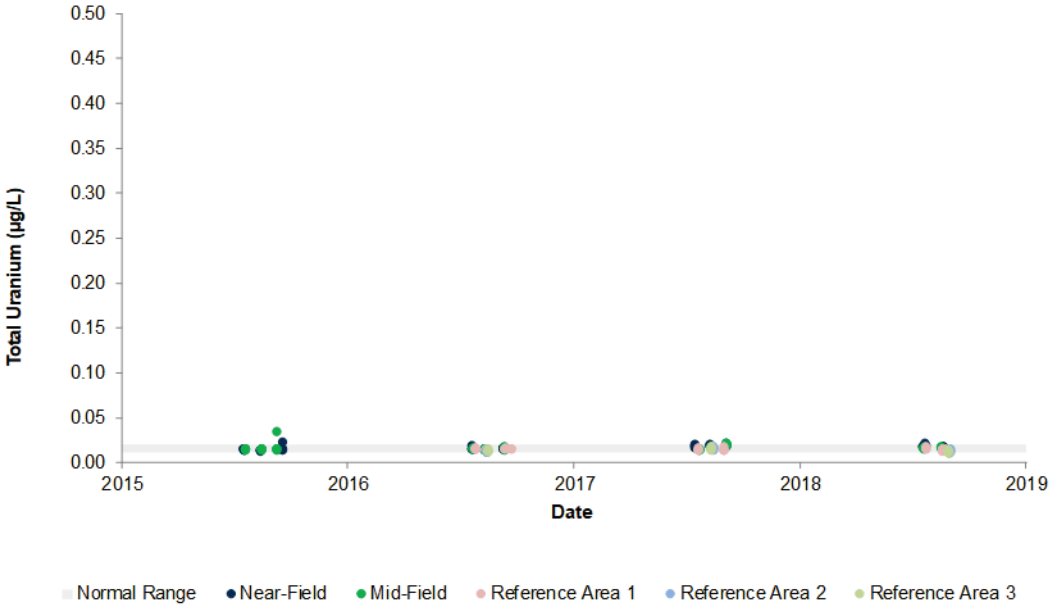


Figure 6F.2-48: Total Uranium During Open-water Conditions in Meliadine Lake, 2015 to 2018

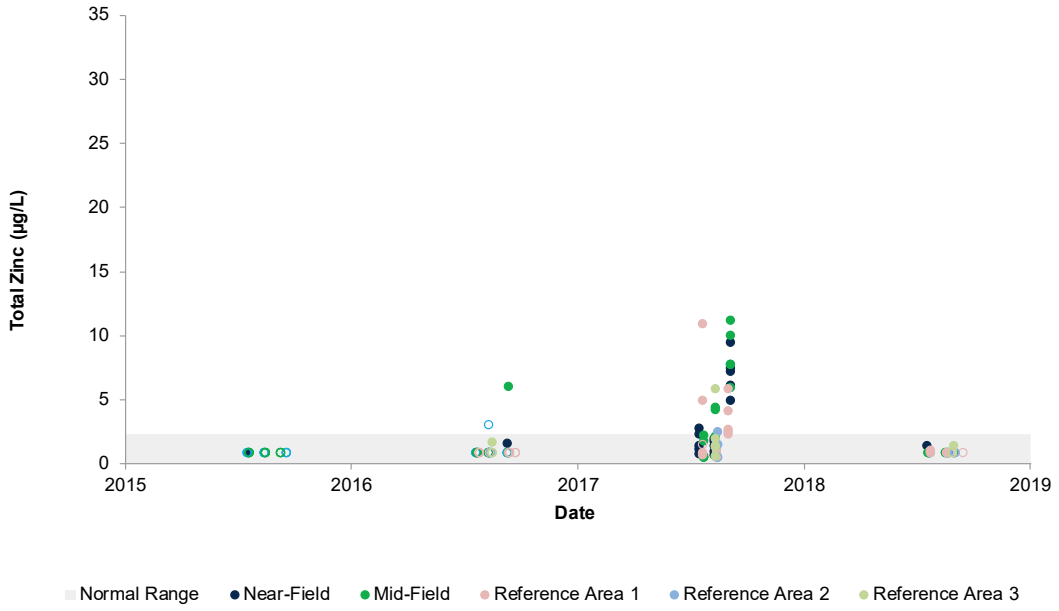


Figure 6F.2-49: Total Zinc During Open-water Conditions in Meliadine Lake, 2015 to 2018

APPENDIX 6G

Temporal Box-and-Whisker Plots by Area

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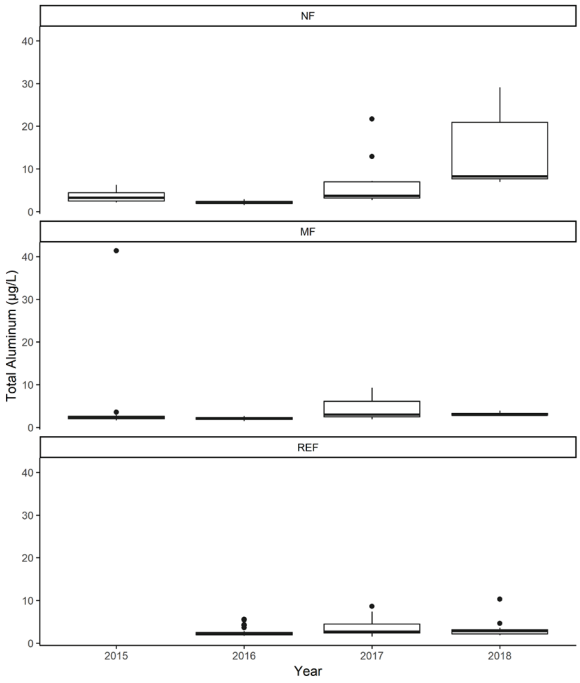
Figure 6G.1-3: Temporal box plots of key major ion parameters measured in the Near-field and Mid-field areas during ice-covered conditions, 2016 to 2018 3

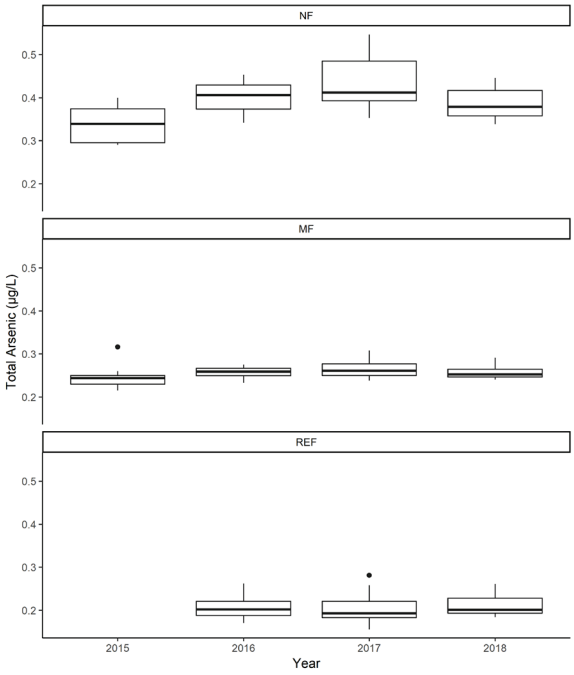
Figure 6G.1-4: Temporal box plots of key total metal parameters measured in the Near-field and Mid-field areas during ice-covered conditions, 2016 to 2018 4

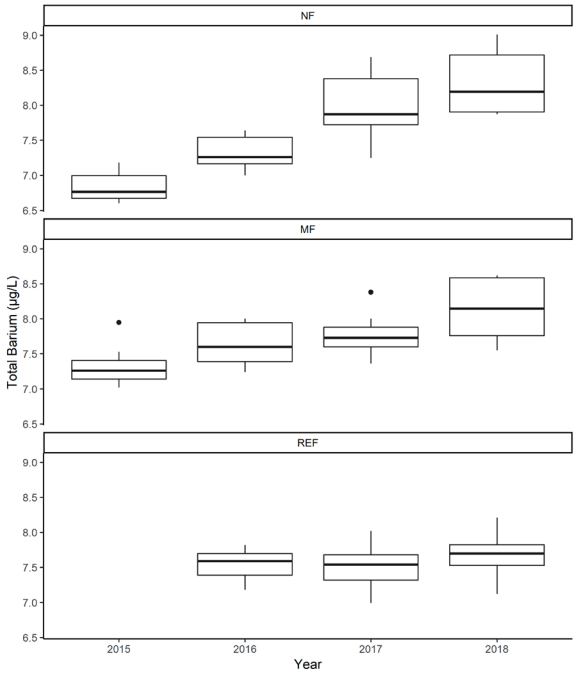
Figure 6G.2-1: Temporal box plots of key conventional parameters measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018 5

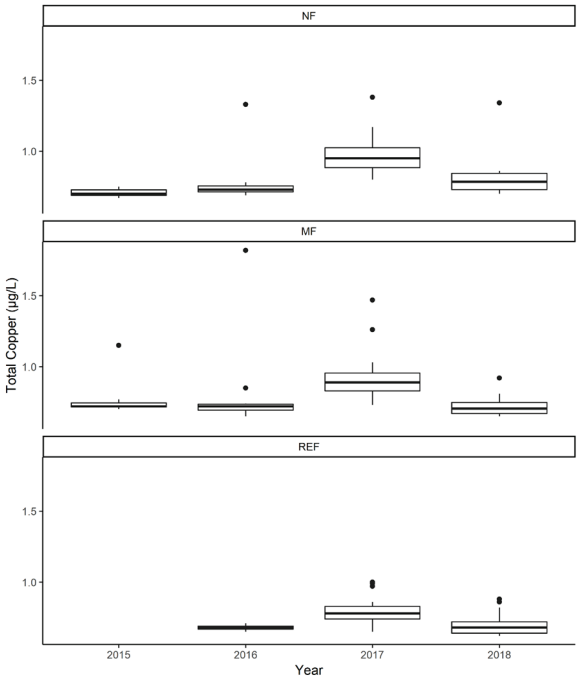
Figure 6G.2-2: Temporal box plots of key nutrient parameters measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018 6

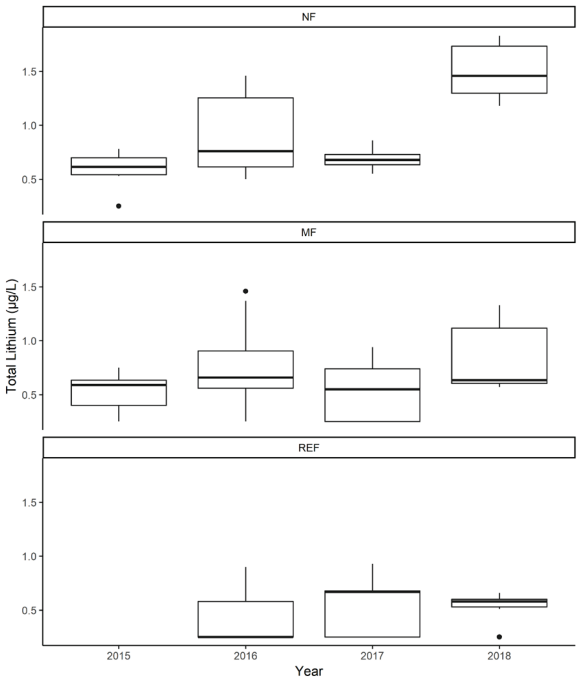
Figure 6G2-3: Temporal box plots of key major ion parameters measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018 7

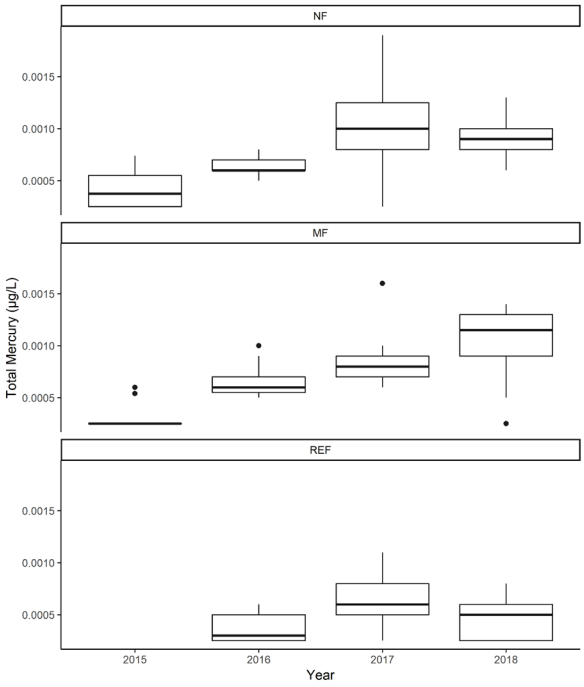

NF
MF
REF
Total Aluminum (µg/L)
0
10
20
30
40
2015
2016
2017
2018
Year

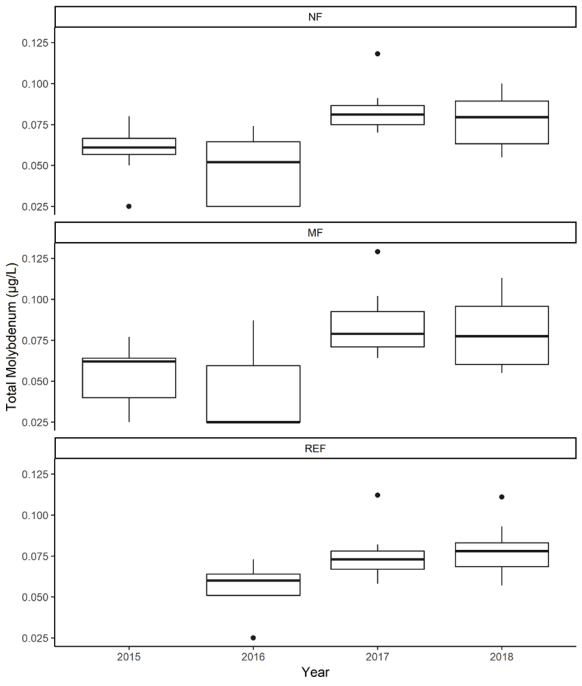

NF
MF
REF
Total Arsenic (µg/L)
0.2
0.3
0.4
0.5
2015
2016
2017
2018
Year

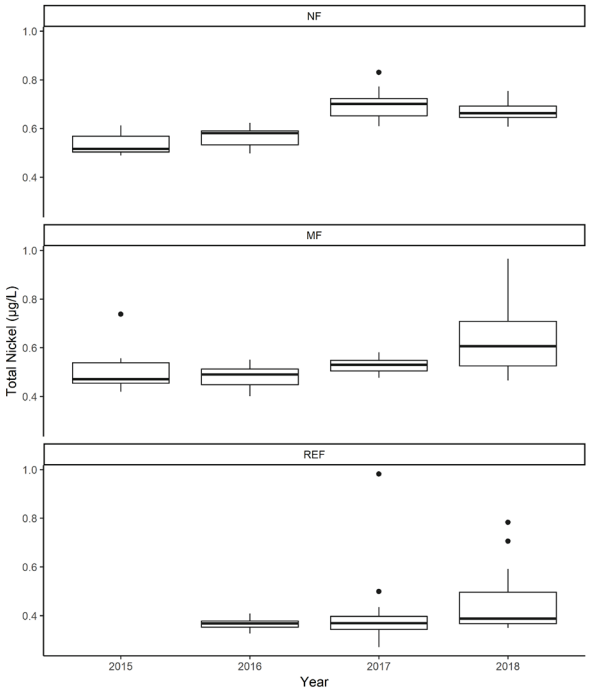

NF
MF
REF
Total Barium (µg/L)
6.5
7.0
7.5
8.0
8.5
9.0
2015
2016
2017
2018
Year

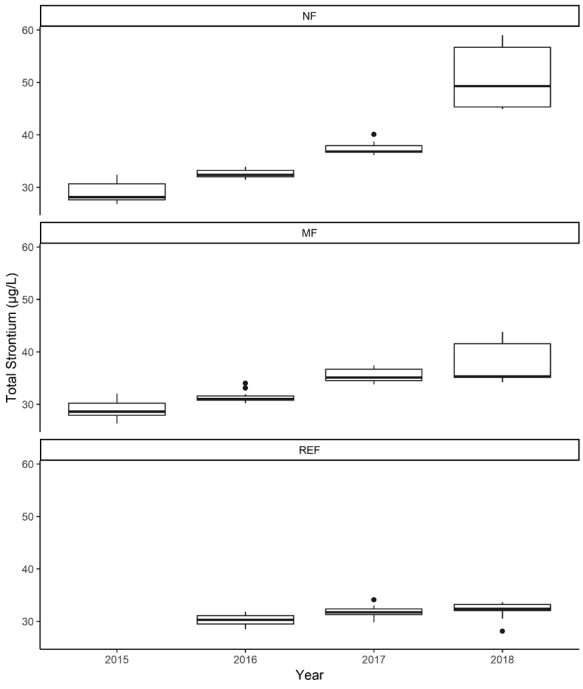

NF
MF
REF
Total Copper (µg/L)
1.5
1.0
2015
2016
2017
2018
Year

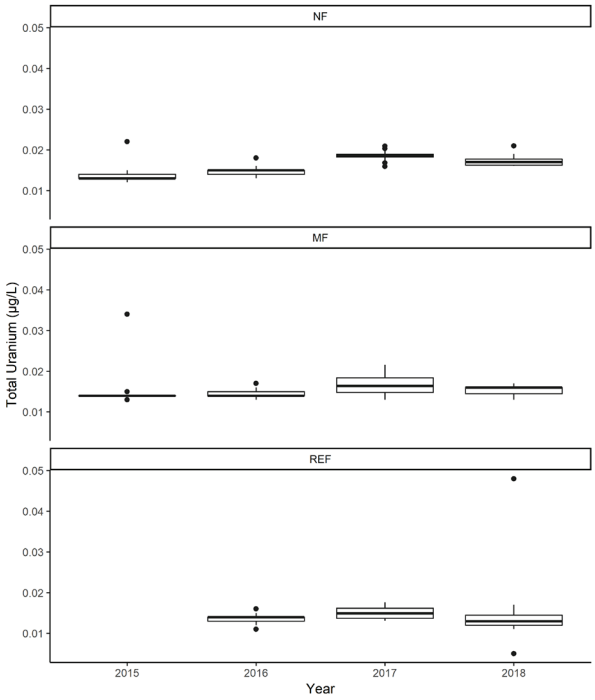

NF
MF
REF
Total Lithium (µg/L)
1.5
1.0
0.5
2015
2016
2017
2018
Year


NF
MF
REF
Total Mercury (µg/L)
0.0015
0.0010
0.0005
2015
2016
2017
2018
Year


NF
MF
REF
Total Molybdenum (µg/L)
0.125
0.100
0.075
0.050
0.025
2015
2016
2017
2018
Year


NF
MF
REF
Total Nickel (µg/L)
1.0
0.8
0.6
0.4
2015
2016
2017
2018
Year

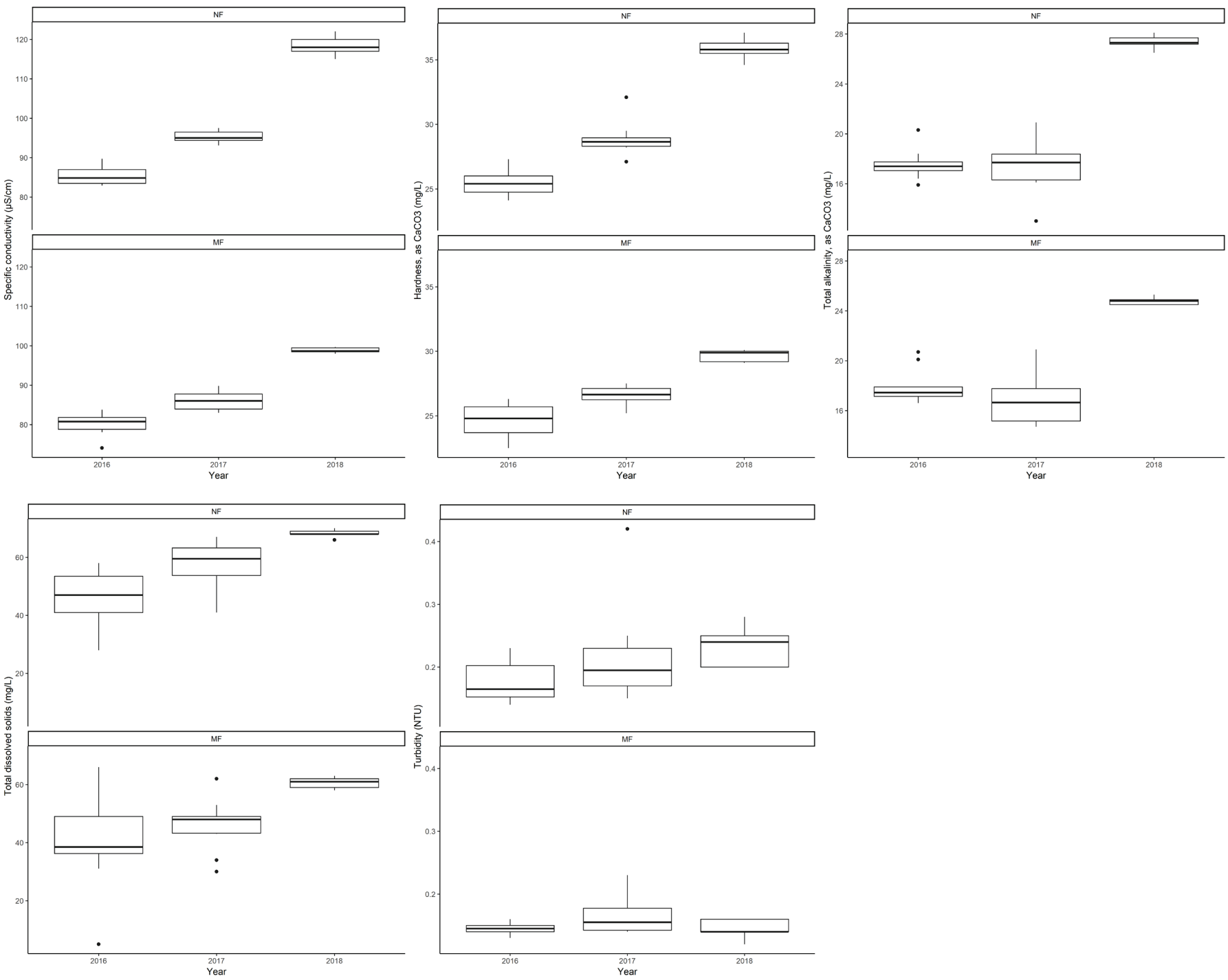

NF
MF
REF
Total Strontium (µg/L)
60
50
40
30
2015
2016
2017
2018
Year



.....8

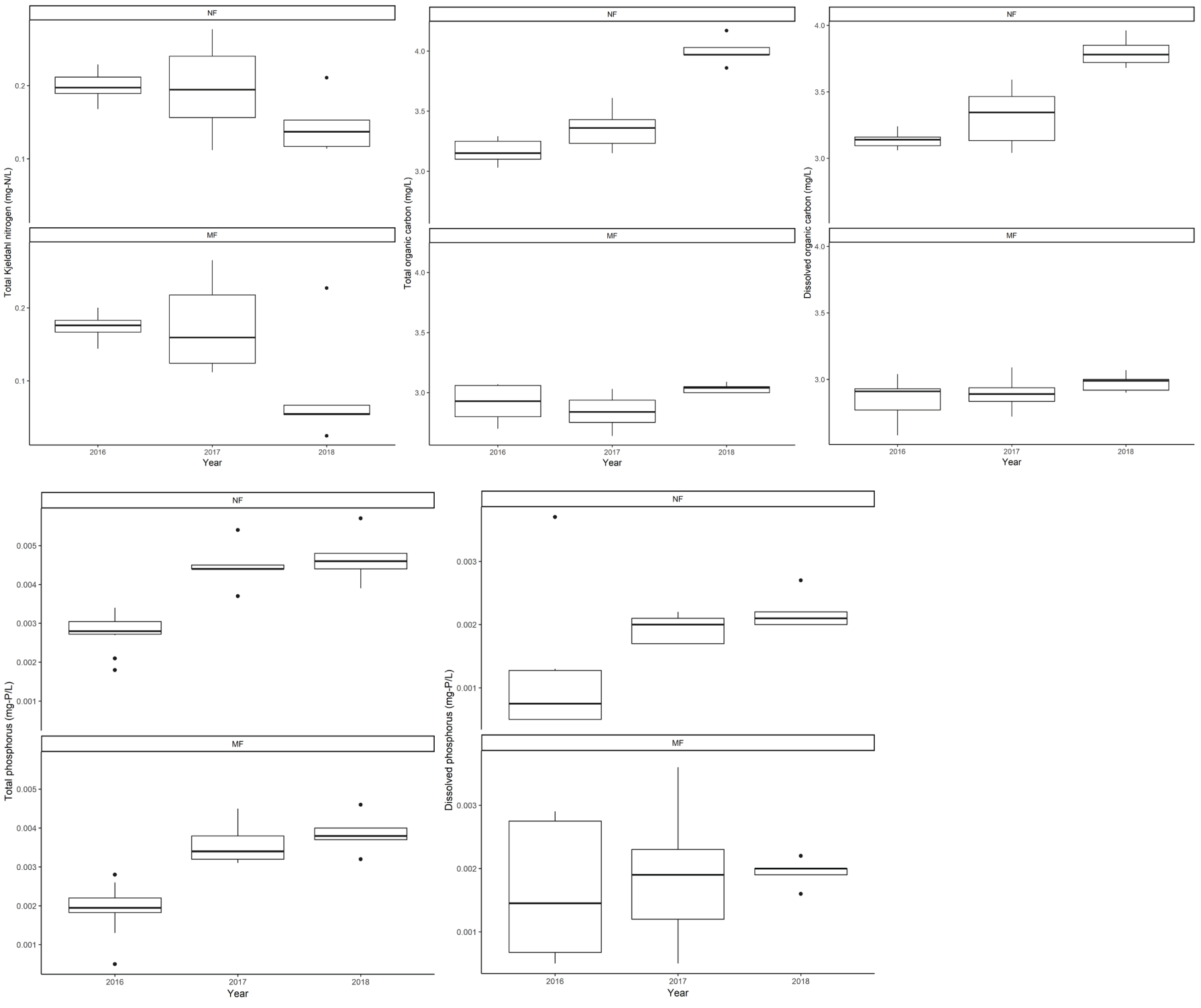
Figure 6G.2-4: Temporal box plots of key total metals measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018.....9

1.0 ICE-COVER SEASON BOX PLOTS



NF = near-field; MF = mid-field; mg/L = milligrams per litre; NTU = nephelometric turbidity unit; µS/cm = microSiemens per centimetre.

Figure 6G.1-1: Temporal box plots of key conventional parameters measured in the Near-field and Mid-field areas during ice-covered conditions, 2016 to 2018



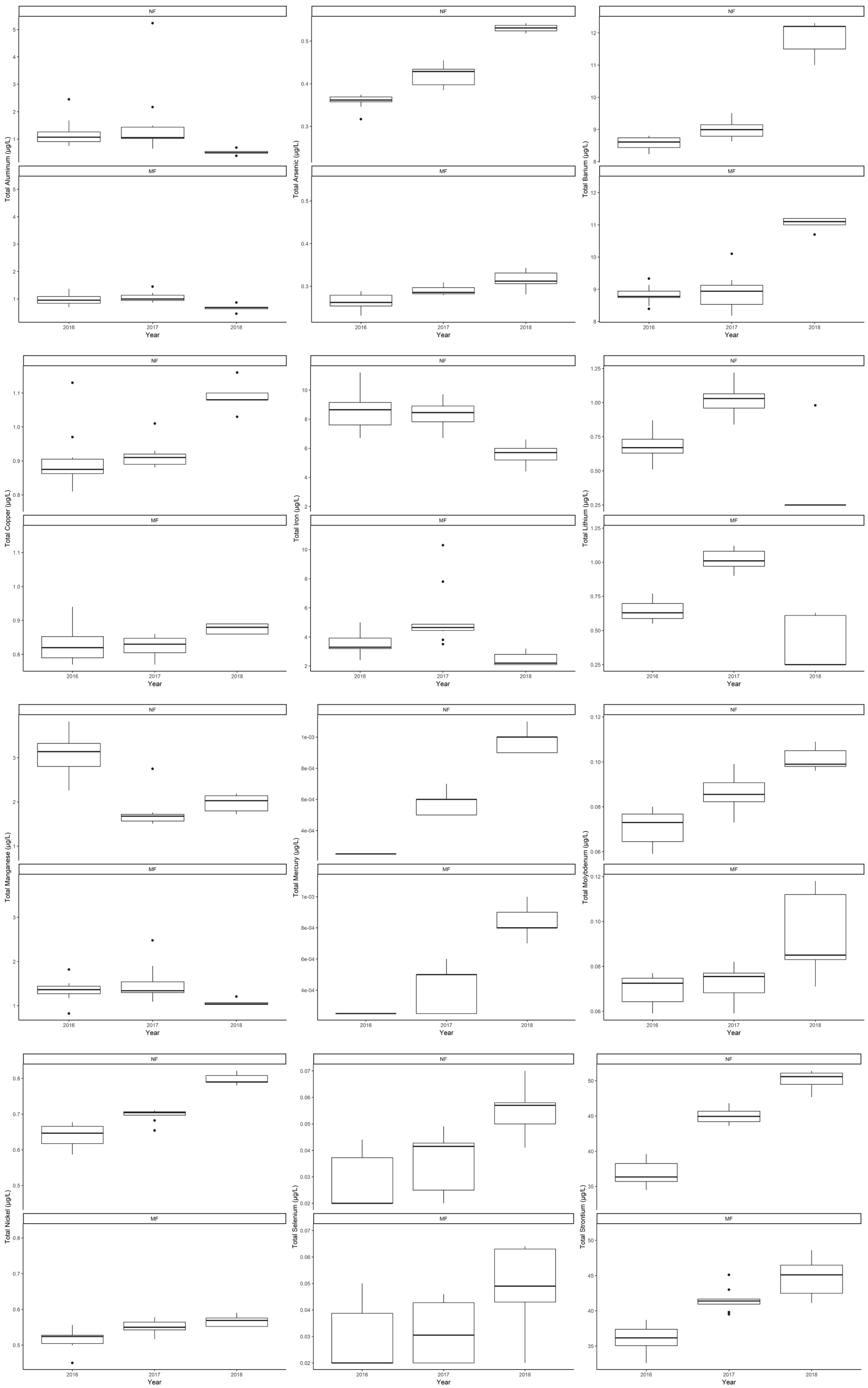
NF = near-field; MF = mid-field; mg/L = milligrams per litre.

Figure 6G.1-2: Temporal box plots of key nutrient parameters measured in the Near-field and Mid-field areas during ice-covered conditions, 2016 to 2018.



NF = near-field; MF = mid-field; mg/L = milligrams per litre.

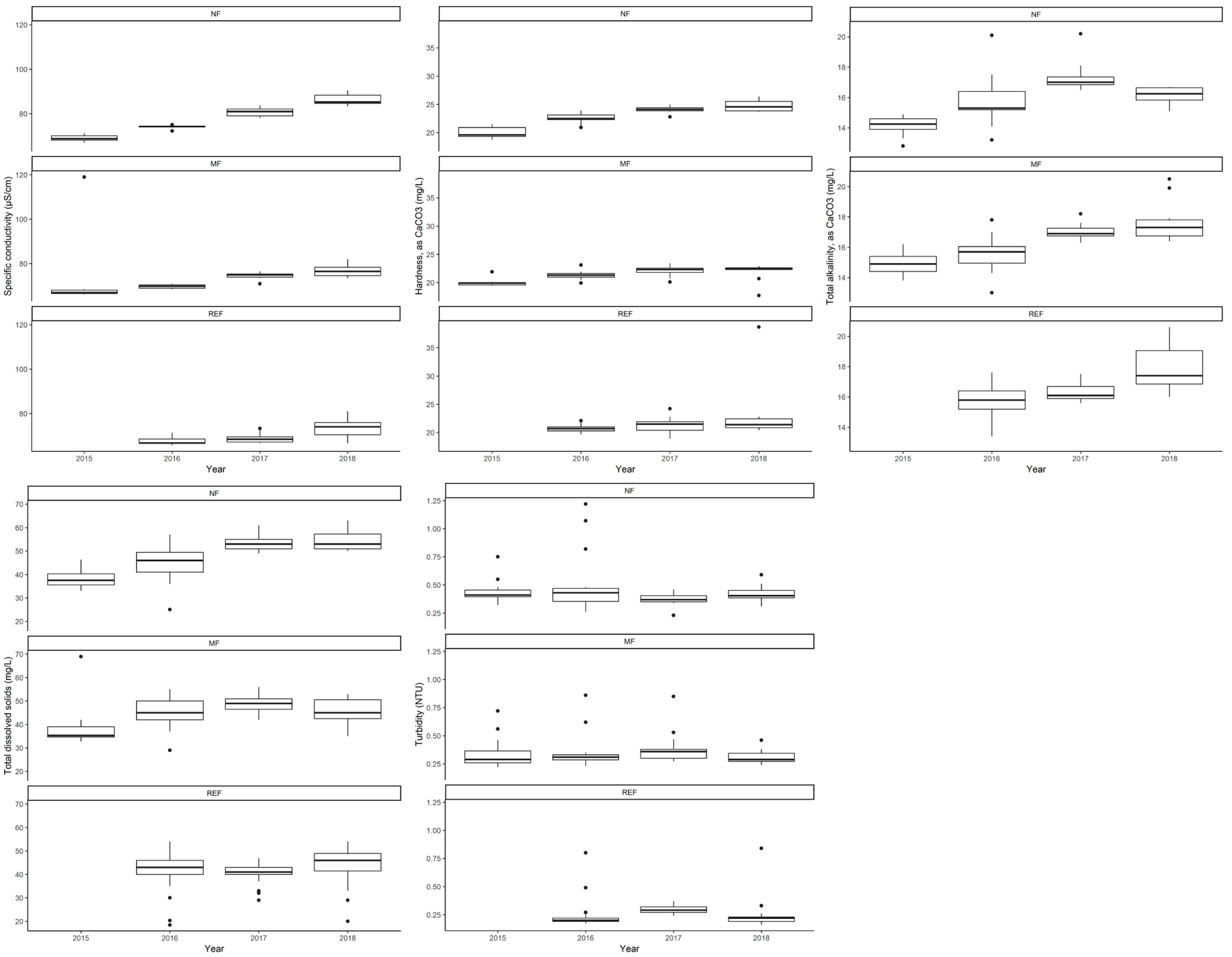
Figure 6G.1-3: Temporal box plots of key major ion parameters measured in the Near-field and Mid-field areas during ice-covered conditions, 2016 to 2018



NF = near-field; MF = mid-field; REF = pooled reference area; µg/L = micrograms per litre.

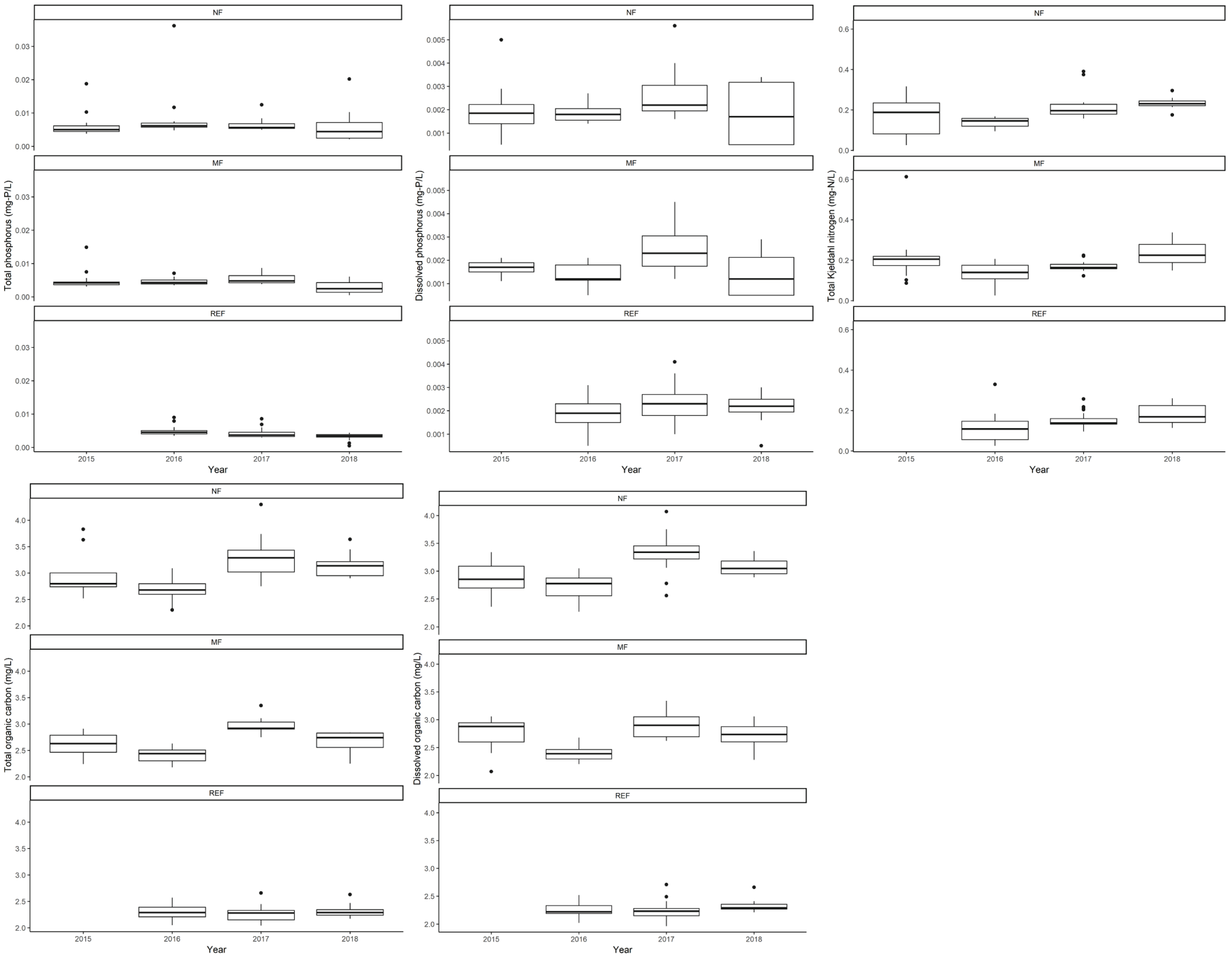
Figure 6G.1-4: Temporal box plots of key total metal parameters measured in the Near-field and Mid-field areas during ice-covered conditions, 2016 to 2018

2.0 OPEN-WATER SEASON BOX PLOTS



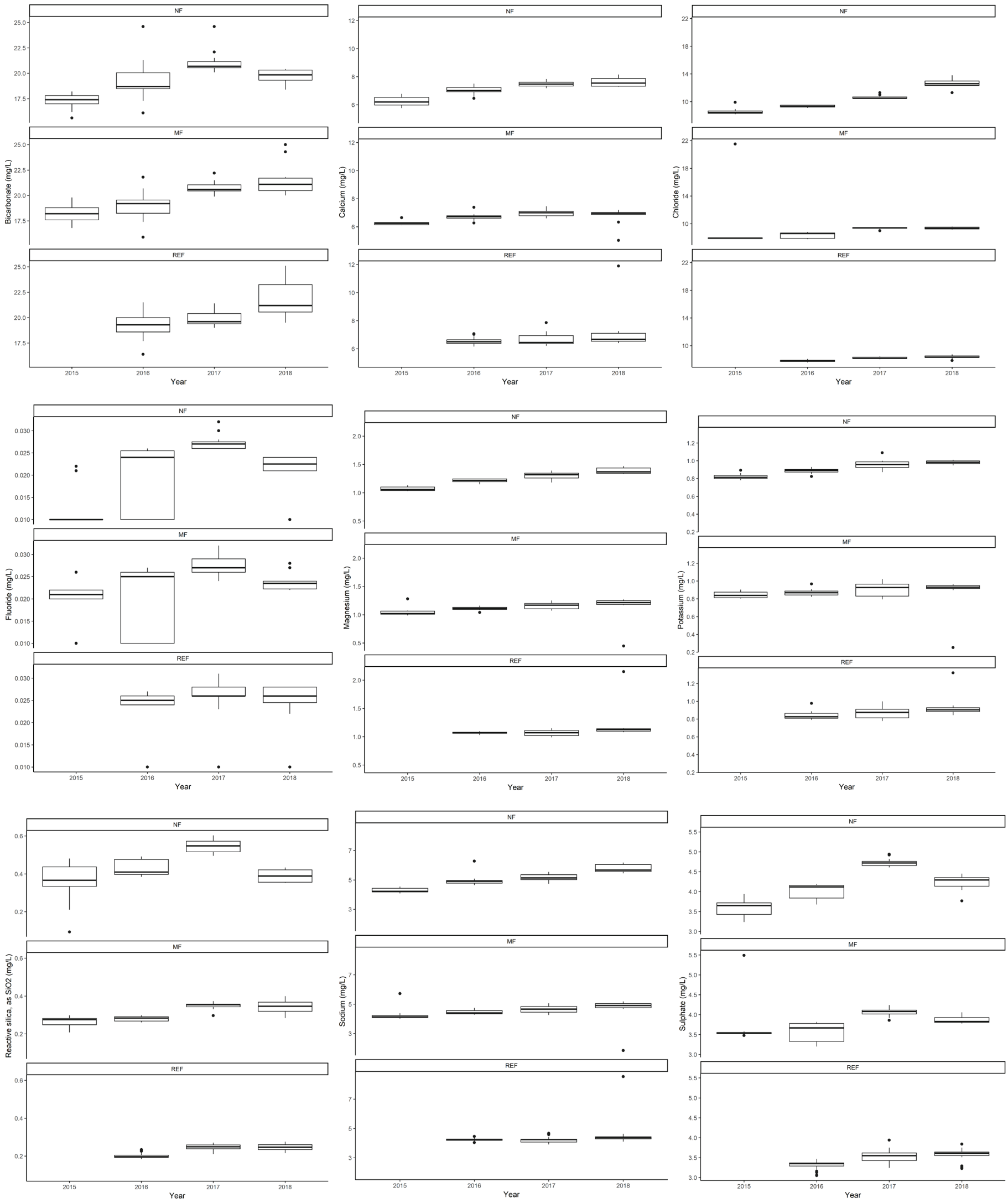
NF = near-field; MF = mid-field; REF = pooled reference area; mg/L = milligrams per litre; NTU = nephelometric turbidity unit; µS/cm = microSiemens per centimetre.

Figure 6G.2-1: Temporal box plots of key conventional parameters measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018



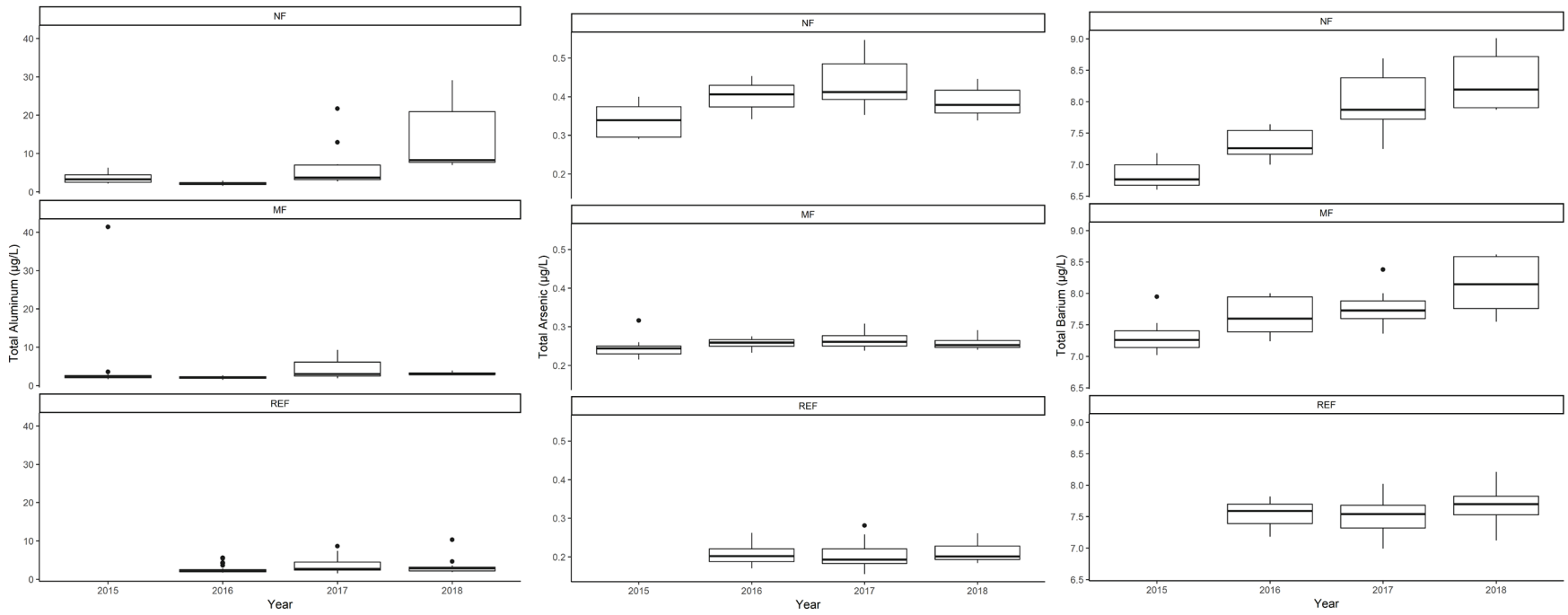
NF = near-field; MF = mid-field; REF = pooled reference area; mg/L = milligrams per litre.

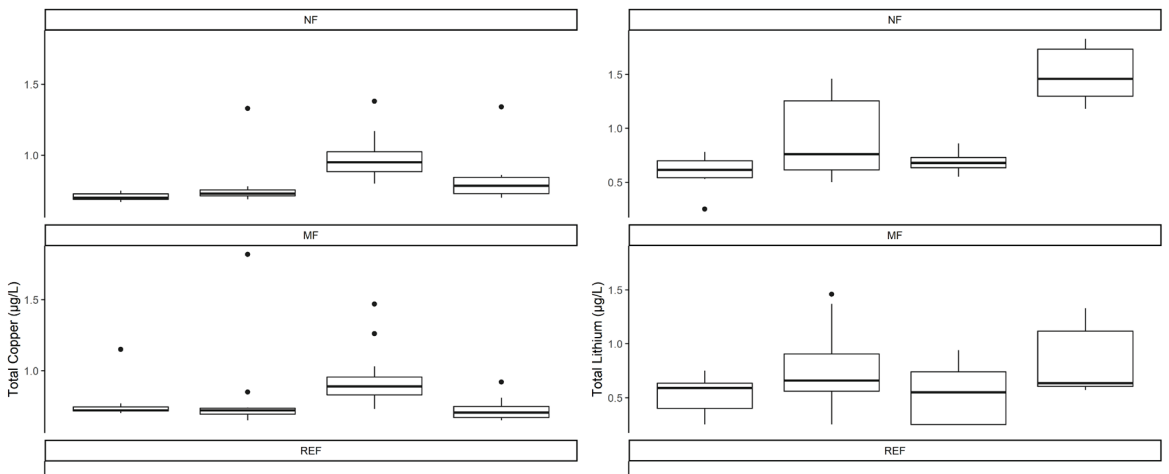
Figure 6G.2-2: Temporal box plots of key nutrient parameters measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018

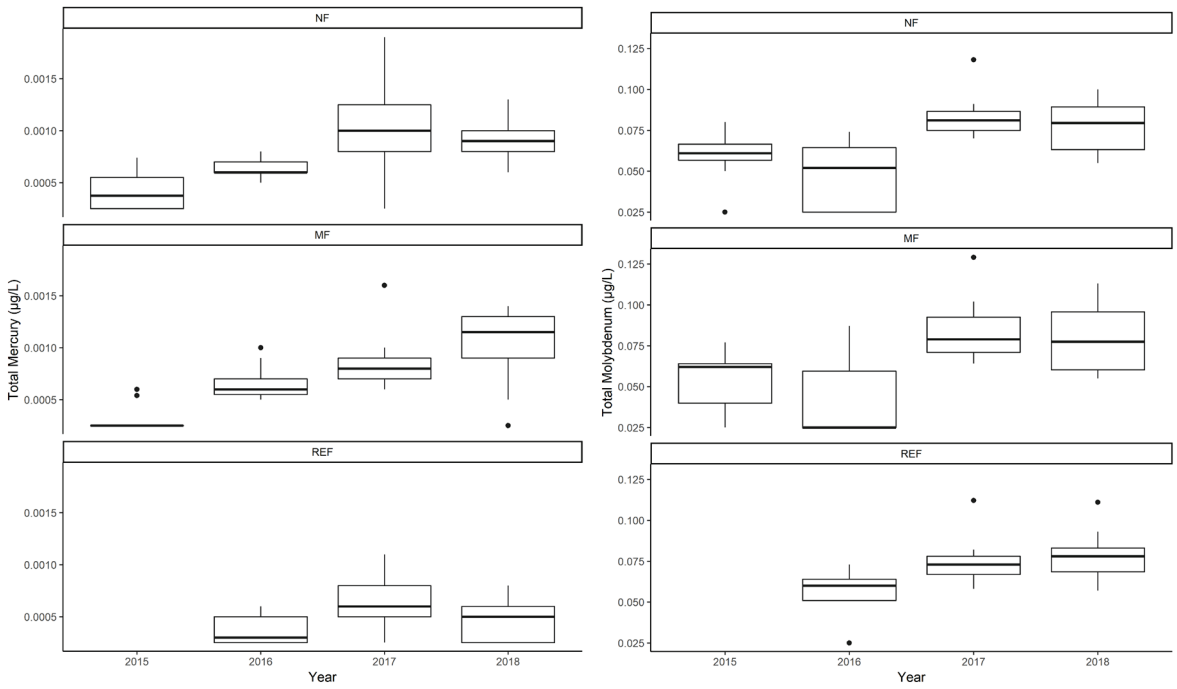


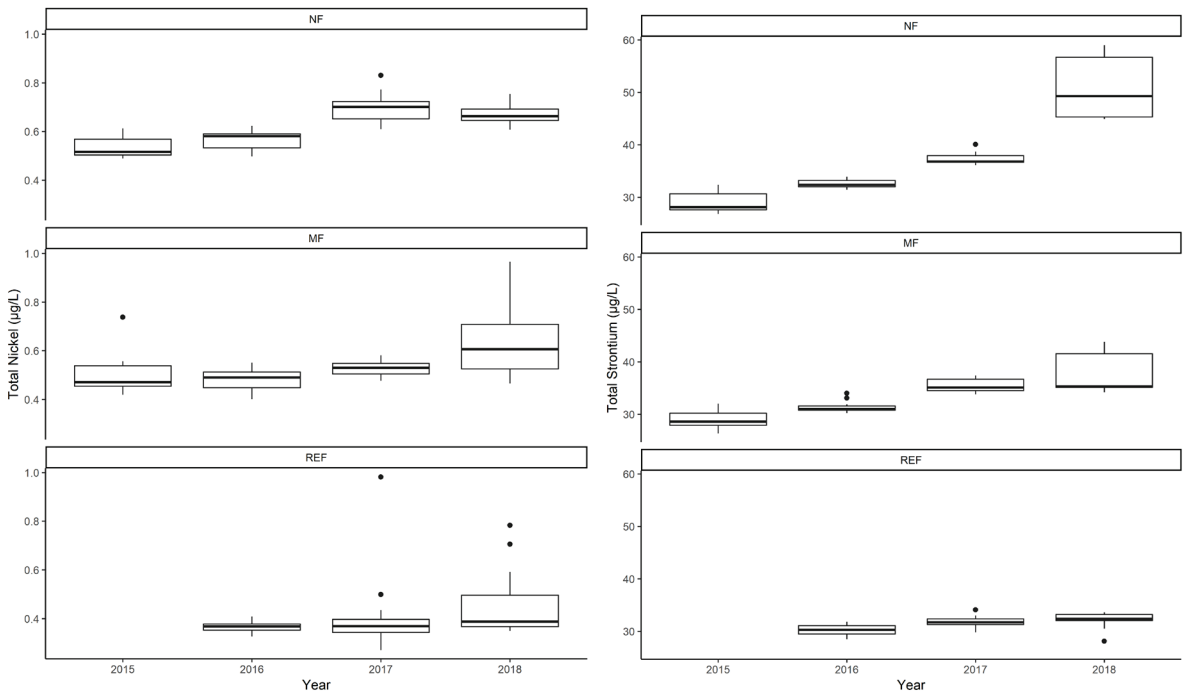
NF = near-field; MF = mid-field; REF = pooled reference area; mg/L = milligrams per litre.

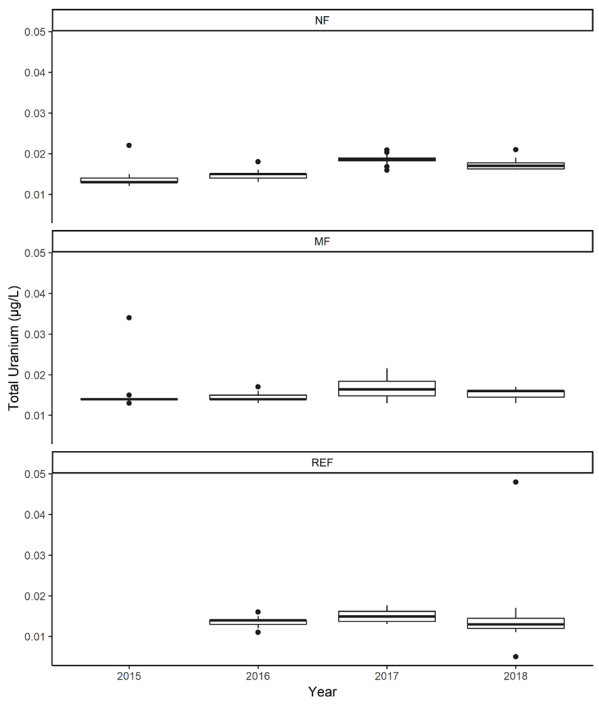
Figure 6G2-3: Temporal box plots of key major ion parameters measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018


NF
MF
REF
Total Aluminum (µg/L)
Total Arsenic (µg/L)
Total Barium (µg/L)
Year
2015
2016
2017
2018


NF
MF
REF
Total Copper (µg/L)
Total Lithium (µg/L)
Year
2015
2016
2017
2018


NF
MF
REF
Total Mercury (µg/L)
Total Molybdenum (µg/L)
Year
2015
2016
2017
2018





Note: total arsenic and total boron box-plots are not provided in this appendix because temporal trends in the Near-field area were variable (see Appendix 6F for temporal plots).

NF = near-field; MF = mid-field; REF = pooled reference area; µg/L = micrograms per litre.

Figure 6G.2-4: Temporal box plots of key total metals measured in the Near-field, Mid-field and Reference Areas during open-water conditions, 2015 to 2018

APPENDIX 6H

Historical Summary Statistics for the Near-field

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Table 6H-1: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2015

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2015						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Field Measured													
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.3	7.0	7.5	0.15	0	13
Specific conductivity	µS/cm	-	-	-	-	-	67	66	64	68	1.8	0	12
Temperature	°C	-	-	-	15	-	9	10	6.2	13	2.6	0	14
Dissolved oxygen	mg/L	-	6.5	-	-	-	11	11	9.6	13	1.2	0	14
Dissolved oxygen	%	-	-	-	-	-	95	98	83	117	12	0	14
Conventional Parameters													
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.4	7.3	7.3	7.4	0.03	0	14
Specific conductivity	µS/cm	-	-	-	-	-	69	69	67	71	1.2	0	14
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	20	20	19	22	0.9	0	14
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	14	14	13	15	0.6	0	14
Total dissolved solids	mg/L	-	-	-	500	-	38	38	33	46	3.6	0	14
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	33	33	32	34	0.8	0	14
Total suspended solids	mg/L	-	-	-	-	-	<5.0	-	<5.0	<5.0	-	14	14
Total organic carbon	mg/L	-	-	-	-	-	2.8	2.9	2.5	3.8	0.36	0	14
Dissolved organic carbon	mg/L	-	-	-	-	-	2.9	2.9	2.4	3.3	0.28	0	14
Turbidity	NTU	-	-	-	-	-	0.41	0.44	0.32	0.8	0.11	0	14
Major Ions													
Bicarbonate	mg/L	-	-	-	-	-	17	17	16	18	0.7	0	14
Calcium	mg/L	-	-	-	-	-	6.2	6.2	5.8	6.8	0.33	0	14
Carbonate	mg/L	-	-	-	-	-	<5.0	-	<5.0	<5.0	-	14	14
Chloride	mg/L	640	120	-	250	-	8.5	8.6	8.2	9.9	0.43	0	14
Fluoride	mg/L	-	0.12	1.5	-	2.8	<0.02	-	<0.02	0.022	-	11	14
Magnesium	mg/L	-	-	-	-	-	1.1	1.1	1.0	1.1	0.036	0	14
Potassium	mg/L	-	-	-	-	-	0.81	0.82	0.78	0.89	0.031	0	14
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.37	0.36	0.093	0.48	0.106	0	14
Sodium	mg/L	-	-	-	200	-	4.2	4.3	4.1	4.5	0.16	0	14
Sulphate	mg/L	-	-	-	500	-	3.7	3.6	3.2	3.9	0.21	0	14
Nutrients													
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	-	<0.005	<0.0050	-	14	14
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	-	<0.001	<0.001	-	14	14
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	-	<0.0051	<0.0051	-	14	14
Total ammonia	mg-N/L	-	2.4 - 12[(a)]	-	-	-	<0.005	-	<0.005	0.019	-	8	14
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.19	0.16	<0.05	0.32	0.094	2	14
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.19	0.16	<0.05	0.32	0.094	2	14
Total nitrogen	mg-N/L	-	-	-	-	-	-	-	-	-	-	0	0
Total phosphorus	mg-P/L	-	-	-	-	-	0.0051	0.0064	0.0038	0.019	0.0039	0	14
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0019	0.0020	<0.001	0.0050	0.00107	1	14
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	-	<0.001	0.0020	-	8	14

Table 6H-1: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2015

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2015						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Total Metals													
Aluminum	µg/L	-	100[b, c]	-	-	-	3.3	3.6	2.1	6.3	1.3	0	14
Antimony	µg/L	-	-	6.0	-	-	<0.02	-	<0.02	0.11	-	12	14
Arsenic	µg/L	-	5.0	10	-	25	0.34	0.34	0.29	0.40	0.040	0	14
Barium	µg/L	-	-	1,000	-	-	6.8	6.8	6.6	7.2	0.19	0	14
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	14	14
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	14	14
Boron	µg/L	29,000	1,500	5,000	-	-	4.8	4.7	3.3	6.1	1.1	0	14
Cadmium	µg/L	0.38 to 0.44[d]	0.039 to 0.044[d]	5.0	-	-	<0.005	-	<0.005	<0.005	-	14	14
Chromium	µg/L	-	1.0	50[e]	-	-	<0.06	-	<0.06	<0.06	-	14	14
Cobalt	µg/L	-	-	-	-	-	0.020	0.021	0.016	0.033	0.0043	0	14
Copper	µg/L	-	2.0[d]	-	1,000	-	0.70	0.71	0.67	0.75	0.025	0	14
Iron	µg/L	-	300	-	300	1,060	21	20	15	25	2.6	0	14
Lead	µg/L	-	1.0[d]	10	-	-	<0.01	-	<0.01	0.014	-	10	14
Lithium	µg/L	-	-	-	-	-	0.62	0.57	<0.5	0.78	0.19	3	14
Manganese	µg/L	-	-	-	50	-	4.4	5.6	3.8	8.4	2.1	0	14
Mercury	µg/L	-	0.026	1.0	-	-	0.00050	-	<0.0005	0.00074	-	7	14
Molybdenum	µg/L	-	73	-	-	-	0.061	0.060	<0.05	0.080	0.013	1	14
Nickel	µg/L	-	25[d]	-	-	-	0.52	0.53	0.49	0.61	0.041	0	14
Selenium	µg/L	-	1.0	50	-	-	<0.04	-	<0.04	0.048	-	12	14
Silver	µg/L	-	0.25	-	-	-	<0.005	-	<0.005	0.0071	-	13	14
Strontium	µg/L	-	-	-	-	-	28	29	27	32	2.0	0	14
Thallium	µg/L	-	0.80	-	-	-	<0.005	-	<0.005	0.0068	-	13	14
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	14	14
Titanium	µg/L	-	-	-	-	-	0.13	0.13	<0.1	0.25	0.078	5	14
Uranium	µg/L	33	15	20	-	-	0.013	0.014	0.012	0.022	0.0024	0	14
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	14	14
Zinc	µg/L	-	-	-	5,000	-	<0.8	-	<0.8	0.81	-	13	14
Dissolved Metals													
Aluminum	µg/L	-	-	-	-	-	1.0	1.4	0.48	4	1.0	0	13
Antimony	µg/L	-	-	-	-	-	<0.02	-	<0.02	0.16	-	10	14
Arsenic	µg/L	-	-	-	-	-	0.31	0.31	0.26	0.37	0.038	0	14
Barium	µg/L	-	-	-	-	-	6.9	6.9	6.5	7.2	0.20	0	14
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	14	14
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	14	14
Boron	µg/L	-	-	-	-	-	5.5	5.2	3.4	7.0	1.4	0	14
Cadmium	µg/L	-	-	-	-	-	<0.005	-	<0.005	0.0084	-	13	14
Chromium	µg/L	-	-	-	-	-	<0.06	-	<0.06	<0.06	-	14	14
Cobalt	µg/L	-	-	-	-	-	<0.01	-	<0.01	0.025	-	8	14
Copper	µg/L	-	-	-	-	-	0.67	0.83	0.55	2.6	0.54	0	13

Table 6H-1: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2015

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2015						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Dissolved Metals (cont'd)													
Iron	µg/L	-	-	-	-	-	5.7	5.9	2.6	8.3	1.5	0	14
Lead	µg/L	-	-	-	-	-	<0.01	-	<0.01	0.16	-	8	14
Lithium	µg/L	-	-	-	-	-	0.61	0.61	<0.5	1.1	0.20	2	14
Manganese	µg/L	-	-	-	-	-	0.88	1.8	0.44	4.3	1.5	0	14
Mercury	µg/L	-	-	-	-	-	<0.0005	-	<0.0005	0.0005	-	13	14
Molybdenum	µg/L	-	-	-	-	-	0.066	0.069	<0.05	0.15	0.027	1	14
Nickel	µg/L	-	-	-	-	-	0.52	0.53	0.46	0.6	0.04	0	13
Selenium	µg/L	-	-	-	-	-	<0.04	-	<0.04	<0.040	-	14	14
Silver	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	14	14
Strontium	µg/L	-	-	-	-	-	28	29	27	31	1.6	0	14
Thallium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	14	14
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	3.1	-	11	14
Titanium	µg/L	-	-	-	-	-	<0.1	-	<0.1	0.20	-	11	14
Uranium	µg/L	-	-	-	-	-	0.012	0.011	<0.01	0.014	0.0029	2	14
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	14	14
Zinc	µg/L	25 to 29[f]	7.1 to 11[g]	-	-	-	<0.8	-	<0.8	17	-	9	14
Other													
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.002	-	<0.002	<0.0020	-	14	14
Cyanide (free)	mg/L	-	-	-	-	-	<0.005	-	<0.001	<0.0050	-	14	14
Cyanide (wad)	mg/L	-	-	-	-	-	<0.002	-	<0.001	<0.0050	-	14	14
Radium-226	Bq/L	-	-	-	-	-	-	-	-	-	-	0	0

(a) = the ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (2.3699 mg-N/L) is based on the combination of field pH (7.5) and water temperature (12.8°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) = guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.0 to 7.5). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (18.7 to 21.5 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (18.7 to 21.5 mg/L as $CaCO_3$) and DOC (2.3 to 3.3 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.0 to 7.5), hardness (18.7 to 21.5 mg/L as $CaCO_3$) and DOC (2.3 to 3.3 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines that fell outside of the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

In cases where 50% or more of data were <DL, no mean or standard deviation was calculated.

Half of the detection limit value was used for total Kjeldahl nitrogen to calculate total nitrogen concentrations.

Grey shaded concentrations are higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units;
mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; Bq/L = Becquerel per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; - = no guideline or data not measured.

Reference:

CCME. 2018. Canadian Water Quality Guideline for the Protection of Aquatic Life: Zinc (Dissolved) 2018 Fact Sheet. Canadian Council of Ministers of the Environment. Gatineau, QC.

Table 6H-2: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2016

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2016						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Field Measured													
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.6	7.7	7.5	8.1	0.26	0	15
Specific conductivity	µS/cm	-	-	-	-	-	72	72	70	73	1.0	0	15
Temperature	°C	-	-	-	15	-	13	12	9.4	14	1.9	0	15
Dissolved oxygen	mg/L	-	6.5	-	-	-	10	10	7.4	12	1.3	0	15
Dissolved oxygen	%	-	-	-	-	-	97	92	71	106	11	0	15
Conventional Parameters													
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.4	7.2	7.7	0.22	0	15
Specific conductivity	µS/cm	-	-	-	-	-	74	74	72	75	0.6	0	15
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	23	23	21	24	0.8	0	15
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	15	16	13	20	1.6	0	15
Total dissolved solids	mg/L	-	-	-	500	-	46	45	25	57	8.4	0	15
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	37	37	36	40	1.2	0	15
Total suspended solids	mg/L	-	-	-	-	-	<1.0	-	<1.0	2.9	-	14	15
Total organic carbon	mg/L	-	-	-	-	-	2.7	2.7	2.3	3.1	0.21	0	15
Dissolved organic carbon	mg/L	-	-	-	-	-	2.8	2.7	2.3	3.1	0.25	0	14
Turbidity	NTU	-	-	-	-	-	0.43	0.51	0.26	1.2	0.29	0	15
Major Ions													
Bicarbonate	mg/L	-	-	-	-	-	18	18	16	25	1.8	0	29
Calcium	mg/L	-	-	-	-	-	6.7	6.6	5.8	7.5	0.51	0	29
Carbonate	mg/L	-	-	-	-	-	<5.0	-	<5.0	<5.0	-	29	29
Chloride	mg/L	640	120	-	250	-	9.2	9.0	8.2	9.9	0.49	0	29
Fluoride	mg/L	-	0.12	1.5	-	2.8	<0.02	-	<0.02	0.026	-	17	29
Magnesium	mg/L	-	-	-	-	-	1.2	1.1	1.0	1.3	0.081	0	29
Potassium	mg/L	-	-	-	-	-	0.85	0.85	0.78	0.93	0.044	0	29
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.40	0.39	0.093	0.49	0.085	0	29
Sodium	mg/L	-	-	-	200	-	4.7	4.6	4.1	6.3	0.45	0	29
Sulphate	mg/L	-	-	-	500	-	3.8	3.8	3.2	4.2	0.29	0	29
Nutrients													
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	-	<0.005	0.0087	-	28	29
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	-	<0.001	<0.001	-	29	29
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	-	<0.0051	0.0087	-	28	29
Total ammonia	mg-N/L	-	0.66 to 12[(a)]	-	-	-	<0.005	-	<0.005	0.019	-	22	29
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.15	0.15	<0.05	0.32	0.068	2	29
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.15	0.15	<0.05	0.32	0.068	2	29
Total nitrogen	mg-N/L	-	-	-	-	-	0.15	0.14	0.094	0.17	0.026	0	15
Total phosphorus	mg-P/L	-	-	-	-	-	0.0059	0.0075	0.0038	0.036	0.0062	0	29
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0018	0.0019	<0.001	0.0050	0.00079	1	29
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	-	<0.001	0.0020	-	21	29

Table 6H-2: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2016

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2016						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Total Metals													
Aluminum	µg/L	-	100[b, c]	-	-	-	2.3	2.2	1.7	<3.0	0.4	1	15
Antimony	µg/L	-	-	6.0	-	-	<0.02	-	<0.02	<0.10	-	15	15
Arsenic	µg/L	-	5.0	10	-	25	0.41	0.40	0.34	0.45	0.035	0	15
Barium	µg/L	-	-	1,000	-	-	7.3	7.3	7.0	7.6	0.23	0	15
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.1	-	15	15
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.05	-	15	15
Boron	µg/L	29,000	1,500	5,000	-	-	7.0	6.5	4.5	<10	1.2	1	15
Cadmium	µg/L	0.38 to 0.49[d]	0.039 to 0.048[d]	5.0	-	-	<0.005	-	<0.005	<0.005	-	15	15
Chromium	µg/L	-	1.0	50[e]	-	-	<0.06	-	<0.06	<0.1	-	15	15
Cobalt	µg/L	-	-	-	-	-	0.020	0.022	0.016	<0.1	0.0082	1	15
Copper	µg/L	-	2.0[d]	-	1,000	-	0.73	0.77	0.69	1.3	0.16	0	15
Iron	µg/L	-	300	-	300	1,060	20	22	16	35	5.2	0	15
Lead	µg/L	-	1.0[d]	10	-	-	<0.01	-	<0.01	<0.05	-	14	15
Lithium	µg/L	-	-	-	-	-	0.76	0.89	0.5	1.5	0.36	1	15
Manganese	µg/L	-	-	-	50	-	7.2	7.3	4.5	11	2.3	0	15
Mercury	µg/L	-	0.026	1.0	-	-	0.00060	0.00063	0.0005	0.00080	0.00008	0	15
Molybdenum	µg/L	-	73	-	-	-	0.052	0.048	<0.05	0.074	0.018	5	15
Nickel	µg/L	-	25[d]	-	-	-	0.58	0.57	0.50	0.62	0.037	0	15
Selenium	µg/L	-	1.0	50	-	-	<0.04	-	<0.04	<0.05	-	12	15
Silver	µg/L	-	0.25	-	-	-	<0.005	-	<0.005	<0.01	-	15	15
Strontium	µg/L	-	-	-	-	-	32	33	31	34	0.8	0	15
Thallium	µg/L	-	0.80	-	-	-	<0.005	-	<0.005	<0.01	-	15	15
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.1	-	15	15
Titanium	µg/L	-	-	-	-	-	<0.1	-	<0.1	<0.3	-	14	15
Uranium	µg/L	33	15	20	-	-	0.015	0.015	0.013	0.018	0.0012	0	15
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.5	-	15	15
Zinc	µg/L	-	-	-	5,000	-	<0.8	-	<0.8	<3.0	-	14	15
Dissolved Metals													
Aluminum	µg/L	-	-	-	-	-	1.1	1.5	0.75	4	0.8	0	13
Antimony	µg/L	-	-	-	-	-	<0.02	-	<0.02	0.02	-	14	15
Arsenic	µg/L	-	-	-	-	-	0.37	0.37	0.32	0.44	0.035	0	15
Barium	µg/L	-	-	-	-	-	7.2	7.2	6.6	7.8	0.34	0	15
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	15	15
Bismuth	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	15	15
Boron	µg/L	-	-	-	-	-	6.3	6.1	4.5	8.0	1.0	0	15
Cadmium	µg/L	-	-	-	-	-	<0.005	-	<0.005	0.0080	-	13	15
Chromium	µg/L	-	-	-	-	-	0.07	0.0822	<0.06	0.23	0.064303077	7	15
Cobalt	µg/L	-	-	-	-	-	<0.01	-	<0.01	0.016	-	9	15
Copper	µg/L	-	-	-	-	-	0.79	0.80	0.69	1.1	0.13	0	8

Table 6H-2: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2016

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2016						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Dissolved Metals (cont'd)													
Iron	µg/L	-	-	-	-	-	6.0	6.5	3.9	9.4	1.8	0	15
Lead	µg/L	-	-	-	-	-	<0.01	-	<0.01	0.05	-	12	14
Lithium	µg/L	-	-	-	-	-	0.76	1.04	<0.5	2.7	0.73	2	15
Manganese	µg/L	-	-	-	-	-	0.95	1.0	0.46	1.8	0.4	0	15
Mercury	µg/L	-	-	-	-	-	0.0005	0.00077	<0.0005	0.0018	0.000592151	5	15
Molybdenum	µg/L	-	-	-	-	-	0.058	0.056	<0.05	0.08	0.018	3	15
Nickel	µg/L	-	-	-	-	-	0.56	0.57	0.53	0.6	0.03	0	14
Selenium	µg/L	-	-	-	-	-	<0.04	-	<0.04	0.044	-	14	15
Silver	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	15	15
Strontium	µg/L	-	-	-	-	-	32	32	31	33	0.9	0	15
Thallium	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	15	15
Tin	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.1	-	15	15
Titanium	µg/L	-	-	-	-	-	<0.1	-	<0.1	0.12	-	14	15
Uranium	µg/L	-	-	-	-	-	0.013	0.013	0.01	0.016	0.0012	0	15
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	<0.05	-	15	15
Zinc	µg/L	27 to 31[(f)]	4.1 to 6.7[(g)]	-	-	-	<0.8	-	<0.8	10	-	9	14
Other													
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.002	-	<0.002	0.0023	-	14	15
Cyanide (free)	mg/L	-	-	-	-	-	<0.005	-	<0.001	<0.0050	-	15	15
Cyanide (wad)	mg/L	-	-	-	-	-	<0.001	-	<0.001	<0.0020	-	15	15
Radium-226	Bq/L	-	-	-	-	-	-	-	-	-	-	0	0

(a) = the ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (2.3699 mg-N/L) is based on the combination of field pH (7.5) and water temperature (12.8°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.0 to 8.1). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(d) = guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (19 to 22 mg/L). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (20.9 to 23.9 mg/L as CaCO3) and DOC (2.3 to 3.3 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.5 to 8.1), hardness (20.9 to 23.9 mg/L as $CaCO_3$) and DOC (2.3 to 3.1 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines that fell outside of the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

In cases where 50% or more of data were <DL, no mean or standard deviation was calculated.

Half of the detection limit value was used for total Kjeldahl nitrogen to calculate total nitrogen concentrations.

Grey shaded concentrations are higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units;
mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; Bq/L = Becquerel per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; - = no guideline or data not measured.

Reference:

CCME. 2018. Canadian Water Quality Guideline for the Protection of Aquatic Life: Zinc (Dissolved) 2018 Fact Sheet. Canadian Council of Ministers of the Environment. Gatineau, QC.

Table 6H-3: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2017

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2017						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Field Measured													
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.6	7.5	7.3	7.6	0.13	0	15
Specific conductivity	µS/cm	-	-	-	-	-	82	81	80	82	0.91	0	15
Temperature	°C	-	-	-	15	-	13	12	9.4	13	1.8	0	15
Dissolved oxygen	mg/L	-	6.5	-	-	-	11	11	10	11	0.43	0	15
Dissolved oxygen	%	-	-	-	-	-	102	102	100	104	1.3	0	15
Conventional Parameters													
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.3	7.3	7.2	7.4	0.074	0	15
Specific conductivity	µS/cm	-	-	-	-	-	81	81	78	84	1.8	0	15
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	24	24	23	25	0.52	0	15
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	17	17	17	20	0.90	0	15
Total dissolved solids	mg/L	-	-	-	500	-	53	53	49	61	3.5	0	15
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	41	41	41	43	0.85	0	15
Total suspended solids	mg/L	-	-	-	-	-	1.1	1.4	<1.0	3.7	1.1	6	15
Total organic carbon	mg/L	-	-	-	-	-	3.3	3.3	2.8	4.3	0.39	0	15
Dissolved organic carbon	mg/L	-	-	-	-	-	3.3	3.3	2.6	4.1	0.36	0	15
Turbidity	NTU	-	-	-	-	-	0.37	0.38	0.23	0.46	0.053	0	15
Major Ions													
Bicarbonate	mg/L	-	-	-	-	-	21	21	20	25	1.1	0	15
Calcium	mg/L	-	-	-	-	-	7.5	7.5	7.2	7.8	0.18	0	15
Carbonate	mg/L	-	-	-	-	-	<5.0	-	<5.0	<5.0	-	15	15
Chloride	mg/L	640	120	-	250	-	11	11	10	11	0.25	0	15
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.027	0.027	0.026	0.032	0.0017	0	15
Magnesium	mg/L	-	-	-	-	-	1.3	1.3	1.2	1.4	0.058	0	15
Potassium	mg/L	-	-	-	-	-	0.96	0.97	0.87	1.1	0.062	0	15
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.55	0.55	0.50	0.60	0.035	0	15
Sodium	mg/L	-	-	-	200	-	5.1	5.2	4.7	5.6	0.21	0	15
Sulphate	mg/L	-	-	-	500	-	4.7	4.7	4.6	4.9	0.099	0	15
Nutrients													
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	-	<0.005	0.073	-	10	15
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	-	<0.001	<0.001	-	15	15
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	-	<0.0051	0.073	-	10	15
Total ammonia	mg-N/L	-	1.5 to 3.4[(a)]	-	-	-	<0.005	-	<0.005	0.011	-	10	15
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.20	0.22	0.16	0.39	0.070	0	15
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.22	0.24	0.16	0.40	0.077	0	15
Total nitrogen	mg-N/L	-	-	-	-	-	0.22	0.24	0.16	0.40	0.077	0	15
Total phosphorus	mg-P/L	-	-	-	-	-	0.0057	0.0065	0.0050	0.013	0.0020	0	15
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0022	0.0026	0.0016	0.0056	0.0011	0	15
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	-	<0.001	0.0012	-	11	15

Table 6H-3: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2017

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2017						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Total Metals													
Aluminum	µg/L	-	100[b, c]	-	-	-	3.7	6.0	2.7	22	5.1	0	15
Antimony	µg/L	-	-	6.0	-	-	<0.02	-	<0.02	0.054	-	14	15
Arsenic	µg/L	-	5.0	10	-	25	0.41	0.43	0.35	0.55	0.055	0	15
Barium	µg/L	-	-	1,000	-	-	7.9	7.9	7.3	8.7	0.46	0	15
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	15	15
Bismuth	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	15	15
Boron	µg/L	29,000	1,500	5,000	-	-	<5.0	-	<5.0	5.4	-	14	15
Cadmium	µg/L	0.47 to 0.51[d]	0.046 to 0.050[d]	5.0	-	-	<0.005	-	<0.005	0.0082	-	13	15
Chromium	µg/L	-	1.0	50[e]	-	-	<0.1	-	<0.1	<0.1	-	15	15
Cobalt	µg/L	-	-	-	-	-	0.022	0.023	0.015	0.044	0.0072	0	15
Copper	µg/L	-	2.0[d]	-	1,000	-	0.95	0.98	0.80	1.4	0.15	0	15
Iron	µg/L	-	300	-	300	1,060	26	25	18	45	6.8	0	15
Lead	µg/L	-	1.0[d]	10	-	-	0.011	0.094	<0.01	0.90	0.23	6	15
Lithium	µg/L	-	-	-	-	-	0.68	0.70	0.55	0.86	0.091	0	15
Manganese	µg/L	-	-	-	50	-	5.5	5.8	4.8	7.3	0.92	0	15
Mercury	µg/L	-	0.026	1.0	-	-	0.0010	0.0010	<0.0005	0.0019	0.00042	1	15
Molybdenum	µg/L	-	73	-	-	-	0.081	0.083	0.070	0.12	0.012	0	15
Nickel	µg/L	-	25[d]	-	-	-	0.70	0.70	0.61	0.83	0.061	0	15
Selenium	µg/L	-	1.0	50	-	-	<0.04	-	<0.04	0.044	-	13	15
Silver	µg/L	-	0.25	-	-	-	<0.005	-	<0.005	<0.005	-	15	15
Strontium	µg/L	-	-	-	-	-	37	37	36	40	1.1	0	15
Thallium	µg/L	-	0.80	-	-	-	<0.002	-	<0.002	0.0021	-	14	15
Tin	µg/L	-	-	-	-	-	<0.02	-	<0.02	0.052	-	12	15
Titanium	µg/L	-	-	-	-	-	<0.5	-	<0.5	0.81	-	14	15
Uranium	µg/L	33	15	20	-	-	0.019	0.019	0.016	0.021	0.0013	0	15
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	0.11	-	14	15
Zinc	µg/L	-	-	-	5,000	-	1.9	3.3	0.62	9.5	2.9	0	15
Dissolved Metals													
Aluminum	µg/L	-	-	-	-	-	1.7	2.7	0.88	15	3.6	0	15
Antimony	µg/L	-	-	-	-	-	<0.02	-	<0.02	0.048	-	13	15
Arsenic	µg/L	-	-	-	-	-	0.41	0.39	0.30	0.48	0.056	0	15
Barium	µg/L	-	-	-	-	-	7.5	7.5	7.0	7.9	0.22	0	15
Beryllium	µg/L	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	15	15
Bismuth	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	15	15
Boron	µg/L	-	-	-	-	-	<10	-	<10	<10	-	15	15
Cadmium	µg/L	-	-	-	-	-	<0.005	-	<0.005	0.0086	-	13	15
Chromium	µg/L	-	-	-	-	-	<0.1	-	<0.1	0.16	-	13	15
Cobalt	µg/L	-	-	-	-	-	0.012	0.019	<0.005	0.054	0.015	2	15
Copper	µg/L	-	-	-	-	-	1.1	1.1	0.81	1.5	0.22	0	15

Table 6H-3: Water Quality Summary during Open-water Conditions in the Near-Field Area, 2017

Parameter	Unit	Water Quality Guidelines					Summary						
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	2017						
		Acute	Chronic				Median	Mean	Min	Max	Standard Deviation	nd	Count
Dissolved Metals (cont'd)													
Iron	µg/L	-	-	-	-	-	7.4	7.2	4.1	12	2.1	0	15
Lead	µg/L	-	-	-	-	-	0.014	0.052	0.0062	0.18	0.063	0	15
Lithium	µg/L	-	-	-	-	-	0.74	0.75	0.57	0.96	0.12	0	15
Manganese	µg/L	-	-	-	-	-	0.72	0.69	0.51	0.87	0.11	0	15
Mercury	µg/L	-	-	-	-	-	0.00080	0.00082	0.00060	0.0011	0.00014	0	15
Molybdenum	µg/L	-	-	-	-	-	0.12	0.11	0.074	0.18	0.035	0	15
Nickel	µg/L	-	-	-	-	-	0.62	0.63	0.57	0.71	0.047	0	15
Selenium	µg/L	-	-	-	-	-	<0.04	-	<0.04	0.052	-	14	15
Silver	µg/L	-	-	-	-	-	<0.005	-	<0.005	<0.005	-	15	15
Strontium	µg/L	-	-	-	-	-	36	36	34	38	1.2	0	15
Thallium	µg/L	-	-	-	-	-	<0.002	-	<0.002	0.0032	-	9	15
Tin	µg/L	-	-	-	-	-	0.013	0.021	<0.01	0.073	0.020	7	15
Titanium	µg/L	-	-	-	-	-	<0.3	-	<0.3	<0.3	-	15	15
Uranium	µg/L	-	-	-	-	-	0.017	0.017	0.014	0.019	0.0016	0	15
Vanadium	µg/L	-	-	-	-	-	<0.05	-	<0.05	0.086	-	14	15
Zinc	µg/L	30 to 34[f]	6.0 to 8.8[g]	-	-	-	1.3	3.3	<0.5	11	3.9	3	15
Other													
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	-	<0.001	<0.001	-	15	15
Radium-226	Bq/L	-	-	-	-	-	-	-	-	-	-	0	0

(a) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (1.53 mg-N/L) is based on the combination of field pH (7.6) and water temperature (13.4°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(b) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.3 to 7.6). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(d) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (22.8 to 25 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(e) Guideline is for chromium VI.

(f) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (22.8 to 25 mg/L as $CaCO_3$) and DOC (2.56 to 4.07 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(g) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.3 to 7.6), hardness (22.8 to 25 mg/L as $CaCO_3$) and DOC (2.56 to 4.07 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines that fell outside of the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as CaCO3) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

In cases where 50% or more of data were <DL, no mean or standard deviation was calculated.

Half of the detection limit value was used for total Kjeldahl nitrogen to calculate total nitrogen concentrations.

Grey shaded concentrations are higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; Bq/L = Becquerel per litre; DOC = dissolved organic carbon; $CaCO_3$ = calcium carbonate; - = no guideline or data not measured.

Reference:

CCME. 2018. Canadian Water Quality Guideline for the Protection of Aquatic Life: Zinc (Dissolved) 2018 Fact Sheet. Canadian Council of Ministers of the Environment. Gatineau, QC.

APPENDIX 7A

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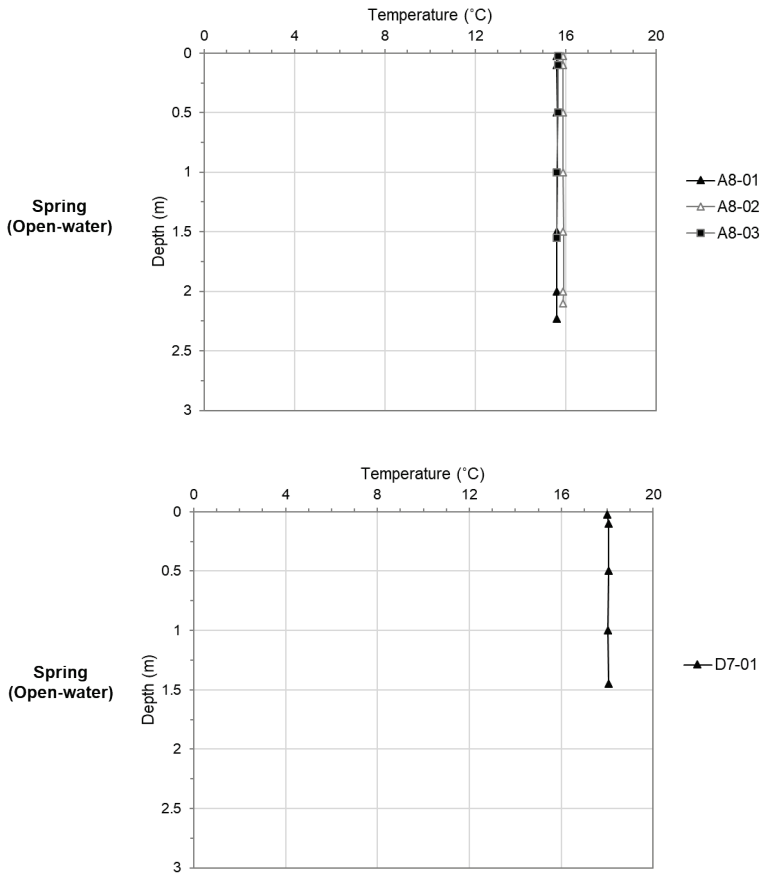
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7A.1.0 FIELD PROFILE PLOTS

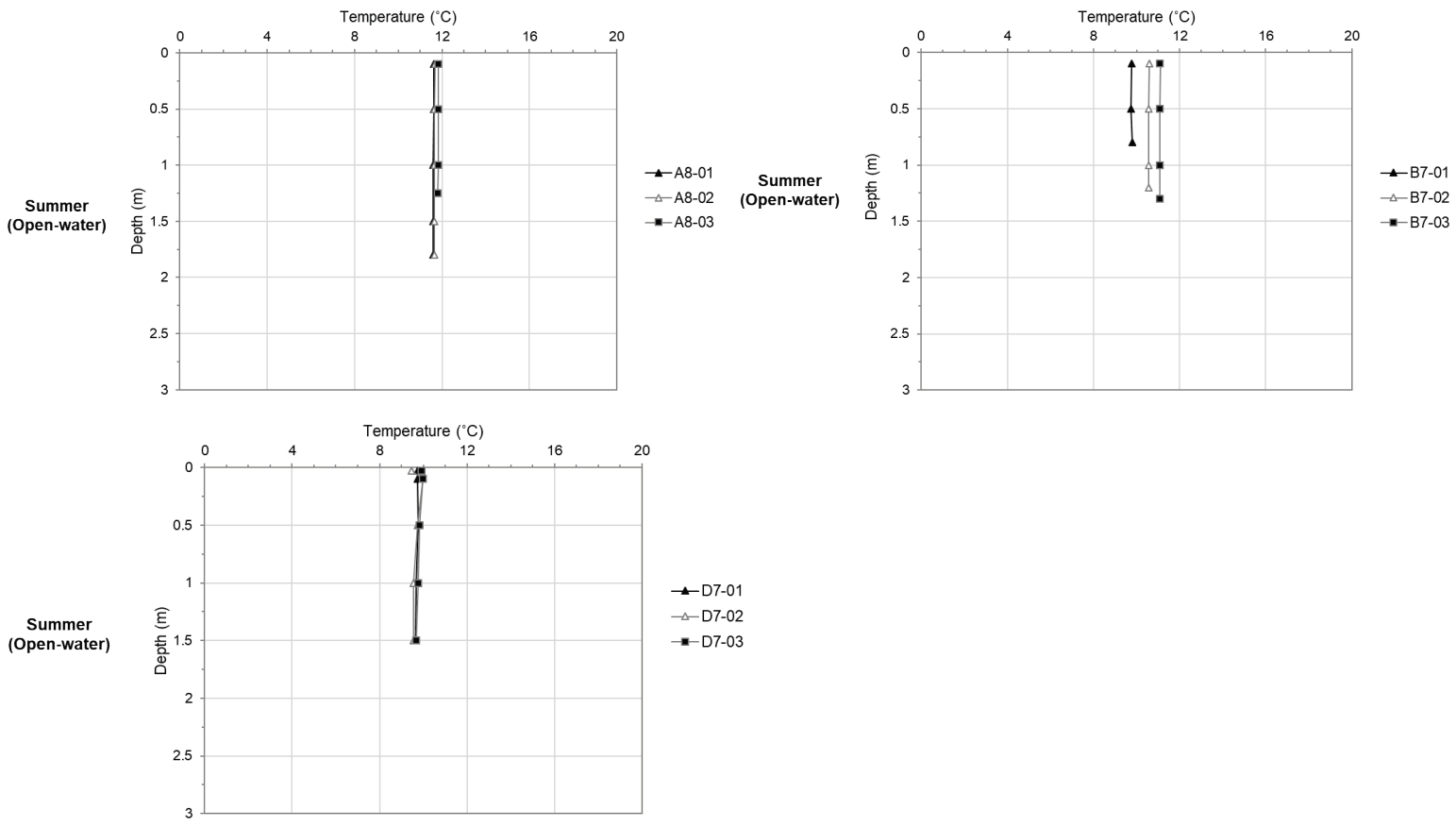
7A.1.1 Temperature



m = metre; °C = degrees Celsius.

Note: Stations D7-02 and D7-03 were not visited during the July program.

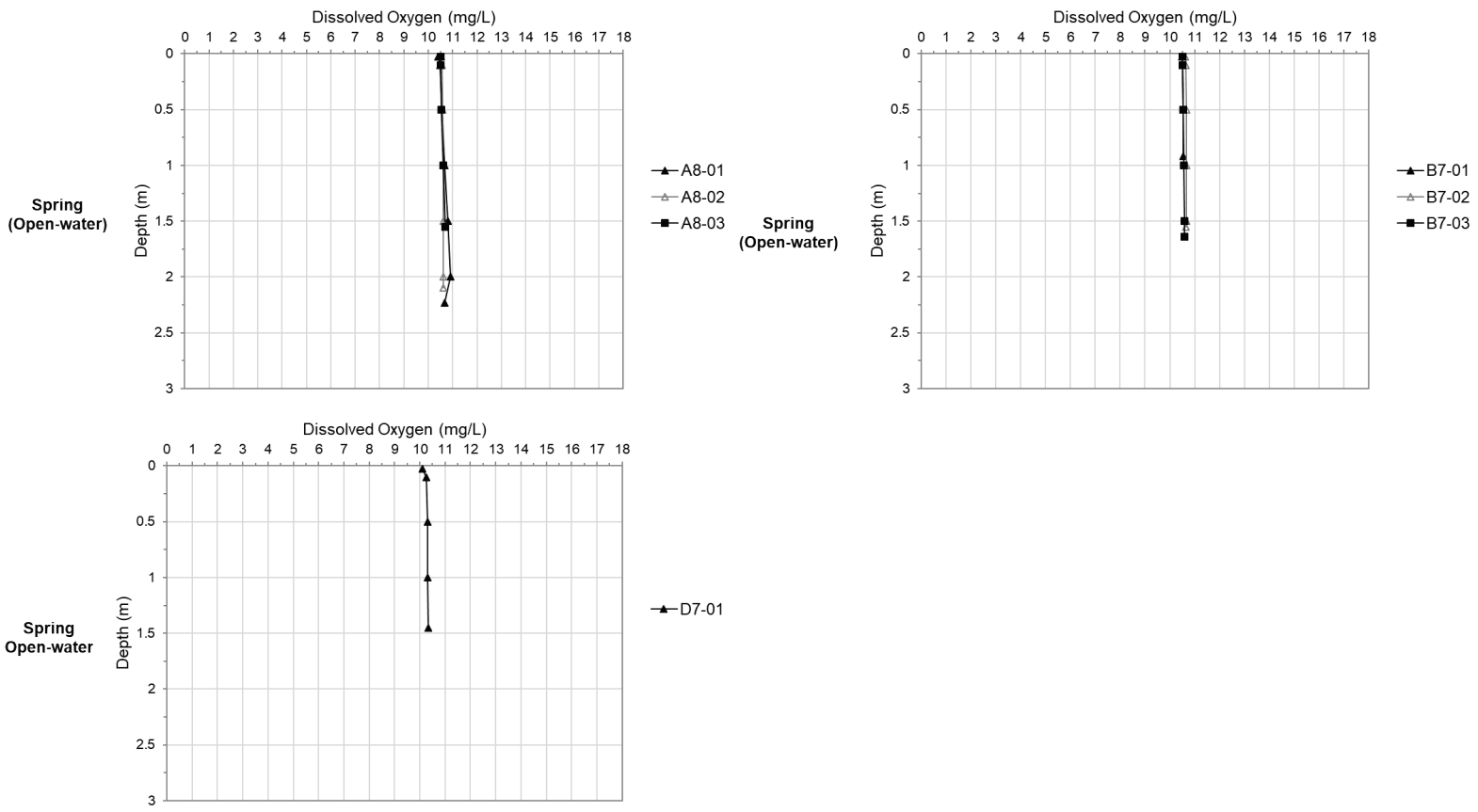
Figure 7A.1-1: Temperature Profiles at Stations on Peninsula Lakes A8, B7 and D7, Open-water (July) 2018



m = metre; °C = degrees Celsius.

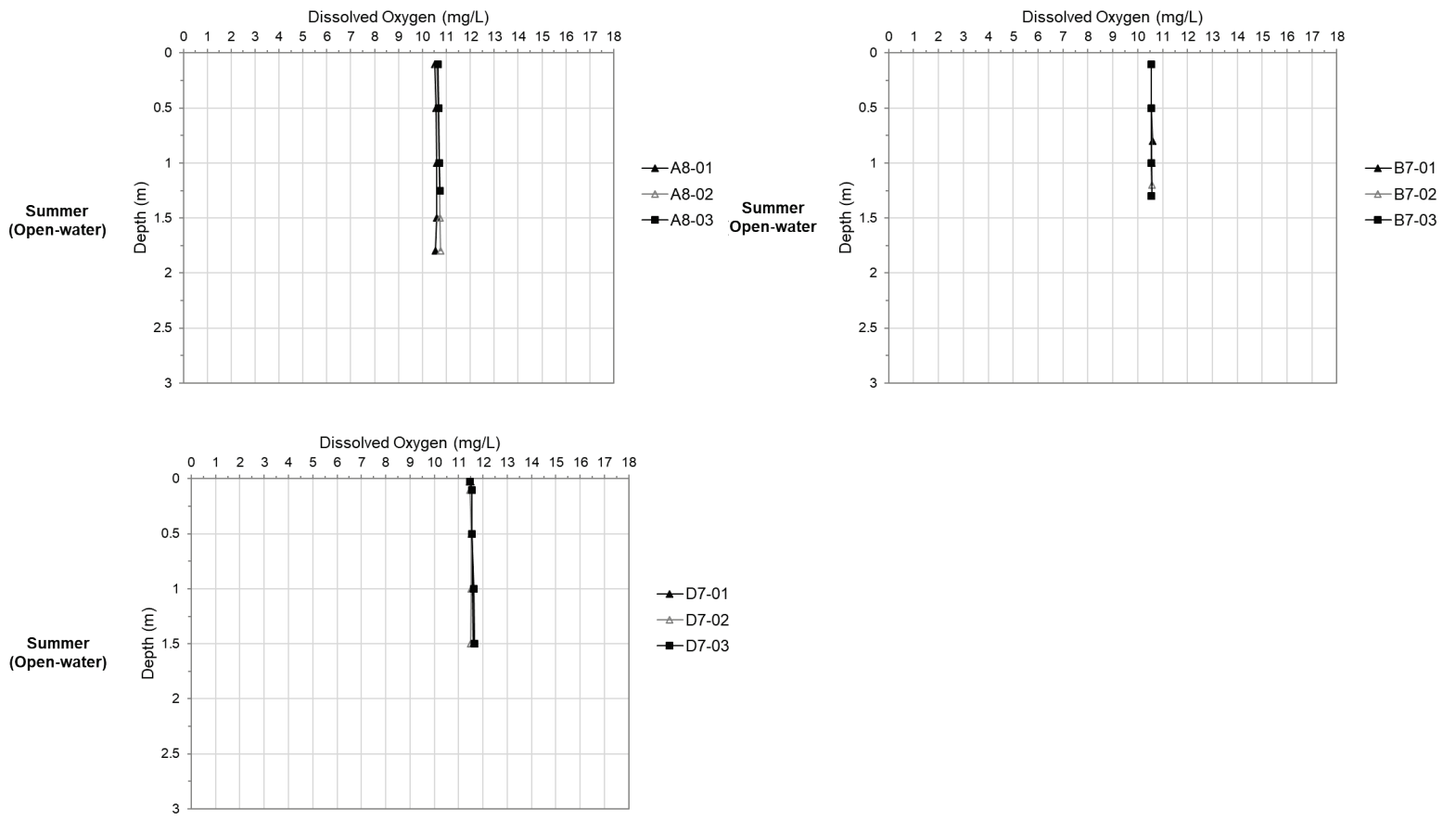
Figure 7A.1-2: Temperature Profiles at Stations on Peninsula Lakes A8, B7 and D7, Open-water (August) 2018

7A.1.2 Dissolved Oxygen



m = metre; mg/L = milligrams per litre.
Note: Stations D7-02 and D7-03 were not visited during the July program.

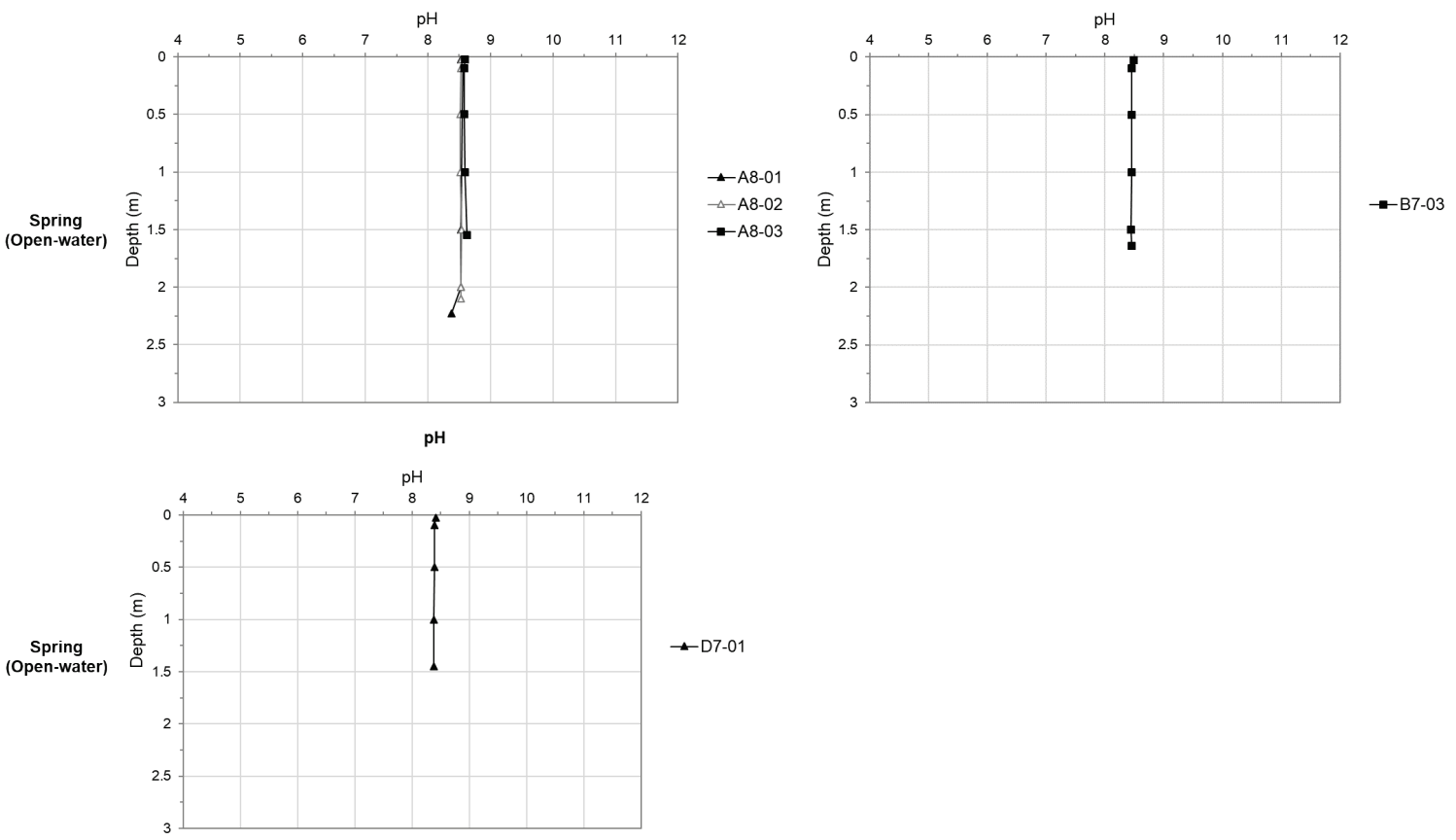
Figure 7A.1-3: Dissolved Oxygen Profiles at Stations on Peninsula Lakes A8, B7, and D7, Open-water (July) 2018



m = metre; mg/L = milligrams per litre.

Figure 7A.1-4: Dissolved Oxygen Profiles at Stations on Peninsula Lakes, Open-water (August) 2018

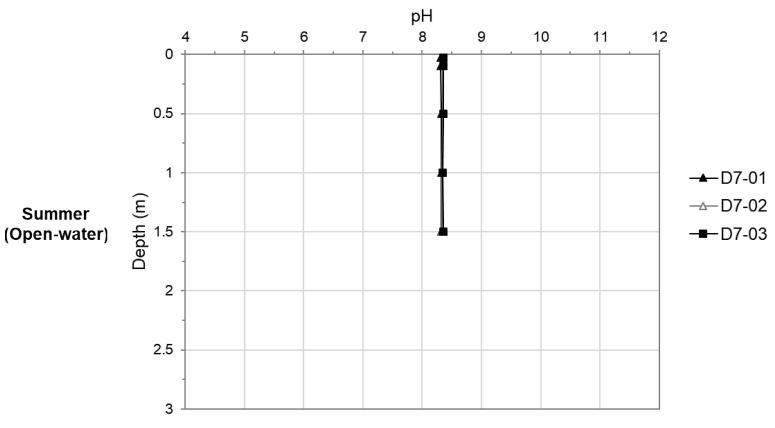
7A.1.3 pH



m = metre; mg/L = milligrams per litre.

Note: pH measured during open-water conditions in July were outside the acceptable range at stations B7-01 and B7-02. Data were deemed unreliable and invalidated. Stations D7-02 and D7-03 were not visited during the July program.

Figure 7A.1-5: pH Profiles at Stations on Peninsula Lakes A8, B7, and D7, Open-water (July) 2018



m = metre; mg/L = milligrams per litre.

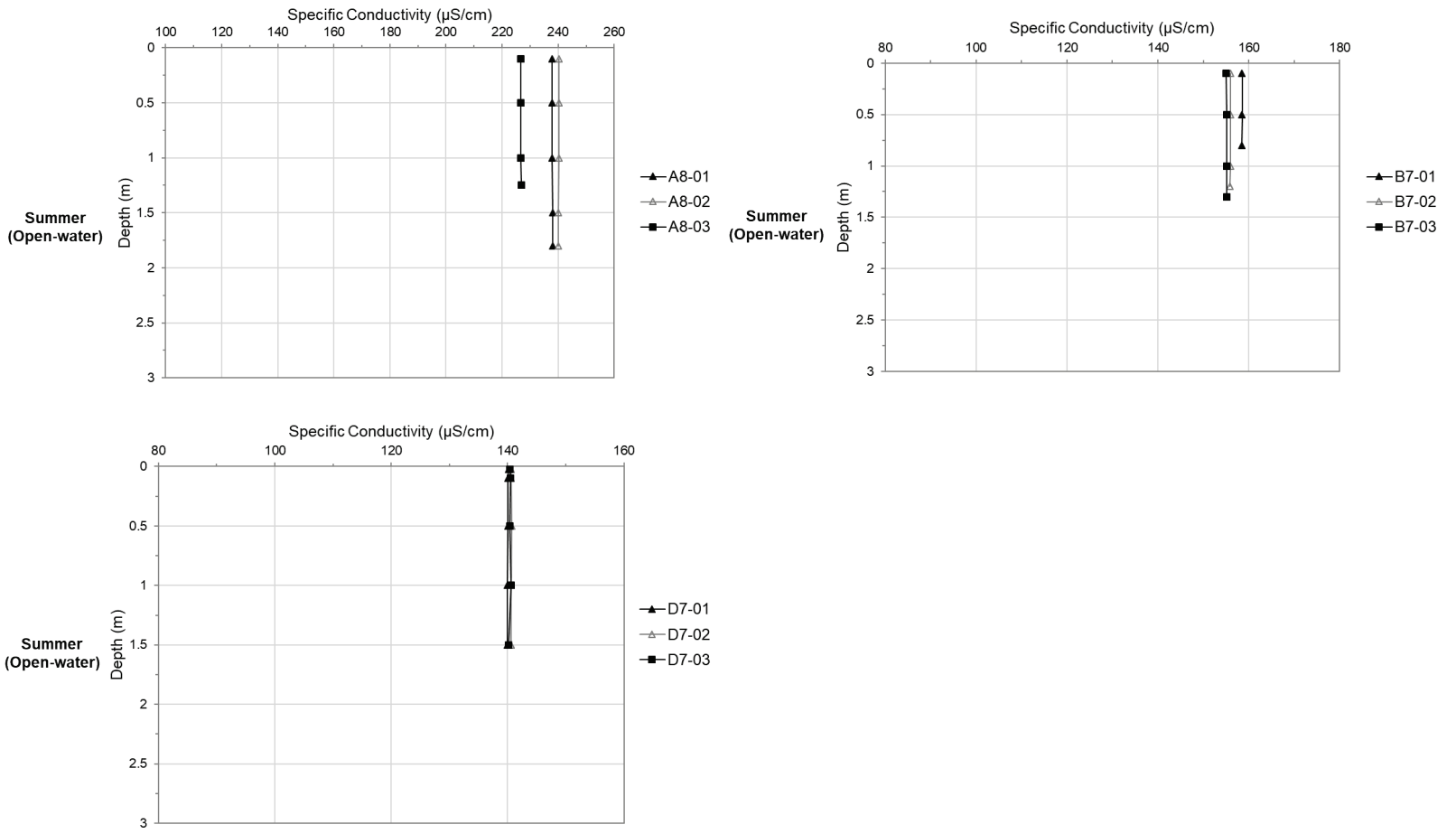
Note: pH measured during open-water conditions in August were outside the acceptable range at all A8 and B7 stations. Data was deemed unreliable and invalidated.

Figure 7A.1-6: pH Profiles at Stations on Peninsula Lakes A8, B7, and D7, Open-water (August) 2018

7A.1.4 Specific Conductivity

m = metre; µS/cm = microSiemens per centimetre.
Note: Stations D7-02 and D7-03 were not visited during the July program.

Figure 7A.1-7: Specific Conductivity Profiles at Stations on Peninsula Lakes A8, B7, and D7, Open-water (July) 2018



m = metre; µS/cm = microSiemens per centimetre.

Figure 7A.1-8: Specific Conductivity Profiles at Stations on Peninsula Lakes A8, B7, and D7, Open-water (August) 2018

7A.2.0 FIELD PROFILE TABLES

7A.2.1 Lake A8 Field Measurements, 2018

Table 7A.2-1: Field Profiles at Peninsula Lake A8, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
A8-01							
A8-01	24-Jul-18	0.025	15.6	106	10.4	209	8.5
A8-01	24-Jul-18	0.1	15.6	107	10.5	210	8.6
A8-01	24-Jul-18	0.5	15.6	108	10.6	210	8.6
A8-01	24-Jul-18	1.0	15.6	109	10.7	210	8.5
A8-01	24-Jul-18	1.5	15.6	110	10.8	210	8.5
A8-01	24-Jul-18	2.0	15.6	111	10.9	210	8.5
A8-01	24-Jul-18	2.2	15.6	109	10.7	210	8.4
A8-02							
A8-02	24-Jul-18	0.025	15.9	108	10.5	209	8.5
A8-02	24-Jul-18	0.1	15.9	108	10.6	209	8.5
A8-02	24-Jul-18	0.5	15.9	109	10.6	209	8.5
A8-02	24-Jul-18	1.0	15.9	109	10.6	209	8.5
A8-02	24-Jul-18	1.5	15.9	109	10.6	209	8.5
A8-02	24-Jul-18	2.0	15.9	109	10.6	209	8.5
A8-02	24-Jul-18	2.1	15.9	109	10.6	209	8.5
A8-03							
A8-03	24-Jul-18	0.025	15.7	107	10.5	193	8.6
A8-03	24-Jul-18	0.1	15.7	107	10.5	193	8.6
A8-03	24-Jul-18	0.5	15.7	108	10.5	193	8.6
A8-03	24-Jul-18	1.0	15.6	108	10.6	193	8.6
A8-03	24-Jul-18	1.6	15.6	109	10.7	193	8.6

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 7A.2-2: Field Profiles at Peninsula Lake A8, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
A8-01							
A8-01	17-Aug-18	0.1	11.6	98	10.5	238	-[(a)]
A8-01	17-Aug-18	0.5	11.6	99	10.6	238	-[(a)]
A8-01	17-Aug-18	1.0	11.6	99	10.6	238	-[(a)]
A8-01	17-Aug-18	1.5	11.6	99	10.6	238	-[(a)]
A8-01	17-Aug-18	1.8	11.6	98	10.5	238	-[(a)]
A8-02							
A8-02	17-Aug-18	0.1	11.7	99	10.6	240	-[(a)]
A8-02	17-Aug-18	0.5	11.7	99	10.7	240	-[(a)]
A8-02	17-Aug-18	1.0	11.6	100	10.7	240	-[(a)]
A8-02	17-Aug-18	1.5	11.7	100	10.7	240	-[(a)]
A8-02	17-Aug-18	1.8	11.7	101	10.8	240	-[(a)]
A8-03							
A8-03	17-Aug-18	0.1	11.8	100	10.7	227	-[(a)]
A8-03	17-Aug-18	0.5	11.8	100	10.7	227	-[(a)]
A8-03	17-Aug-18	1	11.8	100	10.7	227	-[(a)]
A8-03	17-Aug-18	1.3	11.8	101	10.7	227	-[(a)]

(a) Data were invalidated based on quality checks (Appendix 6A).
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

7A.2.2 Lake B7 Field Measurements, 2018

Table 7A.2-3: Field Profiles at Peninsula Lake B7, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
B7-01							
B7-01	22-Jul-18	0.025	17.4	111	10.5	139	-[(a)]
B7-01	22-Jul-18	0.1	17.4	111	10.5	139	-[(a)]
B7-01	22-Jul-18	0.5	17.4	111	10.5	139	-[(a)]
B7-01	22-Jul-18	0.9	17.4	112	10.5	139	-[(a)]
B7-02							
B7-02	22-Jul-18	0.025	17.0	112	10.6	134	-[(a)]
B7-02	22-Jul-18	0.1	17.1	112	10.7	134	-[(a)]
B7-02	22-Jul-18	0.5	17.1	112	10.7	134	-[(a)]
B7-02	22-Jul-18	1.0	17.1	112	10.7	134	-[(a)]
B7-02	22-Jul-18	1.5	17.0	112	10.7	134	-[(a)]
B7-02	22-Jul-18	1.6	17.1	112	10.6	134	-[(a)]
B7-03							
B7-03	22-Jul-18	0.025	17.0	110	10.5	134	8.5
B7-03	22-Jul-18	0.1	17.0	110	10.5	134	8.5
B7-03	22-Jul-18	0.5	17.0	111	10.5	134	8.5
B7-03	22-Jul-18	1.0	17.0	111	10.6	134	8.5
B7-03	22-Jul-18	1.5	17.0	111	10.6	134	8.4
B7-03	22-Jul-18	1.6	17.0	111	10.6	134	8.5

(a) Data were invalidated based on quality checks (Appendix 6A).
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 7A.2-4: Field Profiles at Peninsula Lake B7, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
B7-01							
B7-01	17-Aug-18	0.1	9.8	94	10.6	159	-[(a)]
B7-01	17-Aug-18	0.5	9.7	94	10.6	159	-[(a)]
B7-01	17-Aug-18	0.8	9.8	95	10.6	158	-[(a)]
B7-02							
B7-02	17-Aug-18	0.1	10.6	96	10.6	156	-[(a)]
B7-02	17-Aug-18	0.5	10.6	96	10.6	156	-[(a)]
B7-02	17-Aug-18	1.0	10.6	96	10.6	156	-[(a)]
B7-02	17-Aug-18	1.2	10.6	96	10.6	156	-[(a)]
B7-03							
B7-03	17-Aug-18	0.1	11.1	97	10.5	155	-[(a)]
B7-03	17-Aug-18	0.5	11.1	97	10.6	155	-[(a)]
B7-03	17-Aug-18	1.0	11.1	97	10.6	155	-[(a)]
B7-03	17-Aug-18	1.3	11.1	97	10.6	155	-[(a)]

(a) Data were invalidated based on quality checks (Appendix 6A).
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

7A.2.3 Lake D7 Field Measurements, 2018

Table 7A.2-5: Field Profiles at Peninsula Lake D7, July 2018

Station[(a)]	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
D7-01							
D7-01	22-Jul-18	0.025	18.0	108	10.1	117	8.4
D7-01	22-Jul-18	0.1	18.1	110	10.3	118	8.4
D7-01	22-Jul-18	0.5	18.1	111	10.3	118	8.4
D7-01	22-Jul-18	1.0	18.0	111	10.3	118	8.4
D7-01	22-Jul-18	1.5	18.1	111	10.3	118	8.4

(a) Stations D7-02 and D7-03 were not visited during the July program due to weather delays (i.e., high wind).
mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

Table 7A.2-6: Field Profiles at Peninsula Lake D7, July 2018

Station	Date	Depth (m)	Temperature (˚C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm)	pH
D7-01							
D7-01	01-Sep-18	0.025	9.7	103	11.5	140	8.3
D7-01	01-Sep-18	0.1	9.7	103	11.5	140	8.3
D7-01	01-Sep-18	0.5	9.8	104	11.6	140	8.3
D7-01	01-Sep-18	1.0	9.7	104	11.6	140	8.3
D7-01	01-Sep-18	1.5	9.6	104	11.6	140	8.3
D7-02							
D7-02	01-Sep-18	0.025	9.5	103	11.4	141	8.4
D7-02	01-Sep-18	0.1	10.0	103	11.5	141	8.4
D7-02	01-Sep-18	0.5	9.7	103	11.5	141	8.4
D7-02	01-Sep-18	1	9.5	103	11.5	141	8.3
D7-02	01-Sep-18	1.5	9.5	103	11.5	141	8.3
D7-03							
D7-03	01-Sep-18	0.025	9.9	103	11.5	140	8.4
D7-03	01-Sep-18	0.1	10.0	104	11.5	141	8.4
D7-03	01-Sep-18	0.5	9.8	104	11.6	140	8.4
D7-03	01-Sep-18	1.0	9.8	104	11.6	141	8.4
D7-03	01-Sep-18	1.5	9.7	104	11.7	140	8.4

mg/L = milligrams per litre; µS/cm = microSiemens per centimetre.

APPENDIX 7B

2018 Water Chemistry Tables

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Table 7B-1: Water Quality Results at Peninsula Lake A8, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations					
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	A8-01	A8-02	A8-03	A8-01	A8-02	A8-03
		Acute	Chronic				24-Jul-18	24-Jul-18	24-Jul-18	17-Aug-18	17-Aug-18	17-Aug-18
Field Measured												
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	8.5	8.5	8.6	-	-	-
Specific conductivity	µS/cm	-	-	-	-	-	210	209	193	238	240	227
Temperature	°C	-	-	-	15	-	16[(a)]	16[(a)]	16[(a)]	12	12	12
Dissolved oxygen	mg/L	-	6.5	-	-	-	11	11	11	11	11	11
Dissolved oxygen	%	-	-	-	-	-	109	109	108	99	100	100
Conventional Parameters												
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.8	7.8	7.9	7.8	7.8	7.9
Specific conductivity	µS/cm	-	-	-	-	-	220	220	204	239	239	230
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	84	84	80	84	86	85
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	40	40	45	43	43	49
Total dissolved solids	mg/L	-	-	-	500	-	170	183	163	189	167	177
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	109	106	102	114	117	111
Total suspended solids	mg/L	-	-	-	-	-	1.2	<1.0	<1.0	<1.0	<1.0	1.2
Total organic carbon	mg/L	-	-	-	-	-	3.4	3.3	4.1	3.5	3.7	4.3
Dissolved organic carbon	mg/L	-	-	-	-	-	3.5	3.3	4.1	3.2	3.5	4.0
Turbidity	NTU	-	-	-	-	-	0.49	0.49	0.63	0.51	0.56	0.66
Major Ions												
Bicarbonate	mg/L	-	-	-	-	-	48	49	55	53	53	59
Calcium	mg/L	-	-	-	-	-	28	28	26	28	29	28
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	640	120	-	250	-	40	38	33	42	43	37
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.027	0.025	0.027	0.030	0.029	0.032
Magnesium	mg/L	-	-	-	-	-	3.7	3.5	3.4	3.7	3.7	3.7
Potassium	mg/L	-	-	-	-	-	1.6	1.6	1.5	1.7	1.8	1.7
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.70	0.71	0.94	0.74	0.74	0.71
Sodium	mg/L	-	-	-	200	-	6.6	6.3	5.8	6.8	8.0	6.5
Sulphate	mg/L	-	-	-	500	-	5.5	4.9	4.4	6.2	6.3	5.5
Nutrients												
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Total ammonia	mg-N/L	-	0.16 to 1.2[(b)]	-	-	-	0.0062	<0.005	0.011	<0.005	<0.005	<0.005
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.40	0.41	0.36	0.34	0.48	0.40
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.40	0.41	0.36	0.34	0.48	0.40
Total phosphorus	mg-P/L	-	-	-	-	-	0.0032	0.0017	0.0024	0.0062	0.0070	0.0071
Dissolved phosphorus	mg-P/L	-	-	-	-	-	<0.001	<0.001	0.0011	0.0032	0.0031	0.0038
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Metals												
Aluminum	µg/L	-	100[(c, d)]	-	-	-	2.4	2.7	3.0	3.3	7.9	6.8
Antimony	µg/L	-	-	6.0	-	-	0.020	<0.02	<0.02	<0.02	0.02	<0.020
Arsenic	µg/L	-	5.0	10	-	25	2.7	2.5	2.9	2.3	2.2	2.4
Barium	µg/L	-	-	1,000	-	-	24	24	23	25	23	25
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	3.1	3.0	2.5	2.7	3.1	2.8
Cadmium	µg/L	1.7 to 1.8[(e)]	0.13 to 0.14[(e)]	5.0	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	1.0	50[(f)]	-	-	<0.06	<0.06	<0.06	<0.06	0.15	<0.06
Cobalt	µg/L	-	-	-	-	-	0.046	0.048	0.066	0.046	0.032	0.052
Copper	µg/L	-	2.0 to 2.1[(e)]	-	1,000	-	0.64	0.82	0.84	0.64	0.57	0.69
Iron	µg/L	-	300	-	300	1,060	83	76	97	61	58	95
Lead	µg/L	-	2.4 to 2.6[(e)]	10	-	-	<0.01	0.018	0.017	0.021	0.016	0.043
Lithium	µg/L	-	-	-	-	-	6.6	6.5	5.4	7.1	7.6	6.7
Manganese	µg/L	-	-	-	50	-	15	15	19	7.5	6.5	10.5
Mercury	µg/L	-	0.026	1.0	-	-	0.0010	0.00090	0.0012	0.0010	0.0010	0.0011
Molybdenum	µg/L	-	73	-	-	-	0.20	0.19	0.18	0.29	0.33	0.30
Nickel	µg/L	-	81 to 85[(e)]	-	-	-	0.73	0.69	0.86	0.88	0.78	1.08
Selenium	µg/L	-	1.0	50	-	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	208	202	173	230	246	215
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	0.12	0.10	0.26
Uranium	µg/L	33	15	20	-	-	0.034	0.033	0.030	0.041	0.048	0.040
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
Zinc	µg/L	-	-	-	5,000	-	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8

Table 7B-1: Water Quality Results at Peninsula Lake A8, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations					
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	A8-01	A8-02	A8-03	A8-01	A8-02	A8-03
		Acute	Chronic				24-Jul-18	24-Jul-18	24-Jul-18	17-Aug-18	17-Aug-18	17-Aug-18
Dissolved Metals												
Aluminum	µg/L	-	-	-	-	-	1.6	1.5	1.9	2.1	2.1	2.0
Antimony	µg/L	-	-	-	-	-	0.024	0.13	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	-	-	-	-	2.2	2.2	2.5	1.9	1.9	1.9
Barium	µg/L	-	-	-	-	-	23	24	24	24	24	23
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	-	-	-	-	-	3.1	2.8	2.4	2.5	2.5	2.0
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	-	-	-	-	0.11	<0.06	0.16	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	0.022	0.024	0.033	0.016	0.018	0.017
Copper	µg/L	-	-	-	-	-	0.60	0.73	0.84	0.57	0.56	0.58
Iron	µg/L	-	-	-	-	-	34	37	51	27	26	36
Lead	µg/L	-	-	-	-	-	<0.01	0.017	0.011	0.014	0.011	0.011
Lithium	µg/L	-	-	-	-	-	6.6	6.8	5.6	6.4	6.6	5.8
Manganese	µg/L	-	-	-	-	-	1.9	1.7	1.2	1.3	2.0	1.6
Mercury	µg/L	-	-	-	-	-	0.0010	0.0012	0.0013	0.00050	<0.00050	0.0009
Molybdenum	µg/L	-	-	-	-	-	0.21	0.20	0.21	0.24	0.27	0.25
Nickel	µg/L	-	-	-	-	-	0.77	0.90	1.1	0.73	0.72	0.89
Selenium	µg/L	-	-	-	-	-	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	204	192	171	205	209	179
Thallium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.008	<0.008	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	-	-	-	-	-	0.037	0.034	0.031	0.038	0.048	0.036
Vanadium	µg/L	-	-	-	-	-	0.051	0.061	<0.05	<0.05	<0.05	<0.05
Zinc	µg/L	90 to 95[g]	15 to 20[h]	-	-	-	1.3	0.85	1.5	0.95	<0.8	<0.8
Other												
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

(a) Temperature for some samples fell above the aesthetic guideline of 15˚C but were not flagged in this table because the guideline is not relevant.

(b) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.16 mg-N/L) is based on the combination of field pH (8.6) and water temperature (15.6°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.8 to 8.6). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(d) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available, the laboratory pH was used.

(e) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (79.8 to 86.2 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(f) Guideline is for chromium VI.

(g) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (79.8 to 86.2 mg/L as $CaCO_3$) and DOC (3.23 to 4.12 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(h) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.8 to 8.6), hardness (79.8 to 86.2 mg/L as $CaCO_3$) and DOC (3.23 to 4.12 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L). When field pH was not available laboratory pH was used.

Note:

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

Table 7B-2: Water Quality Results at Peninsula Lake B7, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations					
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	B7-01	B7-02	B7-03	B-07-01	B-07-02	B-07-03
		Acute	Chronic				17-Aug-18	17-Aug-18	17-Aug-18	22-Jul-18	22-Jul-18	22-Jul-18
Field Measured												
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	-	-	-	-	-	8.5
Specific conductivity	µS/cm	-	-	-	-	-	158	156	155	139	134	134
Temperature	°C	-	-	-	15	-	9.8	11	11	17[(a)]	17[(a)]	17[(a)]
Dissolved oxygen	mg/L	-	6.5	-	-	-	11	11	11	11	11	11
Dissolved oxygen	%	-	-	-	-	-	95	96	97	111	112	111
Conventional Parameters												
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.7	7.8	7.7	7.5	7.5	7.5
Specific conductivity	µS/cm	-	-	-	-	-	160	157	156	145	140	142
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	58	58	57	57	55	55
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	34	43	33	30	30	29
Total dissolved solids	mg/L	-	-	-	500	-	113	112	99	102	100	100
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	77	82	75	72	71	71
Total suspended solids	mg/L	-	-	-	-	-	1.4	1.7	1.5	1.0	1.2	1.2
Total organic carbon	mg/L	-	-	-	-	-	4.1	4.1	3.9	4.2	3.9	3.8
Dissolved organic carbon	mg/L	-	-	-	-	-	4.0	4.0	3.9	4.1	3.9	3.8
Turbidity	NTU	-	-	-	-	-	0.50	0.59	0.56	0.40	0.43	0.46
Major Ions												
Bicarbonate	mg/L	-	-	-	-	-	41	53	40	37	36	36
Calcium	mg/L	-	-	-	-	-	20	20	19	20	19	19
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	640	120	-	250	-	25	24	24	23	23	24
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.025	0.026	0.026	0.024	0.023	0.023
Magnesium	mg/L	-	-	-	-	-	2.1	2.1	2.1	2.1	2.0	2.0
Potassium	mg/L	-	-	-	-	-	1.4	1.3	1.4	1.3	1.3	1.2
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.46	0.50	0.54	0.68	0.64	0.62
Sodium	mg/L	-	-	-	200	-	3.7	3.7	3.7	3.5	3.3	3.2
Sulphate	mg/L	-	-	-	500	-	5.2	5.0	4.9	4.5	4.9	4.9
Nutrients												
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
Total ammonia	mg-N/L	-	0.19 to 1.8[(b)]	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.42	0.50	0.40	0.33	0.34	0.30
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.42	0.50	0.40	0.33	0.34	0.30
Total phosphorus	mg-P/L	-	-	-	-	-	0.0079	0.0079	0.0076	0.0062	0.0027	0.0036
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0039	0.0049	0.0037	<0.001	0.0010	<0.001
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	0.0011	<0.001
Total Metals												
Aluminum	µg/L	-	100[(c, d)]	-	-	-	3.3	3.1	4.5	3.3	7.1	2.9
Antimony	µg/L	-	-	6.0	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	5.0	10	-	25	1.4	1.4	1.5	1.7	1.8	1.7
Barium	µg/L	-	-	1,000	-	-	20	21	20	20	20	20
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	10	11	11	10	11	10
Cadmium	µg/L	1.1 to 1.2[(e)]	0.097 to 0.10[(e)]	5.0	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	1.0	50[(f)]	-	-	<0.06	<0.06	<0.06	<0.06	0.066	0.061
Cobalt	µg/L	-	-	-	-	-	0.041	0.039	0.042	0.032	0.061	0.052
Copper	µg/L	-	2.0[(e)]	-	1,000	-	0.66	0.66	0.64	0.80	0.85	0.75
Iron	µg/L	-	300	-	300	1,060	69	65	67	54	90	85
Lead	µg/L	-	1.0[(e)]	10	-	-	0.027	0.024	0.023	0.018	0.032	0.021
Lithium	µg/L	-	-	-	-	-	15	14	15	15	14	14
Manganese	µg/L	-	-	-	50	-	5.7	6.2	6.8	2.3	11	10.0
Mercury	µg/L	-	0.026	1.0	-	-	0.0011	0.0011	0.0010	0.0010	0.0009	0.0010
Molybdenum	µg/L	-	73	-	-	-	0.25	0.20	0.24	0.15	0.15	0.15
Nickel	µg/L	-	25[(e)]	-	-	-	1.00	0.98	0.99	0.87	0.90	0.91
Selenium	µg/L	-	1.0	50	-	-	<0.04	<0.04	<0.04	0.042	<0.04	<0.04
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	248	223	251	216	213	206
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	0.14	0.21	<0.1	0.29	<0.1
Uranium	µg/L	33	15	20	-	-	0.025	0.024	0.027	0.025	0.019	0.018
Vanadium	µg/L	-	-	-	-	-	<0.05	0.074	0.073	0.071	0.092	0.082
Zinc	µg/L	-	-	-	5,000	-	<0.8	1.3	0.95	0.97	0.87	<0.8

Table 7B-2: Water Quality Results at Peninsula Lake B7, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations					
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	B7-01	B7-02	B7-03	B-07-01	B-07-02	B-07-03
		Acute	Chronic				17-Aug-18	17-Aug-18	17-Aug-18	22-Jul-18	22-Jul-18	22-Jul-18
Dissolved Metals												
Aluminum	µg/L	-	-	-	-	-	3.1	1.3	2.2	4.3	2.4	2.1
Antimony	µg/L	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	0.10	0.25
Arsenic	µg/L	-	-	-	-	-	1.2	1.3	1.3	1.8	1.6	1.5
Barium	µg/L	-	-	-	-	-	19	19	19	20	19	19
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	-	-	-	-	-	8.4	9.0	8.6	10	11	10
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	-	-	-	-	<0.06	0.085	<0.06	0.061	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	0.018	0.018	0.014	0.061	0.022	0.022
Copper	µg/L	-	-	-	-	-	0.63	0.69	0.57	0.82	0.65	0.63
Iron	µg/L	-	-	-	-	-	36	29	26	89	44	47
Lead	µg/L	-	-	-	-	-	0.022	0.018	<0.01	0.021	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	14	13	13	14	14	14
Manganese	µg/L	-	-	-	-	-	2.1	0.71	0.66	11	1.5	1.5
Mercury	µg/L	-	-	-	-	-	0.0005	0.0006	0.0007	0.0013	0.0012	0.0012
Molybdenum	µg/L	-	-	-	-	-	0.19	0.19	0.19	0.15	0.15	0.15
Nickel	µg/L	-	-	-	-	-	0.89	0.89	0.88	0.93	0.83	0.83
Selenium	µg/L	-	-	-	-	-	<0.04	<0.04	<0.04	<0.04	0.046	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	211	203	206	218	208	209
Thallium	µg/L	-	-	-	-	-	<0.008	0.0050	0.0080	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	-	-	-	-	-	0.024	0.024	0.024	0.022	0.019	0.020
Vanadium	µg/L	-	-	-	-	-	<0.05	<0.05	0.050	0.081	0.085	0.072
Zinc	µg/L	66 to 70[(g)]	10 to 18[(h)]	-	-	-	3.6	0.94	0.97	<0.8	<0.8	1.1
Other												
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

(a) Temperature for some samples fell above the aesthetic guideline of 15˚C but were not flagged in this table because the guideline is not relevant.

(b) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.19 mg-N/L) is based on the combination of field pH (8.5) and water temperature (17.0°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample. When field pH was not available laboratory pH was used.

(c) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (7.5 to 8.5). The guideline is calculated based on the individual pH for each sample. When field pH was not available laboratory pH was used.

(d) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5. When field pH was not available laboratory pH was used.

(e) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (55.2 to 58.4 mg/L as $CaCO_3$). The guideline is calculated based on the individual hardness value for each sample.

(f) Guideline is for chromium VI.

(g) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (55.2 to 58.4 mg/L as $CaCO_3$) and DOC (3.85 to 4.05 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. All guidelines fell within the validated range for hardness (13.8 to 250.5 mg/L as $CaCO_3$) and DOC (0.3 to 17.3 mg/L).

(h) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.5 to 8.6), hardness (55.2 to 58.4 mg/L as $CaCO_3$) and DOC (3.85 to 4.05 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guideline that fell outside the validated range for pH (6.5 to 8.13), hardness (23.4 to 399 mg/L as $CaCO_3$) and DOC (0.3 to 22.9 mg/L) were constrained to within the validated guideline range as per CCME (2018) guidance. When field pH was not available laboratory pH was used.

Note:

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

Table 7B-3: Water Quality Results at Peninsula Lake D7, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations			
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	D7-01	D7-01	D7-02	D7-03
		Acute	Chronic				22-Jul-18	01-Sep-18	01-Sep-18	01-Sep-18
Field Measured										
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	8.4	8.3	8.3	8.4
Specific conductivity	µS/cm	-	-	-	-	-	118	140	141	141
Temperature	°C	-	-	-	15	-	18[(a)]	9.7	9.5	9.8
Dissolved oxygen	mg/L	-	6.5	-	-	-	10	12	12	12
Dissolved oxygen	%	-	-	-	-	-	111	104	103	104
Conventional Parameters										
pH	unitless	-	6.5 to 9.0	-	7.0 to 11	-	7.8	7.8	7.8	7.8
Specific conductivity	µS/cm	-	-	-	-	-	117	141	142	142
Hardness (as $CaCO_3$)	mg/L	-	-	-	-	-	44	48	49	50
Total alkalinity (as $CaCO_3$)	mg/L	-	-	-	-	-	44	51	50	50
Total dissolved solids	mg/L	-	-	-	500	-	71	74	80	84
Total dissolved solids (calculated)	mg/L	-	-	-	500	-	62	73	73	73
Total suspended solids	mg/L	-	-	-	-	-	1.6	1.8	<1.0	<1.0
Total organic carbon	mg/L	-	-	-	-	-	4.0	4.9	4.8	4.8
Dissolved organic carbon	mg/L	-	-	-	-	-	4.0	4.7	4.7	4.7
Turbidity	NTU	-	-	-	-	-	0.73	0.56	0.69	0.77
Major Ions										
Bicarbonate	mg/L	-	-	-	-	-	53	62	61	61
Calcium	mg/L	-	-	-	-	-	14	15	15	15
Carbonate	mg/L	-	-	-	-	-	<0.6	<0.6	<0.6	<0.6
Chloride	mg/L	640	120	-	250	-	9.0	11	11	11
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001
Fluoride	mg/L	-	0.12	1.5	-	2.8	0.039	0.045	0.045	0.047
Magnesium	mg/L	-	-	-	-	-	2.4	2.7	2.8	2.8
Potassium	mg/L	-	-	-	-	-	1.1	1.3	1.3	1.3
Reactive silica (as SiO_2)	mg/L	-	-	-	-	-	0.20	0.22	0.21	0.21
Sodium	mg/L	-	-	-	200	-	7.1	7.8	8.1	8.3
Sulphate	mg/L	-	-	-	500	-	3.2	5.1	5.2	5.2
Nutrients										
Nitrate	mg-N/L	124	2.9	10	-	-	<0.005	<0.005	<0.005	<0.005
Nitrite	mg-N/L	-	0.060	1.0	-	-	<0.001	<0.001	<0.001	<0.001
Nitrate + nitrite	mg-N/L	-	-	-	-	-	<0.0051	<0.0051	<0.0051	<0.0051
Total ammonia	mg-N/L	-	0.21 to 0.43[(b)]	-	-	-	<0.005	0.067	0.0066	0.0091
Total Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0.24	0.36	0.42	0.34
Total nitrogen (calculated)	mg-N/L	-	-	-	-	-	0.24	0.36	0.42	0.34
Total phosphorus	mg-P/L	-	-	-	-	-	0.0074	0.017	0.019	0.014
Dissolved phosphorus	mg-P/L	-	-	-	-	-	0.0069	0.0061	0.0064	0.0058
Orthophosphate	mg-P/L	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001
Total Metals										
Aluminum	µg/L	-	100[(c, d)]	-	-	-	4.1	5.6	5.0	5.7
Antimony	µg/L	-	-	6.0	-	-	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	5.0	10	-	25	1.4	0.95	0.91	0.90
Barium	µg/L	-	-	1,000	-	-	16	18	18	18
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	29,000	1,500	5,000	-	-	11	12	13	13
Cadmium	µg/L	0.90 to 1.0[(e)]	0.080 to 0.088[(e)]	5.0	-	-	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	1.0	50[(f)]	-	-	<0.06	<0.06	0.33	<0.06
Cobalt	µg/L	-	-	-	-	-	0.051	0.069	0.069	0.066
Copper	µg/L	-	2.0[(e)]	-	1,000	-	0.86	0.99	0.97	0.89
Iron	µg/L	-	300	-	300	1,060	100	57	57	52
Lead	µg/L	-	1.0[(e)]	10	-	-	0.019	0.019	0.019	0.015
Lithium	µg/L	-	-	-	-	-	1.3	1.4	1.4	1.4
Manganese	µg/L	-	-	-	50	-	18	17	15	14
Mercury	µg/L	-	0.026	1.0	-	-	0.0013	0.00050	0.00050	0.00050
Molybdenum	µg/L	-	73	-	-	-	0.43	0.58	0.55	0.55
Nickel	µg/L	-	25[(e)]	-	-	-	0.73	0.85	0.80	0.88
Selenium	µg/L	-	1.0	50	-	-	<0.04	<0.04	<0.04	0.042
Silver	µg/L	-	0.25	-	-	-	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	68	76	76	76
Thallium	µg/L	-	0.80	-	-	-	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	0.12	0.28	0.30	0.23
Uranium	µg/L	33	15	20	-	-	0.048	0.074	0.066	0.073
Vanadium	µg/L	-	-	-	-	-	0.073	0.064	0.080	0.066
Zinc	µg/L	-	-	-	5,000	-	<0.8	<0.8	<0.8	<0.8

Table 7B-3: Water Quality Results at Peninsula Lake D7, 2018

Parameter	Unit	Water Quality Guidelines					Sampling Stations			
		CCME Aquatic Life		Health Canada Drinking Water	Aesthetic	SSWQO	D7-01	D7-01	D7-02	D7-03
		Acute	Chronic				22-Jul-18	01-Sep-18	01-Sep-18	01-Sep-18
Dissolved Metals										
Aluminum	µg/L	-	-	-	-	-	4.8	1.8	2.1	2.4
Antimony	µg/L	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02
Arsenic	µg/L	-	-	-	-	-	1.1	0.79	0.80	0.80
Barium	µg/L	-	-	-	-	-	16	21	17	17
Beryllium	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Bismuth	µg/L	-	-	-	-	-	<0.01	<0.01	<0.01	<0.01
Boron	µg/L	-	-	-	-	-	11	12	13	13
Cadmium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Chromium	µg/L	-	-	-	-	-	<0.06	<0.06	<0.06	<0.06
Cobalt	µg/L	-	-	-	-	-	0.023	0.021	0.022	0.024
Copper	µg/L	-	-	-	-	-	0.79	0.78	0.78	-
Iron	µg/L	-	-	-	-	-	45	20	21	27
Lead	µg/L	-	-	-	-	-	0.013	0.083	<0.01	<0.01
Lithium	µg/L	-	-	-	-	-	1.5	1.4	1.7	1.7
Manganese	µg/L	-	-	-	-	-	1.9	0.84	0.75	0.80
Mercury	µg/L	-	-	-	-	-	0.0014	0.00060	0.00070	0.00060
Molybdenum	µg/L	-	-	-	-	-	0.42	0.59	0.57	0.56
Nickel	µg/L	-	-	-	-	-	0.70	0.81	0.79	0.776
Selenium	µg/L	-	-	-	-	-	<0.04	<0.04	0.046	<0.04
Silver	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Strontium	µg/L	-	-	-	-	-	65	68	77	77
Thallium	µg/L	-	-	-	-	-	<0.005	<0.005	<0.005	<0.005
Tin	µg/L	-	-	-	-	-	<0.05	<0.05	<0.05	<0.05
Titanium	µg/L	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1
Uranium	µg/L	-	-	-	-	-	0.051	0.082	0.081	0.076
Vanadium	µg/L	-	-	-	-	-	0.057	<0.05	0.065	0.068
Zinc	µg/L	55 - 63[g]	11 - 13[h]	-	-	-	2.4	0.84	<0.8	<0.8
Other										
Cyanide	mg/L	-	0.0050	0.20	-	-	<0.001	<0.001	<0.001	<0.001

(a) Temperature for some samples fell above the aesthetic guideline of 15˚C but were not flagged in this table because the guideline is not relevant.

(b) The ammonia guideline is pH and temperature dependent. The guideline that results in the minimum ammonia guideline (0.2058 mg-N/L) is based on the combination of field pH (8.4) and water temperature (18.0°C). Guidelines calculated with temperature and pH values falling outside the defined range (i.e., pH 6.0 to 10.0 and temperature 0°C to 30°C) should be used with caution, as the WQG does not necessarily accurately reflect toxic effects at the low and high pH and temperature extremes. The guideline is calculated based on the individual field pH and temperature measurements for each sample.

(c) Guideline is pH dependent. The guideline range shown is based on the pH range observed in the dataset (8.3 to 8.4). The guideline is calculated based on the individual pH for each sample.

(d) Guideline is pH dependent: 5 µg/L at pH < 6.5 and 100 µg/L at pH ≥ 6.5.

(e) Guideline is hardness dependent. The guideline range shown is based on the hardness range observed in the dataset (44 to 50 mg/L). The guideline is calculated based on the individual hardness value for each sample.

(f) Guideline is for chromium VI.

(g) Guideline is hardness and DOC dependent. The guideline range shown is based on the hardness (43.6 to 49.5 mg/L) and DOC (4.02 to 4.73 mg/L) range observed in the dataset. The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines calculated with hardness and DOC values falling outside the validated range (i.e., hardness 13.8 to 250.5 mg/L as CaCO3 and DOC 0.3 to 17.3 mg/L) were constrained to within the validated range as per CCME guidance (CCME 2018).

(h) Guideline is pH, hardness and DOC dependent. The guideline range shown is based on the of field pH (7.79 to 7.8), Hardness (43.6 to 49.5 mg/L) and DOC (4.02 to 4.73 mg/L). The guideline is calculated based on the individual hardness and DOC for each sample. Guidelines calculated with pH, Hardness and DOC values falling outside of the validated range (i.e., pH 6.5 to 8.13, hardness 23.4 to 399 mg/L and DOC 0.3 to 22.9 mg/L) were constrained to within the validated range as per CCME guidance (CCME 2018). The minimum guideline is 2 µg/L based on minimum Hardness of 23.4 mg/L, DOC of 0.3 mg/L and maximum pH of 8.13. Zinc toxicity increases as the pH increases, when field pH was not available laboratory pH was used.

No concentrations were higher than water quality guidelines.

Water quality data and guidelines shown in this table were rounded to reflect laboratory or field instrument precision *after* comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Concentrations equal to the guideline values were not identified as exceedances.

CCME = Canadian Council of Ministers of the Environment; SSWQO = site-specific water quality objective; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

Table 7B-4: Historical Water Quality Results at Peninsula Lake A8, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Field Measured																						
pH	-	7.8	7.8	7.6	8.1	0.27	0	3	8.2	8.2	8.2	8.2	0.013	0	4	8.1	8.1	7.9	8.4	0.24	0	6
Specific conductivity	µS/cm	259	235	183	264	45	0	3	293	293	289	296	4.0	0	4	306	291	255	306	23	0	6
Temperature	°C	12	13	12	14	0.96	0	3	14	14	14	14	0.31	0	4	14	14	14	14	0.12	0	6
Dissolved oxygen	mg/L	9.8	9.9	9.3	11	0.61	0	3	8.9	8.7	7.6	9.7	1.1	0	4	10	10	10.0	11	0.38	0	6
Dissolved oxygen	%	92	95	88	104	8.1	0	3	90	89	79	96	8.8	0	4	103	104	101	107	2.6	0	6
Conventional Parameters																						
pH	-	7.8	7.8	7.8	7.9	0.046	0	3	7.8	7.8	7.6	8.1	0.26	0	4	7.7	7.7	7.7	7.9	0.075	0	6
Specific conductivity	µS/cm	264	239	188	264	44	0	3	286	285	279	289	4.2	0	4	303	292	250	318	26	0	6
Hardness, as $CaCO_3$	mg/L	104	94	73	106	19	0	3	109	109	107	109	1.0	0	4	109	108	98	115	6.3	0	6
Total alkalinity, as $CaCO_3$	mg/L	38	38	36	41	3.3	0	2	44	44	43	45	1.1	0	2	49	49	47	51	1.5	0	4
Total dissolved solids	mg/L	172	158	120	181	33	0	3	221	221	197	246	27	0	4	205	203	166	229	22	0	6
Total dissolved solids (calculated)	mg/L	128	115	90	128	22	0	3	140	140	139	141	1.2	0	4	149	144	127	152	11	0	6
Total suspended solids	mg/L	<5.0	-	<5.0	<5.0	-	3	3	<1.0	-	<1.0	<1.0	-	4	4	1.5	1.6	<1.0	3.4	1.1	2	6
Turbidity	NTU	0.67	0.81	0.53	1.2	0.38	0	3	0.47	0.47	0.36	0.59	0.11	0	4	0.48	0.47	0.38	0.61	0.084	0	6
Major Ions																						
Bicarbonate	mg/L	44	46	44	50	3.3	0	3	53	53	50	54	2.1	0	4	58	58	55	62	2.7	0	6
Calcium	mg/L	35	32	24	35	6.5	0	3	36	36	36	36	0.34	0	4	36	35	32	37	2.1	0	6
Carbonate	mg/L	<5.0	-	<5.0	<5.0	-	3	3	<5.0	-	<5.0	<5.0	-	4	4	<5.0	-	<5.0	<5.0	-	6	6
Chloride	mg/L	51	44	28	51	13	0	3	57	57	57	58	0.49	0	4	60	56	43	61	7.9	0	6
Cyanide	mg/L	<0.002	-	<0.002	<0.002	-	3	3	<0.002	-	<0.002	<0.002	-	4	4	<0.001	-	<0.001	<0.001	-	6	6
Fluoride	mg/L	0.028	0.029	0.027	0.031	0.0021	0	3	0.032	0.032	0.030	0.034	0.0017	0	4	0.036	0.036	0.034	0.039	0.0019	0	6
Magnesium	mg/L	4.1	3.8	3.1	4.2	0.61	0	3	4.5	4.5	4.3	4.7	0.15	0	4	4.8	4.7	4.3	5.0	0.28	0	6
Potassium	mg/L	1.9	1.7	1.4	2.0	0.32	0	3	2.0	2.0	2.0	2.1	0.067	0	4	2.1	2.1	1.9	2.2	0.15	0	6
Reactive silica, as SiO2	mg/L	0.27	0.44	0.25	0.80	0.31	0	3	0.54	0.42	<0.01	0.58	0.28	1	4	0.69	0.86	0.59	1.4	0.35	0	6
Sodium	mg/L	6.7	6.1	4.6	7.0	1.3	0	3	7.8	7.8	7.7	7.9	0.090	0	4	8.2	7.8	6.8	8.4	0.70	0	6
Sulphate	mg/L	6.9	6.1	4.6	6.9	1.3	0	3	6.5	6.5	6.5	6.6	0.048	0	4	8.3	7.8	6.6	8.6	0.92	0	6
Nutrients and Organics																						
Nitrate	mg-N/L	0.015	0.012	<0.005	0.017	0.0079	1	3	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6
Nitrite	mg-N/L	<0.001	-	<0.001	<0.001	-	3	3	<0.001	-	<0.001	<0.001	-	4	4	<0.001	-	<0.001	<0.001	-	6	6
Nitrate + nitrite	mg-N/L	0.015	0.012	<0.0051	0.017	0.0079	1	3	<0.0051	-	<0.0051	<0.0051	-	4	4	<0.0051	-	<0.0051	<0.0051	-	6	6
Total ammonia	mg-N/L	<0.005	-	<0.005	<0.005	-	3	3	0.0060	-	<0.005	0.0086	-	2	4	0.0071	0.0079	<0.005	0.015	0.0047	1	6
Total Kjeldahl nitrogen	mg-N/L	0.39	0.40	0.36	0.44	0.040	0	3	0.31	0.29	0.21	0.33	0.055	0	4	0.31	0.32	0.30	0.38	0.030	0	6
Dissolved Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0	0	-	-	-	-	-	0	0	0.28	0.31	0.25	0.43	0.064	0	6
Total nitrogen (calculated)	mg-N/L	0.40	0.41	0.36	0.46	0.048	0	3	0.31	0.29	0.21	0.33	0.055	0	4	0.31	0.32	0.30	0.38	0.030	0	6
Total nitrogen	mg-N/L	-	-	-	-	-	0	0	0.31	0.29	0.21	0.33	0.055	0	4	0.31	0.32	0.30	0.38	0.030	0	6
Dissolved nitrogen	mg-N/L	-	-	-	-	-	0	0	-	-	-	-	-	0	0	0.28	0.31	0.25	0.43	0.064	0	6
Total phosphorus	mg-P/L	0.0062	0.0066	0.0059	0.0078	0.0010	0	3	0.0061	0.0060	0.0056	0.0064	0.00035	0	4	0.0067	0.0067	0.0046	0.0097	0.0019	0	6
Dissolved phosphorus	mg-P/L	0.0027	0.0026	0.0023	0.0027	0.00023	0	3	0.0025	0.0025	0.0017	0.0032	0.00074	0	4	0.0023	0.0022	0.0017	0.0025	0.00031	0	6
Orthophosphate	mg-P/L	<0.001	-	<0.001	0.0013	-	2	3	0.0011	-	<0.001	0.0011	-	2	4	<0.001	-	<0.001	0.0012	-	5	6
Total organic carbon	mg/L	4.2	4.3	3.8	4.9	0.53	0	3	3.9	3.9	3.6	4.2	0.27	0	4	4.2	4.2	3.6	4.8	0.47	0	6
Dissolved organic carbon	mg/L	4.4	4.6	4.4	5.1	0.45	0	3	3.8	3.8	3.5	4.1	0.30	0	4	4.1	4.3	3.9	5.0	0.46	0	6

Table 7B-4: Historical Water Quality Results at Peninsula Lake A8, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Total Metals																						
Aluminum	µg/L	2.1	2.1	1.7	2.4	0.31	0	3	1.5	1.4	0.99	1.7	0.30	0	4	1.7	2.0	1.1	4.5	1.3	0	6
Antimony	µg/L	<0.02	-	<0.02	0.021	-	2	3	<0.02	-	<0.02	<0.02	-	4	4	0.026	-	<0.02	0.41	-	3	6
Arsenic	µg/L	1.8	1.8	1.5	2.0	0.27	0	3	2.1	2.1	1.9	2.3	0.17	0	4	2.2	2.1	1.9	2.5	0.23	0	6
Barium	µg/L	25	23	20	26	3.0	0	3	29	29	29	29	0.25	0	4	29	29	26	31	2.1	0	6
Beryllium	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	<0.01	-	4	4	<0.01	-	<0.01	<0.01	-	6	6
Bismuth	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	<0.01	-	4	4	<0.005	-	<0.005	<0.005	-	6	6
Boron	µg/L	2.9	3.4	2.5	4.7	1.2	0	3	5.0	5.3	4.2	6.9	1.1	0	4	<5.0	-	<5.0	<5.0	-	6	6
Cadmium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	0.0051	-	5	6
Chromium	µg/L	<0.06	-	<0.06	<0.06	-	3	3	<0.06	-	<0.06	0.12	-	3	4	<0.1	-	<0.1	<0.1	-	6	6
Cobalt	µg/L	0.034	0.034	0.017	0.051	0.017	0	3	0.033	0.033	0.020	0.048	0.011	0	4	0.028	0.030	0.021	0.045	0.0090	0	6
Copper	µg/L	0.77	0.83	0.73	0.98	0.13	0	3	0.59	0.65	0.57	0.84	0.13	0	4	0.69	0.70	0.61	0.85	0.089	0	6
Iron	µg/L	41	41	15	68	27	0	3	46	46	19	72	22	0	4	38	40	28	59	12	0	6
Lead	µg/L	0.015	0.018	<0.01	0.034	0.015	1	3	<0.01	-	<0.01	<0.01	-	4	4	<0.01	-	<0.01	0.030	-	4	6
Lithium	µg/L	9.8	8.6	6.0	10	2.3	0	3	10.0	10.0	9.2	11	0.60	0	4	9.8	9.3	7.4	10	1.3	0	6
Manganese	µg/L	7.9	7.1	0.61	13	6.1	0	3	8.9	8.3	2.9	13	4.0	0	4	7.7	8.5	6.0	12	2.4	0	6
Mercury	µg/L	<0.0005	-	<0.0005	0.00055	-	2	3	0.00080	0.00080	0.00060	0.0010	0.00023	0	4	0.00095	0.00093	0.00060	0.0013	0.00023	0	6
Molybdenum	µg/L	0.18	0.19	0.17	0.22	0.024	0	3	0.19	0.19	0.17	0.21	0.025	0	4	0.22	0.22	0.22	0.23	0.0038	0	6
Nickel	µg/L	0.84	0.85	0.79	0.93	0.073	0	3	0.79	0.79	0.77	0.80	0.013	0	4	0.85	0.85	0.77	0.94	0.060	0	6
Selenium	µg/L	<0.04	-	<0.04	<0.04	-	3	3	<0.04	-	<0.04	<0.04	-	4	4	<0.04	-	<0.04	<0.04	-	6	6
Silver	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6
Strontium	µg/L	238	209	152	238	50	0	3	258	258	256	260	1.7	0	4	266	249	200	270	31	0	6
Thallium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	4	4	0.0034	0.0034	0.0029	0.0040	0.00043	0	6
Tin	µg/L	<0.05	-	<0.05	<0.05	-	3	3	<0.05	-	<0.05	<0.05	-	4	4	<0.02	-	<0.02	0.030	-	5	6
Titanium	µg/L	<0.1	-	<0.1	<0.1	-	3	3	<0.1	-	<0.1	<0.1	-	4	4	<0.5	-	<0.5	<0.5	-	6	6
Uranium	µg/L	0.025	0.025	0.023	0.026	0.0015	0	3	0.043	0.043	0.042	0.043	0.00050	0	4	0.050	0.050	0.048	0.054	0.0024	0	6
Vanadium	µg/L	<0.05	-	<0.05	<0.05	-	3	3	<0.05	-	<0.05	<0.05	-	4	4	<0.05	-	<0.05	<0.05	-	6	6
Zinc	µg/L	<0.8	-	<0.8	1.1	-	2	3	<0.8	-	<0.8	<0.8	-	4	4	1.2	1.3	<0.5	2.8	0.84	1	6
Dissolved Metals																						
Aluminum	µg/L	1.5	1.5	0.93	2.0	0.74	0	2	0.65	0.89	0.62	1.4	0.44	0	3	2.5	3.2	1.8	7.2	2.0	0	6
Antimony	µg/L	<0.02	-	<0.02	0.027	-	2	3	<0.02	-	<0.02	<0.02	-	4	4	0.020	-	<0.02	0.096	-	3	6
Arsenic	µg/L	1.7	1.7	1.6	1.7	0.076	0	3	1.8	1.9	1.7	2.3	0.29	0	4	1.8	1.9	1.8	2.2	0.19	0	6
Barium	µg/L	25	24	20	26	3.1	0	3	29	29	29	30	0.43	0	4	29	28	25	29	1.9	0	6
Beryllium	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	<0.01	-	4	4	<0.01	-	<0.01	<0.01	-	6	6
Bismuth	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	0.010	-	3	4	<0.005	-	<0.005	<0.005	-	6	6
Boron	µg/L	3.2	3.3	2.7	4.0	0.66	0	3	5.4	5.3	4.9	5.6	0.36	0	3	<10	-	<10	<10	-	6	6
Cadmium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6
Chromium	µg/L	<0.06	-	<0.06	0.074	-	2	3	<0.06	-	<0.06	0.16	-	3	4	<0.1	-	<0.1	0.17	-	5	6
Cobalt	µg/L	0.020	0.024	0.019	0.033	0.0078	0	3	0.015	0.021	0.012	0.040	0.013	0	4	0.038	0.037	0.017	0.058	0.017	0	6
Copper	µg/L	0.84	0.84	0.73	0.94	0.15	0	2	0.58	0.58	0.55	0.61	0.030	0	3	0.91	0.92	0.75	1.1	0.13	0	6
Iron	µg/L	25	25	22	28	3.7	0	2	4.7	8.8	2.2	20	9.4	0	3	17	20	15	29	6.7	0	6
Lead	µg/L	0.035	0.094	0.015	0.23	0.12	0	3	<0.01	-	<0.01	<0.01	-	4	4	0.025	0.043	0.0092	0.15	0.054	0	6
Lithium	µg/L	9.9	8.6	5.7	10	2.5	0	3	9.7	9.6	9.1	9.9	0.33	0	4	9.6	9.0	6.8	10	1.4	0	6
Manganese	µg/L	0.74	0.74	0.61	0.86	0.18	0	2	0.37	0.45	0.064	0.92	0.43	0	3	1.6	1.9	1.1	2.9	0.75	0	6

Table 7B-4: Historical Water Quality Results at Peninsula Lake A8, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Dissolved Metals (cont'd)																						
Mercury	µg/L	<0.0005	-	<0.0005	<0.0005	-	3	3	<0.0005	-	<0.0005	0.00050	-	3	4	0.00095	0.00097	0.00090	0.0011	0.000082	0	6
Molybdenum	µg/L	0.18	0.18	0.17	0.19	0.013	0	3	0.19	0.20	0.16	0.23	0.032	0	4	0.24	0.24	0.21	0.29	0.028	0	6
Nickel	µg/L	0.81	0.82	0.79	0.87	0.039	0	3	0.81	0.80	0.71	0.87	0.067	0	4	0.81	0.85	0.73	1.2	0.17	0	6
Selenium	µg/L	<0.04	-	<0.04	<0.04	-	3	3	<0.04	-	<0.04	<0.04	-	4	4	<0.04	-	<0.04	<0.04	-	6	6
Silver	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6
Strontium	µg/L	240	211	141	251	61	0	3	255	254	249	257	3.6	0	4	252	239	194	271	31	0	6
Thallium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	4	4	0.0039	0.0040	0.0037	0.0047	0.00039	0	6
Tin	µg/L	<0.05	-	<0.05	<0.05	-	3	3	<0.05	-	<0.05	<0.05	-	4	4	0.011	-	<0.01	0.016	-	3	6
Titanium	µg/L	<0.1	-	<0.1	<0.1	-	3	3	<0.1	-	<0.1	<0.1	-	4	4	<0.3	-	<0.3	<0.3	-	6	6
Uranium	µg/L	0.027	0.025	0.022	0.027	0.0029	0	3	0.044	0.044	0.043	0.045	0.00096	0	4	0.053	0.052	0.046	0.056	0.0037	0	6
Vanadium	µg/L	<0.05	-	<0.05	<0.05	-	3	3	<0.05	-	<0.05	<0.05	-	4	4	<0.05	-	<0.05	0.055	-	5	6
Zinc	µg/L	<0.8	-	<0.8	16	-	2	3	<0.8	-	<0.8	<0.8	-	4	4	1.9	2.8	0.71	8.3	2.7	0	6
Other																						
Cyanide (free)	mg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.001	<0.005	-	6	6
Cyanide (wad)	mg/L	<0.002	-	<0.002	<0.002	-	3	3	<0.002	-	<0.002	<0.002	-	4	4	<0.001	-	<0.001	<0.001	-	6	6

SD = standard deviation; µS/cm = microsiemens per centimetre; NTU = nephelometric turbidity unit; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

Table 7B-5: Historical Water Quality Results at Peninsula Lake B7, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Field Measured																						
pH	-	7.5	7.5	7.2	7.8	0.30	0	4	8.1	8.1	7.9	8.3	0.13	0	6	8.0	8.0	7.9	8.2	0.17	0	6
Specific conductivity	µS/cm	149	151	149	156	3.5	0	4	164	163	158	167	3.4	0	6	159	159	157	160	1.2	0	6
Temperature	°C	10	10	9.9	11	0.70	0	4	14	14	14	14	0.26	0	6	11	11	9.4	12	1.3	0	6
Dissolved oxygen	mg/L	9.6	9.7	9.0	11	0.74	0	4	8.6	8.3	6.3	9.8	1.5	0	6	11	11	11	12	0.26	0	6
Dissolved oxygen	%	86	88	80	99	8.0	0	4	85	82	61	97	15	0	6	104	104	102	106	1.6	0	6
Conventional Parameters																						
pH	-	7.5	7.5	7.4	7.7	0.12	0	4	7.8	7.8	7.6	8.1	0.25	0	6	7.6	7.6	7.6	7.7	0.022	0	6
Specific conductivity	µS/cm	163	163	161	164	1.3	0	4	165	164	161	166	2.1	0	6	162	162	161	163	0.89	0	6
Hardness, as $CaCO_3$	mg/L	63	65	63	69	2.8	0	4	66	66	62	68	2.5	0	6	62	63	60	65	1.7	0	6
Total alkalinity, as $CaCO_3$	mg/L	34	34	32	35	1.5	0	4	37	37	35	38	1.3	0	6	37	37	37	38	0.35	0	6
Total dissolved solids	mg/L	109	108	103	111	3.6	0	4	116	114	102	120	7.2	0	6	100	100	95	109	5.1	0	6
Total dissolved solids (calculated)	mg/L	79	79	79	80	0.49	0	4	81	80	78	82	2.2	0	6	79	79	77	81	1.6	0	6
Total suspended solids	mg/L	<5.0	-	<5.0	<5.0	-	4	4	<1.0	-	<1.0	1.2	-	4	6	1.1	1.3	<1.0	2.2	0.78	2	6
Turbidity	NTU	0.54	0.55	0.47	0.64	0.072	0	4	0.41	0.39	0.32	0.45	0.052	0	6	0.40	0.39	0.33	0.45	0.052	0	6
Major Ions																						
Bicarbonate	mg/L	42	42	39	43	1.8	0	4	45	45	42	46	1.6	0	6	46	46	45	46	0.45	0	6
Calcium	mg/L	22	22	21	23	1.0	0	4	23	22	21	23	0.99	0	6	21	20	20	21	0.21	0	6
Carbonate	mg/L	<5.0	-	<5.0	<5.0	-	4	4	<5.0	-	<5.0	<5.0	-	6	6	<5.0	-	<5.0	<5.0	-	6	6
Chloride	mg/L	25	25	25	26	0.49	0	4	24	24	24	25	0.41	0	6	22	22	20	23	1.3	0	6
Cyanide	mg/L	<0.002	-	<0.002	<0.002	-	4	4	<0.002	-	<0.002	<0.002	-	6	6	<0.001	-	<0.001	<0.001	-	6	6
Fluoride	mg/L	0.027	0.027	0.026	0.028	0.00096	0	4	0.031	0.031	0.031	0.031	0	0	6	0.030	0.026	<0.02	0.037	0.013	2	6
Magnesium	mg/L	2.4	2.4	2.3	2.5	0.090	0	4	2.4	2.4	2.3	2.4	0.046	0	6	2.5	2.5	2.4	2.6	0.065	0	6
Potassium	mg/L	1.3	1.3	1.3	1.3	0.022	0	4	1.3	1.3	1.3	1.4	0.049	0	6	1.4	1.3	1.2	1.4	0.064	0	6
Reactive silica, as SiO2	mg/L	1.0	1.0	0.99	1.1	0.056	0	4	0.86	0.88	0.76	1.00	0.090	0	6	0.35	0.34	0.30	0.37	0.027	0	6
Sodium	mg/L	3.6	3.6	3.4	3.8	0.14	0	4	3.9	3.9	3.7	4.0	0.11	0	6	4.1	4.1	4.0	4.4	0.16	0	6
Sulphate	mg/L	4.6	4.6	4.5	4.6	0.073	0	4	4.2	4.2	4.1	4.2	0.018	0	6	5.4	5.3	4.7	6.0	0.63	0	6
Nutrients and Organics																						
Nitrate	mg-N/L	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	0.018	-	4	6	<0.005	-	<0.005	<0.005	-	6	6
Nitrite	mg-N/L	<0.001	-	<0.001	<0.001	-	4	4	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	6	6
Nitrate + nitrite	mg-N/L	<0.0051	-	-	-	-	1	1	<0.0051	-	<0.0051	0.018	-	4	6	<0.0051	-	<0.0051	<0.0051	-	6	6
Total ammonia	mg-N/L	<0.005	-	<0.005	<0.005	-	4	4	0.0086	0.0083	<0.005	0.013	0.0041	1	6	0.0090	0.015	<0.005	0.042	0.015	2	6
Total Kjeldahl nitrogen	mg-N/L	0.29	0.32	0.26	0.46	0.093	0	4	0.31	0.32	0.25	0.40	0.048	0	6	0.38	0.38	0.33	0.44	0.045	0	6
Dissolved Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0	0	-	-	-	-	-	0	0	0.37	0.38	0.32	0.47	0.057	0	6
Total nitrogen (calculated)	mg-N/L	0.46	-	-	-	-	0	1	0.31	0.32	0.27	0.40	0.043	0	6	0.38	0.38	0.33	0.44	0.045	0	6
Total nitrogen	mg-N/L	-	-	-	-	-	0	0	0.31	0.32	0.27	0.40	0.043	0	6	0.38	0.38	0.33	0.44	0.045	0	6
Dissolved nitrogen	mg-N/L	-	-	-	-	-	0	0	-	-	-	-	-	0	0	0.37	0.38	0.32	0.47	0.057	0	6
Total phosphorus	mg-P/L	0.0066	0.0066	0.0064	0.0068	0.00017	0	4	0.0070	0.0075	0.0061	0.0094	0.0015	0	6	0.0060	0.0061	0.0056	0.0069	0.00052	0	6
Dissolved phosphorus	mg-P/L	0.0022	0.0022	0.0015	0.0029	0.00064	0	4	0.0023	0.0021	0.0016	0.0024	0.00034	0	6	0.0032	0.0032	0.0028	0.0036	0.00035	0	6
Orthophosphate	mg-P/L	<0.001	-	<0.001	<0.001	-	4	4	<0.001	-	<0.001	0.0013	-	5	6	<0.001	-	<0.001	0.0012	-	5	6
Total organic carbon	mg/L	5.1	17	4.9	53	24	0	4	5.1	5.1	5.0	5.4	0.20	0	6	5.4	5.3	4.8	5.5	0.26	0	6
Dissolved organic carbon	mg/L	5.2	4.7	2.9	5.5	1.2	0	4	5.2	5.1	4.9	5.3	0.18	0	6	5.2	5.3	5.1	5.6	0.19	0	6

Table 7B-5: Historical Water Quality Results at Peninsula Lake B7, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Total Metals																						
Aluminum	µg/L	1.6	1.6	1.3	1.8	0.18	0	4	1.7	3.4	1.5	12	4.1	0	6	3.0	3.4	1.9	5.7	1.3	0	6
Antimony	µg/L	<0.02	-	<0.02	<0.02	-	4	4	<0.02	-	<0.02	<0.02	-	6	6	<0.02	-	<0.02	<0.02	-	6	6
Arsenic	µg/L	1.4	1.4	1.4	1.5	0.046	0	4	1.7	1.7	1.6	2.0	0.15	0	6	1.3	1.3	1.3	1.4	0.043	0	6
Barium	µg/L	19	19	18	19	0.45	0	4	20	20	19	20	0.41	0	6	19	18	18	19	0.70	0	6
Beryllium	µg/L	<0.01	-	<0.01	<0.01	-	4	4	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6
Bismuth	µg/L	<0.01	-	<0.01	<0.01	-	4	4	<0.01	-	<0.01	<0.01	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Boron	µg/L	3.8	4.4	3.6	6.5	1.4	0	4	7.7	7.4	5.7	8.4	0.97	0	6	<5.0	-	<5.0	<5.0	-	6	6
Cadmium	µg/L	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	0.019	-	5	6	<0.005	-	<0.005	0.0070	-	5	6
Chromium	µg/L	<0.06	-	<0.06	<0.06	-	4	4	<0.06	-	<0.06	<0.06	-	6	6	<0.1	-	<0.1	<0.1	-	6	6
Cobalt	µg/L	0.042	0.042	0.037	0.047	0.0041	0	4	0.048	0.076	0.038	0.23	0.076	0	6	0.035	0.036	0.034	0.039	0.0020	0	6
Copper	µg/L	0.70	0.70	0.69	0.73	0.019	0	4	0.62	0.66	0.59	0.91	0.12	0	6	0.77	0.84	0.72	1.1	0.17	0	6
Iron	µg/L	88	87	78	95	6.9	0	4	89	89	67	110	19	0	6	58	59	55	66	4.1	0	6
Lead	µg/L	0.014	0.013	<0.01	0.020	0.0064	1	4	<0.01	-	<0.01	0.086	-	5	6	0.013	0.023	<0.01	0.084	0.030	2	6
Lithium	µg/L	6.1	7.6	6.0	12	3.0	0	4	5.4	5.4	5.2	5.6	0.20	0	6	4.4	4.4	3.9	5.1	0.52	0	6
Manganese	µg/L	8.5	8.5	7.5	9.5	0.85	0	4	7.6	7.1	5.4	8.5	1.4	0	6	4.4	4.4	4.1	4.9	0.29	0	6
Mercury	µg/L	<0.0005	-	<0.0005	0.00050	-	3	4	0.00080	0.00083	0.00060	0.0012	0.00021	0	6	0.00075	0.0011	0.00050	0.0021	0.00070	0	6
Molybdenum	µg/L	0.16	0.17	0.15	0.18	0.013	0	4	0.15	0.16	0.13	0.21	0.031	0	6	0.17	0.17	0.16	0.18	0.0070	0	6
Nickel	µg/L	0.86	0.87	0.84	0.92	0.034	0	4	0.91	0.98	0.81	1.5	0.27	0	6	1.0	1.1	0.93	1.3	0.14	0	6
Selenium	µg/L	<0.04	-	<0.04	<0.04	-	4	4	0.040	-	<0.04	0.049	-	3	6	<0.04	-	<0.04	<0.04	-	6	6
Silver	µg/L	<0.005	-	<0.005	0.0062	-	3	4	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Strontium	µg/L	153	152	149	154	2.4	0	4	148	148	142	156	6.0	0	6	139	140	136	148	4.3	0	6
Thallium	µg/L	<0.005	-	<0.005	0.0064	-	3	4	<0.005	-	<0.005	0.0054	-	5	6	0.0030	0.0031	0.0027	0.0035	0.00030	0	6
Tin	µg/L	<0.05	-	<0.05	<0.05	-	4	4	<0.05	-	<0.05	0.078	-	5	6	<0.02	-	<0.02	<0.02	-	6	6
Titanium	µg/L	<0.1	-	<0.1	<0.1	-	4	4	<0.1	-	<0.1	0.33	-	4	6	<0.5	-	<0.5	<0.5	-	6	6
Uranium	µg/L	0.024	0.024	0.020	0.029	0.0040	0	4	0.026	0.027	0.025	0.029	0.0019	0	6	0.026	0.026	0.025	0.029	0.0016	0	6
Vanadium	µg/L	<0.05	-	<0.05	<0.05	-	4	4	<0.05	-	<0.05	0.050	-	5	6	<0.05	-	<0.05	<0.05	-	6	6
Zinc	µg/L	<0.8	-	<0.8	<0.8	-	4	4	<0.8	-	<0.8	40	-	5	6	1.2	2.6	0.54	10	3.7	0	6
Dissolved Metals																						
Aluminum	µg/L	1.1	1.1	0.73	1.5	0.32	0	4	1.2	1.2	1.1	1.5	0.17	0	6	2.5	2.5	1.5	3.8	1.1	0	6
Antimony	µg/L	<0.02	-	<0.02	<0.02	-	4	4	<0.02	-	<0.02	<0.02	-	6	6	<0.02	-	<0.02	0.036	-	5	6
Arsenic	µg/L	1.3	1.3	1.3	1.3	0.019	0	4	1.4	1.4	1.4	1.5	0.042	0	6	1.2	1.2	1.2	1.2	0.029	0	6
Barium	µg/L	18	18	17	19	0.66	0	4	19	19	18	20	0.50	0	6	18	18	17	18	0.45	0	6
Beryllium	µg/L	<0.01	-	<0.01	<0.01	-	4	4	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6
Bismuth	µg/L	<0.01	-	<0.01	<0.01	-	4	4	<0.01	-	<0.01	<0.01	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Boron	µg/L	3.1	3.1	2.7	3.7	0.43	0	4	6.6	6.6	6.4	6.8	0.16	0	6	<10	-	<10	19	-	5	6
Cadmium	µg/L	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Chromium	µg/L	<0.06	-	<0.06	<0.06	-	4	4	0.11	0.11	<0.06	0.18	0.069	2	6	<0.1	-	<0.1	0.19	-	4	6
Cobalt	µg/L	0.021	0.021	0.017	0.027	0.0043	0	4	0.021	0.021	0.019	0.022	0.0010	0	6	0.038	0.044	0.035	0.064	0.012	0	6
Copper	µg/L	0.68	0.71	0.65	0.84	0.088	0	4	-	-	-	-	-	0	0	1.0	1.0	0.77	1.3	0.19	0	6
Iron	µg/L	35	38	31	51	9.0	0	4	30	30	24	36	5.5	0	6	33	32	22	38	6.2	0	6
Lead	µg/L	0.022	0.025	0.014	0.043	0.013	0	4	0.013	-	<0.01	0.025	-	3	6	0.036	0.073	0.010	0.24	0.095	0	5
Lithium	µg/L	6.0	7.6	5.9	12	3.2	0	4	5.4	5.4	5.1	5.5	0.16	0	6	4.6	4.6	4.5	4.6	0.037	0	6
Manganese	µg/L	2.2	2.8	0.93	5.6	2.0	0	4	0.89	0.90	0.74	1.1	0.13	0	6	0.88	1.3	0.82	2.7	0.79	0	6
Mercury	µg/L	<0.0005	-	<0.0005	<0.0005	-	4	4	0.00060	0.00057	0.00050	0.00060	0.000052	0	6	0.00060	0.00062	0.00050	0.00070	0.000075	0	6

Table 7B-5: Historical Water Quality Results at Peninsula Lake B7, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Dissolved Metals (cont'd)																						
Molybdenum	µg/L	0.14	0.14	0.14	0.15	0.0071	0	4	0.16	0.17	0.14	0.22	0.030	0	6	0.20	0.21	0.17	0.27	0.040	0	6
Nickel	µg/L	0.86	0.86	0.82	0.89	0.034	0	4	0.87	0.87	0.82	0.91	0.033	0	6	1.0	1.0	0.96	1.1	0.039	0	6
Selenium	µg/L	<0.04	-	<0.04	<0.04	-	4	4	<0.04	-	<0.04	<0.04	-	6	6	<0.04	-	<0.04	<0.04	-	6	6
Silver	µg/L	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Strontium	µg/L	148	148	144	151	3.3	0	4	147	146	138	154	6.9	0	6	134	134	129	139	3.8	0	6
Thallium	µg/L	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6	0.0033	0.0032	0.0026	0.0039	0.00044	0	6
Tin	µg/L	<0.05	-	<0.05	<0.05	-	4	4	<0.05	-	<0.05	<0.05	-	6	6	0.015	-	<0.01	0.088	-	3	6
Titanium	µg/L	<0.1	-	<0.1	<0.1	-	4	4	<0.1	-	<0.1	<0.1	-	6	6	<0.3	-	<0.3	<0.3	-	6	6
Uranium	µg/L	0.026	0.025	0.019	0.027	0.0037	0	4	0.026	0.026	0.025	0.027	0.00089	0	6	0.029	0.029	0.027	0.032	0.0021	0	6
Vanadium	µg/L	<0.05	-	<0.05	<0.05	-	4	4	<0.05	-	<0.05	<0.05	-	6	6	<0.05	-	<0.05	<0.05	-	6	6
Zinc	µg/L	<0.8	-	<0.8	<0.8	-	4	4	<0.8	-	<0.8	1.2	-	5	6	1.5	1.6	<0.5	3.2	1.0	1	6
Other																						
Free cyanide	mg/L	<0.005	-	<0.005	<0.005	-	4	4	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.001	<0.005	-	6	6
Cyanide (wad)	mg/L	<0.002	-	<0.002	<0.002	-	4	4	<0.002	-	<0.002	<0.002	-	6	6	<0.001	-	<0.001	<0.001	-	6	6

SD = standard deviation; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

Table 7B-6: Historical Water Quality Results at Peninsula Lake D7, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Field Measured																						
pH	-	7.9	7.9	7.8	7.9	0.069	0	3	8.3	8.3	8.2	8.3	0.029	0	6	8.2	8.2	8.2	8.4	0.094	0	6
Specific conductivity	µS/cm	110	110	110	111	0.58	0	3	144	144	139	147	3.7	0	6	153	153	151	154	1.3	0	6
Temperature	°C	13	13	13	13	0.15	0	3	14	14	14	15	0.32	0	6	13	13	12	13	0.34	0	6
Dissolved oxygen	mg/L	11	11	11	11	0.16	0	3	7.7	7.9	6.2	9.8	1.8	0	6	11	11	11	11	0.16	0	6
Dissolved oxygen	%	103	103	101	104	1.4	0	3	77	79	62	98	18	0	6	107	106	103	108	2.4	0	6
Conventional Parameters																						
pH	-	7.8	7.8	7.8	7.8	0.0058	0	3	8.0	7.9	7.7	8.2	0.26	0	6	7.6	7.6	7.3	7.9	0.31	0	6
Specific conductivity	µS/cm	111	111	111	112	0.58	0	3	145	145	143	147	1.9	0	6	155	155	151	160	3.8	0	6
Hardness, as $CaCO_3$	mg/L	42	42	41	42	0.42	0	3	52	52	51	54	1.2	0	6	54	54	52	58	2.4	0	6
Total alkalinity, as $CaCO_3$	mg/L	40	39	38	40	1.2	0	3	49	50	48	54	2.5	0	6	55	55	54	55	0.55	0	6
Total dissolved solids	mg/L	65	61	52	67	8.1	0	3	96	95	83	103	7.7	0	6	91	92	89	100	4.4	0	6
Total dissolved solids (calculated)	mg/L	57	57	56	58	0.75	0	3	73	74	72	77	2.2	0	6	79	79	78	81	1.4	0	6
Total suspended solids	mg/L	<3.0	-	<3.0	<3.0	-	3	3	<1.0	-	<1.0	1.3	-	5	6	1.0	-	<1.0	2.2	-	3	6
Total organic carbon	mg/L	3.5	3.5	3.4	3.6	0.071	0	3	4.7	4.7	4.4	5.0	0.26	0	6	5.1	5.0	4.8	5.2	0.21	0	6
Dissolved organic carbon	mg/L	3.3	2.9	1.9	3.6	0.87	0	3	4.6	4.5	4.2	4.8	0.20	0	6	4.8	4.8	4.4	5.1	0.35	0	6
Turbidity	NTU	0.85	0.85	0.84	0.86	0.010	0	3	0.56	0.58	0.41	0.82	0.17	0	6	0.89	0.90	0.79	1.0	0.099	0	6
Major Ions																						
Bicarbonate	mg/L	48	48	46	49	1.4	0	3	59	61	58	66	3.1	0	6	67	67	66	68	0.70	0	6
Calcium	mg/L	13	13	13	13	0.100	0	3	16	16	16	17	0.50	0	6	16	16	15	17	0.72	0	6
Carbonate	mg/L	<5.0	-	<5.0	<5.0	-	3	3	<5.0	-	<5.0	<5.0	-	6	6	<5.0	-	<5.0	<5.0	-	6	6
Chloride	mg/L	8.6	8.6	8.6	8.7	0.036	0	3	11	11	11	12	0.28	0	6	12	12	12	12	0.23	0	6
Cyanide	mg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.002	-	<0.002	<0.002	-	6	6	<0.001	-	<0.001	<0.001	-	6	6
Fluoride	mg/L	0.031	0.031	0.030	0.031	0.00058	0	3	0.043	0.043	0.042	0.045	0.0013	0	6	0.044	0.045	0.043	0.052	0.0036	0	6
Magnesium	mg/L	2.3	2.2	2.2	2.3	0.040	0	3	2.9	2.9	2.8	2.9	0.028	0	6	3.1	3.1	2.9	3.4	0.21	0	6
Potassium	mg/L	1.0	1.0	1.00	1.0	0.0064	0	3	1.3	1.3	1.3	1.3	0.026	0	6	1.4	1.4	1.3	1.5	0.12	0	6
Reactive silica, as SiO2	mg/L	0.18	0.18	0.17	0.19	0.0098	0	3	0.27	0.27	0.27	0.28	0.0032	0	6	0.14	0.14	0.13	0.14	0.0025	0	6
Sodium	mg/L	5.9	6.0	5.9	6.0	0.061	0	3	8.0	8.0	7.9	8.1	0.072	0	6	8.3	8.3	7.8	8.7	0.37	0	6
Sulphate	mg/L	2.9	2.9	2.9	3.0	0.025	0	3	4.2	4.2	4.2	4.3	0.054	0	6	5.0	4.8	3.8	5.2	0.51	0	6
Nutrients and Organics																						
Nitrate	mg-N/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Nitrite	mg-N/L	<0.001	-	<0.001	<0.001	-	3	3	<0.001	-	<0.001	<0.001	-	6	6	<0.001	-	<0.001	<0.001	-	6	6
Nitrate + nitrite	mg-N/L	<0.0051	-	<0.0051	<0.0051	-	3	3	<0.0051	-	<0.0051	<0.0051	-	6	6	<0.0051	-	<0.0051	<0.0051	-	6	6
Total ammonia	mg-N/L	0.0070	0.0068	0.0064	0.0071	0.00038	0	3	0.0050	-	<0.005	0.0071	-	3	6	0.0064	0.0072	0.0056	0.012	0.0023	0	6
Total Kjeldahl nitrogen	mg-N/L	0.36	0.35	0.33	0.37	0.017	0	3	0.36	0.36	0.32	0.39	0.028	0	6	0.31	0.32	0.24	0.45	0.084	0	6
Dissolved Kjeldahl nitrogen	mg-N/L	-	-	-	-	-	0	0	-	-	-	-	-	0	0	0.28	0.28	0.19	0.38	0.077	0	6
Total nitrogen (calculated)	mg-N/L	0.36	0.35	0.33	0.37	0.017	0	3	0.36	0.36	0.32	0.39	0.028	0	6	0.31	0.32	0.24	0.45	0.084	0	6
Total nitrogen	mg-N/L	-	-	-	-	-	0	0	0.36	0.36	0.32	0.39	0.028	0	6	0.31	0.32	0.24	0.45	0.084	0	6
Dissolved nitrogen	mg-N/L	-	-	-	-	-	0	0	-	-	-	-	-	0	0	0.28	0.28	0.19	0.38	0.077	0	6
Total phosphorus	mg-P/L	0.013	0.013	0.012	0.013	0.00075	0	3	0.013	0.016	0.012	0.033	0.0081	0	6	0.013	0.013	0.011	0.017	0.0022	0	6
Dissolved phosphorus	mg-P/L	0.0039	0.0044	0.0039	0.0054	0.00087	0	3	0.0032	0.0033	0.0024	0.0043	0.00074	0	6	0.0047	0.0050	0.0040	0.0064	0.0011	0	6
Orthophosphate	mg-P/L	<0.001	-	<0.001	<0.001	-	3	3	0.0019	0.0021	0.0012	0.0042	0.0011	0	6	<0.001	-	<0.001	0.0018	-	4	6

Table 7B-6: Historical Water Quality Results at Peninsula Lake D7, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Total Metals																						
Aluminum	µg/L	4.1	4.0	3.1	4.8	0.82	0	3	5.4	5.6	4.7	7.1	0.82	0	6	5.3	5.5	4.2	6.7	0.98	0	6
Antimony	µg/L	<0.02	-	<0.02	<0.02	-	3	3	<0.02	-	<0.02	0.035	-	4	6	<0.02	-	<0.02	<0.02	-	6	6
Arsenic	µg/L	1.0	1.0	1.0	1.1	0.025	0	3	1.1	1.1	0.97	1.2	0.085	0	6	0.96	0.97	0.90	1.1	0.055	0	6
Barium	µg/L	15	15	15	15	0.20	0	3	16	16	16	17	0.69	0	6	16	16	15	17	0.50	0	6
Beryllium	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6
Bismuth	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	<0.01	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Boron	µg/L	9.7	9.7	9.0	10	0.65	0	3	16	16	14	18	1.2	0	6	12	12	11	13	0.89	0	6
Cadmium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	0.011	-	5	6
Chromium	µg/L	<0.06	-	<0.06	<0.06	-	3	3	<0.06	-	<0.06	0.067	-	5	6	<0.1	-	<0.1	<0.1	-	6	6
Cobalt	µg/L	0.046	0.046	0.046	0.047	0.00058	0	3	0.040	0.041	0.035	0.047	0.0057	0	6	0.043	0.043	0.039	0.047	0.0030	0	6
Copper	µg/L	0.60	0.59	0.58	0.60	0.012	0	3	0.74	0.73	0.69	0.76	0.028	0	6	0.94	0.95	0.79	1.2	0.15	0	6
Iron	µg/L	126	125	122	127	2.6	0	3	61	60	46	75	12	0	6	47	47	42	52	4.3	0	6
Lead	µg/L	<0.01	-	<0.01	0.013	-	2	3	<0.01	-	<0.01	0.012	-	5	6	0.017	-	<0.01	0.023	-	3	6
Lithium	µg/L	1.3	1.3	1.2	1.4	0.10	0	3	1.6	1.7	1.5	2.0	0.17	0	6	1.7	1.6	1.3	1.8	0.27	0	6
Manganese	µg/L	12	12	12	12	0.20	0	3	9.8	9.6	8.4	11	0.88	0	6	11	11	9.2	13	1.5	0	6
Mercury	µg/L	0.00055	0.00055	0.00054	0.00057	0.000015	0	3	0.00070	0.00067	0.00060	0.00070	0.000052	0	6	0.00080	0.00079	<0.0005	0.0011	0.00031	1	6
Molybdenum	µg/L	0.25	0.25	0.24	0.25	0.0057	0	3	0.41	0.41	0.35	0.46	0.047	0	6	0.44	0.45	0.41	0.48	0.027	0	6
Nickel	µg/L	0.56	0.55	0.54	0.57	0.016	0	3	0.65	0.64	0.58	0.68	0.034	0	6	0.69	0.70	0.64	0.80	0.057	0	6
Selenium	µg/L	<0.04	-	<0.04	<0.04	-	3	3	0.047	0.044	<0.04	0.056	0.013	1	6	0.045	0.040	<0.04	0.059	0.016	2	6
Silver	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Strontium	µg/L	57	56	55	58	1.3	0	3	75	76	72	81	3.2	0	6	81	81	78	82	1.6	0	6
Thallium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	6	6	<0.002	-	<0.002	0.0042	-	4	6
Tin	µg/L	<0.05	-	<0.05	<0.05	-	3	3	<0.05	-	<0.05	<0.05	-	6	6	<0.02	-	<0.02	<0.02	-	6	6
Titanium	µg/L	0.20	0.21	0.16	0.28	0.061	0	3	0.21	0.24	0.14	0.45	0.11	0	6	<0.5	-	<0.5	<0.5	-	6	6
Uranium	µg/L	0.057	0.058	0.056	0.062	0.0032	0	3	0.081	0.081	0.077	0.086	0.0030	0	6	0.094	0.093	0.084	0.10	0.0076	0	6
Vanadium	µg/L	0.060	0.061	0.059	0.065	0.0032	0	3	0.056	0.053	<0.05	0.070	0.015	1	6	0.056	0.053	<0.05	0.069	0.015	1	6
Zinc	µg/L	<0.8	-	<0.8	<0.8	-	3	3	<0.8	-	<0.8	<0.8	-	6	6	1.9	1.7	0.57	<3.0	0.79	1	6
Dissolved Metals																						
Aluminum	µg/L	2.0	1.9	1.8	2.0	0.13	0	3	2.0	2.1	1.6	3.0	0.47	0	6	3.4	3.6	2.0	5.7	1.4	0	6
Antimony	µg/L	<0.02	-	<0.02	<0.02	-	3	3	0.021	-	<0.02	0.047	-	3	6	<0.02	-	<0.02	<0.02	-	6	6
Arsenic	µg/L	0.82	0.82	0.81	0.83	0.010	0	3	0.93	0.92	0.86	0.97	0.044	0	6	0.84	0.84	0.79	0.91	0.052	0	6
Barium	µg/L	16	16	15	16	0.17	0	3	16	16	15	16	0.54	0	6	16	16	15	16	0.48	0	6
Beryllium	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	<0.01	-	6	6	<0.01	-	<0.01	<0.01	-	6	6
Bismuth	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	0.011	-	5	6	<0.005	-	<0.005	<0.005	-	6	6
Boron	µg/L	11	11	11	13	1.0	0	3	14	15	13	16	1.0	0	6	11	11	10	12	0.63	0	6
Cadmium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Chromium	µg/L	<0.06	-	<0.06	<0.06	-	3	3	0.12	0.11	<0.06	0.17	0.051	1	6	<0.1	-	<0.1	0.19	-	5	6
Cobalt	µg/L	0.013	0.013	0.012	0.014	0.0010	0	3	0.016	0.016	0.013	0.022	0.0034	0	6	0.056	0.052	0.034	0.065	0.012	0	6
Copper	µg/L	0.58	0.58	0.56	0.60	0.020	0	3	0.77	-	-	-	-	0	1	0.97	0.96	0.79	1.1	0.13	0	6
Iron	µg/L	45	44	41	47	3.1	0	3	14	14	13	15	0.93	0	6	18	21	12	36	8.7	0	6
Lead	µg/L	<0.01	-	<0.01	<0.01	-	3	3	<0.01	-	<0.01	0.024	-	4	6	0.020	0.044	0.0081	0.17	0.061	0	6
Lithium	µg/L	1.3	1.3	1.3	1.3	0.0058	0	3	1.6	1.6	1.4	1.7	0.16	0	6	1.7	1.7	1.5	1.9	0.15	0	6
Manganese	µg/L	1.1	1.1	0.91	1.3	0.17	0	3	0.60	0.61	0.51	0.74	0.089	0	6	1.2	2.1	0.63	5.7	2.0	0	6
Mercury	µg/L	<0.0005	-	<0.0005	<0.0005	-	3	3	0.0015	0.0015	0.00050	0.0026	0.0011	0	6	0.0011	0.0012	0.00090	0.0016	0.00031	0	6

Table 7B-6: Historical Water Quality Results at Peninsula Lake D7, 2015 to 2017

Parameter	Unit	Yearly Summary																			
		2015							2016							2017						
		Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count	Median	Mean	Min	Max	SD	nd	Count
Dissolved Metals (cont'd)																						
Molybdenum	µg/L	0.25	0.25	0.25	0.26	0.0056	0	3	0.39	0.39	0.34	0.44	0.046	0	6	0.46	0.46	0.39	0.52	0.061	0	6
Nickel	µg/L	0.57	0.56	0.54	0.58	0.022	0	3	0.64	0.64	0.61	0.69	0.030	0	6	0.64	0.64	0.60	0.68	0.030	0	6
Selenium	µg/L	<0.04	-	<0.04	<0.04	-	3	3	0.047	-	<0.04	0.067	-	3	6	0.043	0.036	<0.04	0.047	0.013	2	6
Silver	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.005	<0.005	-	6	6
Strontium	µg/L	56	56	55	58	1.5	0	3	74	74	71	76	1.9	0	6	73	73	67	78	4.5	0	6
Thallium	µg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	0.013	-	5	6	<0.002	-	<0.002	0.0027	-	4	6
Tin	µg/L	<0.05	-	<0.05	<0.05	-	3	3	<0.05	-	<0.05	<0.05	-	6	6	0.012	-	<0.01	0.020	-	3	6
Titanium	µg/L	<0.1	-	<0.1	<0.1	-	3	3	<0.1	-	<0.1	<0.1	-	6	6	<0.3	-	<0.3	<0.3	-	6	6
Uranium	µg/L	0.049	0.049	0.047	0.050	0.0015	0	3	0.081	0.081	0.080	0.083	0.0012	0	6	0.098	0.098	0.093	0.10	0.0036	0	6
Vanadium	µg/L	<0.05	-	<0.05	<0.05	-	3	3	<0.05	-	<0.05	0.052	-	5	6	<0.05	-	<0.05	<0.05	-	6	6
Zinc	µg/L	<0.8	-	<0.8	<0.8	-	3	3	<0.8	-	<0.8	<0.8	-	6	6	1.2	1.1	<0.5	1.5	0.46	1	6
Other																						
Free cyanide	mg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.005	-	<0.005	<0.005	-	6	6	<0.005	-	<0.001	<0.005	-	6	6
Cyanide (wad)	mg/L	<0.005	-	<0.005	<0.005	-	3	3	<0.002	-	<0.002	<0.002	-	6	6	<0.001	-	<0.001	<0.001	-	6	6

SD = standard deviation; µS/cm = microsiemens per centimeter; NTU = nephelometric turbidity units; mg/L = milligrams per litre; mg-P/L = milligrams phosphorus per litre; mg-N/L = milligrams nitrogen per litre; µg/L = micrograms per litre; DOC = dissolved organic carbon; - = no guideline or data not measured.

APPENDIX 7C

Time-series Plots

Note: parameters with all samples below detection were not included. An open symbol on the plot represents a measurement that is below detection.

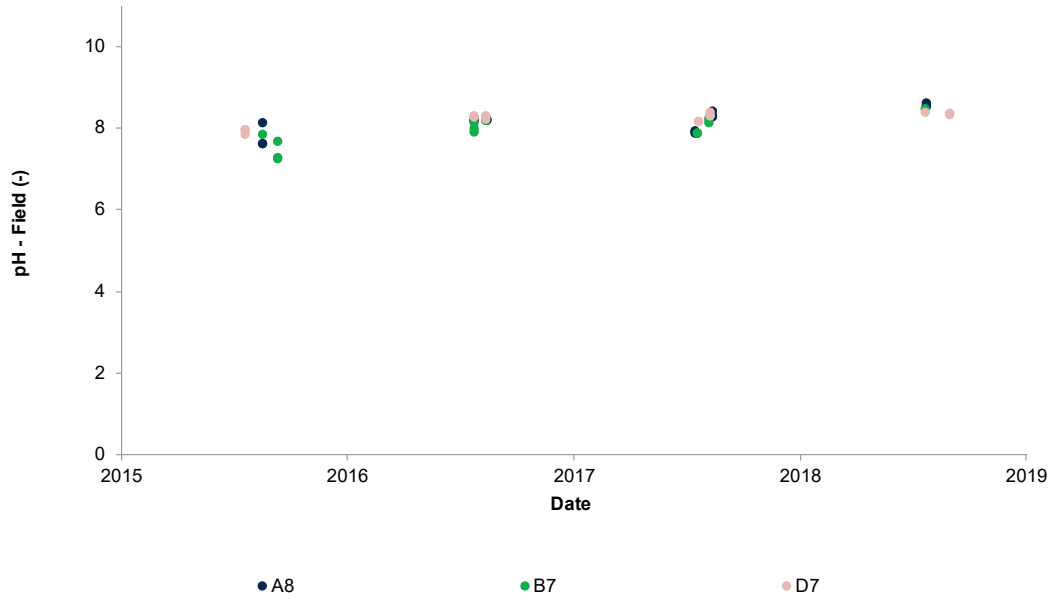


Figure 7C-1: Field pH in Peninsula Lakes, 2015 to 2018

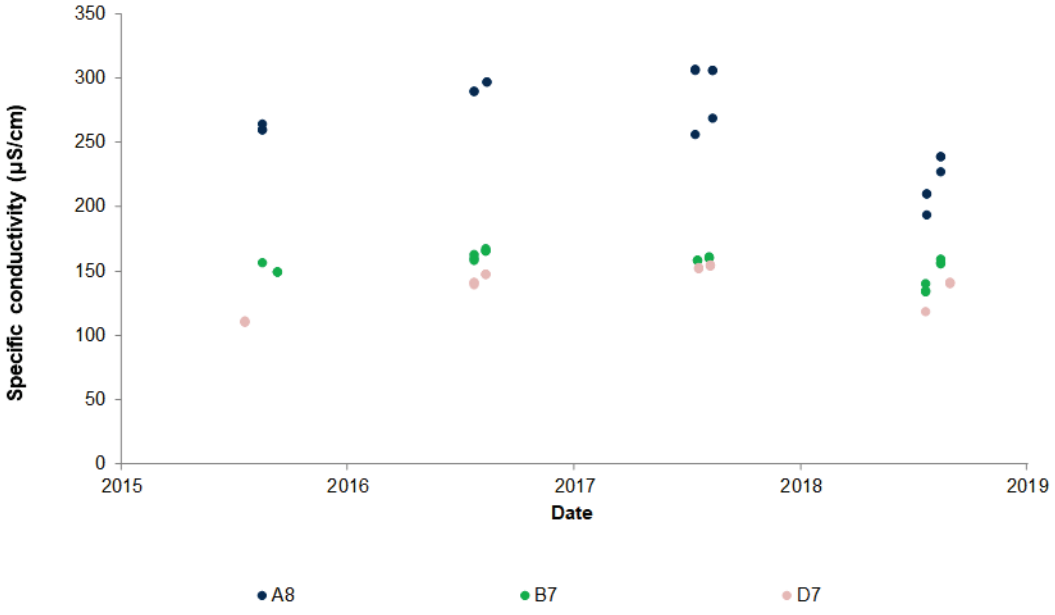


Figure 7C-2: Specific Conductivity in Peninsula Lakes, 2015 to 2018

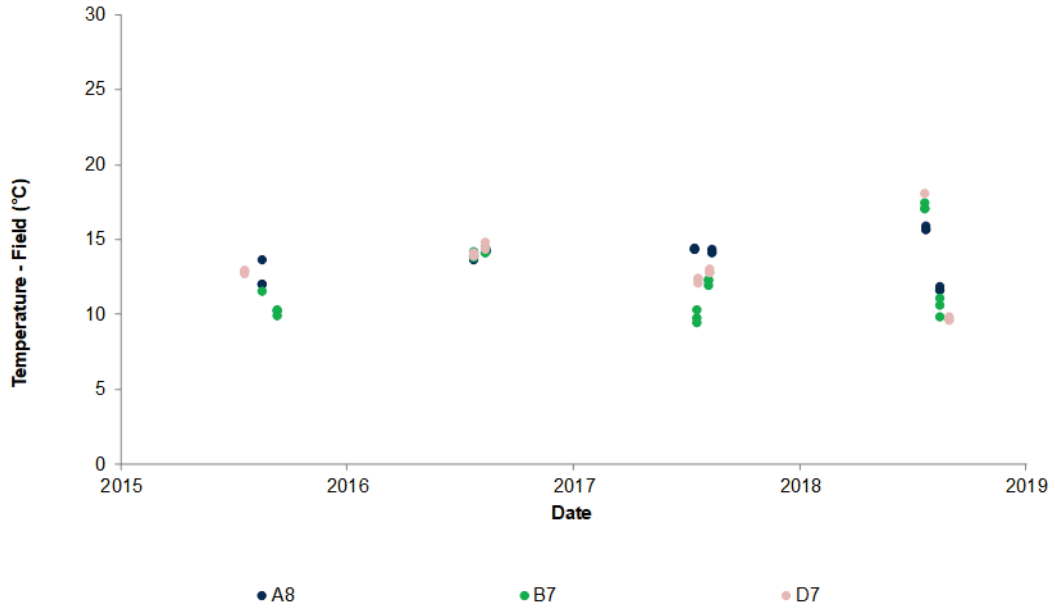


Figure 7C-3: Temperature in Peninsula Lakes, 2015 to 2018

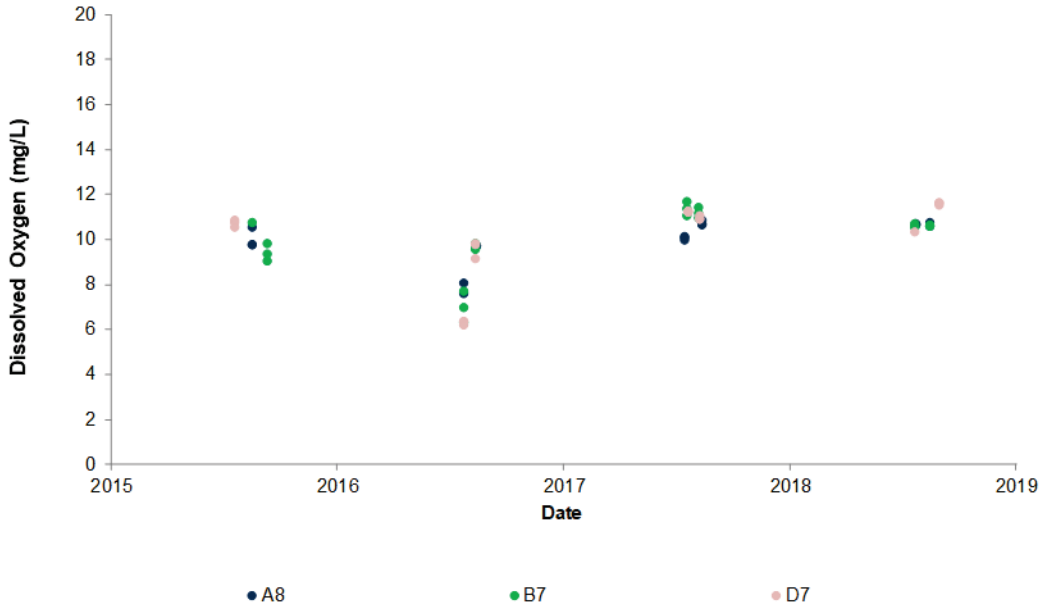


Figure 7C-4: Dissolved Oxygen in Peninsula Lakes, 2015 to 2018



Figure 7C-5: Dissolved Oxygen in Peninsula Lakes, 2015 to 2018

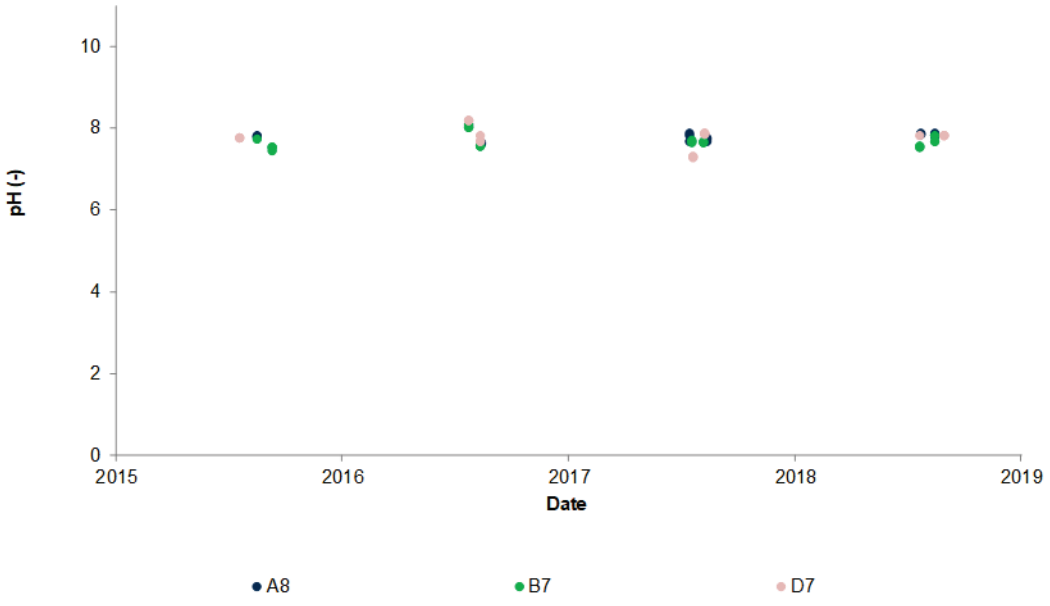


Figure 7C-6: Laboratory pH in Peninsula Lakes, 2015 to 2018

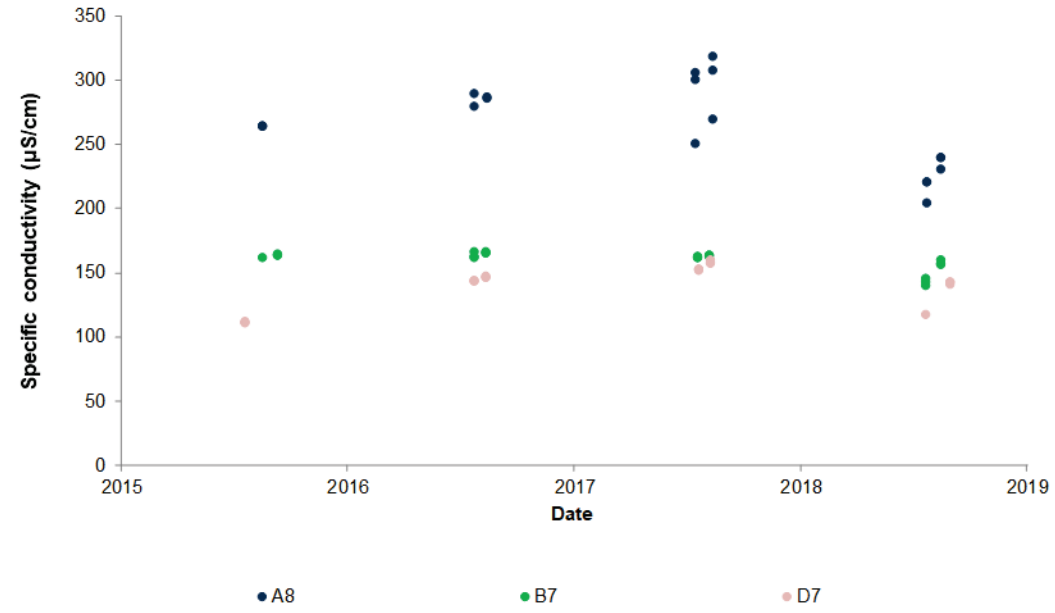


Figure 7C-7: Laboratory Specific Conductivity in Peninsula Lakes, 2015 to 2018

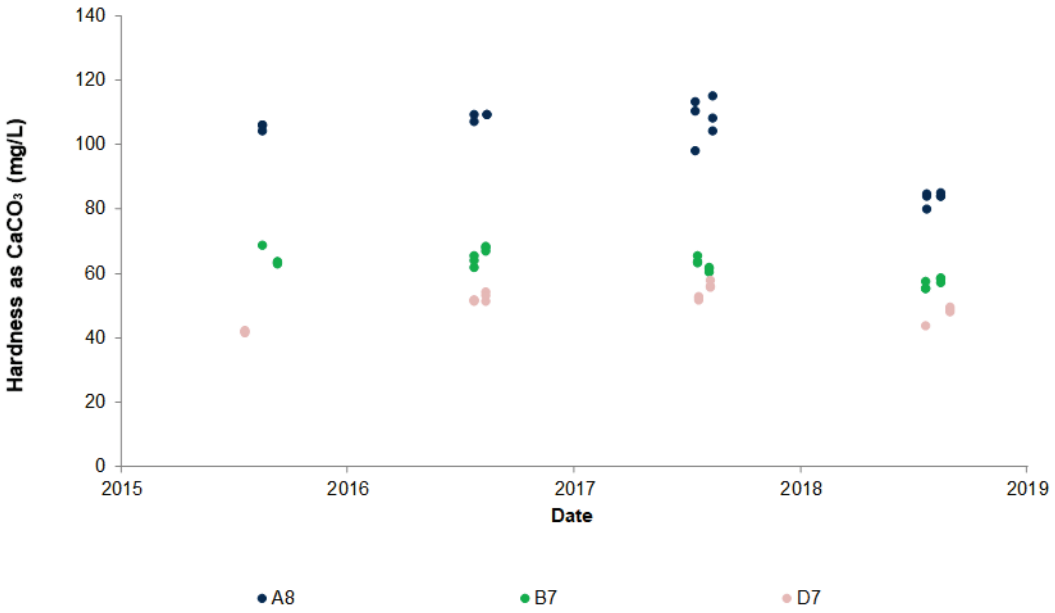


Figure 7C-8: Hardness in Peninsula Lakes, 2015 to 2018

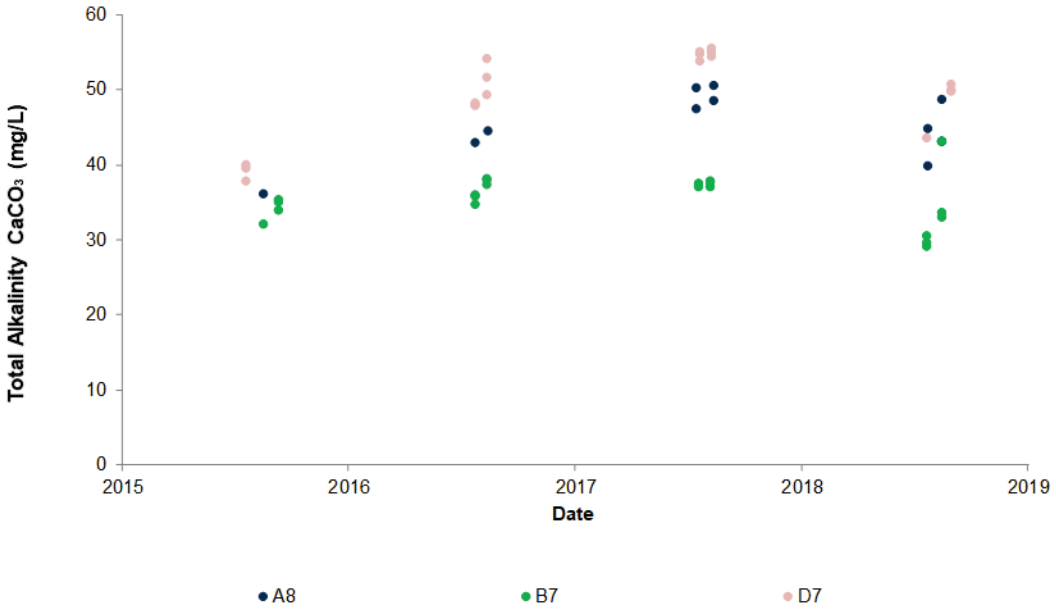


Figure 7C-9: Total Alkalinity in Peninsula Lakes, 2015 to 2018

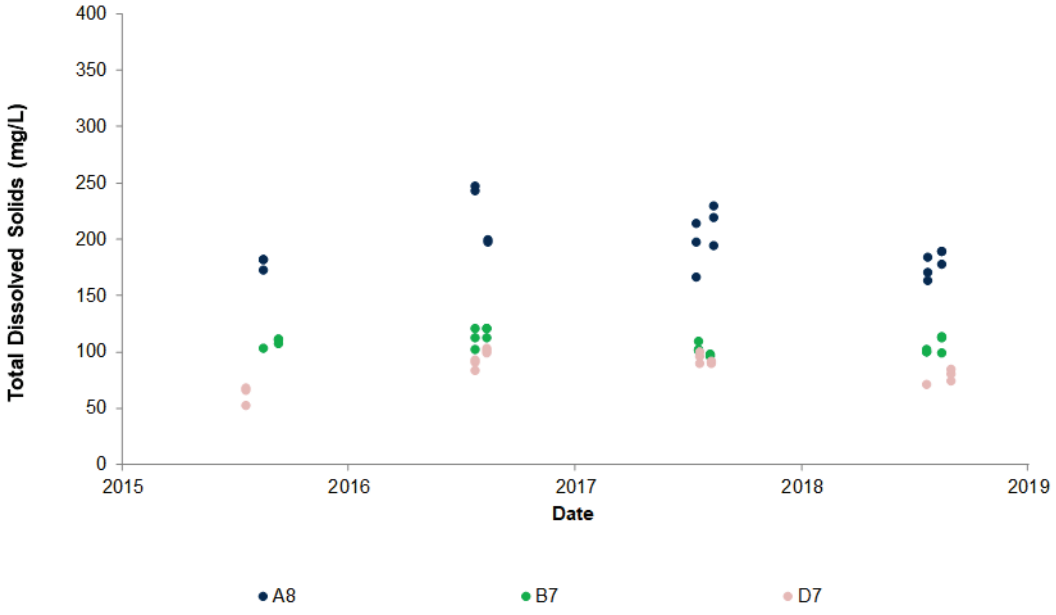


Figure 7C-10: Total Dissolved Solids in Peninsula Lakes, 2015 to 2018

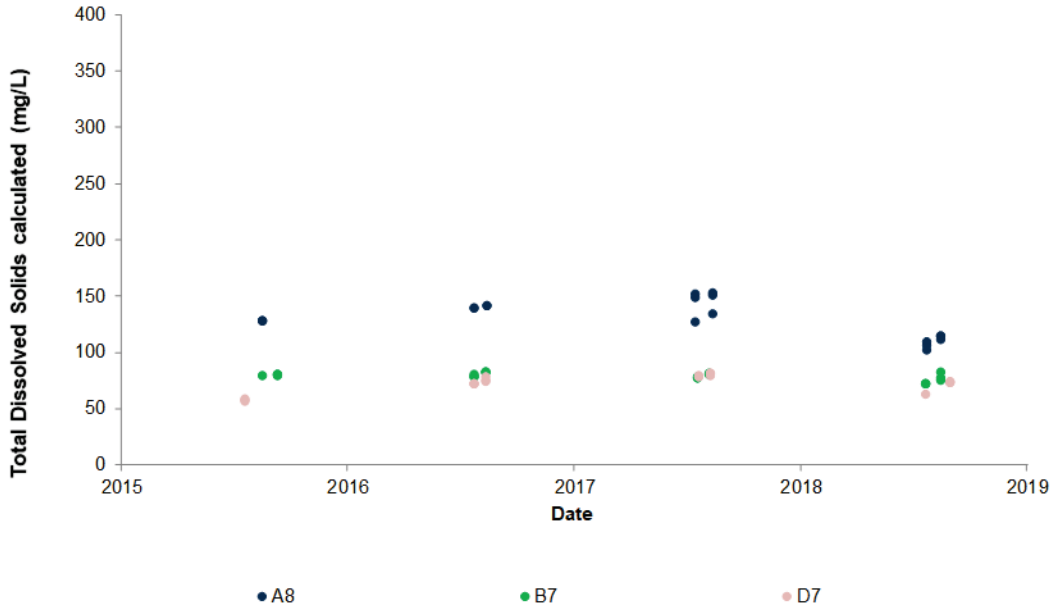


Figure 7C-11: Total Dissolved Solids (Calculated) in Peninsula Lakes, 2015 to 2018

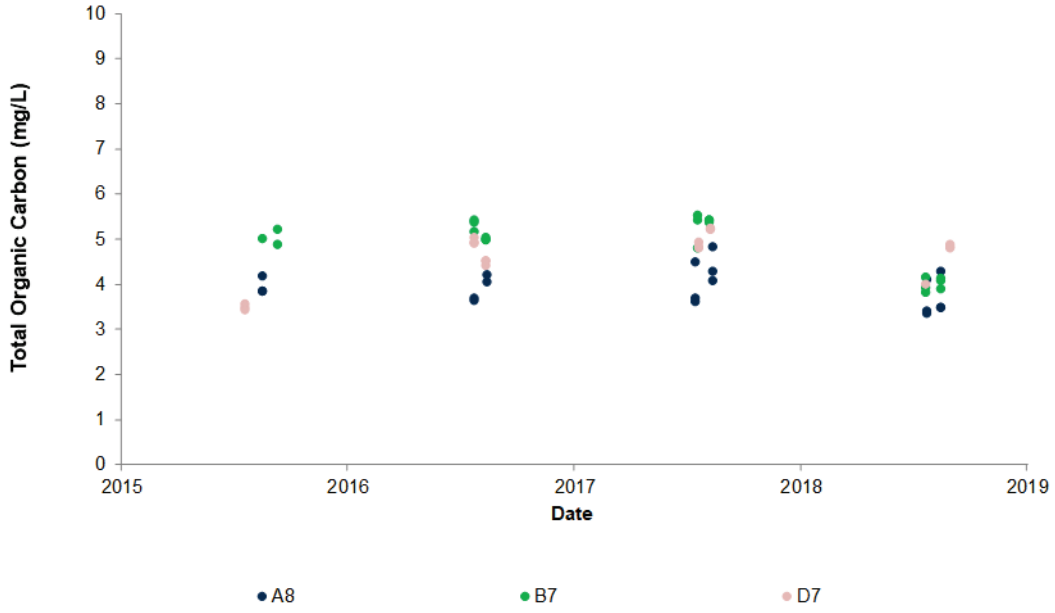


Figure 7C-12: Total Organic Carbon in Peninsula Lakes, 2015 to 2018

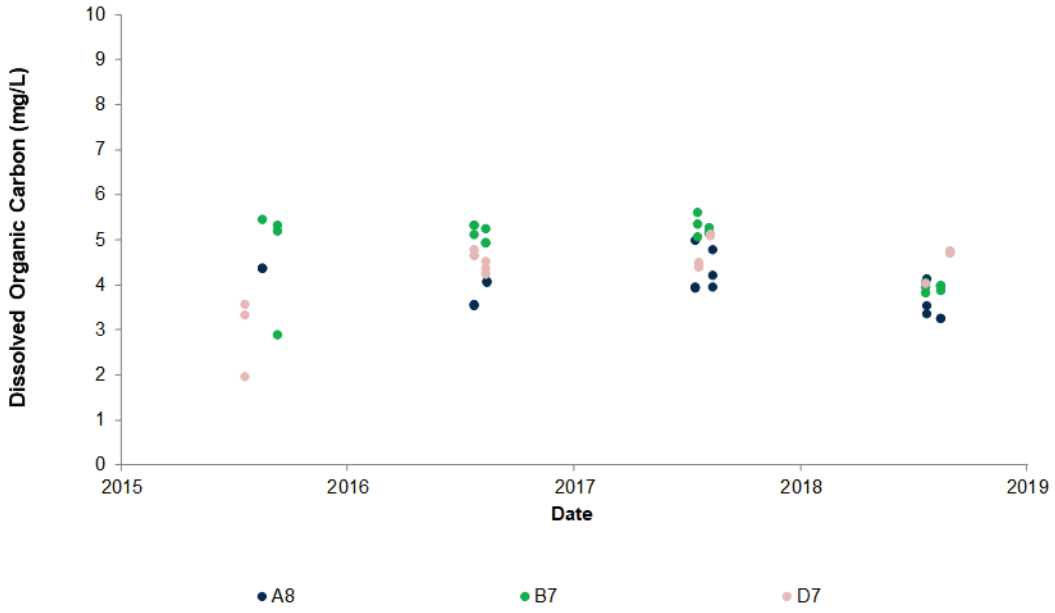


Figure 7C-13: Dissolved Organic Carbon in Peninsula Lakes, 2015 to 2018

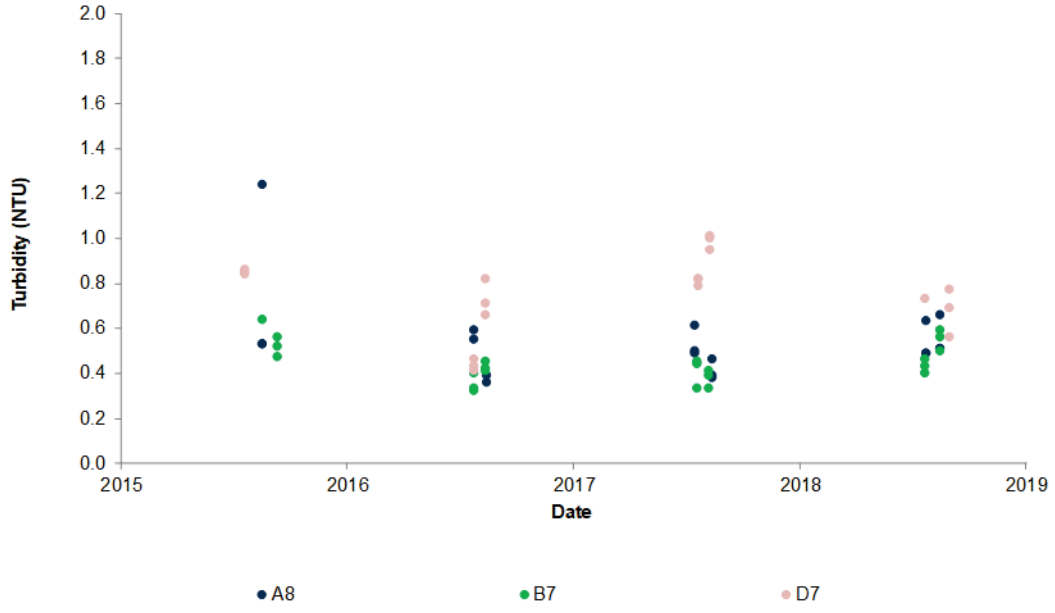


Figure 7C-14: Turbidity in Peninsula Lakes, 2015 to 2018

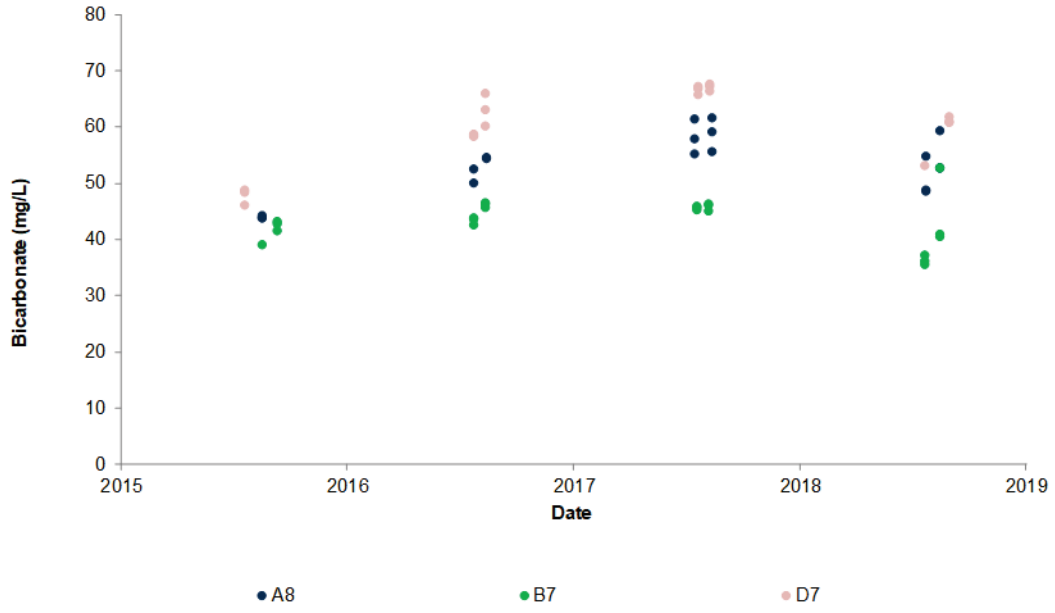


Figure 7C-15: Bicarbonate in Peninsula Lakes, 2015 to 2018

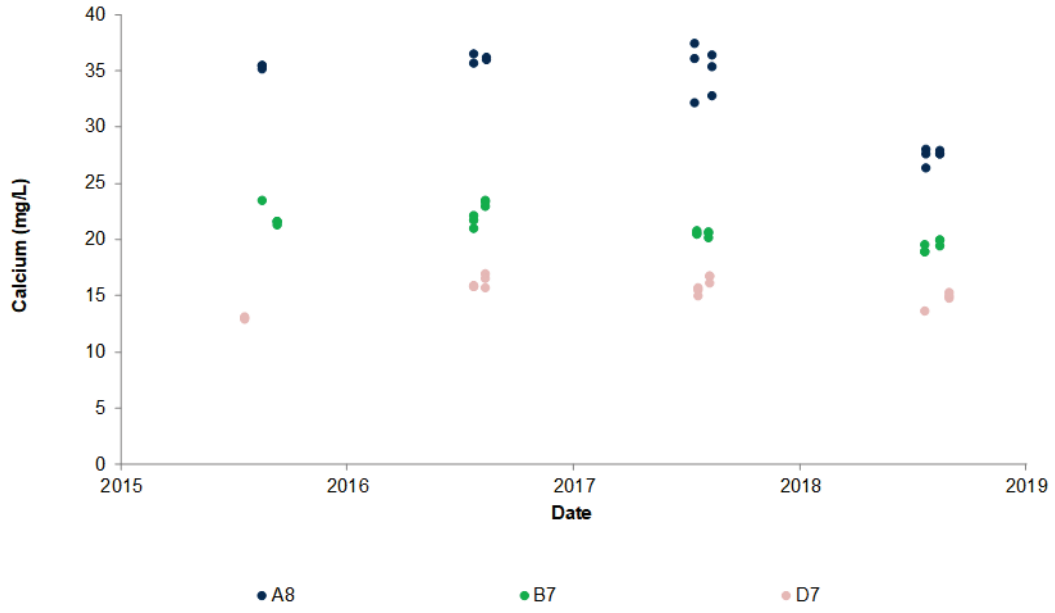


Figure 7C-16: Calcium in Peninsula Lakes, 2015 to 2018

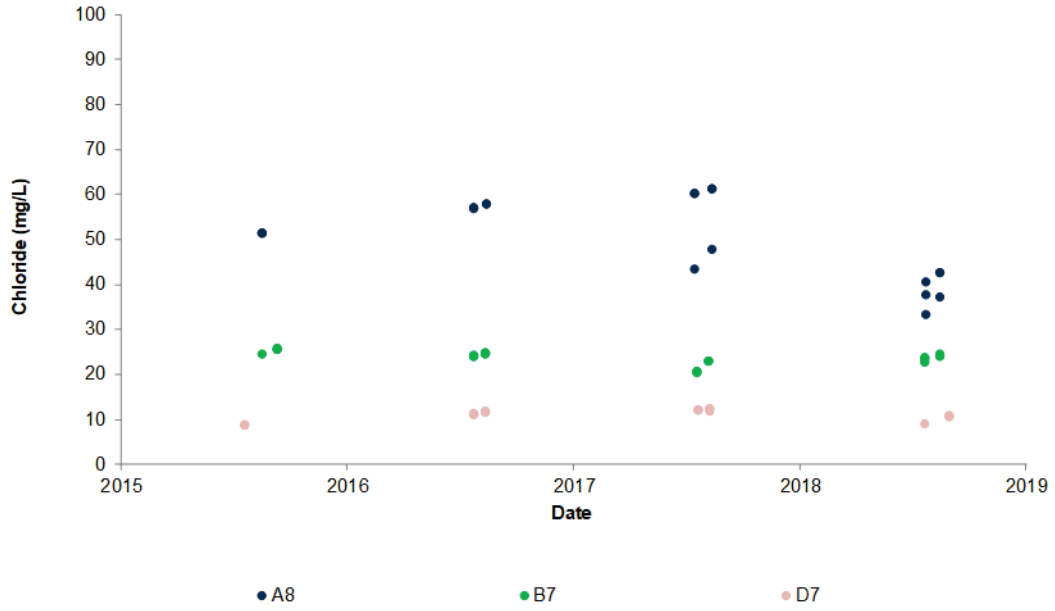


Figure 7C-17: Chloride in Peninsula Lakes, 2015 to 2018

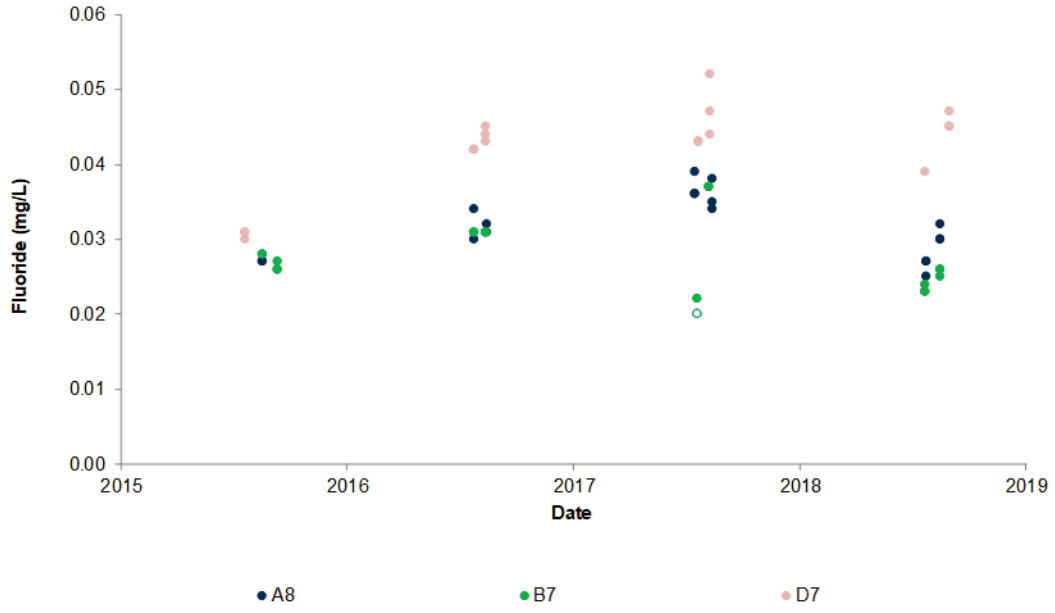


Figure 7C-18: Fluoride in Peninsula Lakes, 2015 to 2018

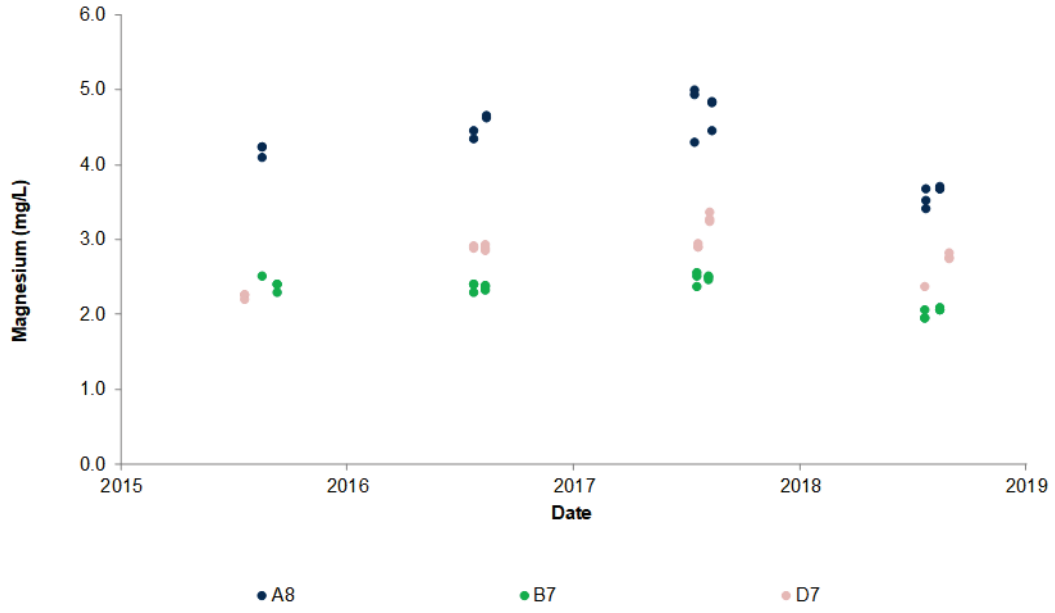


Figure 7C-19: Magnesium in Peninsula Lakes, 2015 to 2018

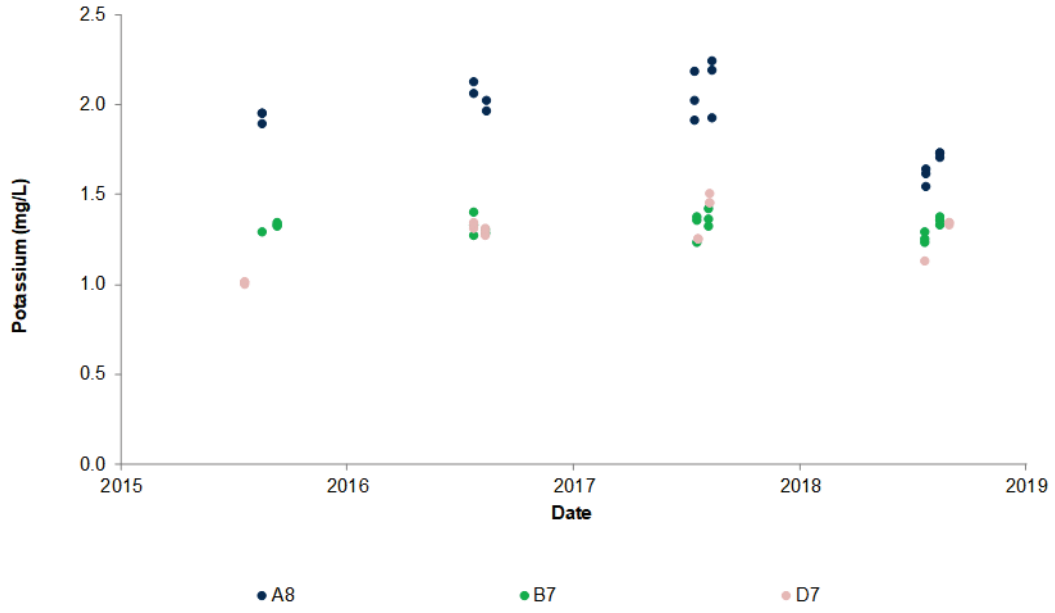


Figure 7C-20: Potassium in Peninsula Lakes, 2015 to 2018

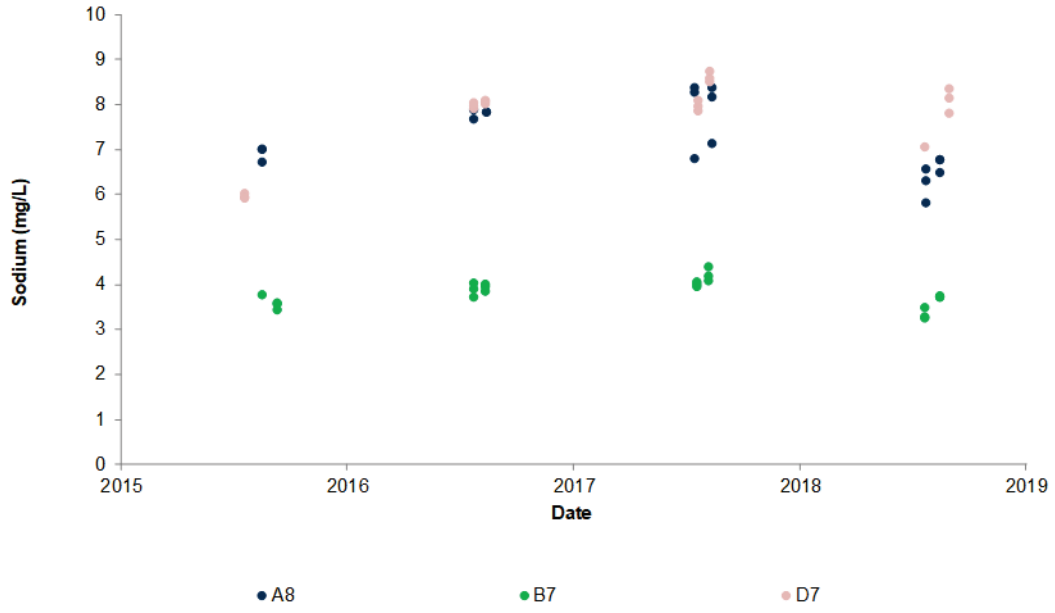


Figure 7C-21: Sodium in Peninsula Lakes, 2015 to 2018

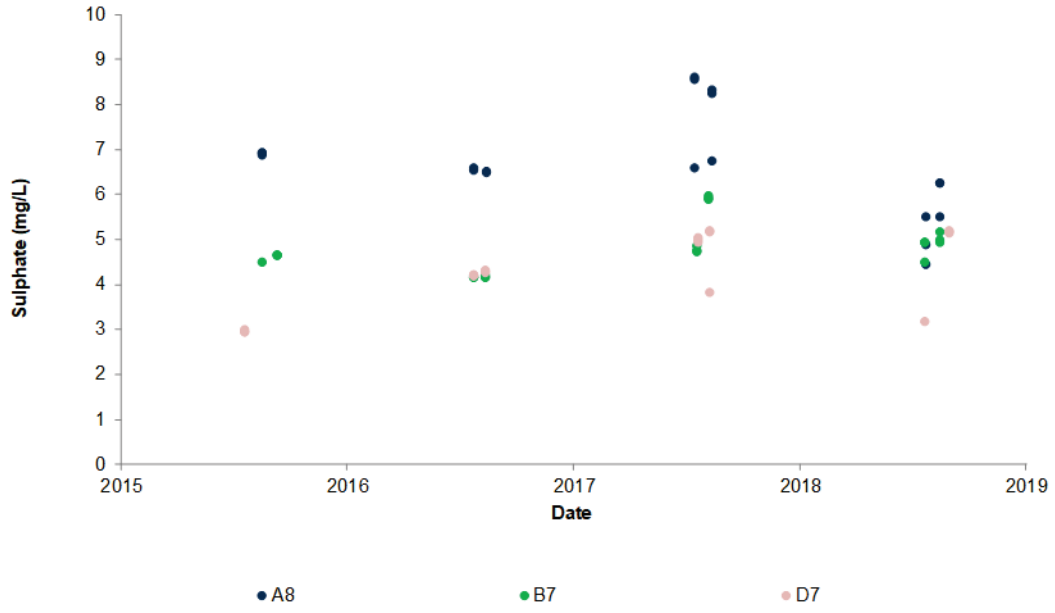


Figure 7C-22: Sulphate in Peninsula Lakes, 2015 to 2018

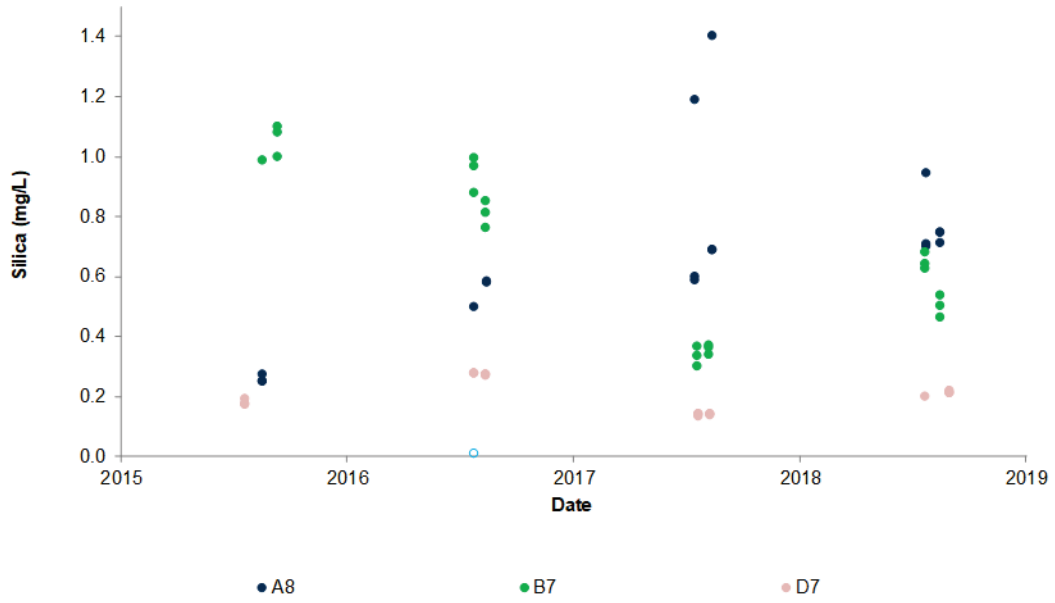


Figure 7C-23: Reactive Silica in Peninsula Lakes, 2015 to 2018

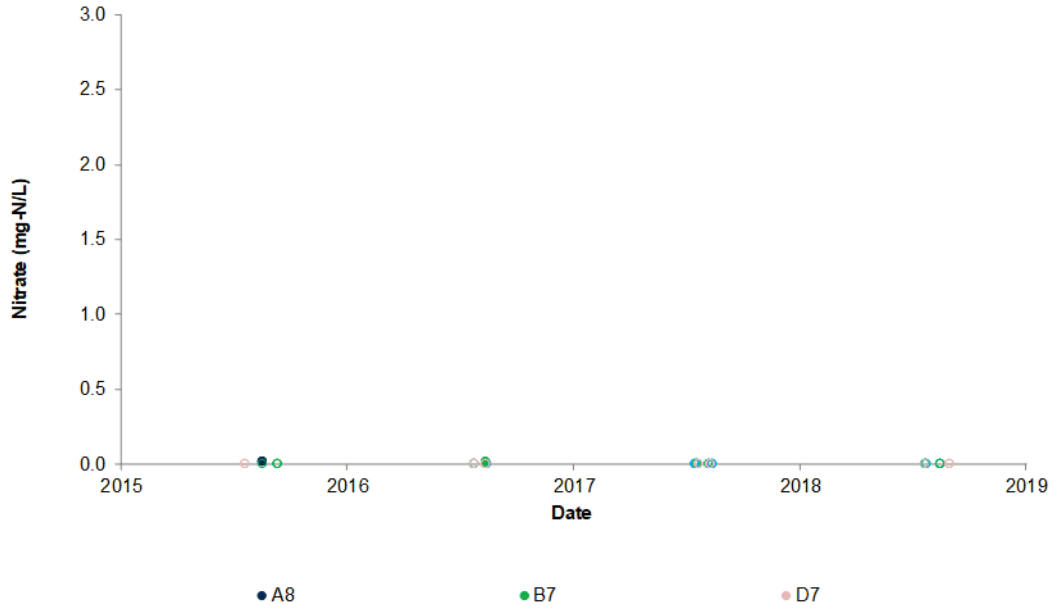


Figure 7C-24: Nitrate As N in Peninsula Lakes, 2015 to 2018

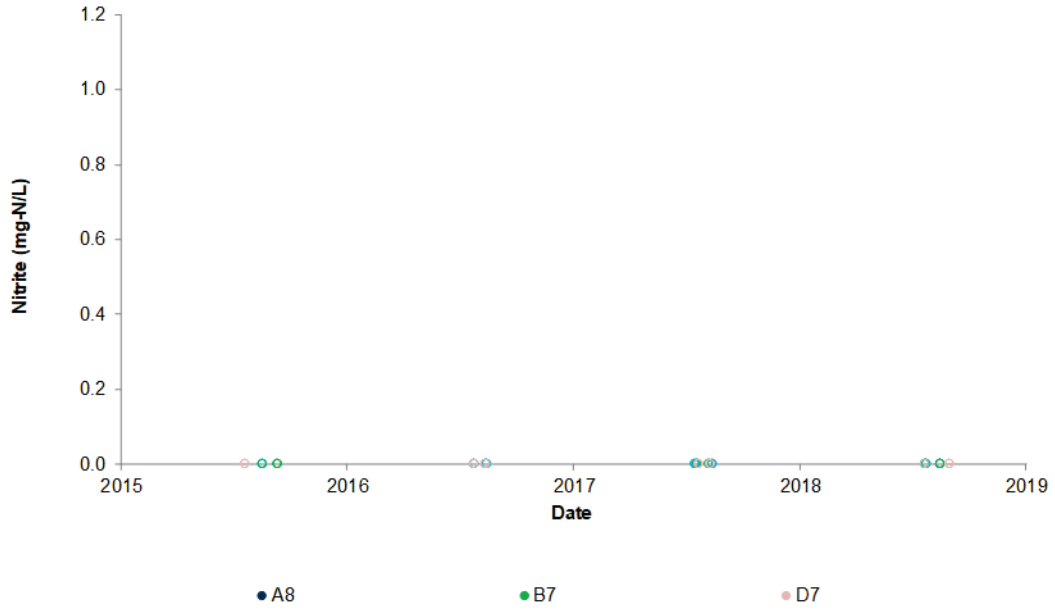


Figure 7C-25: Nitrite As N in Peninsula Lakes, 2015 to 2018



Figure 7C-26: Nitrate And Nitrite in Peninsula Lakes, 2015 to 2018

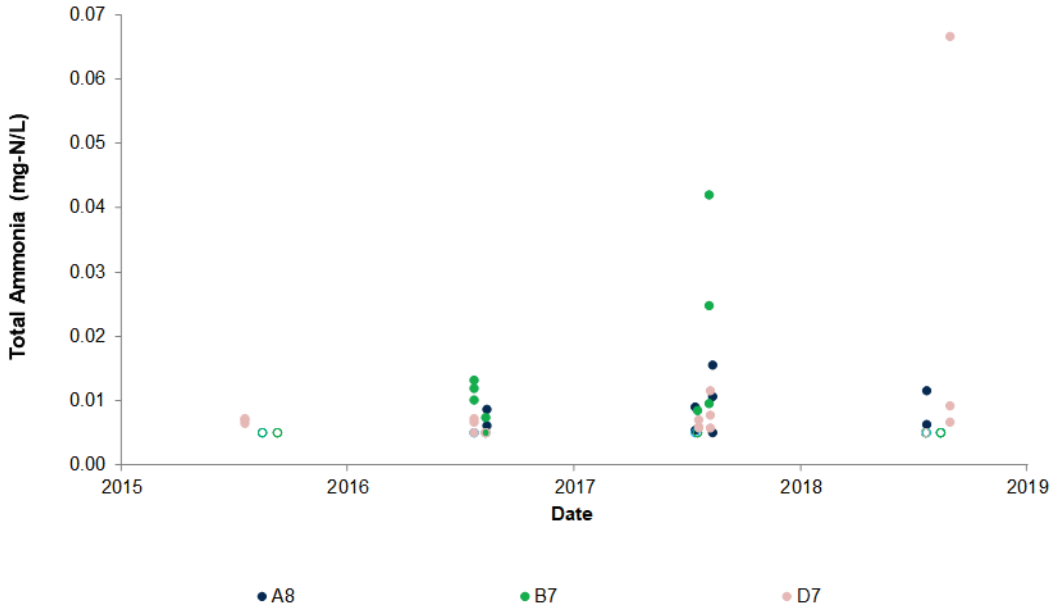


Figure 7C-27: Total Ammonia in Peninsula Lakes, 2015 to 2018

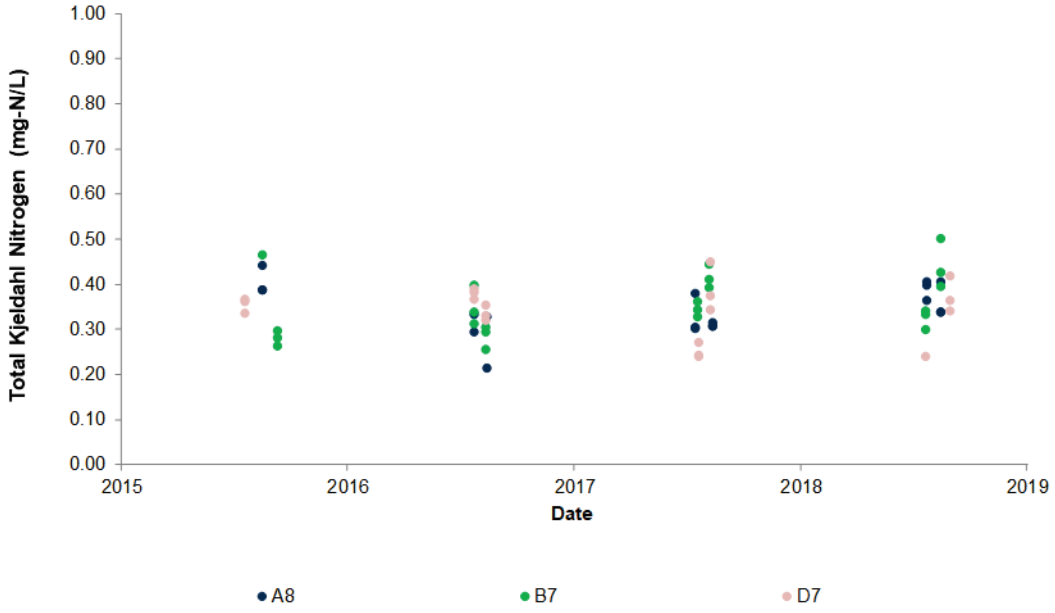


Figure 7C-28: Total Kjeldahl Nitrogen in Peninsula Lakes, 2015 to 2018

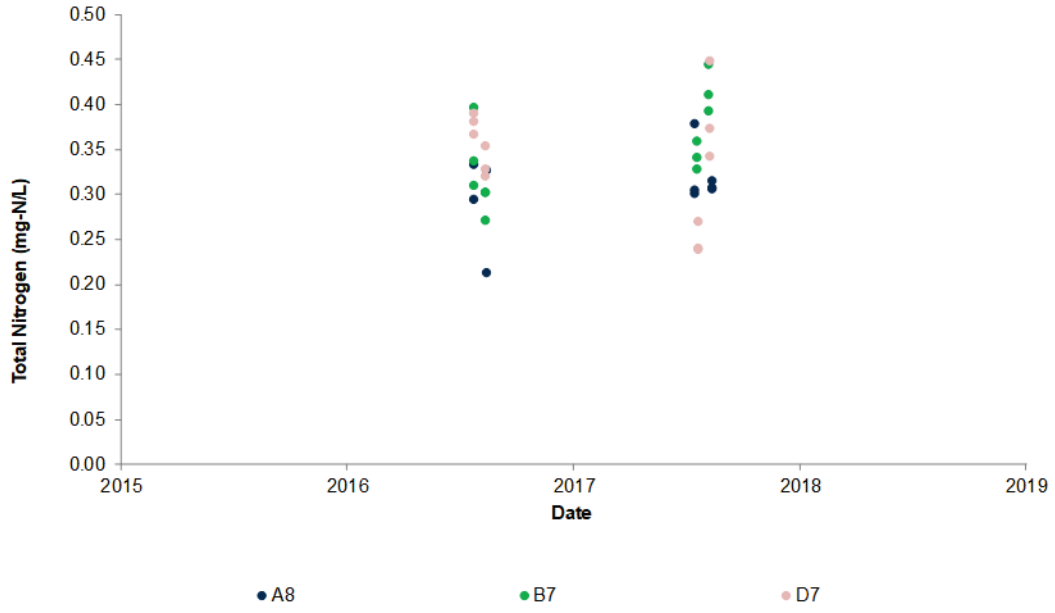


Figure 7C-29: Total Nitrogen in Peninsula Lakes, 2015 to 2018

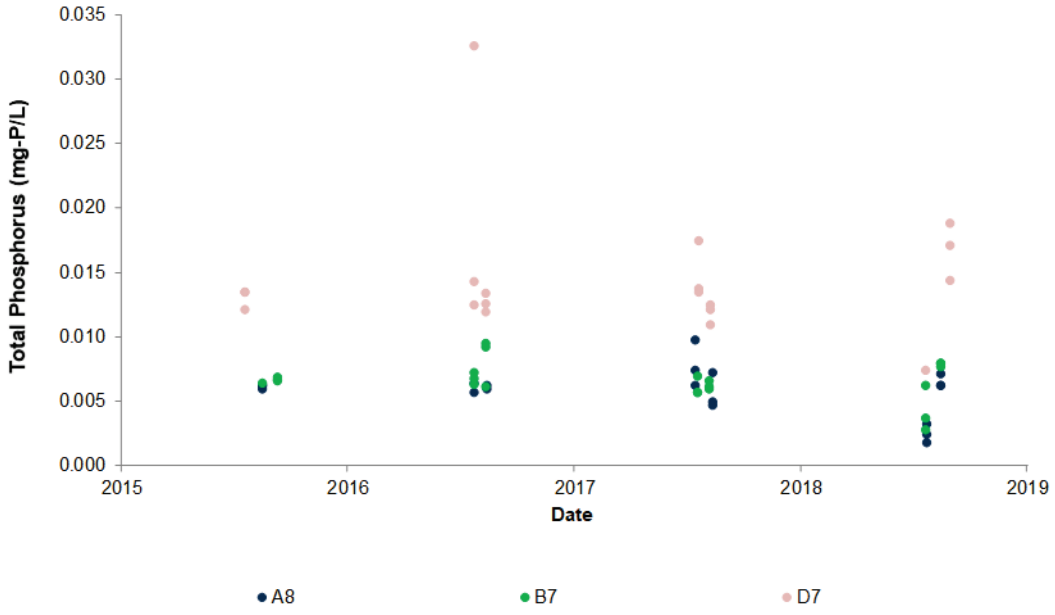


Figure 7C-30: Total Phosphorus in Peninsula Lakes, 2015 to 2018

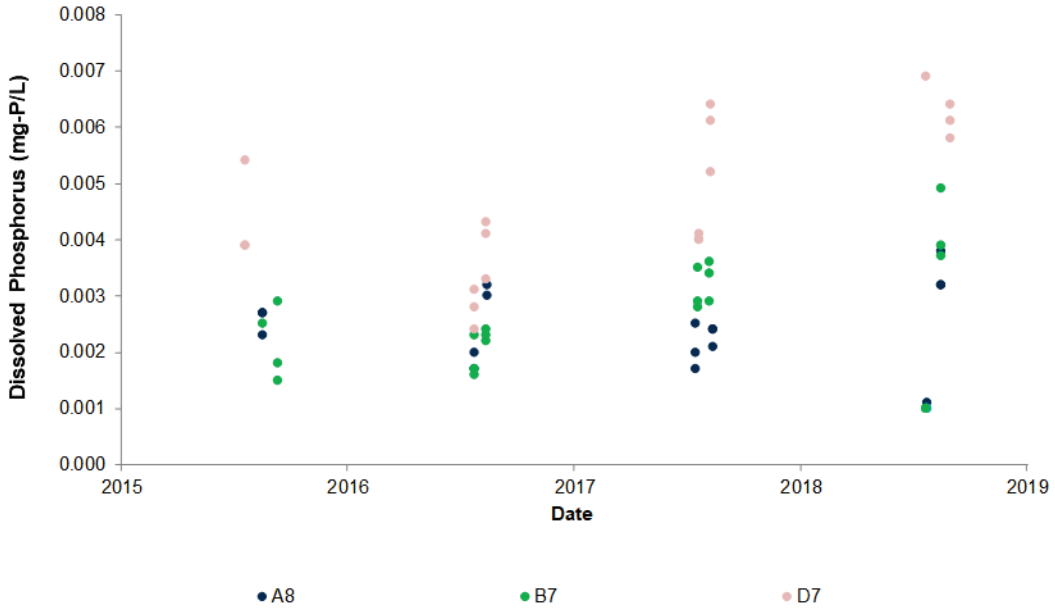


Figure 7C-31: Dissolved Phosphorus in Peninsula Lakes, 2015 to 2018

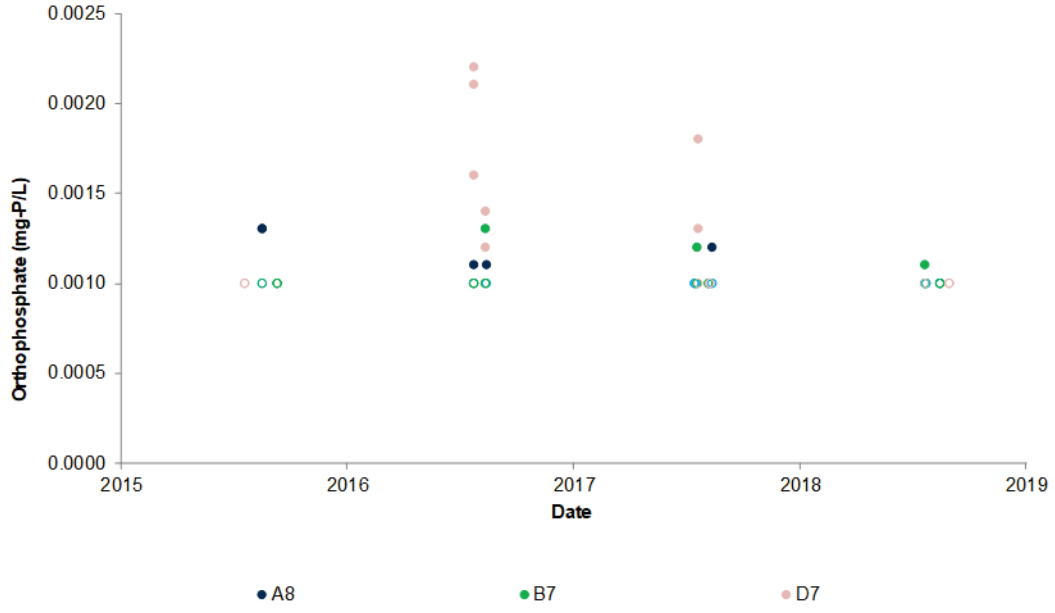


Figure 7C-32: Orthophosphate in Peninsula Lakes, 2015 to 2018

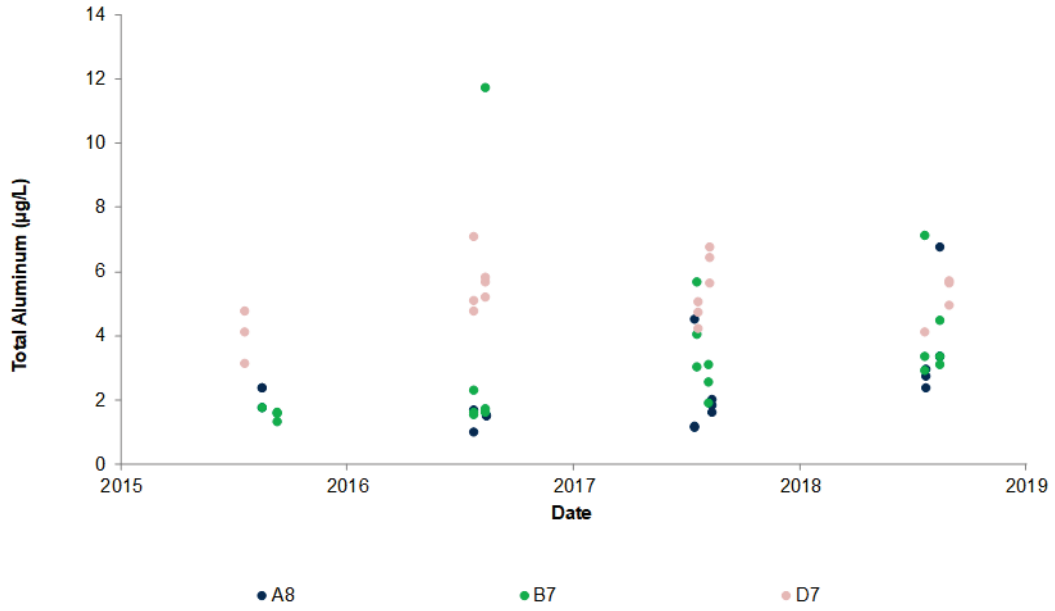


Figure 7C-33: Total Aluminum in Peninsula Lakes, 2015 to 2018

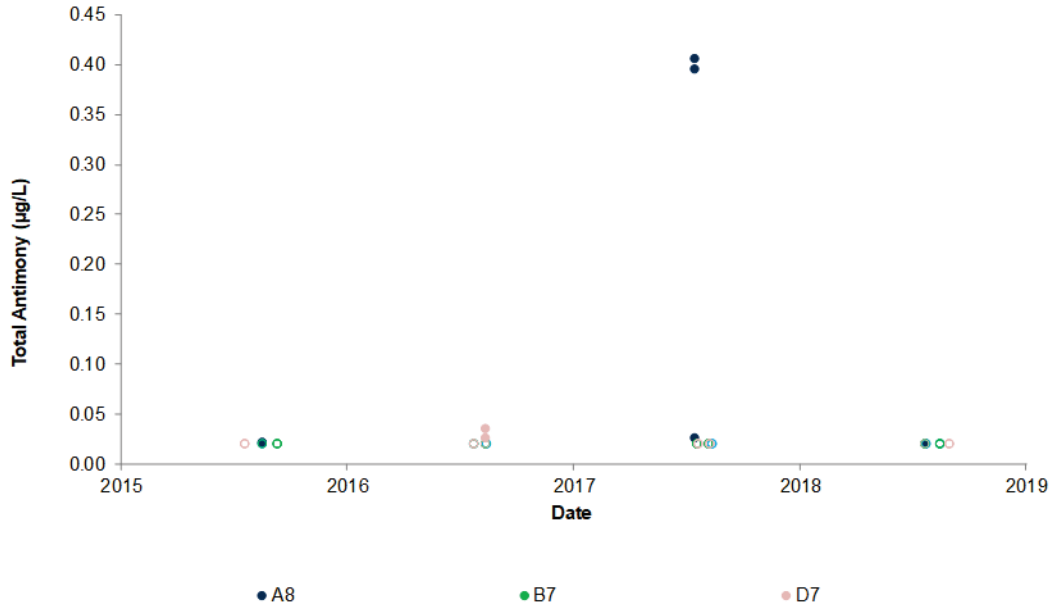


Figure 7C-34: Total Antimony in Peninsula Lakes, 2015 to 2018

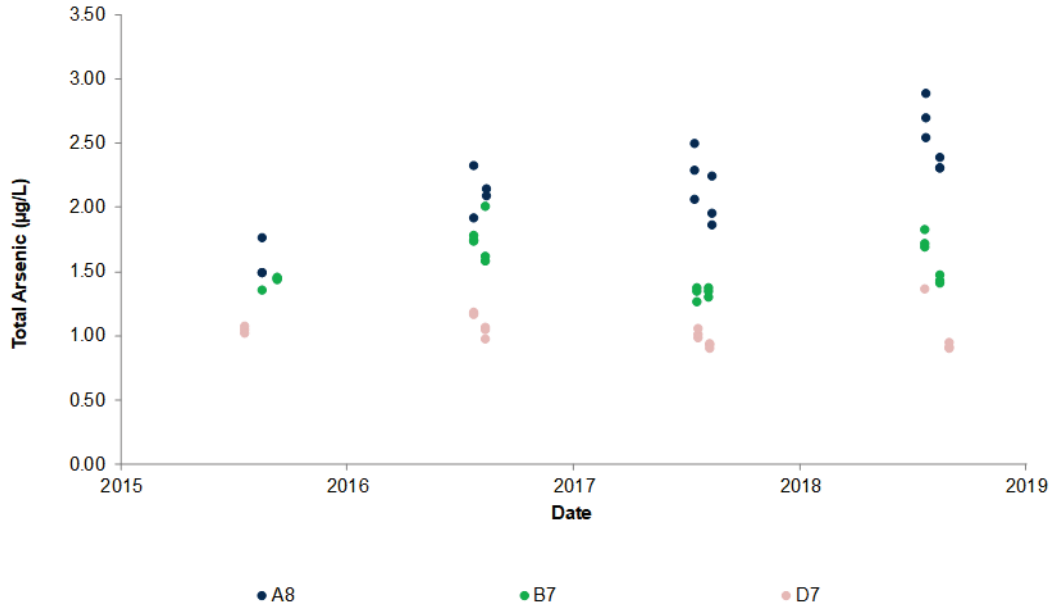


Figure 7C-35: Total Arsenic in Peninsula Lakes, 2015 to 2018

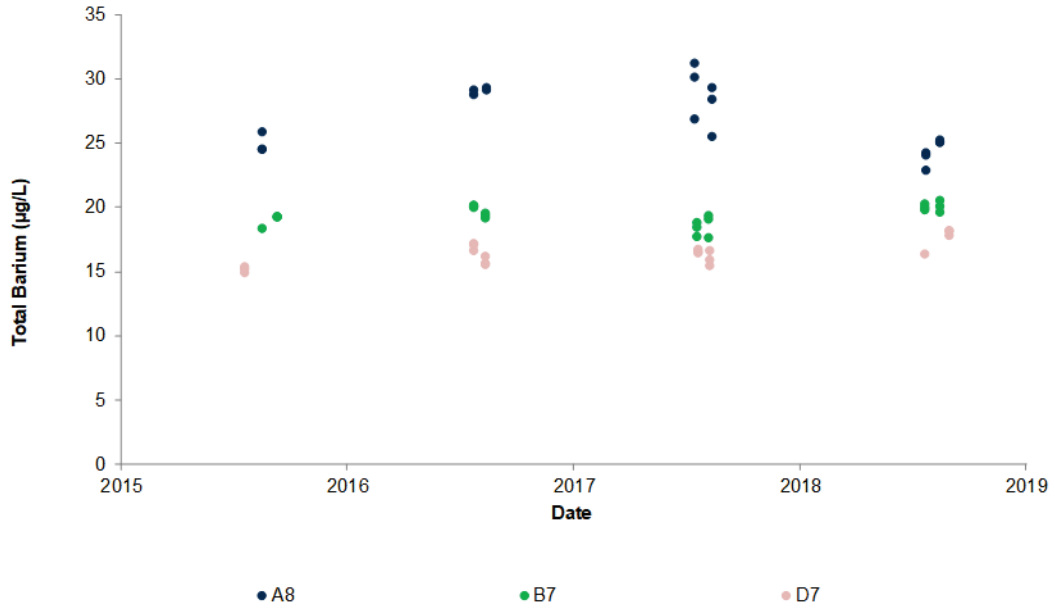


Figure 7C-36: Total Barium in Peninsula Lakes, 2015 to 2018

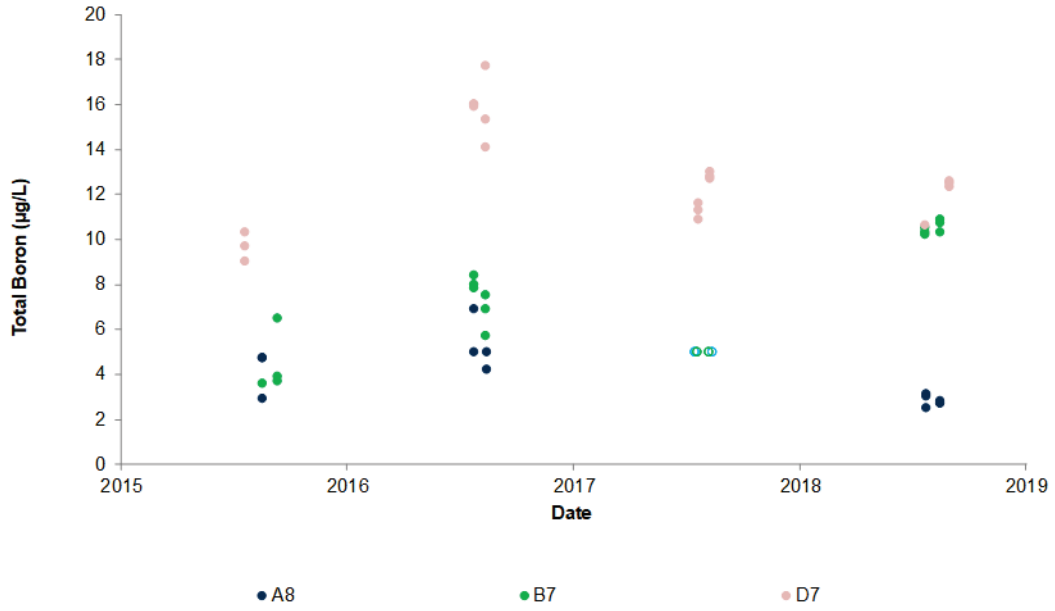


Figure 7C-37: Total Boron in Peninsula Lakes, 2015 to 2018

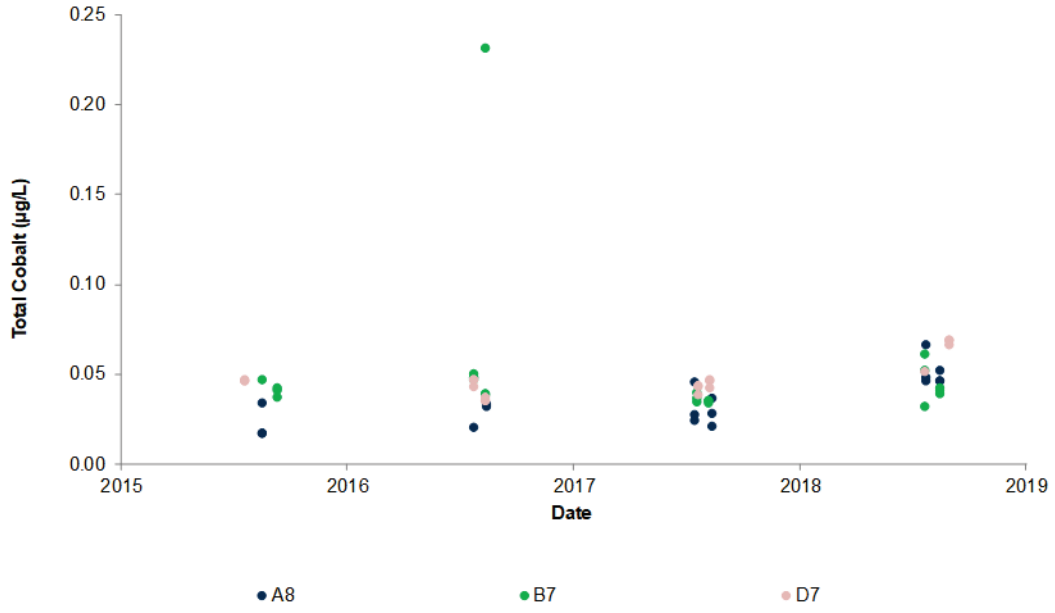


Figure 7C-38: Total Cobalt in Peninsula Lakes, 2015 to 2018

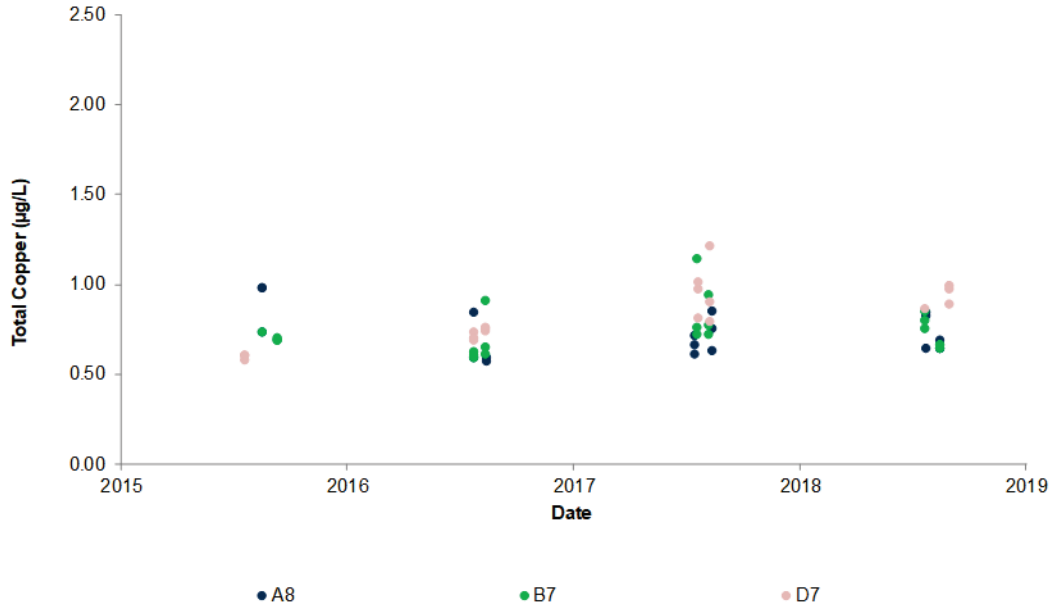


Figure 7C-39: Total Copper in Peninsula Lakes, 2015 to 2018

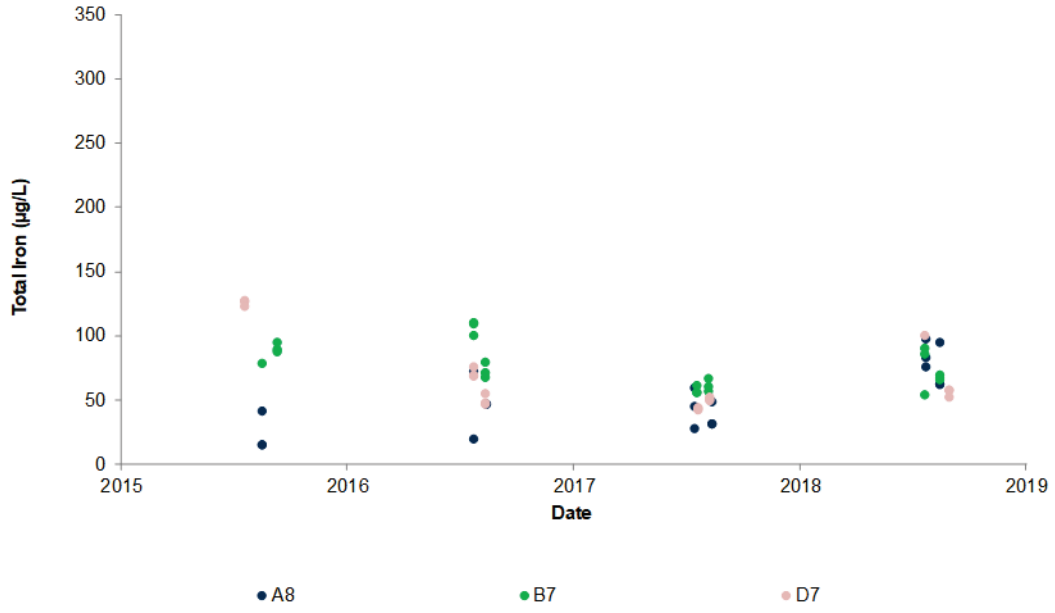


Figure 7C-40: Total Iron in Peninsula Lakes, 2015 to 2018

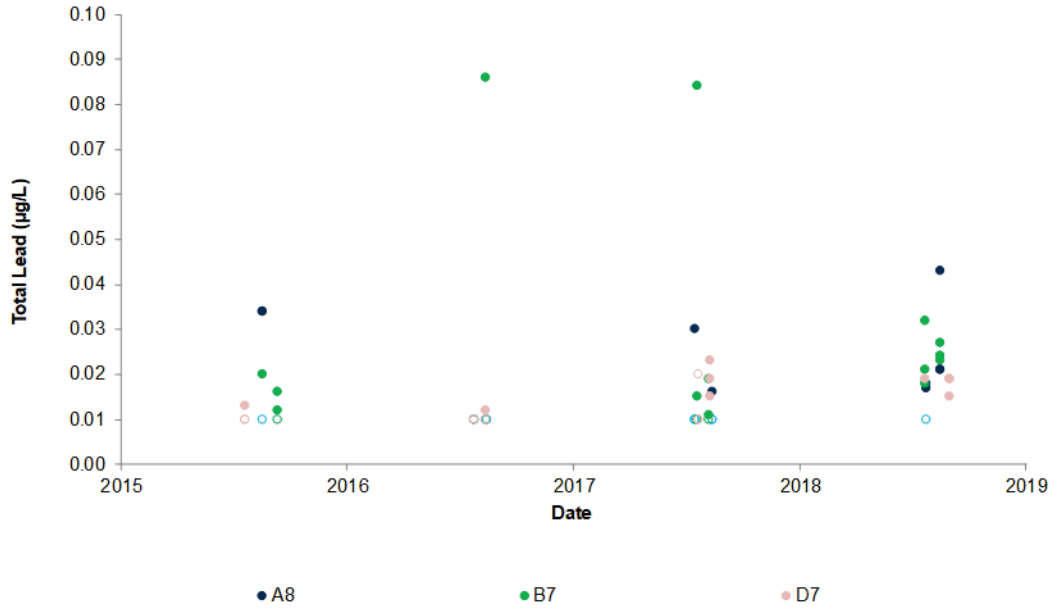


Figure 7C-41: Total Lead in Peninsula Lakes, 2015 to 2018

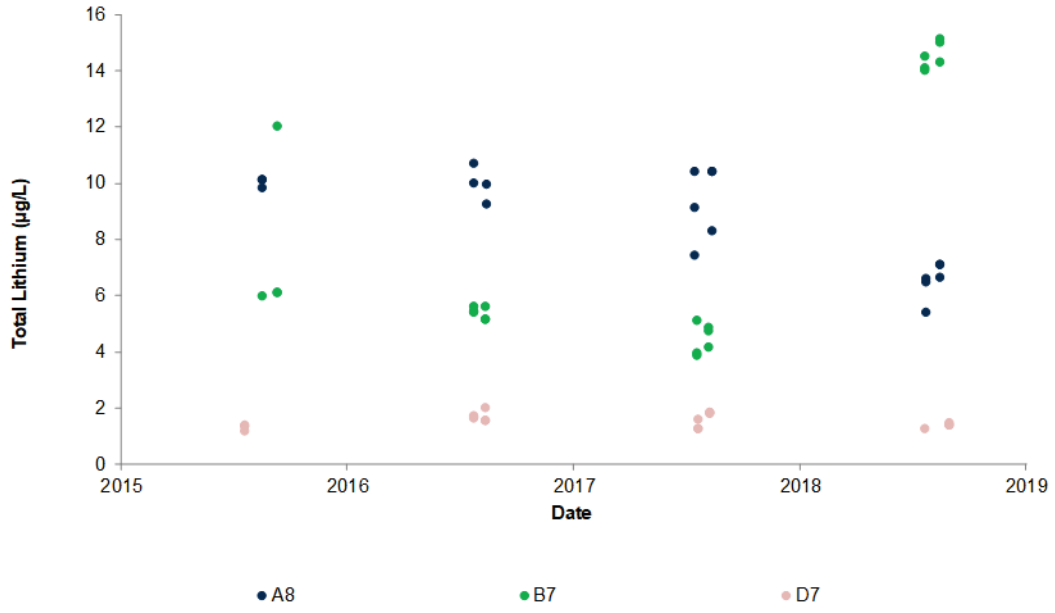


Figure 7C-42: Total Lithium in Peninsula Lakes, 2015 to 2018

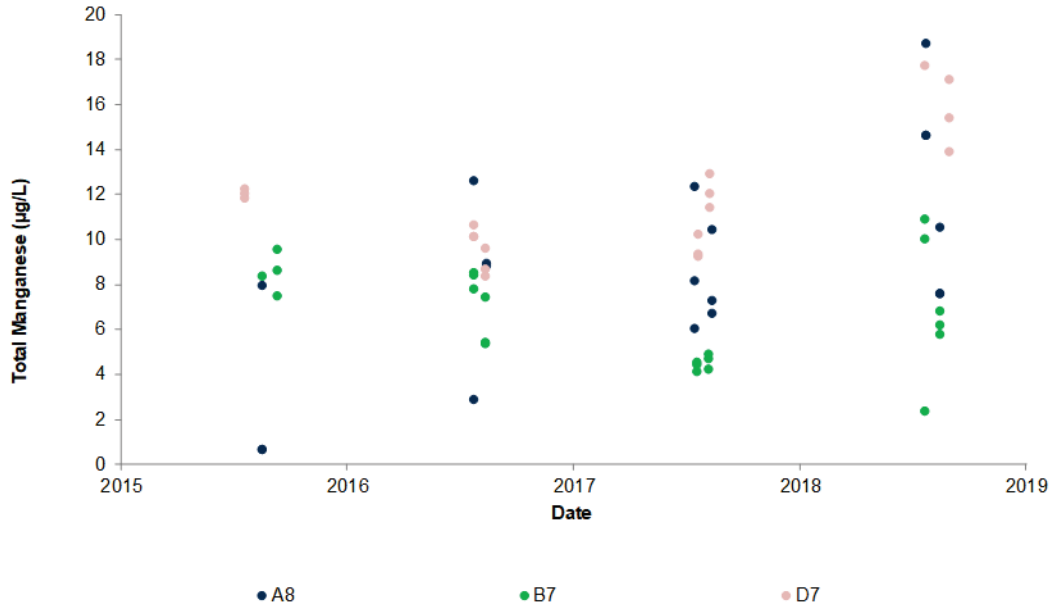


Figure 7C-43: Total Manganese in Peninsula Lakes, 2015 to 2018

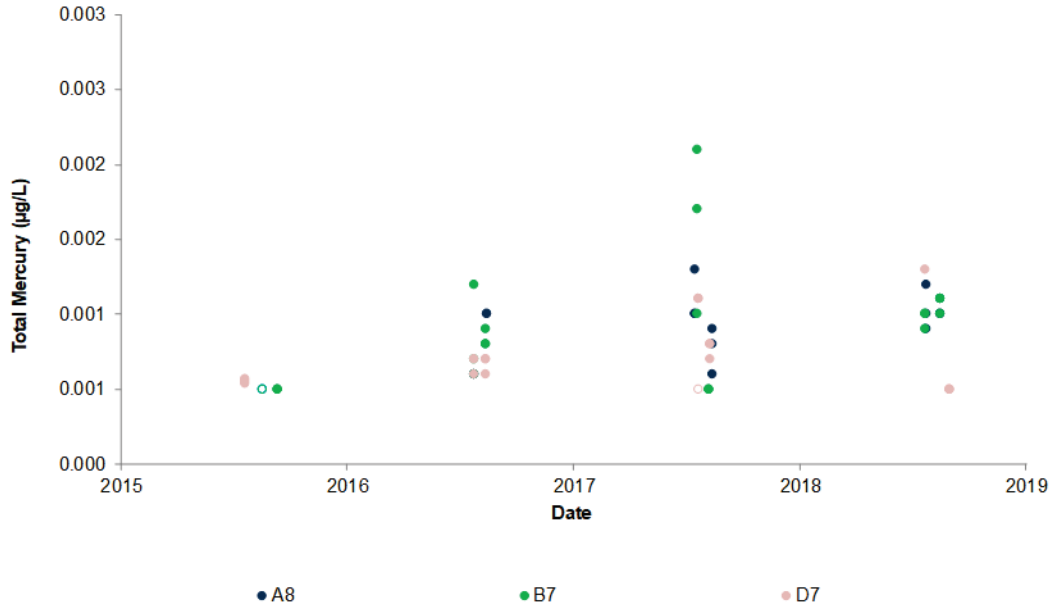


Figure 7C-44: Total Mercury in Peninsula Lakes, 2015 to 2018

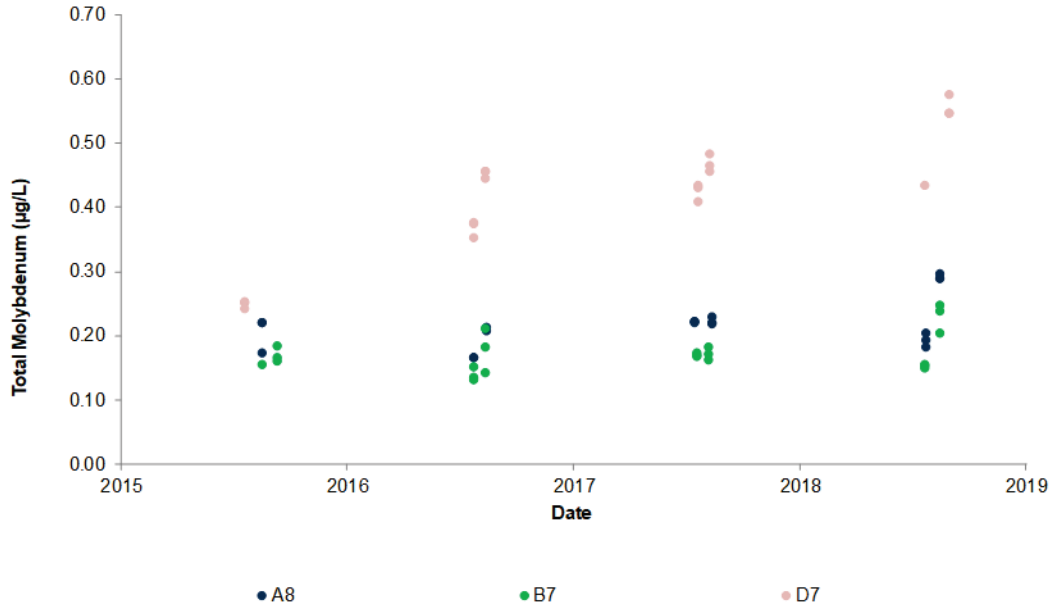


Figure 7C-45: Total Molybdenum in Peninsula Lakes, 2015 to 2018



Figure 7C-46: Total Nickel in Peninsula Lakes, 2015 to 2018

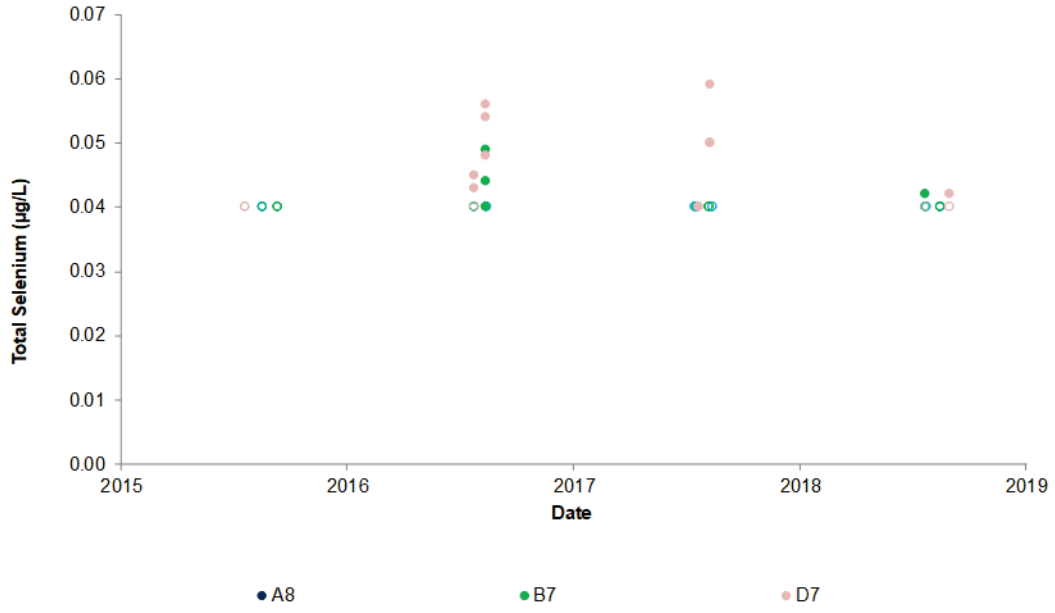


Figure 7C-47: Total Selenium in Peninsula Lakes, 2015 to 2018

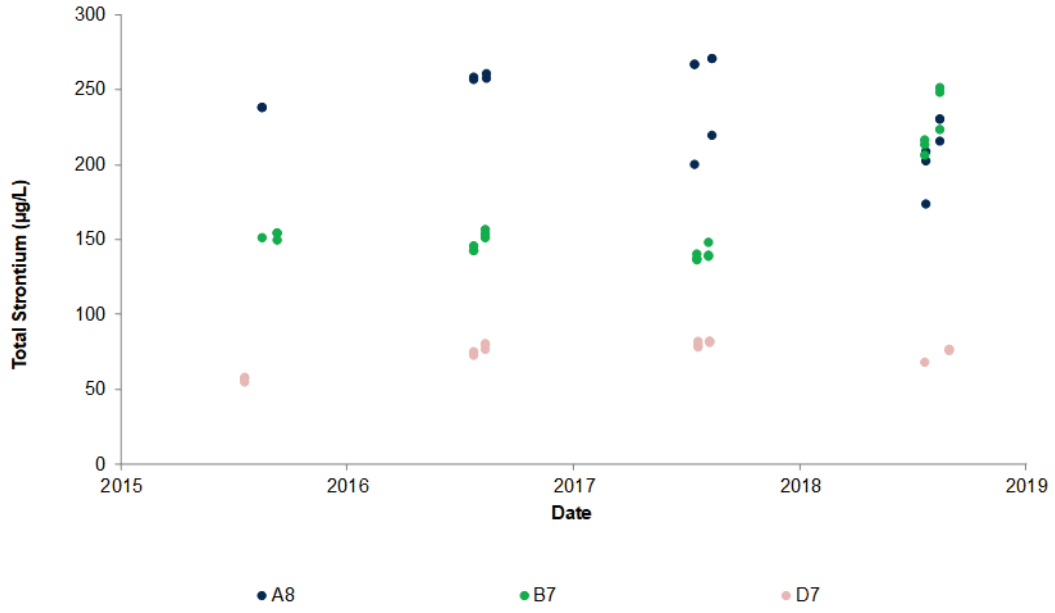


Figure 7C-48: Total Strontium in Peninsula Lakes, 2015 to 2018

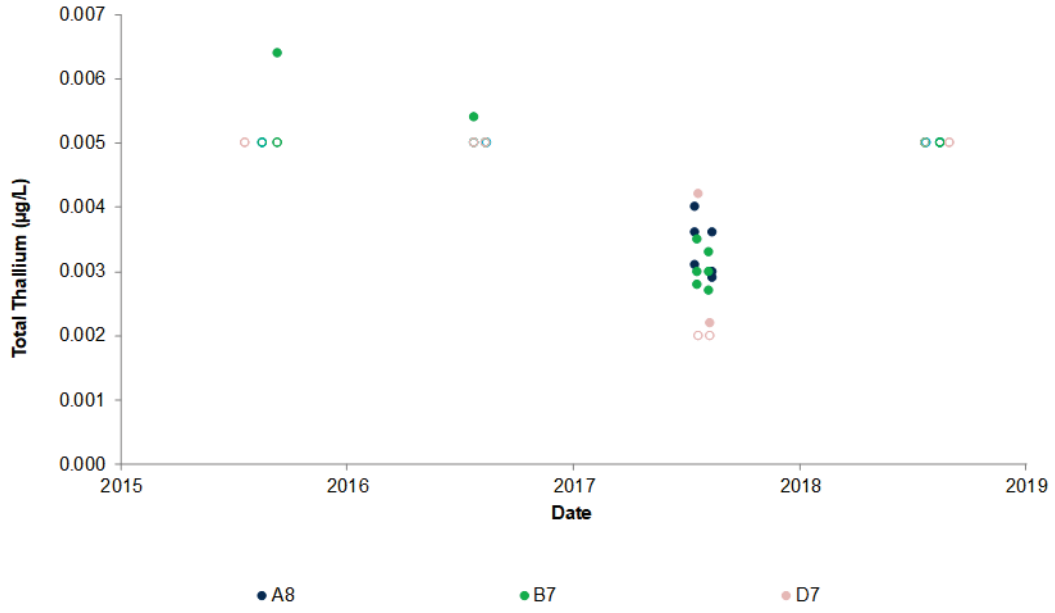


Figure 7C-49: Total Thallium in Peninsula Lakes, 2015 to 2018

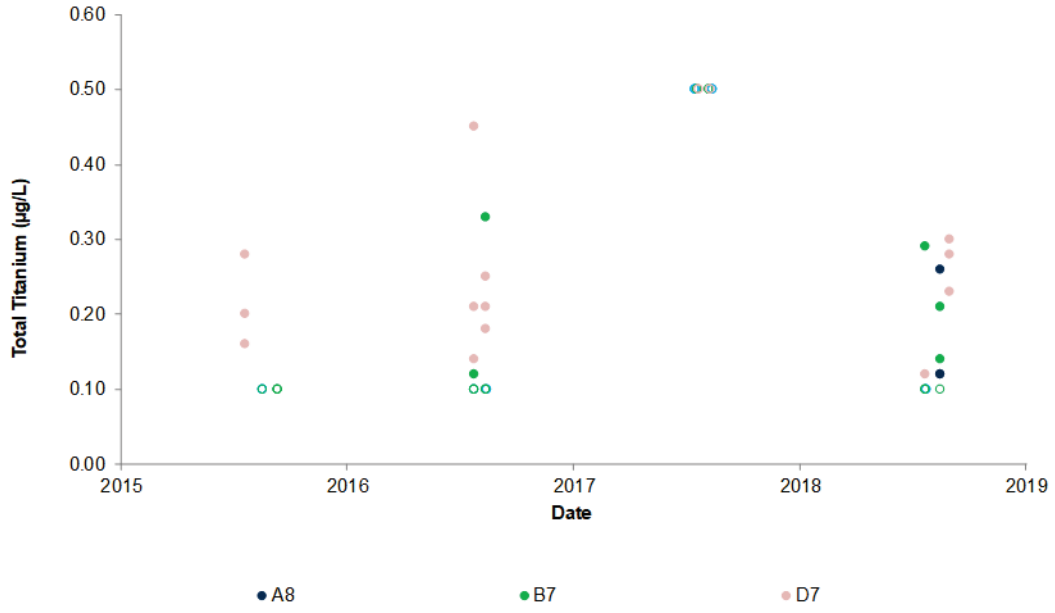


Figure 7C-50: Total Titanium in Peninsula Lakes, 2015 to 2018

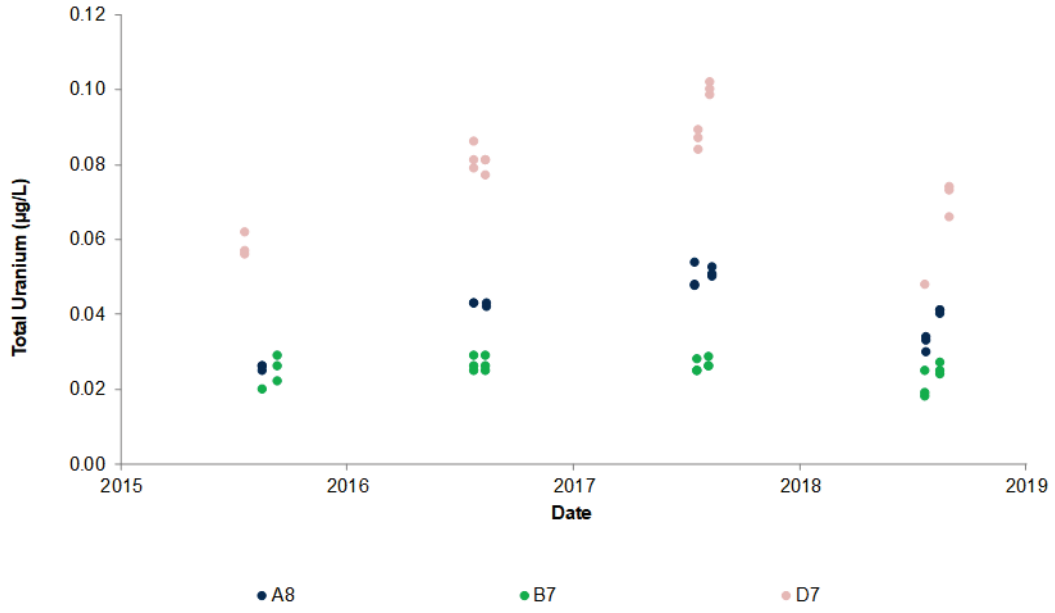


Figure 7C-51: Total Uranium in Peninsula Lakes, 2015 to 2018

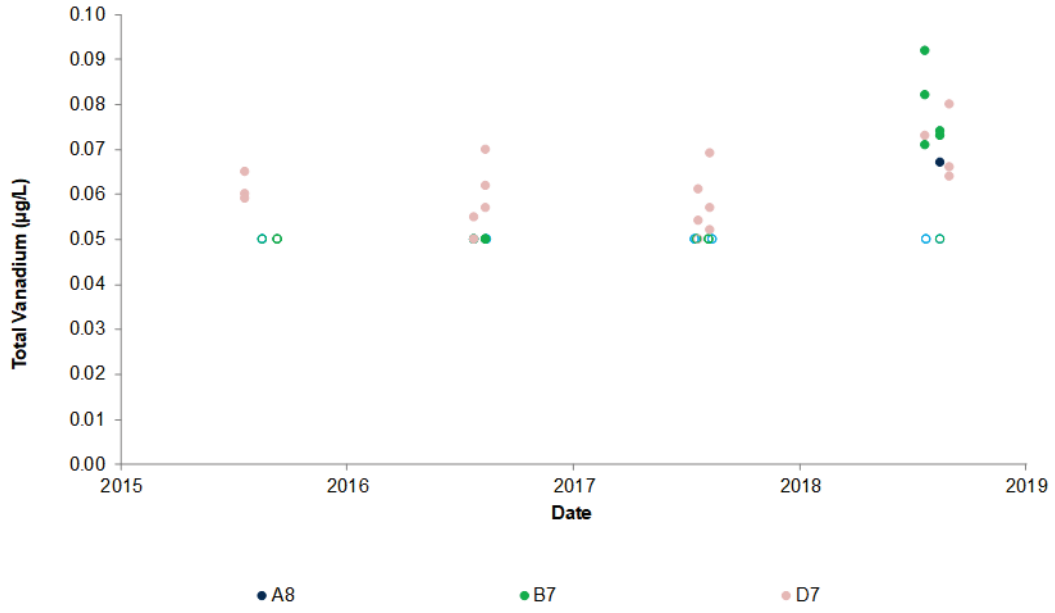


Figure 7C-52: Total Vanadium in Peninsula Lakes, 2015 to 2018

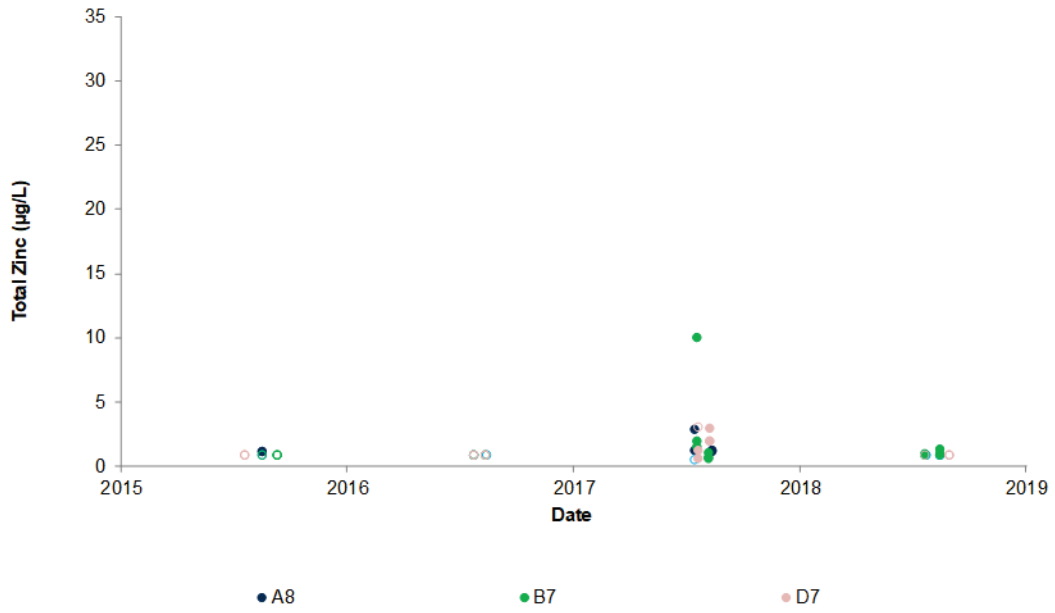


Figure 7C-53: Total Zinc in Peninsula Lakes, 2015 to 2018

APPENDIX 8A

Sediment Quality - Quality Assurance, Quality Control

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8A.1.0 INTRODUCTION

Quality assurance and quality control (QA/QC) practices determine data integrity and are relevant to all aspects of the Meliadine AEMP sediment quality monitoring program. Golder Associates Ltd. (Golder) applied these practices throughout the activities, from sample collection to data analysis, and reporting. Quality Assurance (QA) is the set of procedures incorporated into the program's standard procedures, so that the field sample collection is carried out to a high standard which does not introduce errors or bias. Quality Control (QC) is the system of validation checks performed to measure quality to determine if the data quality objectives have been met. The QA/QC procedures in 2018 followed relevant requirements outlined in the Meliadine AEMP Design Plan (Golder 2016).

This appendix describes QA/QC practices applied during sediment quality monitoring, evaluates QC data, and describes the implications of QC results to the interpretation of results.

8A.2.0 QUALITY ASSURANCE PROCEDURES

Quality assurance applicable to this monitoring component of the AEMP covers three areas of internal and external management: field work, laboratory analysis, and office operations.

8A.2.1 Field Work

Golder field crews are trained to be proficient in standardized field sampling procedures, data recording, and equipment operations applicable to sediment quality sampling. Field work during the 2018 sediment program was completed according to approved specific work instructions and established technical procedures. Specific work instructions are standardized forms that reference appropriate technical procedures and provide specific sampling instructions for the work to be undertaken. For example, specific work instructions provide field staff with descriptions of exact sampling locations, equipment needs and acceptance criteria, sample handling and storage requirements, sample labelling and shipping protocols, and internal and laboratory contacts. Specific work instructions also provide specific guidelines for field record keeping and sample tracking. Golder technical procedures are consistent with information described in the relevant scientific literature and regulatory guidance documents (e.g., Environment Canada 1993; APHA 2012), and outline relevant information regarding protocols for field sample collection and in situ field measurements.

One crew member was responsible for managing the sample documentation process so that:

- required samples were collected or reasons were documented as to why a sample was not collected
- chain-of-custody and analytical request forms were filled out appropriately
- established labelling and documentation procedures were followed

8A.2.2 Laboratory Analyses

A Canadian Association for Laboratory Accreditation Inc. (CALA) accredited analytical laboratory, ALS Environmental (ALS; Edmonton location), was used for the analysis of sediment samples collected by Golder for the 2018 field program. Under CALA's accreditation program, performance evaluation assessments are conducted for laboratory procedures, methods, and internal QC. Therefore, the analytical data reported by ALS were considered reliable.

One member of the sediment quality monitoring team from Golder was designated as the laboratory liaison to streamline communications with the laboratory.

8A.2.3 Office Operations

Relevant elements of office-based QA were:

- using appropriately trained personnel for each data management, analysis, and reporting task
- senior review of work
- using standardized data manipulation and summary tools, where applicable
- filing hard-copy, electronic data, and project information according to standardized protocols
- using a data management system to maintain an organized, consistent system to store, check and export field and laboratory data field and laboratory data storage, QC, and retrieval

8A.3.0 QUALITY CONTROL PROCEDURES

8A.3.1 Field Control Procedures

One QC sample type was used in this program to evaluate data quality from samples collected in the field:

- **Duplicate samples** are additional samples collected at the same time and location as original sediment samples collected during a field program, using the same sampling methods. They are used to check within-site variation, and the precision of field sampling methods and laboratory analysis.

QC samples (i.e., duplicates) accounted for approximately 10% of the total number of sediment samples submitted for analysis. All QC samples were submitted “blind” (i.e., so not to identify them as QC samples) to the laboratory to test the validity of the analysis process. These samples were analyzed for the same set of parameters as the original collected sediment samples.

8A.3.2 Field and Laboratory Data Quality Control Procedures

Field datasheets and the field notebook were reviewed for completeness and unexpected values and trends. Upon receipt of sediment quality data from the laboratory, a series of seven standard checks were performed to screen for potential data quality issues (Sections 3.2.1 to 3.2.5):

- verified that all samples were analyzed
- review of detection limits (DLs)
- review of units
- review of holding times exceedances
- compare duplicates

8A.3.2.1 Screening of Individual Laboratory Results

The following screening procedures were completed for individual laboratory results in 2018:

- Project chain-of-custody (COC) forms and analytical request forms were compared to sampling records to confirm sampling locations, matched assigned sample control numbers (SCNs), and analysis requests for all required parameters.
- Laboratory results were reviewed to confirm analysis of all required parameters.
- Field and laboratory data from the same sample were reviewed to check that field and laboratory data were similar.
- Logic checks were conducted, including a check for the presence of zero values
- Outliers from historical data were identified through a visual comparison of 2018 data to historical data.

Laboratory results were considered for re-analyses if:

- Values were assessed as higher or lower than expected, based on comparisons to historical concentrations.

If re-analysis confirmed the original analysis result (i.e., RPD less than 30%), the original result was retained. If the re-analysis was notably different than the original result (i.e., RPD greater than 30%), then a decision was made to keep the original or re-analyzed result based on discussions with the laboratory regarding any QC issues of the original and re-analyzed results, holding time exceedances, historical concentrations, concentrations of other parameters within the same sample, results of the QC samples, or a combination of these factors. The rationale for requesting re-analyses or revising the original result to the re-analyzed result was documented.

8A.3.2.2 Detection Limits

Detection limits were specified for all chemical analyses required by the 2018 sediment program. Project standard DLs and the DLs provided by the laboratory for individual samples were compared.

If laboratory DLs were higher than the project standard DLs, the laboratory was notified and requested to provide an explanation for the change in DLs. If possible, a parameter was re-analyzed at the project standard DL. Changes in DLs by the laboratory during the program can limit the analysis and interpretation of sediment quality data. Limitations can occur when comparing results with different DLs and results to sediment quality guidelines. Specifically, an increase in DL above measured concentrations reduces the ability to detect spatial and temporal patterns; whereas an increase in DL above a sediment guideline reduces the ability to detect guideline exceedances when concentrations are below DLs.

8A.3.2.3 Units

For each parameter, the units reported by the laboratory were compared against expected units, as coded into the database.

8A.3.2.4 Holding Time

For each parameter the holding time between sample collection and analysis was specified by the laboratory based on Sample Holding Time Re-evaluation (US EPA 2005). The laboratory reviewed holding times for any exceedances and identified any data that may have been unreliable due to holding time exceedances. Holding time exceedances were considered when determining the validity of re-analyzed results from the laboratory.

8A.3.2.5 Duplicate Samples

Differences between concentrations measured in duplicate sediment samples were calculated as the RPD for each parameter. Before calculating the RPD, concentrations below the DL were replaced with the DL value in cases when only one of the concentrations for a given parameter was detectable. The RPD was calculated as per Equation 1:

$$RPD = (|difference\ in\ concentration\ between\ two\ of\ the\ duplicate\ samples|/mean\ concentration)\ x\ 100$$

[Equation 1]

The RPD value for a given parameter was notable if both conditions apply:

- The RPD was greater than 30%.
- Concentrations in one or both samples were greater than five times the DL.

The number of parameters with exceedances of the evaluation criteria was compared with the total number of parameters analyzed to evaluate analytical precision.

Within-site variability and field sampling precision of duplicate sample results were rated as:

- **Low and high**, respectively, if less than 10% of the parameters included in the duplicate sample analysis were notably different from one another
- **Moderate**, if 10% to 30% of the parameters included in the duplicate sample analysis were notably different from one another
- **High and low**, respectively, if more than 30% of the parameters included in the duplicate sample analysis were notably different from one another

8A.3.3 Office Quality Control Procedures

Office-based QC procedures followed by the 2018 sediment study were:

- Saving unaltered field datasheets, field notebooks, and laboratory files (e.g., COC forms, analysis request forms, certificates of analysis) in the Meliadine AEMP sediment quality monitoring program directory to document the original and final sources of laboratory and field sediment quality data from each program.
- Comparing sample field and laboratory data entered into the Meliadine AEMP sediment quality monitoring program data management system against field datasheets and final laboratory reports to confirm data accuracy.
- Creating backup files before each major data processing step.
- Verifying the accuracy of calculations performed to generate summary statistics and complete guideline comparisons.
- Documenting the final results for the QA/QC assessment annually in the Annual Environmental Effects Monitoring and Aquatic Effects Monitoring Program report.

8A.4.0 2018 LABORATORY DATA QUALITY RESULTS

8A.4.1 Screening of Individual Laboratory Results

8A.4.1.1 Chain-of-Custody Review

No issues were found in the COC forms.

8A.4.1.2 Parameters Requested for Analysis

All requested parameters were analyzed by the laboratory.

8A.4.1.3 Laboratory Data Review

Thirty-nine laboratory results, which represented less than 1.5% of the 2018 laboratory dataset were further evaluated because of reasons outlined in Table 8A-1. Re-analysis of samples for certain parameters was requested when data logic checks indicated a potential problem with the data. In all cases, re-analysis confirmed the original result and the original result was retained.

8A.4.2 Analytical Methods

All required parameters under the AEMP Design Plan (Golder 2016) were analyzed by the laboratory using the standard analytical methods requested during the program (Table 8A-2).

8A.4.3 Detection Limits

Requested DLs (Table 8A-2) were met for all parameters with exception of total organic carbon in one sample, MEL-05-01 where the DL was 0.075%, however, this did not impact the outcome of the analysis.

8A.4.4 Units

The laboratory reported the expected units for each parameter in 2018.

8A.4.5 Holding Time

To maintain sample integrity, sediment samples for laboratory analyses were submitted as soon as possible after collection.

Holding times were exceeded for samples where the laboratory was unable to initiate testing promptly following sample receipt or there were delays in sample delivery to the laboratory. Analytical holding times were met for most constituents, with the exception of laboratory mercury (3 samples) and total organic carbon (3 samples).

8A.4.6 Duplicate Samples

Two duplicate sediment quality samples were collected during the 2018 program (Table 8A-3).

A small percentage (i.e., 4%) of the paired duplicate concentrations had an RPD of more than 30% when one or both parameter concentrations were above five times the DL. The site variability and field precision for the 2018 dataset was rated as low and high, respectively.

8A.4.7 Internal Laboratory Quality Control

ALS flagged three samples as having failed the internal QC evaluation for beryllium and lithium, MEL-03-03, MEL-05-02 and its replicate MEL-05-02B. After contacting ALS for clarification, ALS stated that failure for lithium was a method blank failure for lithium, reporting 0.57 mg/kg when the allowable limit is 0.50 mg/kg, with explanation qualifier B. This qualifier indicates that the method blank had slightly more lithium detected than

normal. This trace amount (0.07 mg/kg) may be significant if sample results are between 0.5 mg/kg and 2.5 mg/kg. Samples with levels higher than 2.5 mg/kg (as in all 3 of the above samples) would not be significantly affected, and would be reported as observed. When typical measurement uncertainty is allowed for these observed results, the reported increased lithium concentration is insignificant.

For beryllium, ALS clarified that the recovery in the in-house prepared Laboratory Control Sample (LCS) of 121.5%, was greater than the limit of 120%, with qualifier MES ( ). When several metals are measured in one QC sample, the chances of random failure increase. CCME (1999) recognizes that measurement uncertainty may occasionally cause a metal recovery to fail, and if that failure is low (less than 10% outside allowable limits) for no more than 1 metal in a list of 10 metals or more, this is more likely due to random uncertainty rather than laboratory preparation or measurement failure. As beryllium was the only metal that had a high recovery, the recovery exceedance was less than 10% over the limit, and the list of metals was 28 elements long, this does not indicate analytical failure.

In both cases, review of the QC data assured ALS that results were acceptable and should be reported, and hence these were included in the report dataset.

8A.5.0 SUMMARY OF DATA QUALITY

The review of field and laboratory data indicated that field measurements and laboratory data were of high quality. Key findings from the 2018 QA/QC results are as follows:

- No issues were identified in analytical methods used or units reported by the laboratory.
- Holding times recommended by the laboratory were exceeded for a few parameters. These holding time exceedances were not expected to have affected data quality for the Meliadine sediment quality program.
- Evaluation of the sediment quality QC samples indicated that within-site variability and field precision for the 2018 dataset were rated as low and high, respectively.

The overall quality of the sediment quality data was rated high. Therefore, the results reported in the report are considered reliable and meet the needs of the program.

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TABLES

Table 8A-1: Summary of Re-evaluated Sediment Quality Laboratory Data, Meliadine Mine, 2018

Station Name	Station Sample ID	Lab ID	Sample Date	Parameter	Reason for Evaluation	Result	Unit	Decision
MEL-01-09	MEL-01-09	L2161109-4	22-Aug-18	% Sand	Greater than 30% RPD between replicates	56.8	%	Concentrations were confirmed by re-analysis; original result was retained.
				% Silt[(a)]		36.0	%	
				% Clay		7.2	%	
MEL-01-02	R-18-01	L2161120-2	22-Aug-18	% Sand	Greater than 30% RPD between replicates	54.0	%	
				% Silt[(a)]		40.3	%	
				% Clay		5.6	%	
MEL-05-02	MEL-05-02A	L2161128-4	30-Aug-18	Total lead	Greater than 30% RPD between replicates	0.178	µg/g	
MEL-05-02	MEL-05-02B	L2161128-5	30-Aug-18	Total lead	Greater than 30% RPD between replicates	0.254	µg/g	

(a) Given that particle-size parameters are interdependent, re-analysis was requested for all three categories.

µg/g = micrograms per gram.

Table 8A-2: Summary of Analytical Methods and Detection Limits, Meliadine Mine, 2018

Parameter	Unit (dry wt.)	Total Number of Samples	Analysis Method	Method Description	Standard ALS Detection Limit
Physical Parameters					
% Sand	%	22	SSIR-51 Method 3.2.1	Particle size - Pipette removal OM & CO3	1
% Silt	%	22	SSIR-51 Method 3.2.1	Particle size - Pipette removal OM & CO3	1
% Clay	%	22	SSIR-51 Method 3.2.1	Particle size - Pipette removal OM & CO3	1
Total Organic Carbon	%	22	CSSS (2008) P216-217 / CSSS (2008) 21.2	Total Organic Carbon Calculation	0.05
Metals[(a)]					
Aluminum	mg/kg[(b)]	22	EPA 200.2/6020A (mod)	CRC ICPMS	50
Antimony	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.1
Arsenic	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.1
Barium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.5
Beryllium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.1
Bismuth	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.2
Boron	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	5
Cadmium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.02
Calcium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	100
Chromium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.5
Cobalt	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.1
Copper	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.5
Iron	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	50
Lead	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.5
Lithium	mg/kg	22	EPA 200.2/6020A	CRC ICPMS	0.5
Magnesium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	20
Manganese	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	1
Mercury	mg/kg	22	EPA 200.2/1631E (Mod)	CVAAS	0.0050
Molybdenum	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.1
Nickel	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.5
Potassium	mg/kg	22	EPA 200.2/6020A	CRC ICPMS	50
Selenium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.2
Silver	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.1
Sodium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	100
Strontium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.5
Thallium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.05
Tin	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	2
Titanium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	1
Uranium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.05
Vanadium	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	0.2
Zinc	mg/kg	22	EPA 200.2/6020A (mod)	CRC ICPMS	2

(a) The list of elements reported for metals analysis includes metalloids such as arsenic and non-metals such as selenium, which are collectively referred to as “metals” in this table.

(b) µg/g and mg/kg are equivalent units.

mg/kg = miligrams per kilogram; µg/g = micrograms per gram; CRC ICPMS = collision/reaction cell inductively coupled plasma mass spectrometry; CVAAS = cold vapour atomic absorption spectrophotometry.

Table 8A-3: Quality Control Duplicate Sample Results, Meliadine Mine, 2018

Parameter	Unit (dry wt.)	MEL-01-09			MEL-05-02		
		Sample	Duplicate	RPD	Sample	Duplicate	RPD
		22-Aug-18			30-Aug-18		
Particle-size and Organic Carbon							
% Sand	%	24.2	10.4	79.8%	56.8	54	5.1%
% Silt	%	61.3	82.1	29.0%	36	40.3	11.3%
% Clay	%	14.5	7.5	63.6%	7.2	5.6	25.0%
Total Organic Carbon	%	5.3	5.59	5.3%	6.5	7.8	18.2%
Metals[(a)]							
Aluminum	µg/g	12,700	12,700	0.0%	8,570	9,720	12.6%
Antimony	µg/g	0.18	0.18	0.0%	0.11	0.14	24.0%
Arsenic	µg/g	28.8	29.4	2.1%	6.99	9.13	26.6%
Barium	µg/g	101	104	2.9%	66.3	80.3	19.1%
Beryllium	µg/g	0.31	0.3	3.3%	0.19	0.21	10.0%
Bismuth	µg/g	0.32	0.3	6.5%	<0.2	<0.2	-
Boron	µg/g	8.2	6.1	29.4%	<5	6.1	19.8%
Cadmium	µg/g	0.411	0.425	3.3%	0.178	0.254	35.2%
Calcium	µg/g	4,380	4,270	2.5%	3,710	4,380	16.6%
Chromium	µg/g	50.6	51.4	1.6%	46.4	43.2	7.1%
Cobalt	µg/g	27.1	25.6	5.7%	8.01	9.22	14.0%
Copper	µg/g	77.8	78.30	0.6%	65.2	84.50	25.8%
Iron	µg/g	29,400	30,100	2.4%	13,900	15,500	10.9%
Lead	µg/g	10.8	10.7	0.9%	5.49	7.11	25.7%
Lithium	µg/g	14.1	14	0.7%	10.4	11.5	10.0%
Magnesium	µg/g	7,180	7,230	0.7%	5,650	6,300	10.9%
Manganese	µg/g	332	336	1.2%	163	186	13.2%
Mercury	µg/g	0.028	0.0289	3.2%	0.0116	0.0155	28.8%
Molybdenum	µg/g	9.44	8.61	9.2%	2.38	2.7	12.6%
Nickel	µg/g	85.4	83.2	2.6%	37.7	41.3	9.1%
Potassium	µg/g	2,290	2,310	0.9%	1,190	1,410	16.9%
Selenium	µg/g	0.92	0.94	2.2%	0.56	0.77	31.6%
Silver	µg/g	0.2	0.21	4.9%	<0.1	0.1	0.0%
Sodium	µg/g	330	320	3.1%	170	210	21.1%
Strontium	µg/g	24.8	23.8	4.1%	18.5	21.4	14.5%
Thallium	µg/g	0.333	0.335	0.6%	0.145	0.177	19.9%
Tin	µg/g	<2	<2	-	<2	<2	-
Titanium	µg/g	768	716	7.0%	507	515	1.6%
Uranium	µg/g	4.22	4.07	3.6%	1.85	2.28	20.8%
Vanadium	µg/g	56.8	56.7	0.2%	36.1	41.4	13.7%
Zinc	µg/g	93.9	95.4	1.6%	49.4	59.4	18.4%

(a) The list of elements reported for metals analysis includes metalloids such as arsenic and non-metals such as selenium, which are collectively referred to as “metals” in this table.

Grey shading indicates a greater than 30% relative percent difference between replicates, when at least one replicate sample concentration was 5-times greater than the detection limit.

Light grey shading indicates a greater than 30% relative percent difference between replicates, but replicate sample concentrations were not 5-times greater than the detection limit.

RPD = Relative Percent Difference; µg/g = micrograms per gram; < = less than.

APPENDIX 8B

Sediment Quality Dataset in 2018

Table 8B-1: Sediment Quality Data from the Meliadine Lake 2018 Samping Program

Parameter	Unit (Dry Weight)	Guidelines		Sampling Sites									
		ISQG	PEL	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
				22-Aug-18	22-Aug-18	21-Aug-18	22-Aug-18	22-Aug-18	31-Aug-18	18-Aug-18	31-Aug-18	31-Aug-18	15-Aug-18
Particle-size and organic carbon													
Sand	%	-	-	25	42	6.3	8.4	24	68	46	33	38	63
Silt	%	-	-	64	55	82	81	61	24	44	51	48	29
Clay	%	-	-	12	3.3	11	10	15	8.6	9.5	17	13	7.3
Fines (silt + clay)	%	-	-	75	58	94	92	76	32	54	67	62	37
Total Organic Carbon	%	-	-	4.0	3.0	5.7	4.5	5.3	4.6	6.2	9.0	7.4	6.2
Metals and Metalloids													
Aluminum	µg/g	-	-	12,600	11,100	13,900	14,500	12,700	9,350	12,000	10,500	11,300	7,560
Antimony	µg/g	-	-	0.13	0.15	0.16	0.14	0.18	<0.1	<0.1	0.14	0.13	0.11
Arsenic	µg/g	5.9	17	**19**$^{(I, P)}$	**15**$^{(I)}$	**33**$^{(I, P)}$	**23**$^{(I, P)}$	**29**$^{(I, P)}$	**8.4**$^{(I)}$	**12**$^{(I)}$	**16**$^{(I)}$	**11**$^{(I)}$	**8.9**$^{(I)}$
Barium	µg/g	-	-	115	90	132	136	101	92	117	120	115	91
Beryllium	µg/g	-	-	0.33	0.28	0.33	0.37	0.31	0.23	0.29	0.28	0.28	0.22
Bismuth	µg/g	-	-	0.32	0.25	0.35	0.37	0.32	<0.2	0.25	0.25	0.23	<0.2
Boron	µg/g	-	-	6.1	5.9	6.9	7.1	8.2	<5.0	7.2	8.2	7.0	5.4
Cadmium	µg/g	0.6	3.5	0.52	0.54	0.52	**0.6**$^{(I)}$	0.41	0.22	0.34	0.45	0.35	0.3
Calcium	µg/g	-	-	4,460	3,760	4,540	4,700	4,380	3,840	5,130	5,070	5,250	4,170
Chromium	µg/g	37	90	**50**$^{(I)}$	**43**$^{(I)}$	**56**$^{(I)}$	**57**$^{(I)}$	**51**$^{(I)}$	**39**$^{(I)}$	**54**$^{(I)}$	**45**$^{(I)}$	**50**$^{(I)}$	31
Cobalt	µg/g	-	-	13	8.5	17	16	27	8.8	11	12	10	7.6
Copper	µg/g	36	197	**81**$^{(I)}$	**61**$^{(I)}$	**89**$^{(I)}$	**95**$^{(I)}$	**78**$^{(I)}$	**56**$^{(I)}$	**88**$^{(I)}$	**99**$^{(I)}$	**91**$^{(I)}$	**69**$^{(I)}$
Iron	µg/g	-	-	24,300	20,200	31,600	29,600	29,400	16,000	21,700	20,400	19,000	12,900
Lead	µg/g	35	91	11	8.8	13	12	11	6.1	9.4	10	8.7	7.4
Lithium	µg/g	-	-	15	13	17	17	14	11	15	12	13	10
Magnesium	µg/g	-	-	7,130	6,160	7,770	8,030	7,180	5,930	7,010	5,740	6,550	4,370
Manganese	µg/g	-	-	351	273	375	471	332	240	333	400	300	193
Mercury	µg/g	0.17	0.49	0.027	0.019	0.044	0.031	0.028	0.013	0.02	0.029	0.018	0.016
Molybdenum	µg/g	-	-	4.0	3.0	5.9	4.4	9.4	2.6	3.7	5.2	3.9	3.4
Nickel	µg/g	-	-	61	47	69	73	85	38	54	60	50	39
Potassium	µg/g	-	-	2,240	1,940	2,520	2,530	2,290	1,550	2,040	1,840	1,910	1,320
Selenium	µg/g	-	-	0.94	0.69	1.1	1.2	0.92	0.55	0.92	1.1	0.91	0.75
Silver	µg/g	-	-	0.18	0.14	0.22	0.22	0.2	<0.1	0.16	0.17	0.15	0.12
Sodium	µg/g	-	-	300	250	360	350	330	200	300	290	310	190
Strontium	µg/g	-	-	24	20	26	27	25	20	28	28	27	23
Thallium	µg/g	-	-	0.42	0.26	0.37	0.45	0.33	0.18	0.25	0.29	0.27	0.22
Tin	µg/g	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	µg/g	-	-	698	641	739	786	768	613	677	490	599	419
Uranium	µg/g	-	-	4.4	3.6	4.2	5.1	4.2	1.9	3.5	3.8	3.2	2.6
Vanadium	µg/g	-	-	57	47	61	66	57	36	48	46	48	32
Zinc	µg/g	123	315	89	71	100	101	94	68	92	96	91	68

Bolded values are higher than sediment quality guidelines. ISQG = Interim Sediment Quality Guideline; PEL = Probable Effect Level.
$^{(I)}$ = value higher than the Interim Sediment Quality Guideline.
$^{(P)}$ = value higher than the Probable Effect Level.

Sediment quality data shown in this table were rounded to reflect laboratory precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.
- = no guideline or data.

Table 8B-1: Sediment Quality Data from the Meliadine Lake 2018 Samping Program

Parameter	Unit (Dry Weight)	Guidelines		Sampling Sites									
		ISQG	PEL	MEL-03-01	MEL-03-02	MEL-03-03	MEL-03-04	MEL-03-05	MEL-05-01	MEL-05-02	MEL-05-03	MEL-05-04	MEL-05-05
				20-Aug-18	28-Aug-18	28-Aug-18	26-Aug-18	28-Aug-18	01-Sep-18	30-Aug-18	29-Aug-18	30-Aug-18	29-Aug-18
Particle-size and organic carbon													
Sand	%	-	-	78	67	26	47	70	92	57	52	42	13
Silt	%	-	-	20	32	67	49	27	7.5	36	38	42	77
Clay	%	-	-	2.1	1.5	6.9	4.6	3.1	<1.0	7.2	9.4	16	9.8
Fines (silt + clay)	%	-	-	22	33	74	53	30	8.0	43	48	59	87
Total Organic Carbon	%	-	-	1.9	0.29	7.7	5.4	3.0	0.76	6.5	7.0	7.2	6.9
Metals and Metalloids													
Aluminum	µg/g	-	-	5,160	5,490	11,500	7,780	6,410	5,590	8,570	7,860	9,500	13,600
Antimony	µg/g	-	-	<0.1	<0.1	0.12	<0.1	<0.1	<0.1	0.11	0.1	<0.1	0.27
Arsenic	µg/g	5.9	17	4.6	5.9	**7.2**[(I)]	5.0	3.4	3.6	**7.0**[(I)]	**9.8**[(I)]	**10**[(I)]	**23**[(I, P)]
Barium	µg/g	-	-	38	31	104	88	63	22	66	61	79	132
Beryllium	µg/g	-	-	0.12	0.14	0.27	0.2	0.15	<0.1	0.19	0.19	0.21	0.26
Bismuth	µg/g	-	-	<0.2	<0.2	0.21	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.35
Boron	µg/g	-	-	<5.0	<5.0	6.9	5.4	<5.0	<5.0	<5.0	5.1	6.7	8.0
Cadmium	µg/g	0.6	3.5	0.061	<0.02	0.28	0.18	0.18	0.033	0.18	0.2	0.21	0.43
Calcium	µg/g	-	-	2,670	2,660	5,880	4,250	3,300	1,530	3,710	3,780	4,610	6,080
Chromium	µg/g	37	90	19	20	**49**[(I)]	32	24	21	**46**[(I)]	34	**48**[(I)]	**65**[(I)]
Cobalt	µg/g	-	-	3.7	3.6	9.0	6.7	5.8	3.9	8.0	7.8	7.6	15
Copper	µg/g	36	197	14	7.6	**92**[(I)]	**58**[(I)]	**41**[(I)]	7.4	**65**[(I)]	**65**[(I)]	**72**[(I)]	**76**[(I)]
Iron	µg/g	-	-	9,000	10,700	16,600	11,900	9,350	10,900	13,900	13,400	14,700	28,300
Lead	µg/g	35	91	2.8	3.2	6.9	4.4	3.4	1.8	5.5	5.3	6.4	10
Lithium	µg/g	-	-	7.9	9.1	17	12	9.6	6.4	10	8.9	10	15
Magnesium	µg/g	-	-	2,930	3,090	6,500	4,540	3,840	3,840	5,650	4,780	5,820	8,800
Manganese	µg/g	-	-	104	107	251	158	123	109	163	158	200	285
Mercury	µg/g	0.17	0.49	<0.005	<0.005	0.015	0.0092	0.0064	<0.005	0.012	0.0087	0.013	0.011
Molybdenum	µg/g	-	-	1.4	1.7	2.8	2.5	1.5	0.5	2.4	2.8	2.4	9.5
Nickel	µg/g	-	-	15	15	46	32	24	12	38	34	43	65
Potassium	µg/g	-	-	1,040	1,110	2,200	1,590	1,330	654	1,190	1,200	1,430	3,160
Selenium	µg/g	-	-	<0.2	<0.2	0.79	0.48	0.34	<0.2	0.56	0.59	0.7	1.2
Silver	µg/g	-	-	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.17
Sodium	µg/g	-	-	140	130	350	230	190	<100	170	190	230	360
Strontium	µg/g	-	-	13	12	31	20	16	8.3	19	19	23	29
Thallium	µg/g	-	-	0.078	0.058	0.21	0.17	0.15	0.056	0.15	0.13	0.14	0.31
Tin	µg/g	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	µg/g	-	-	486	503	787	547	525	350	507	465	517	819
Uranium	µg/g	-	-	0.91	1.1	3.1	1.8	1.4	0.46	1.9	1.8	2.1	7.2
Vanadium	µg/g	-	-	22	25	45	32	25	20	36	34	39	77
Zinc	µg/g	123	315	24	20	70	51	41	22	49	47	51	64

Bolded values are higher than sediment quality guidelines. ISQG = Interim Sediment Quality Guideline; PEL = Probable Effect Level.
[(I)] = value higher than the Interim Sediment Quality Guideline.
[(P)] = value higher than the Probable Effect Level.

Sediment quality data shown in this table were rounded to reflect laboratory precision after comparisons to guidelines. Therefore, values slightly above guidelines may be displayed as being equal to the guidelines and identified as exceedances. Measured concentrations equal to the guideline values were not identified as exceedances.
- = no guideline or data.

APPENDIX 8C

Time-series Plots with Normal Ranges

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1.0 PARTICLE-SIZE AND ORGANIC CARBON

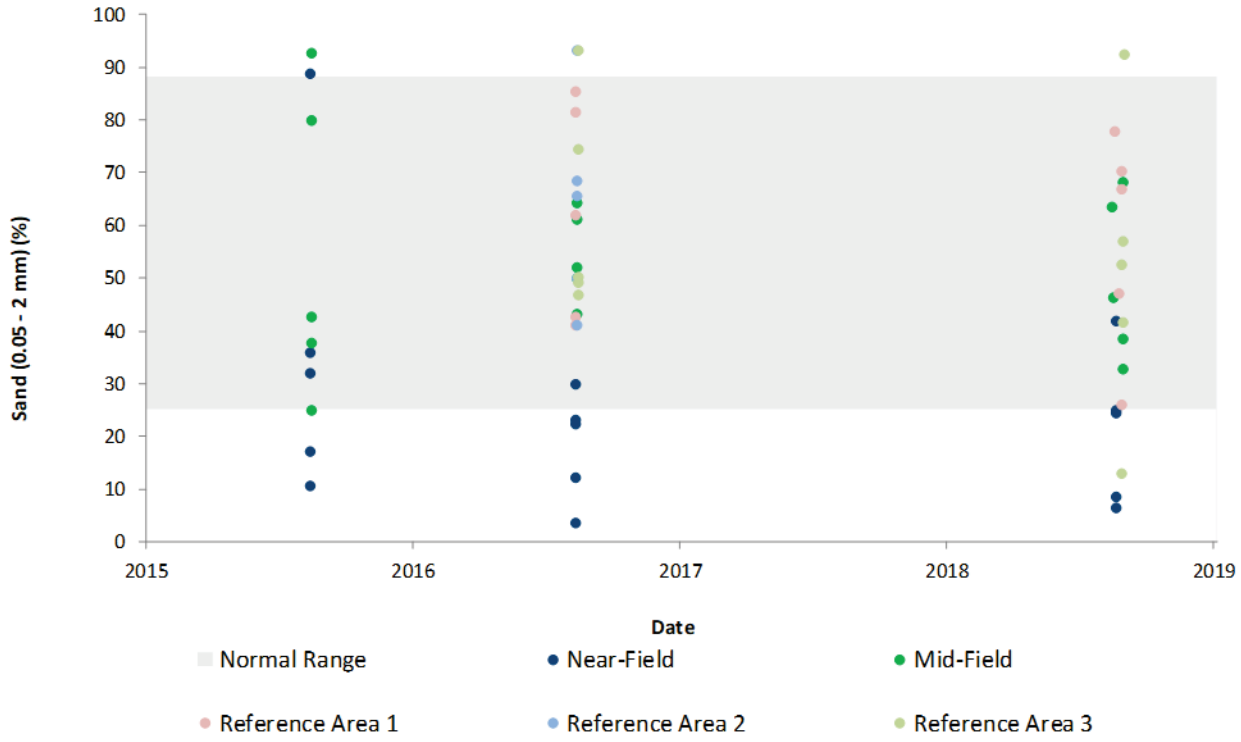


Figure 8C.1-1: Sand (%) in Meliadine Lake, 2015 to 2018

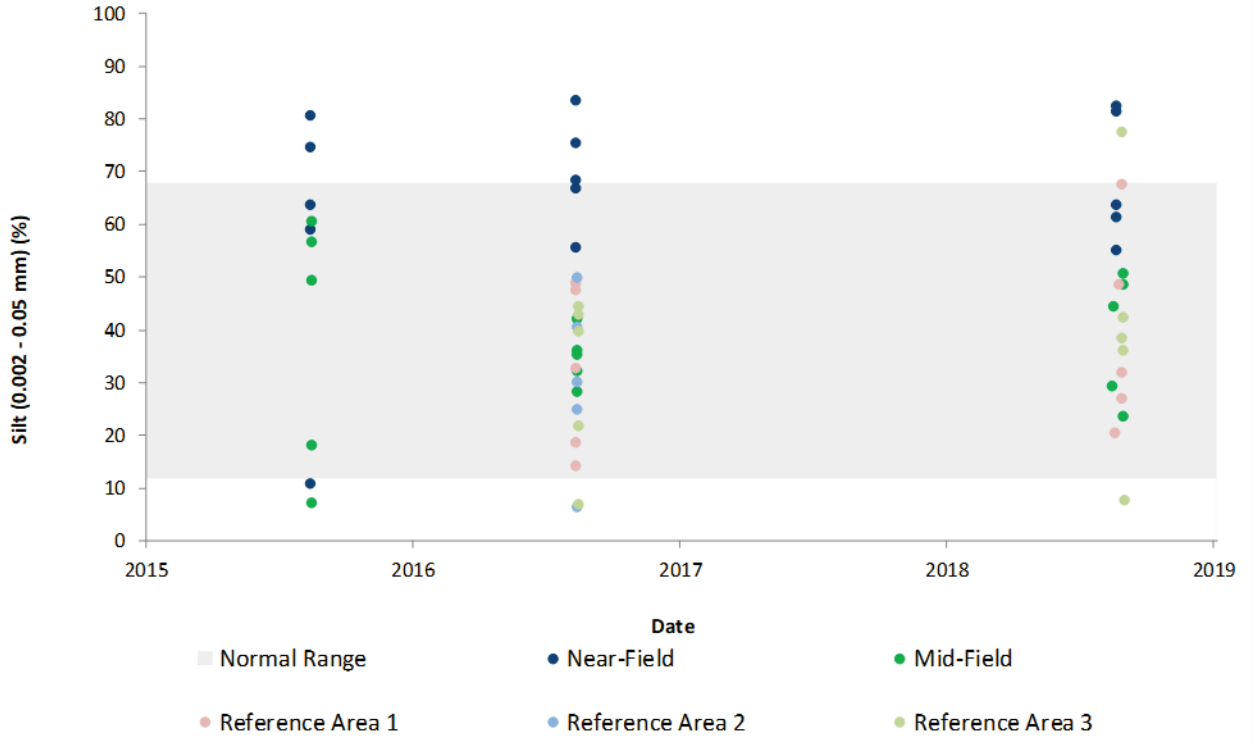


Figure 8C.1-2: Silt (%) in Meliadine Lake, 2015 to 2018

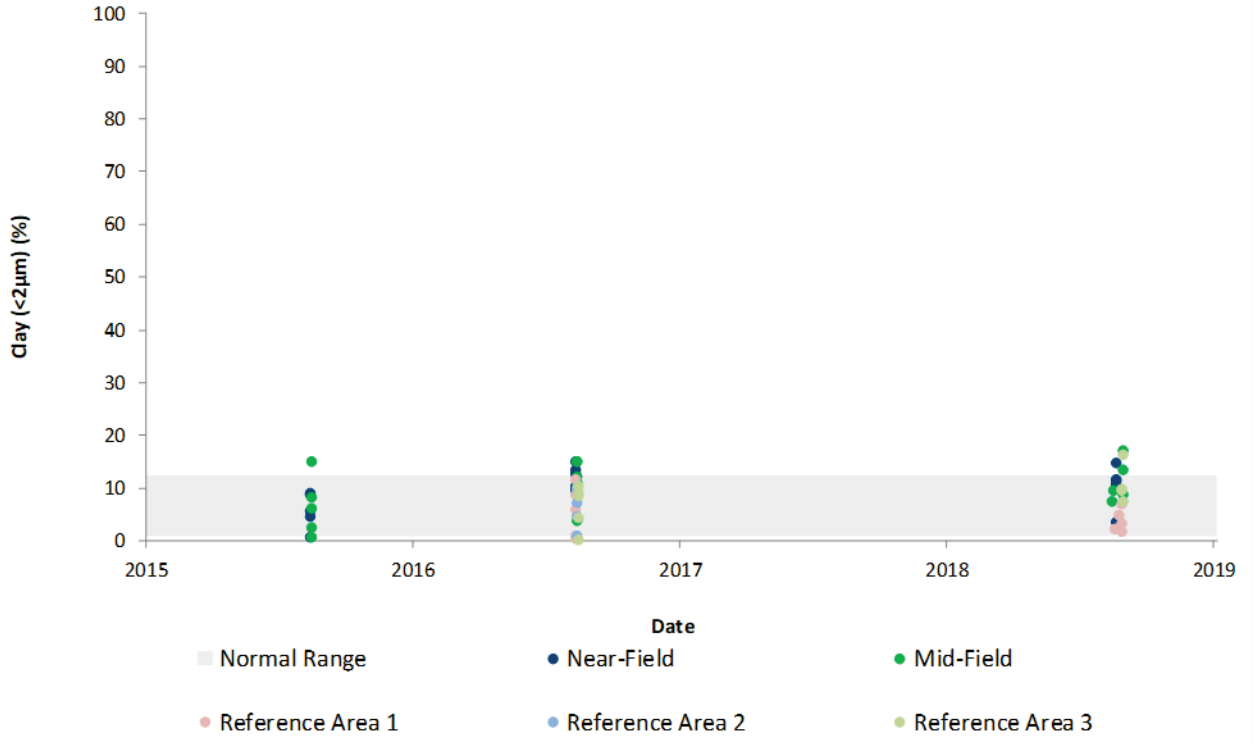


Figure 8C.1-3: Clay (%) in Meliadine Lake, 2015 to 2018

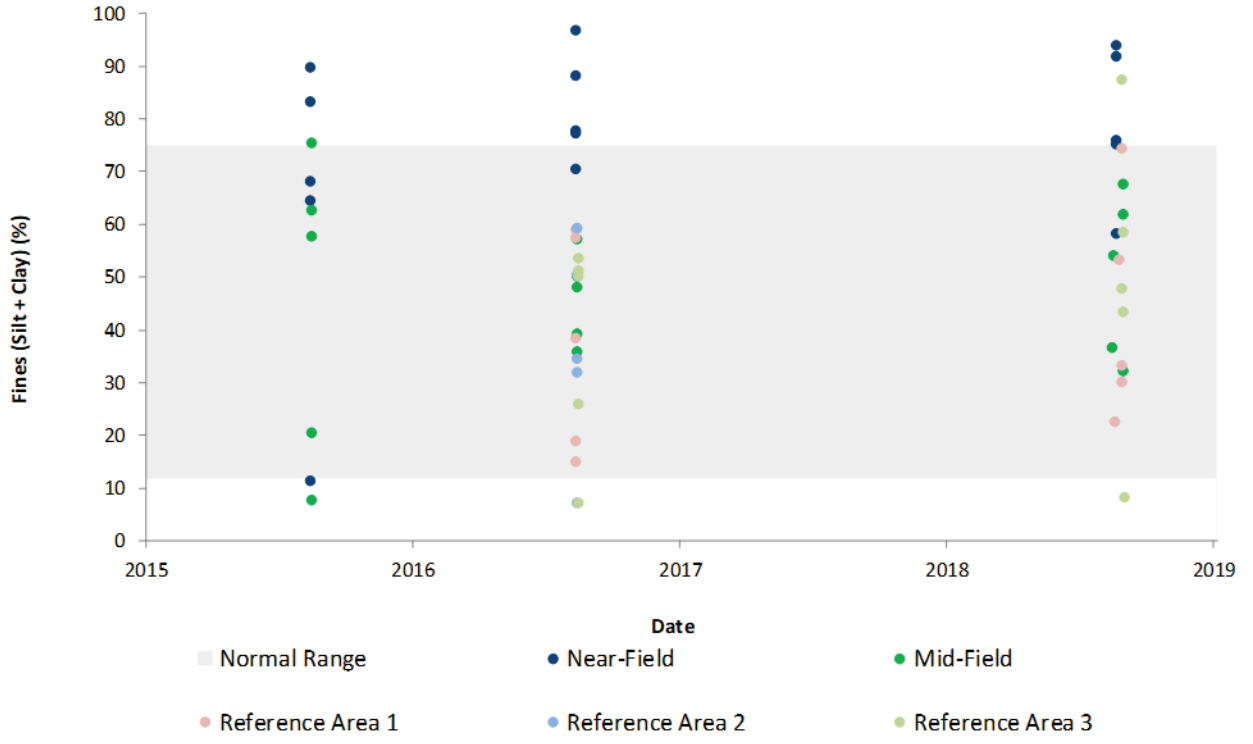


Figure 8C.1-4: Fines (Silt + Clay %) in Meliadine Lake, 2015 to 2018

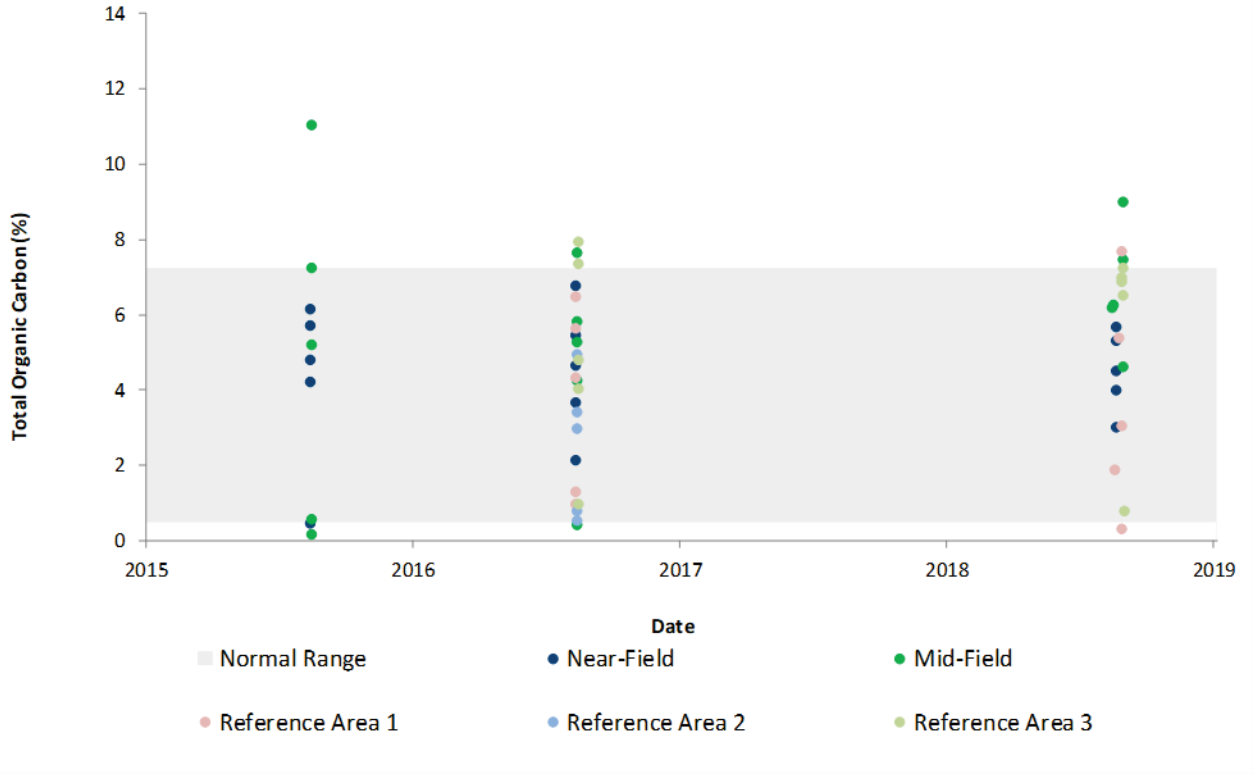
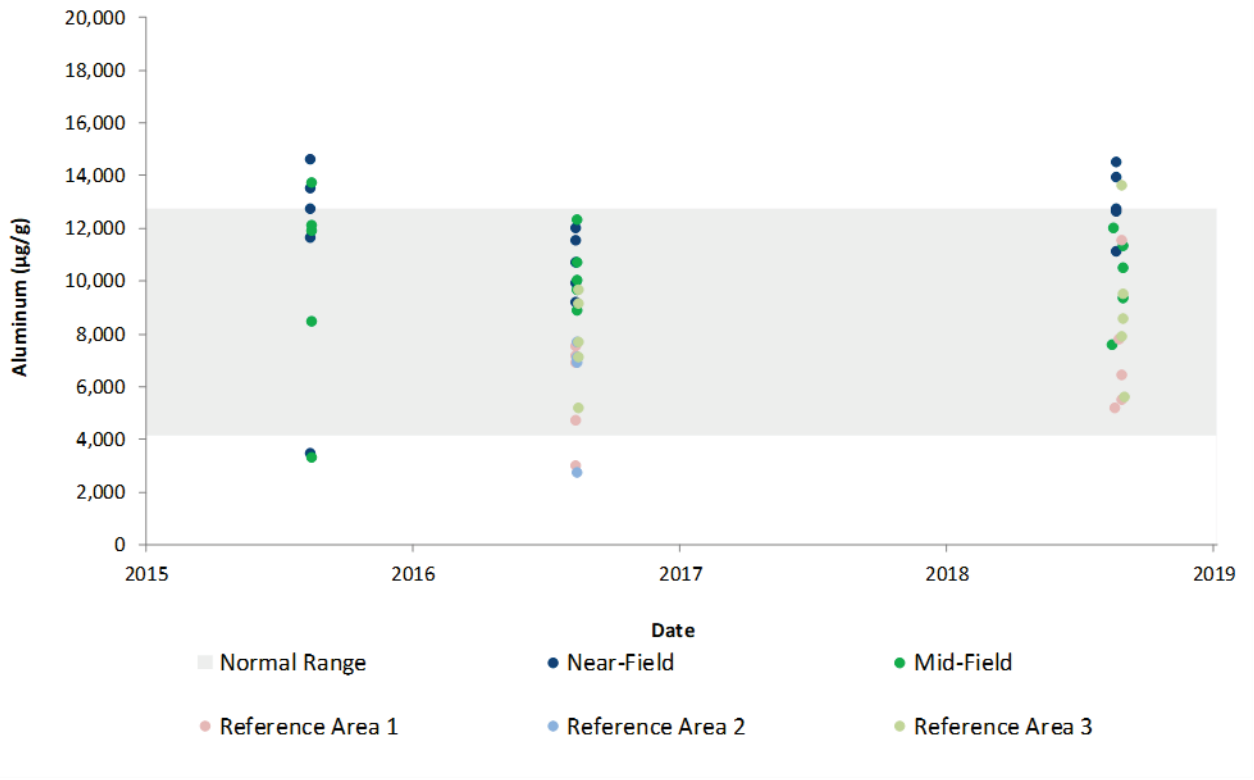


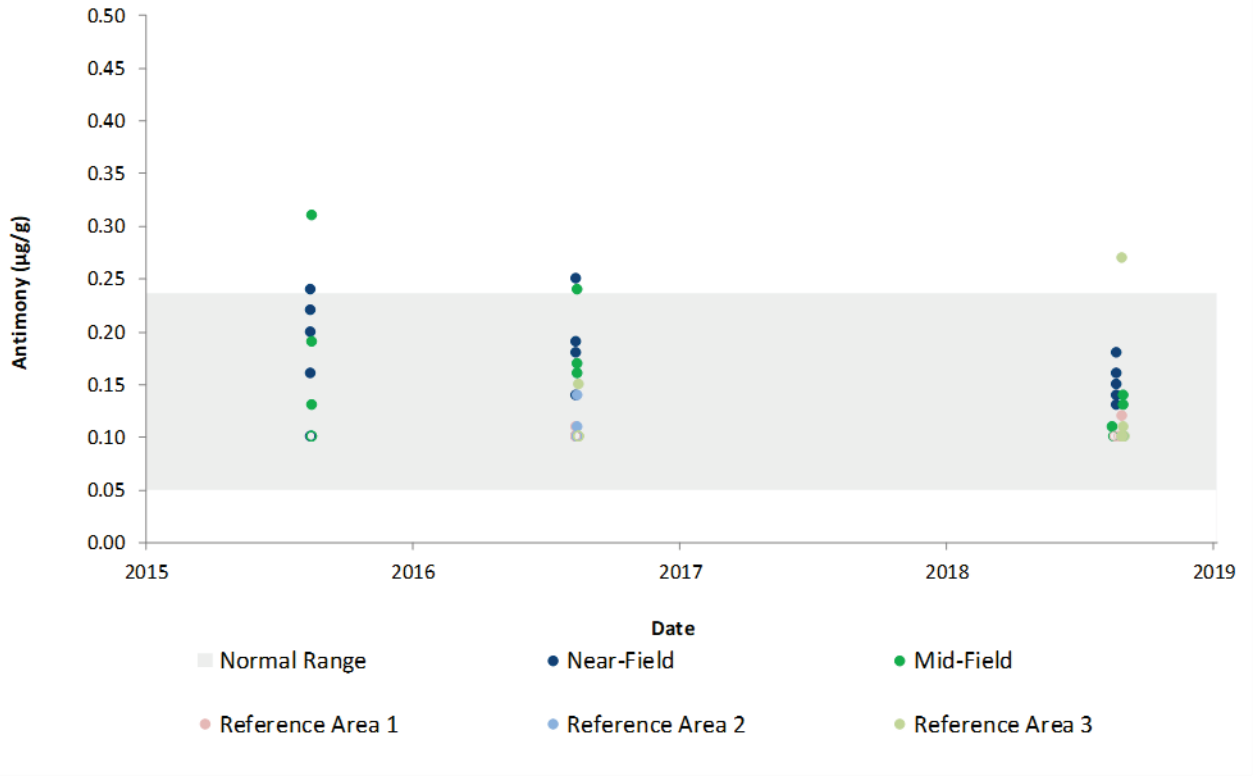
Figure 8C.1-5: Total Organic Carbon in Meliadine Lake, 2015 to 2018

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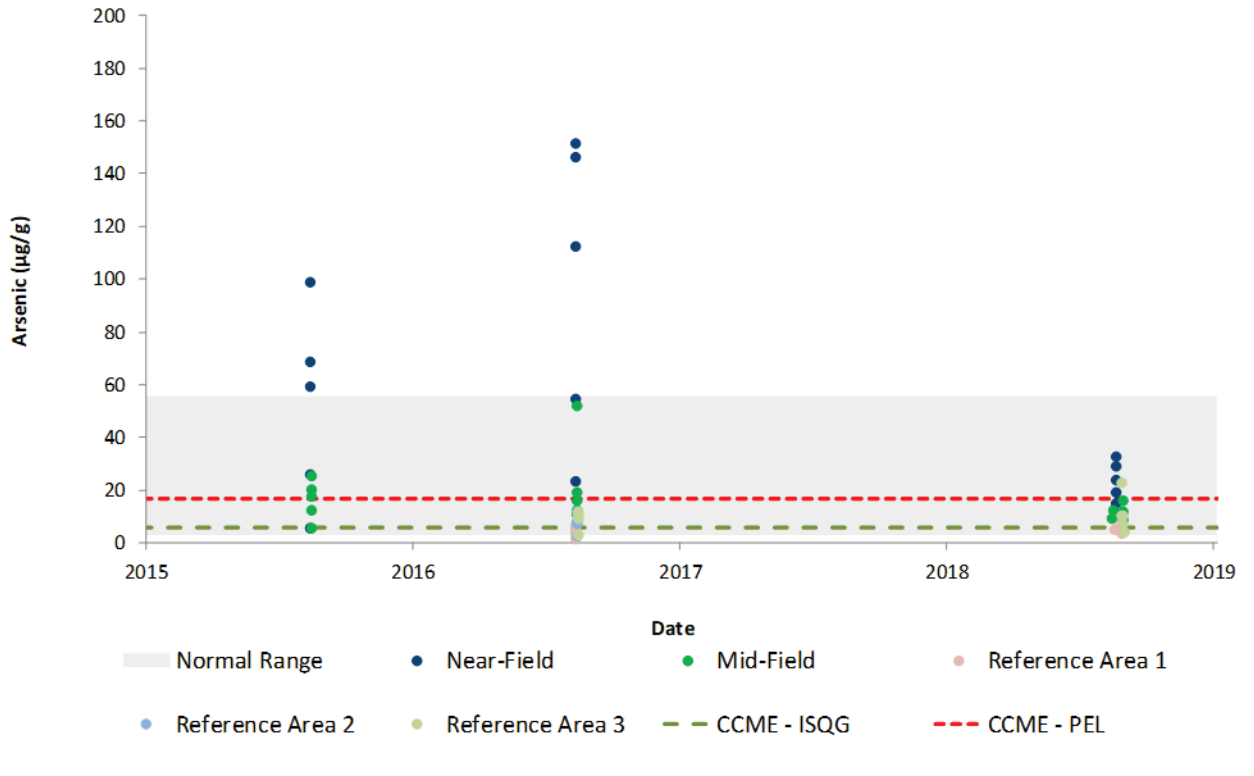
Note: µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-1: Concentrations of Aluminum in Meliadine Lake, 2015 to 2018



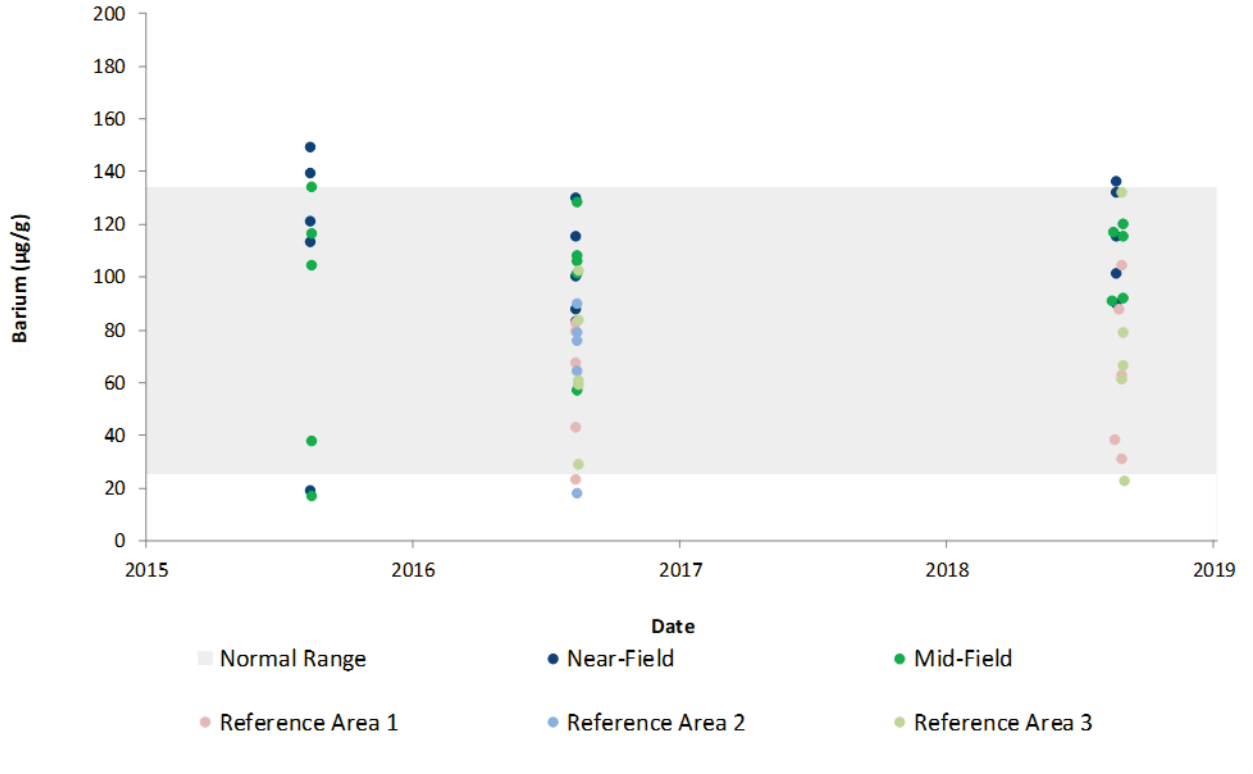
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-2: Concentrations of Antimony in Meliadine Lake, 2015 to 2018



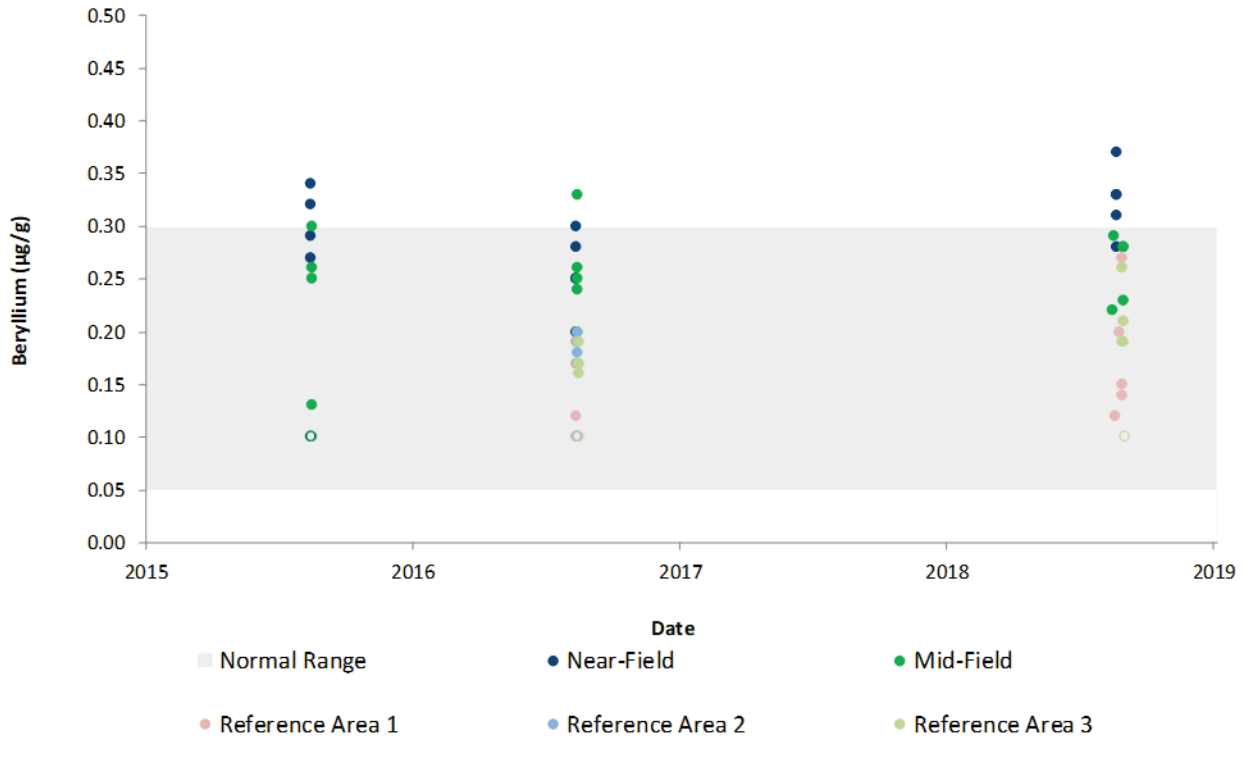
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-3: Concentrations of Arsenic in Meliadine Lake, 2015 to 2018



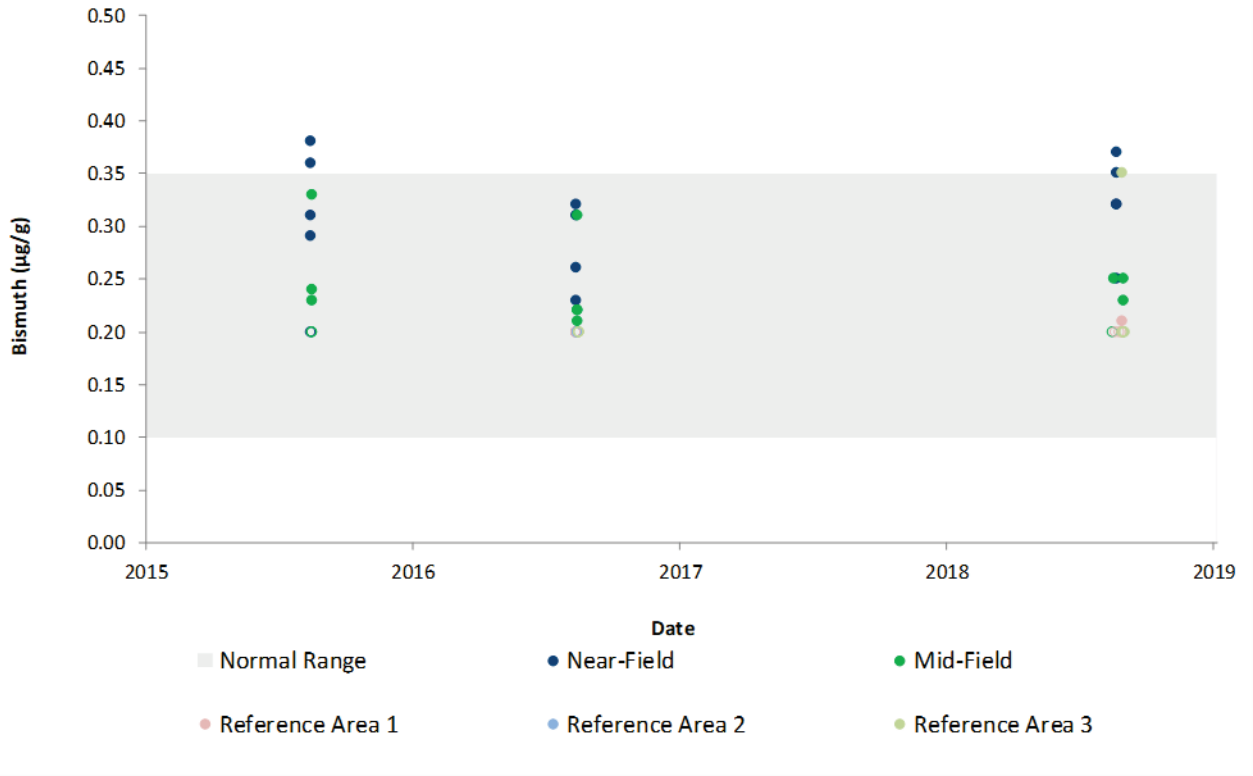
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-4: Concentrations of Barium in Meliadine Lake, 2015 to 2018



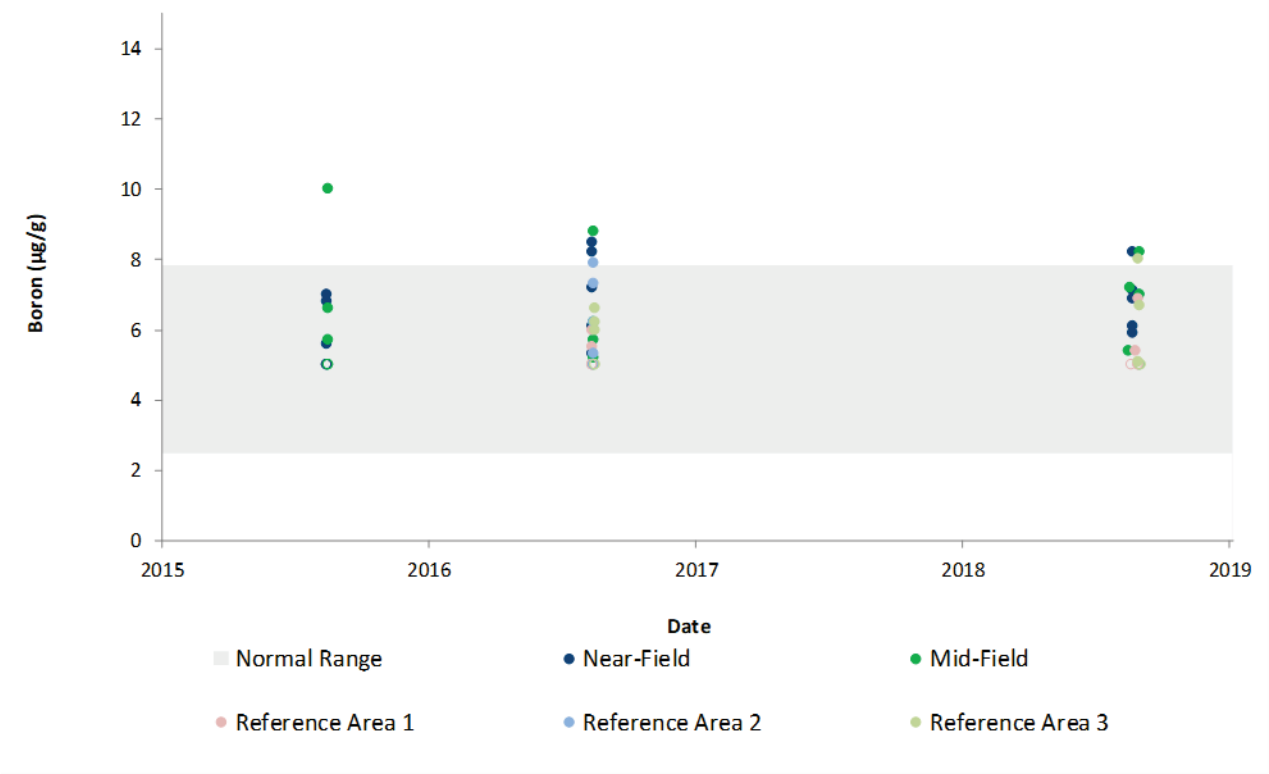
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-5: Concentrations of Beryllium in Meliadine Lake, 2015 to 2018



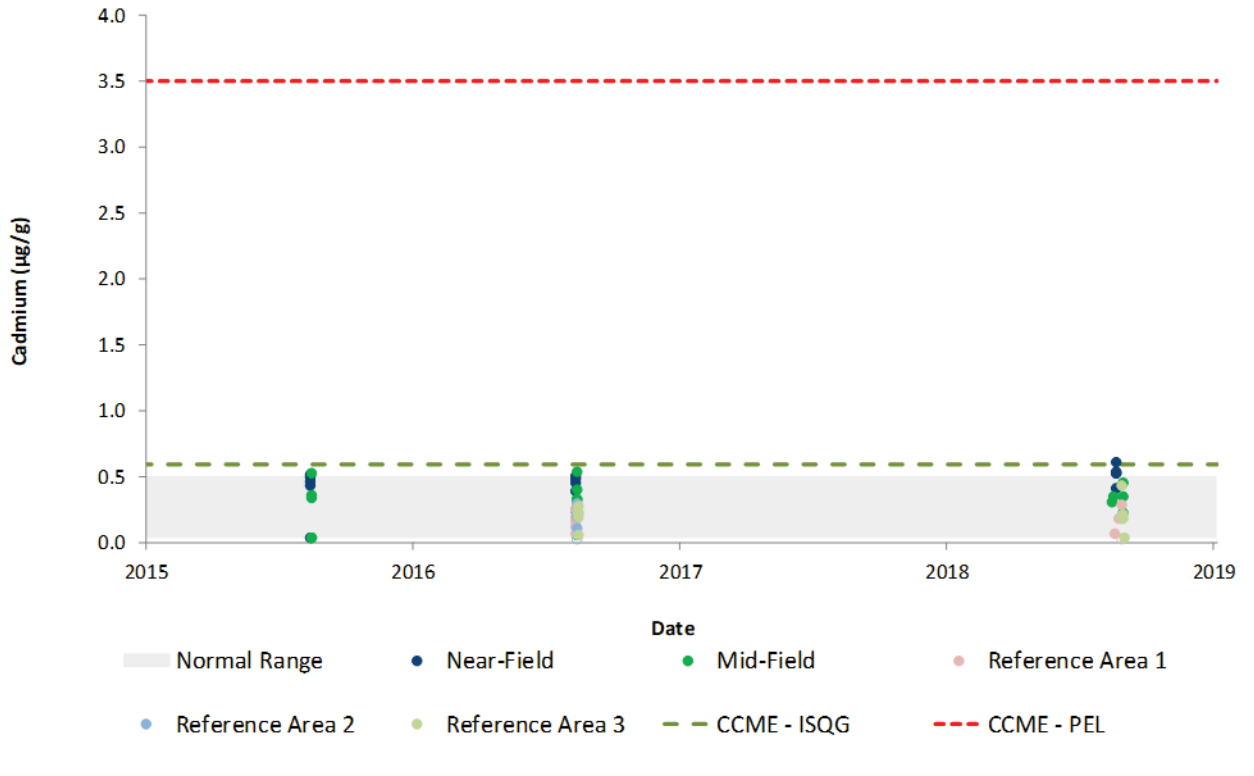
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-6: Concentrations of Bismuth in Meliadine Lake, 2015 to 2018



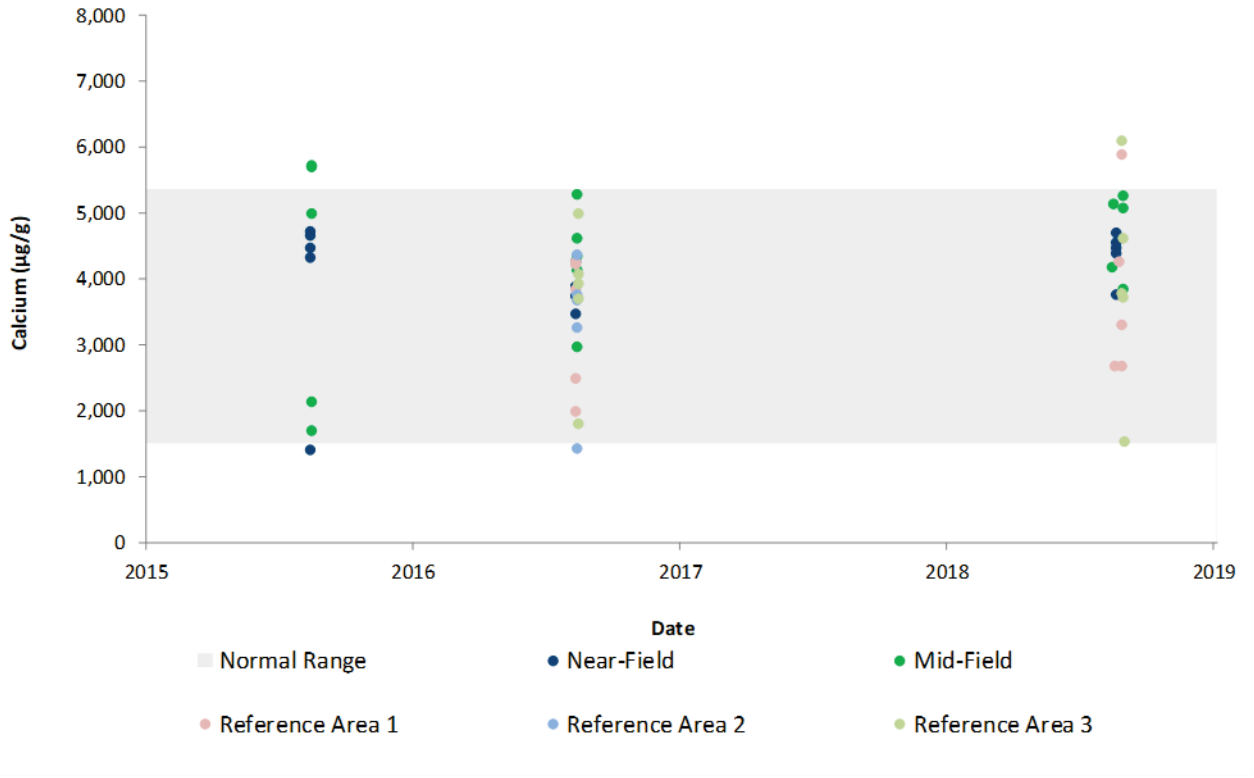
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-7: Concentrations of Boron in Meliadine Lake, 2015 to 2018



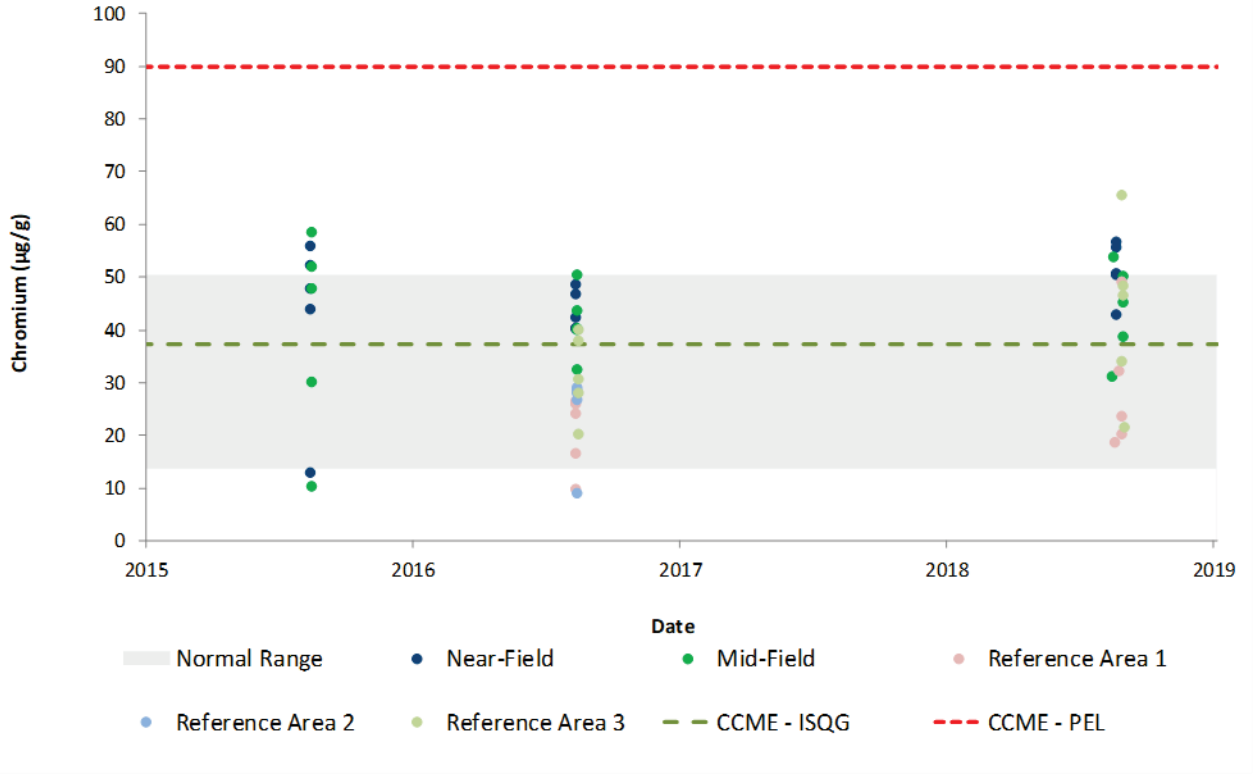
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-8: Concentrations of Cadmium in Meliadine Lake, 2015 to 2018



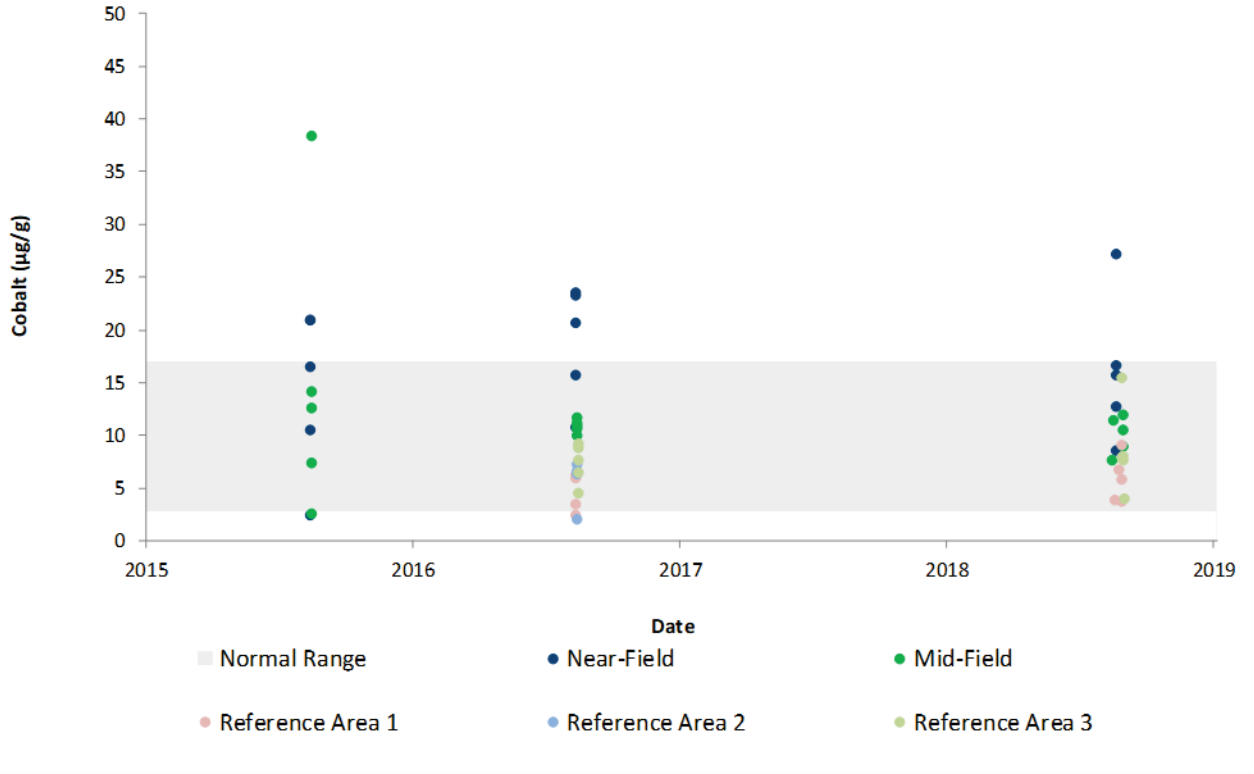
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-9: Concentrations of Calcium in Meliadine Lake, 2015 to 2018



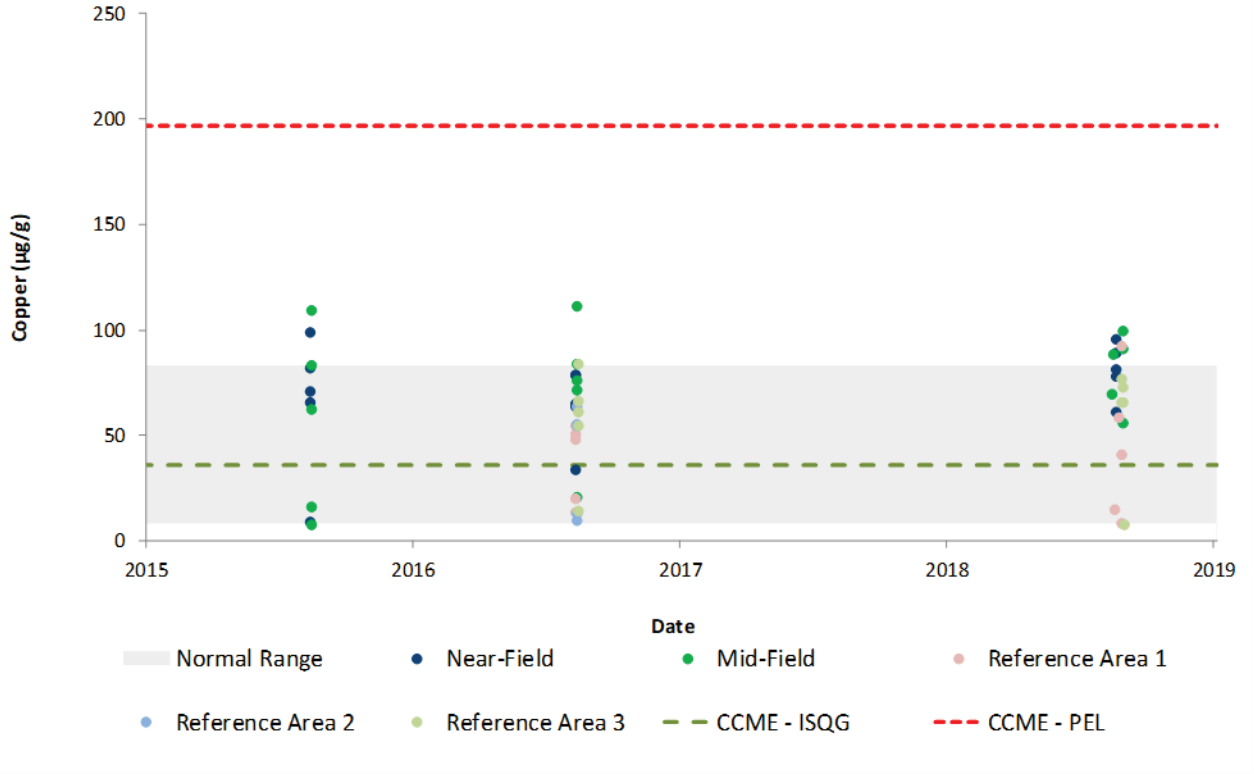
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-10: Concentrations of Chromium in Meliadine Lake, 2015 to 2018



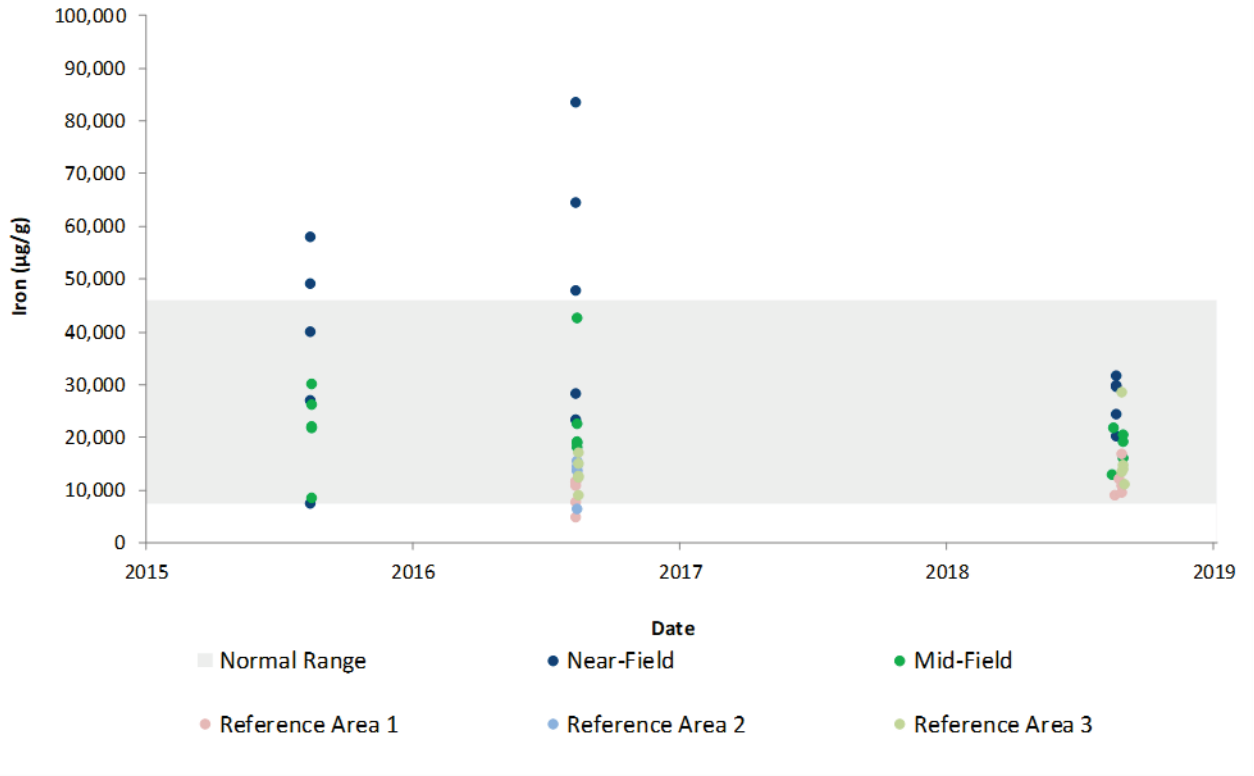
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-11: Concentrations of Cobalt in Meliadine Lake, 2015 to 2018



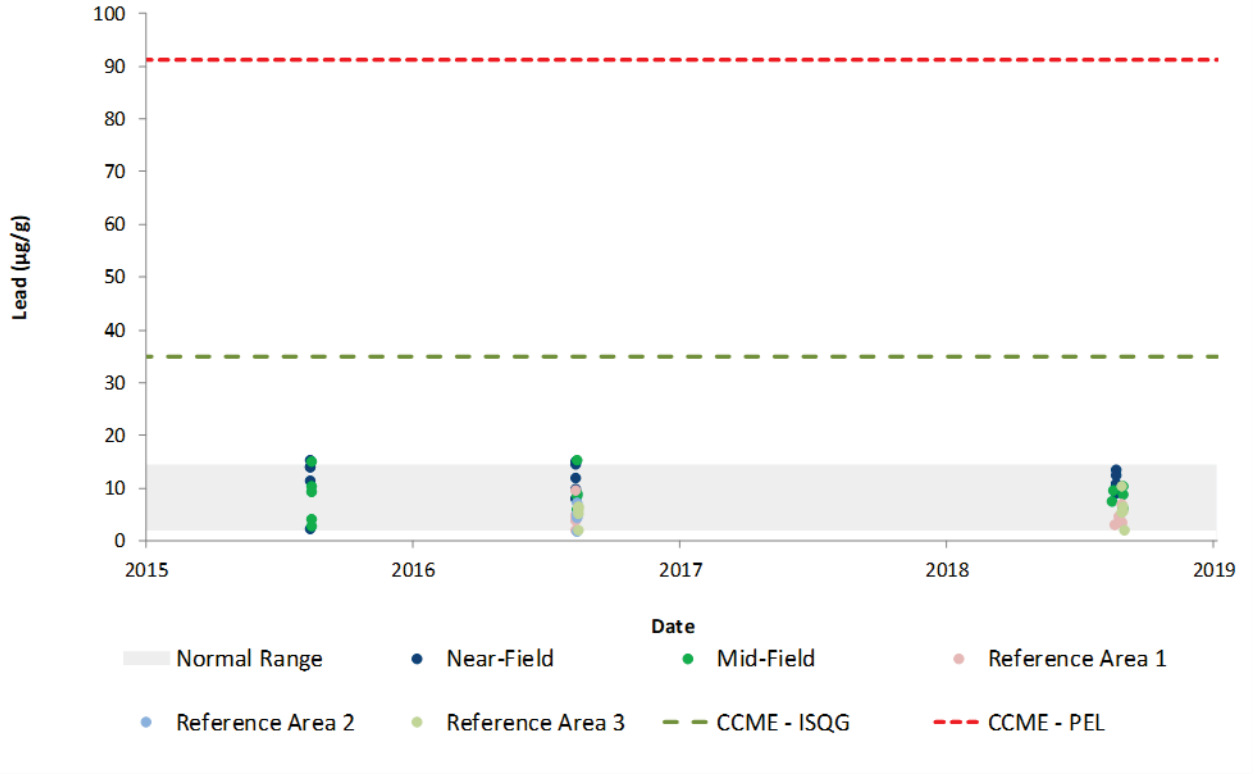
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-12: Concentrations of Copper in Meliadine Lake, 2015 to 2018



µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-13: Concentrations of Iron in Meliadine Lake, 2015 to 2018



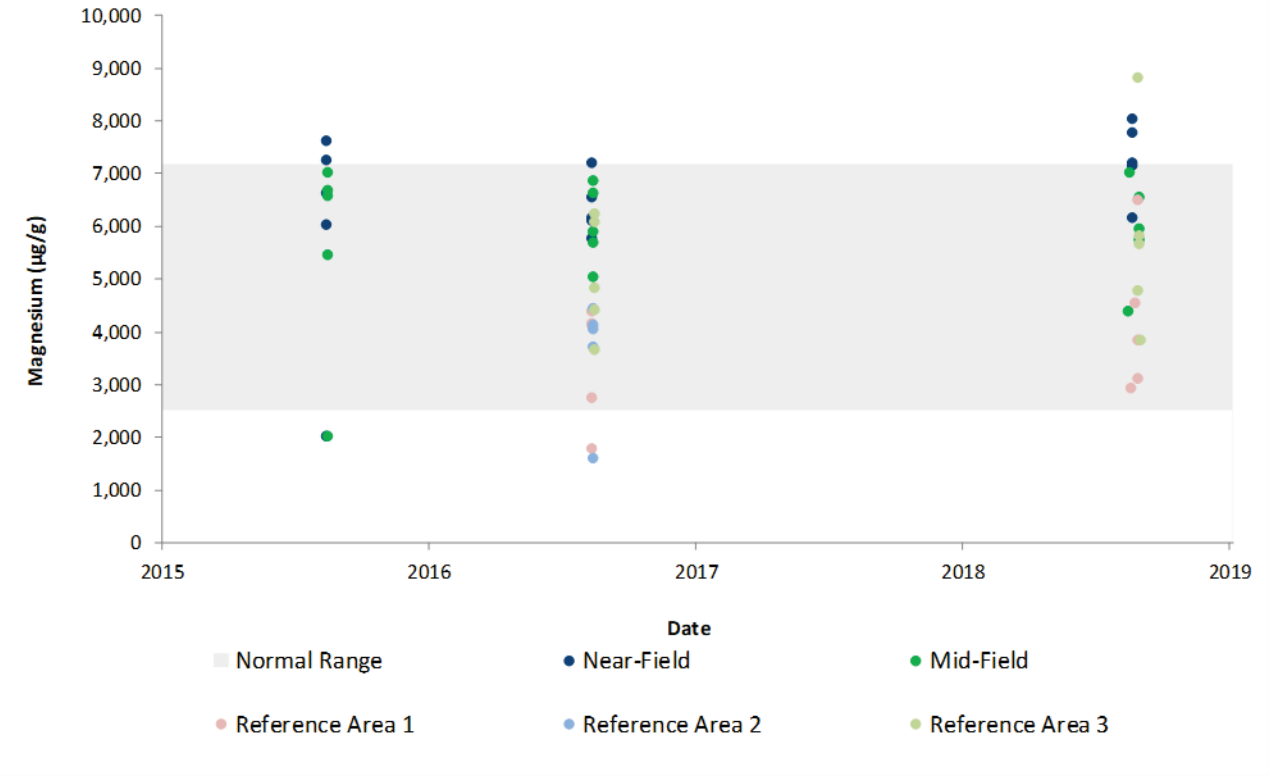
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-14: Concentrations of Lead in Meliadine Lake, 2015 to 2018



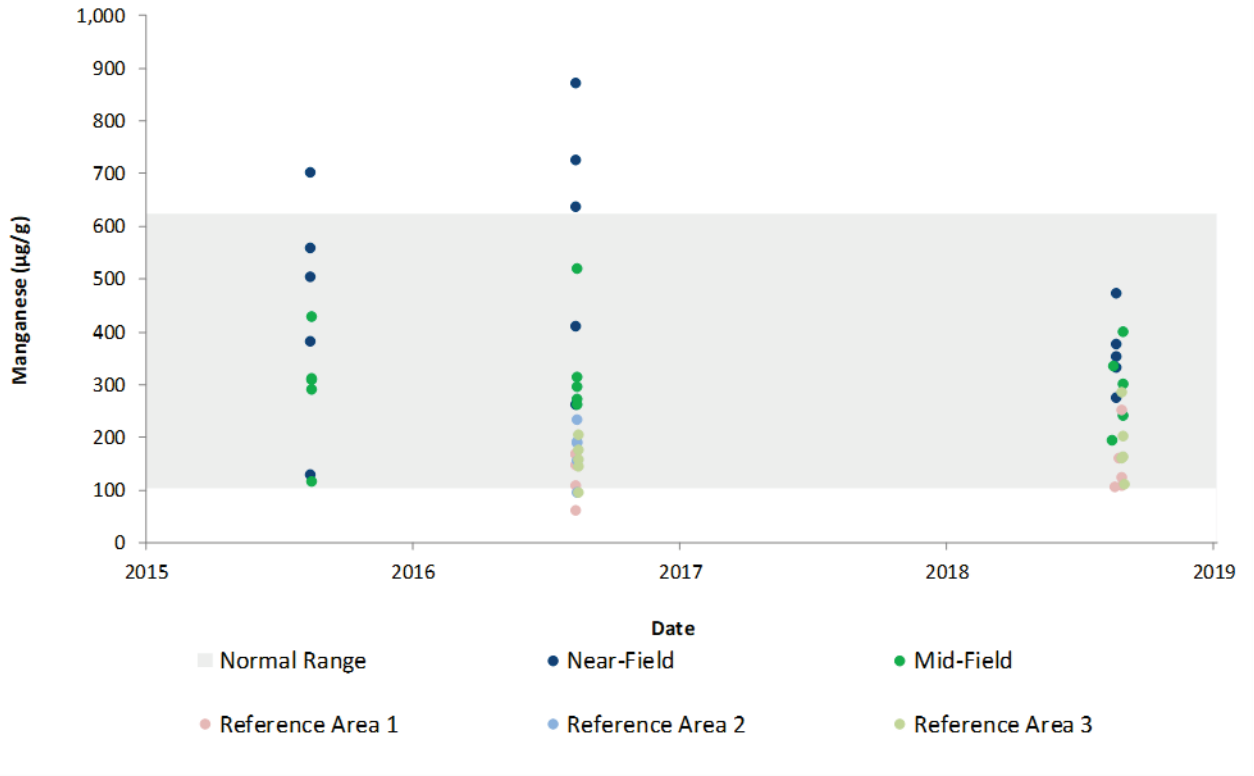
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-15: Concentrations of Lithium in Meliadine Lake, 2015 to 2018



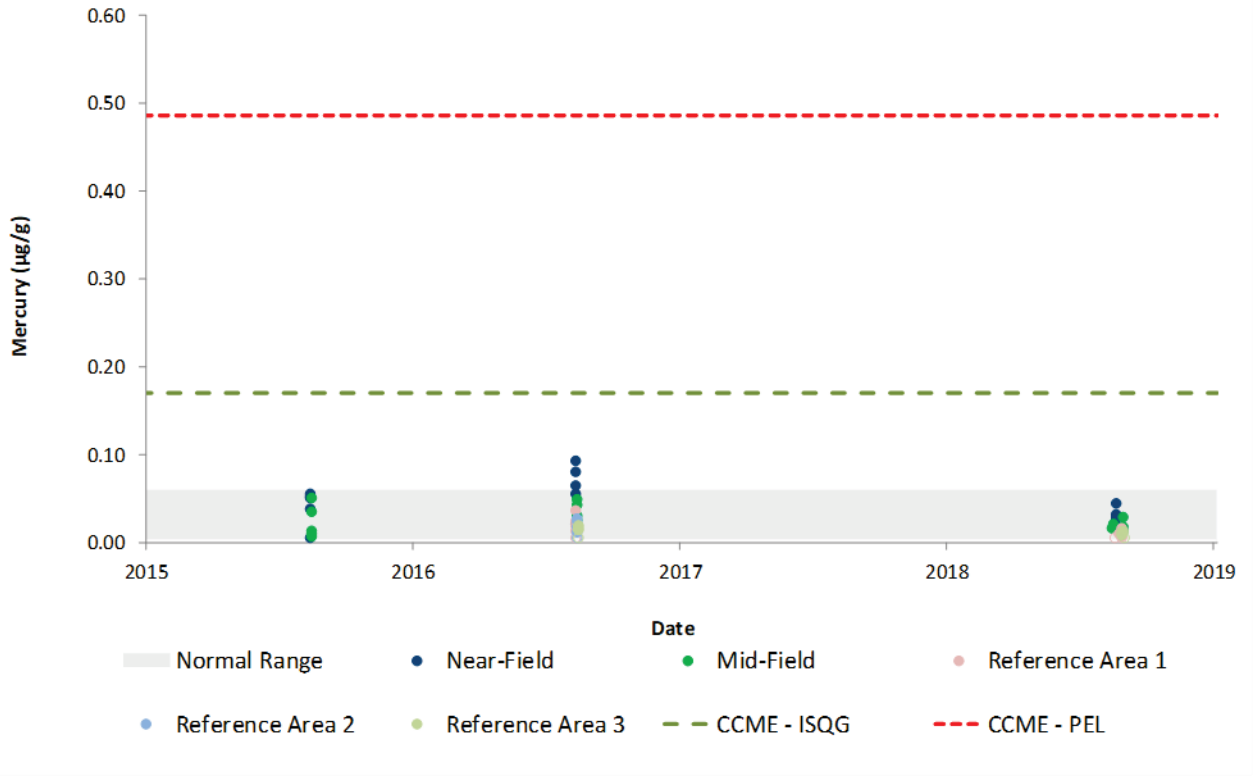
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-16: Concentrations of Magnesium in Meliadine Lake, 2015 to 2018



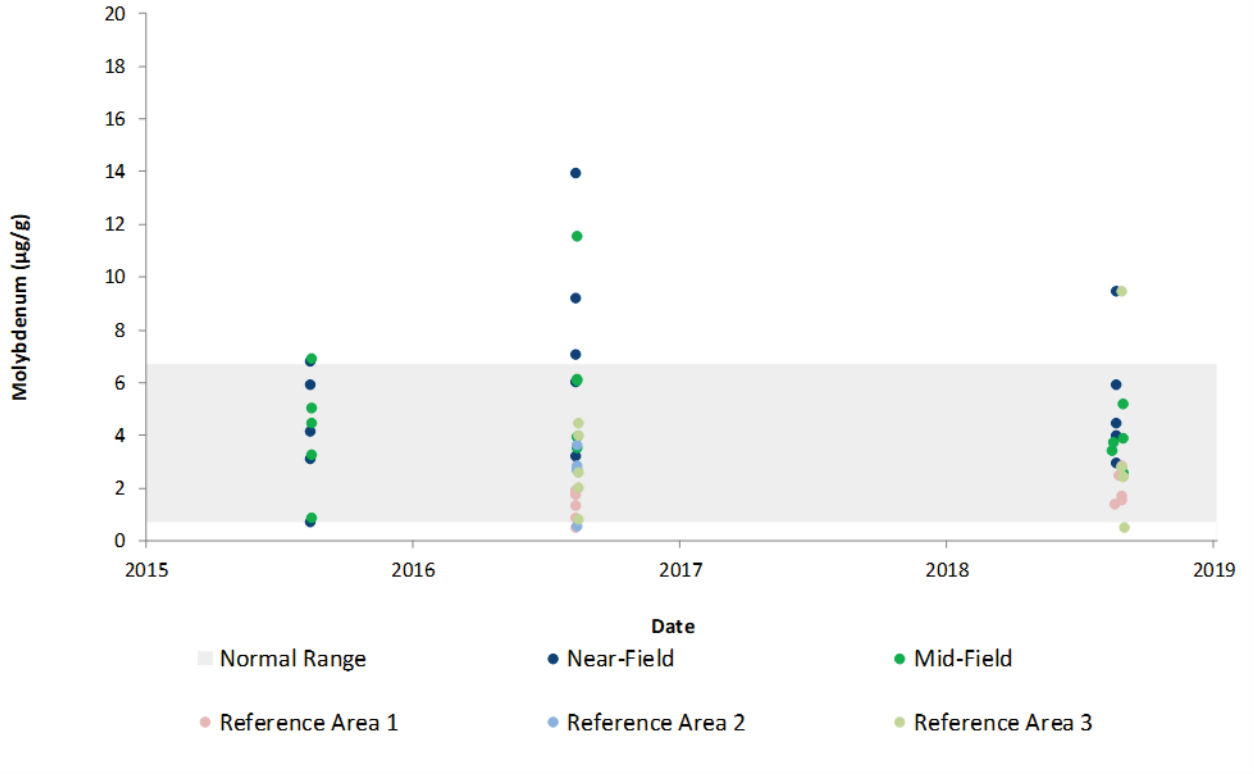
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-17: Concentrations of Manganese in Meliadine Lake, 2015 to 2018



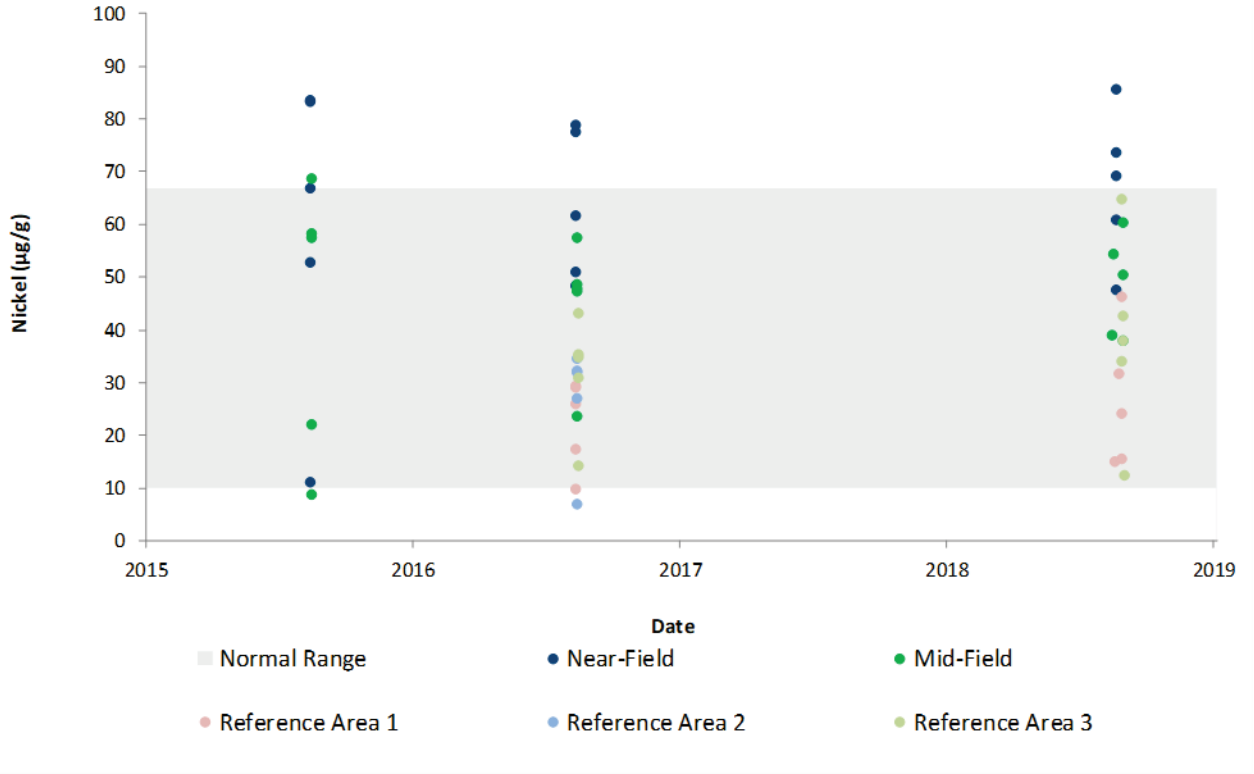
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-18: Concentrations of Mercury in Meliadine Lake, 2015 to 2018



µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-19: Concentrations of Molybdenum in Meliadine Lake, 2015 to 2018



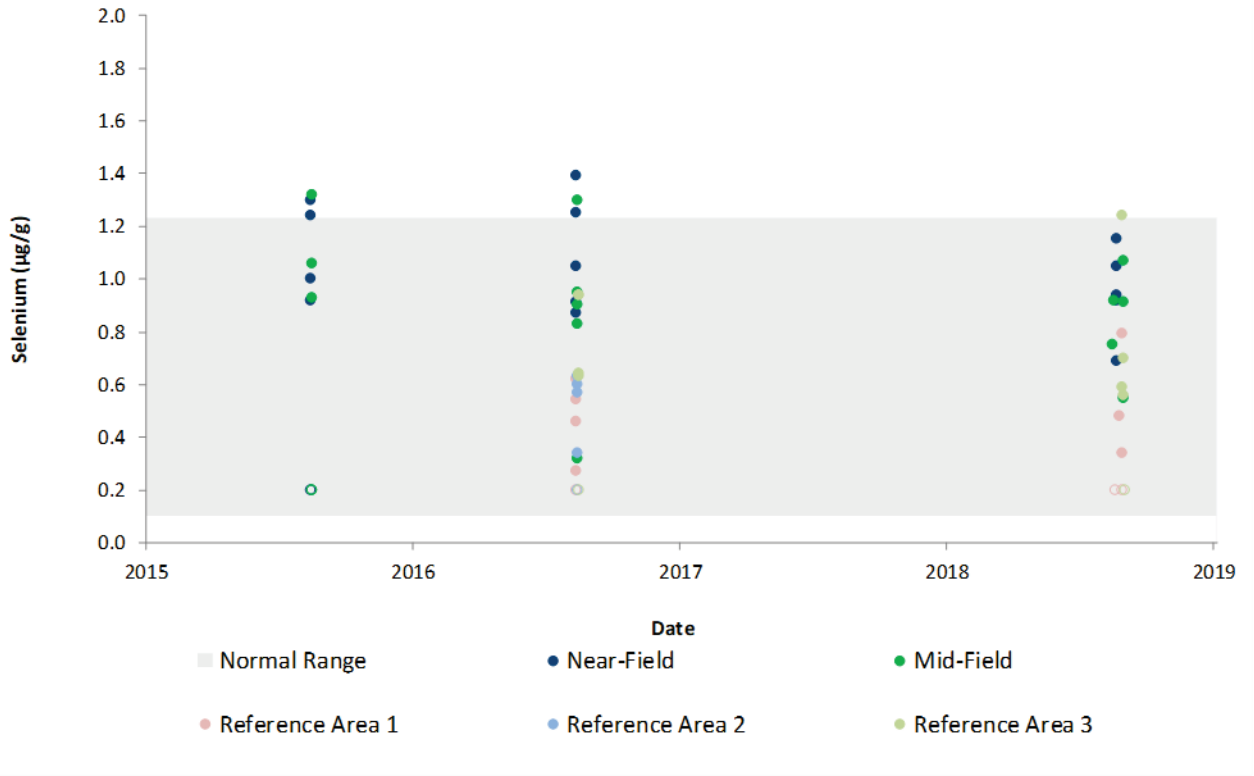
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-20: Concentrations of Nickel in Meliadine Lake, 2015 to 2018



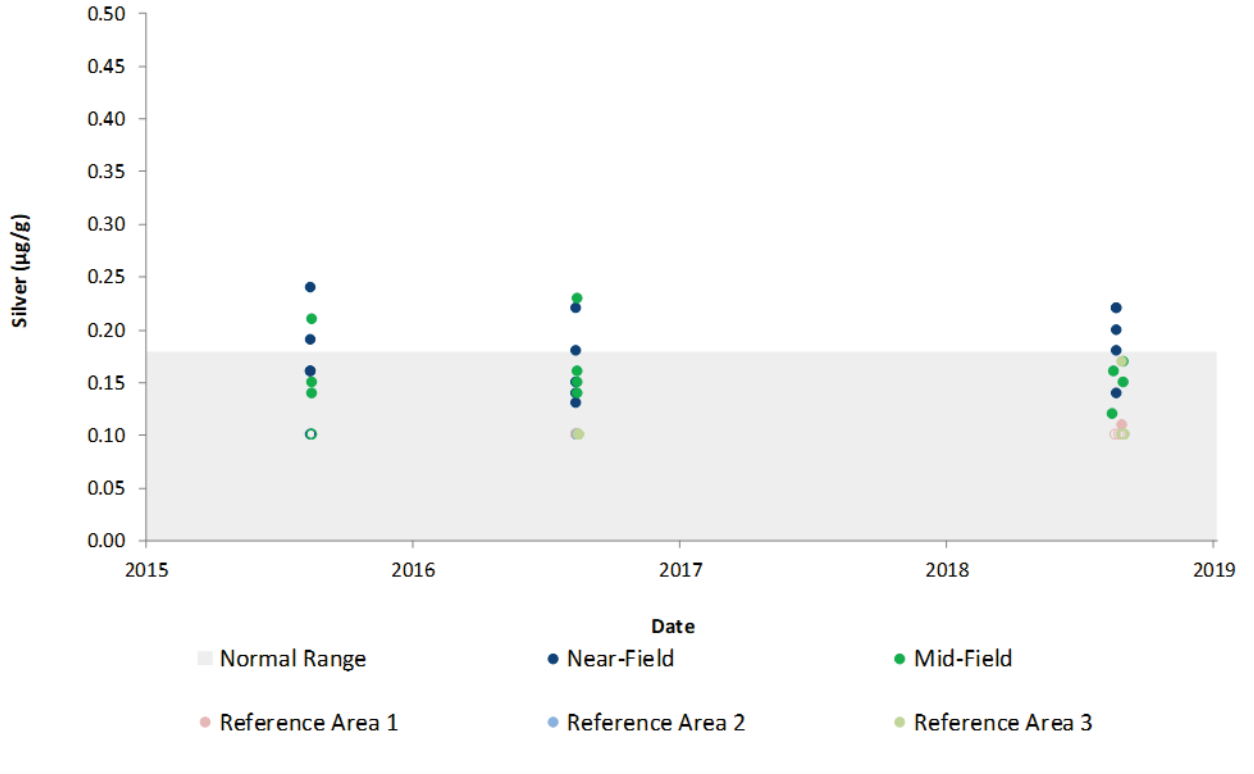
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-21: Concentrations of Potassium in Meliadine Lake, 2015 to 2018



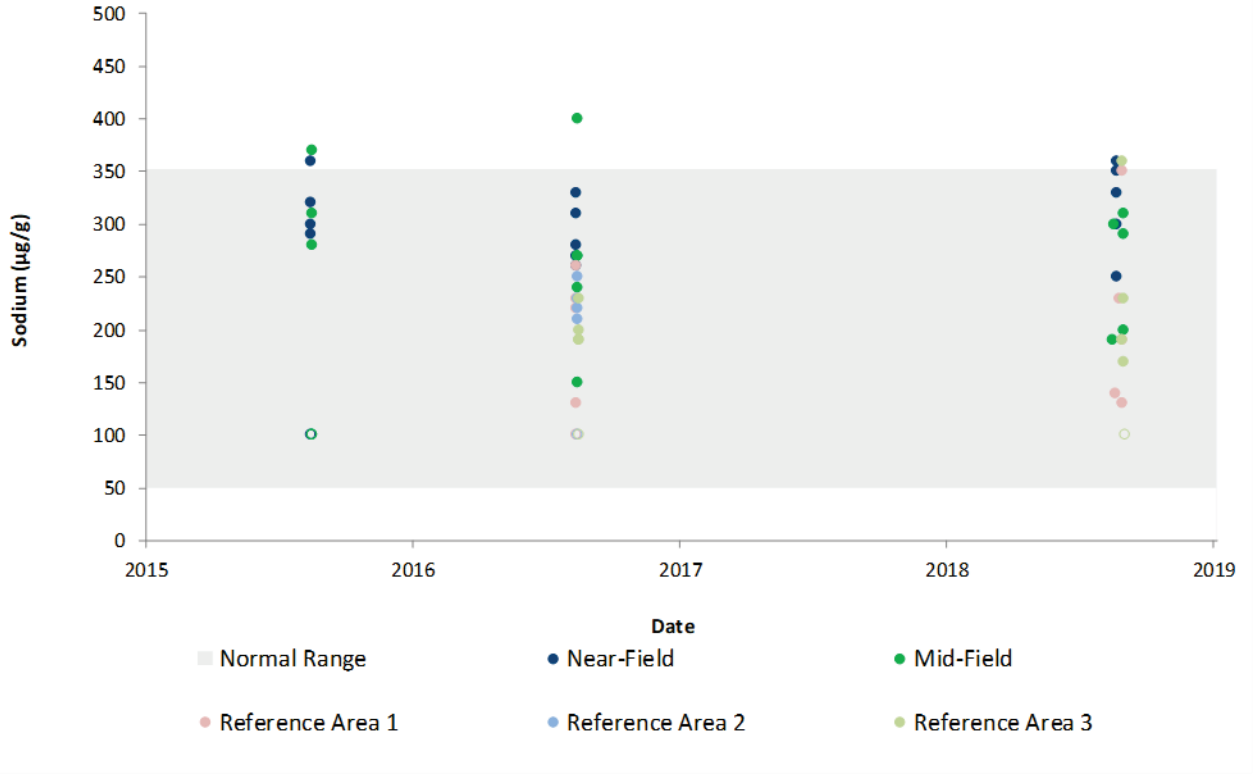
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-22: Concentrations of Selenium in Meliadine Lake, 2015 to 2018



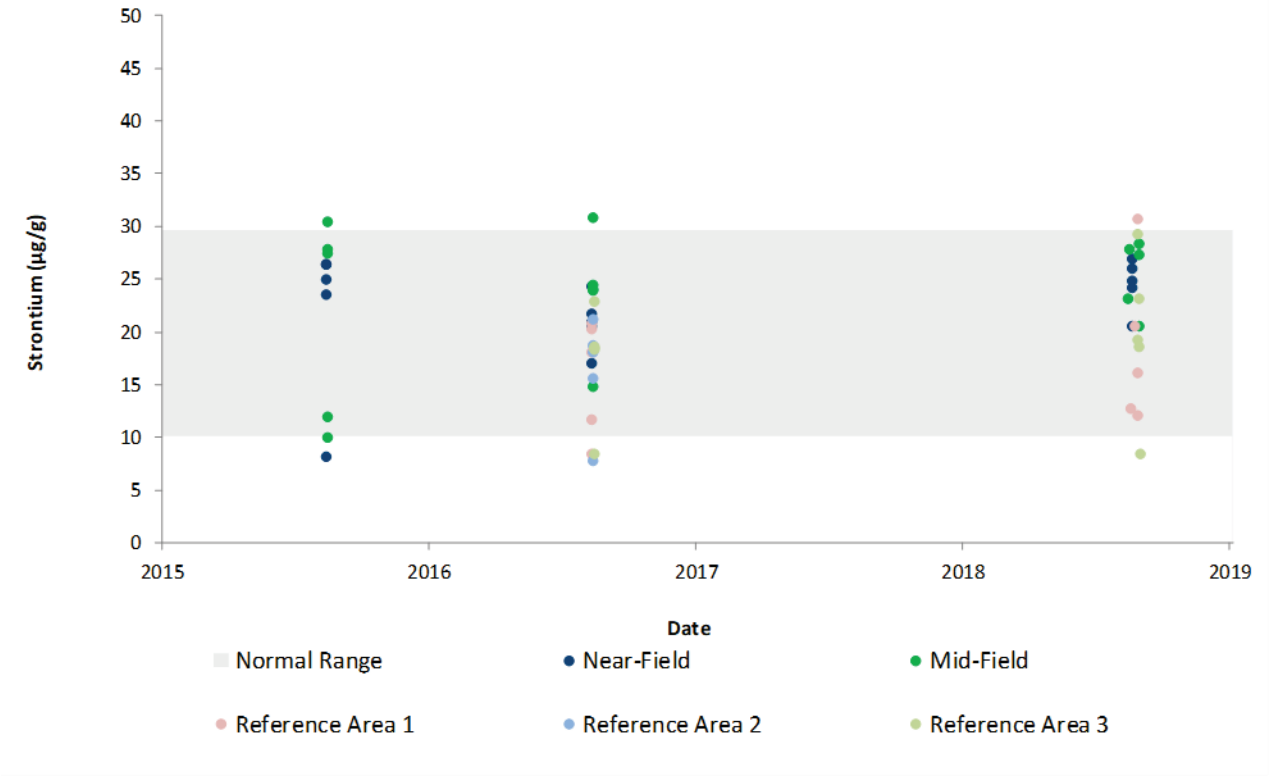
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-23: Concentrations of Silver in Meliadine Lake, 2015 to 2018



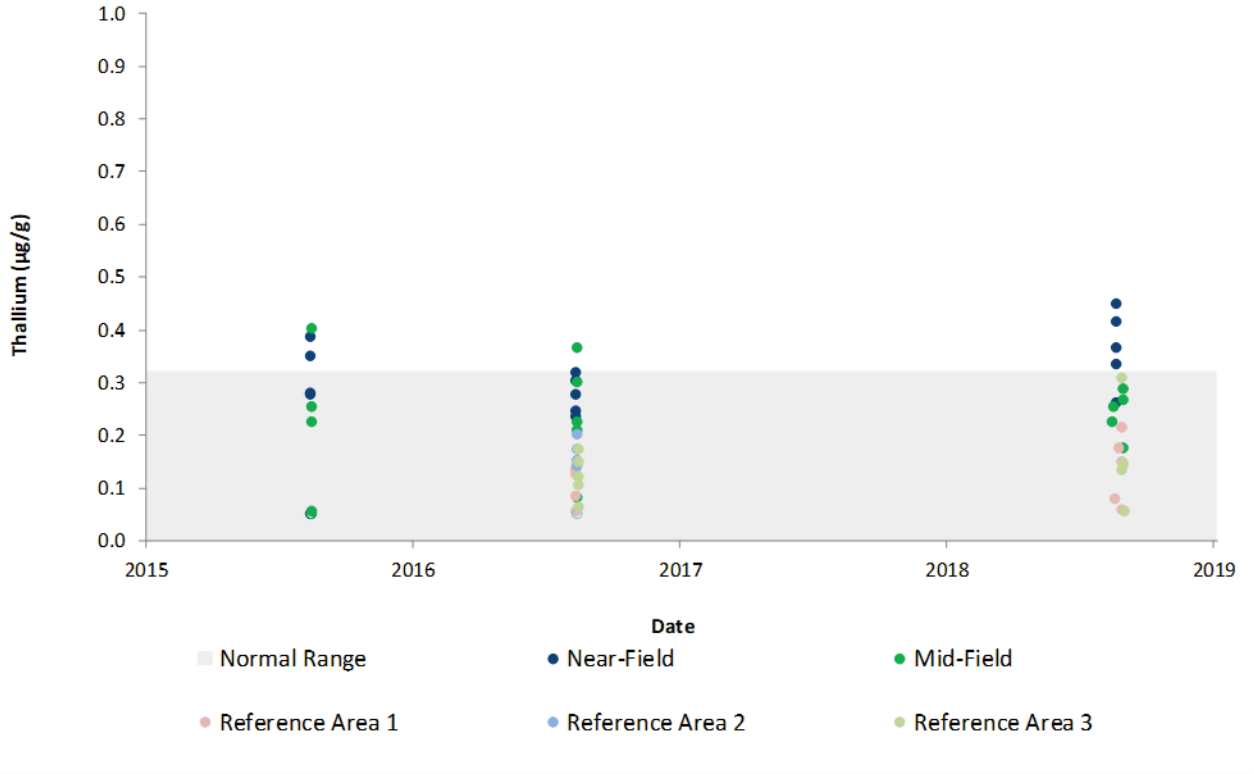
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-24: Concentrations of Sodium in Meliadine Lake, 2015 to 2018



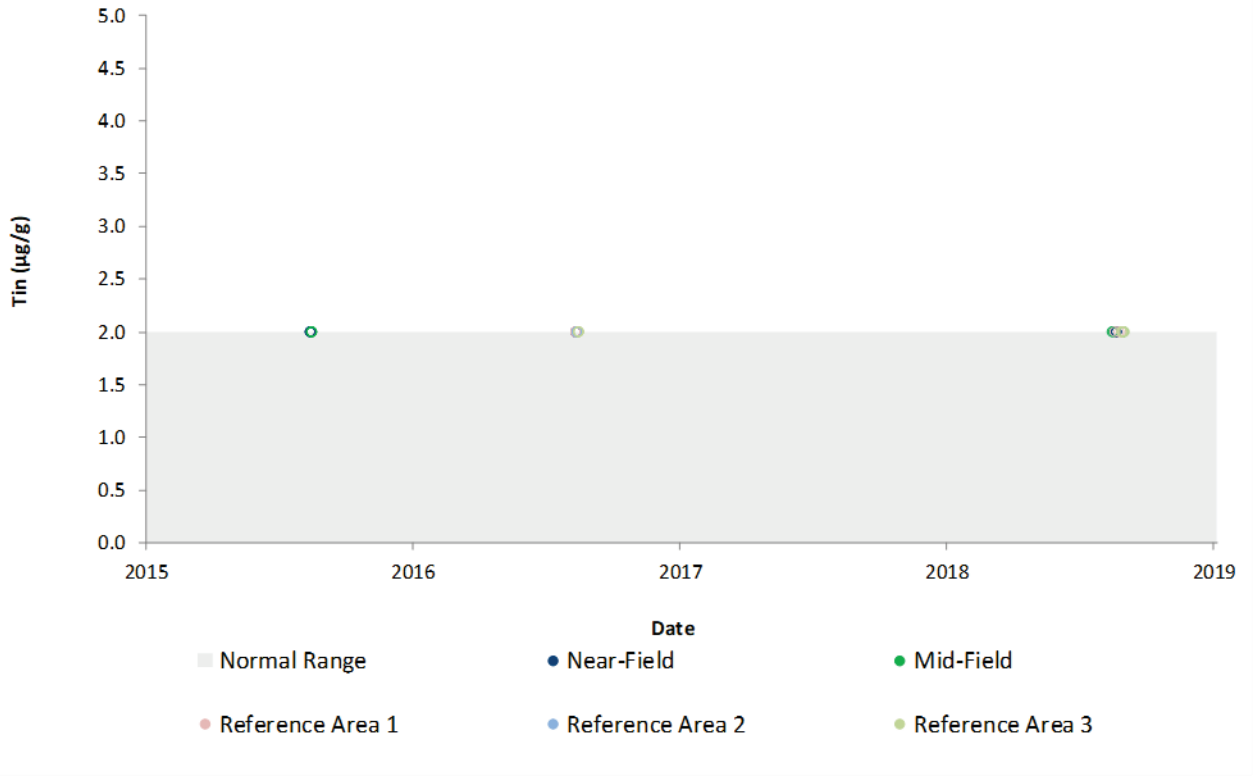
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.1-25: Concentrations of Strontium in Meliadine Lake, 2015 to 2018



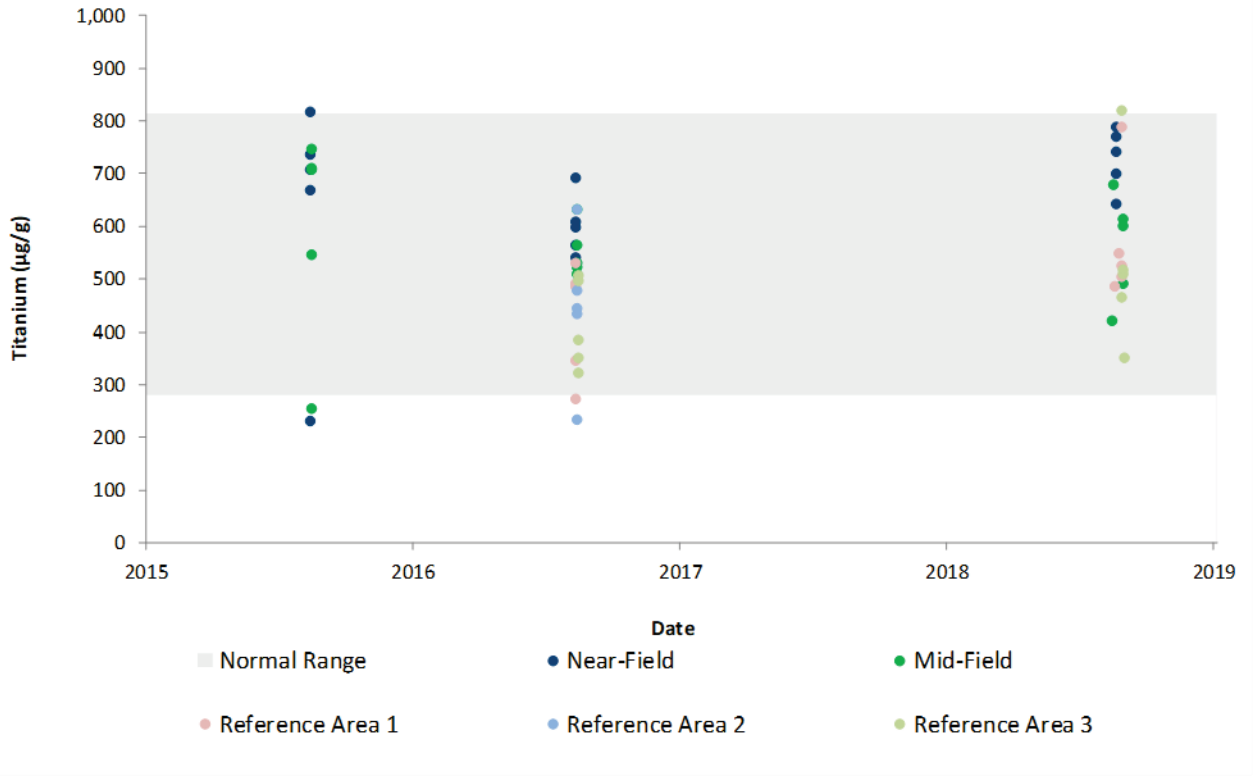
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-26: Concentrations of Thallium in Meliadine Lake, 2015 to 2018



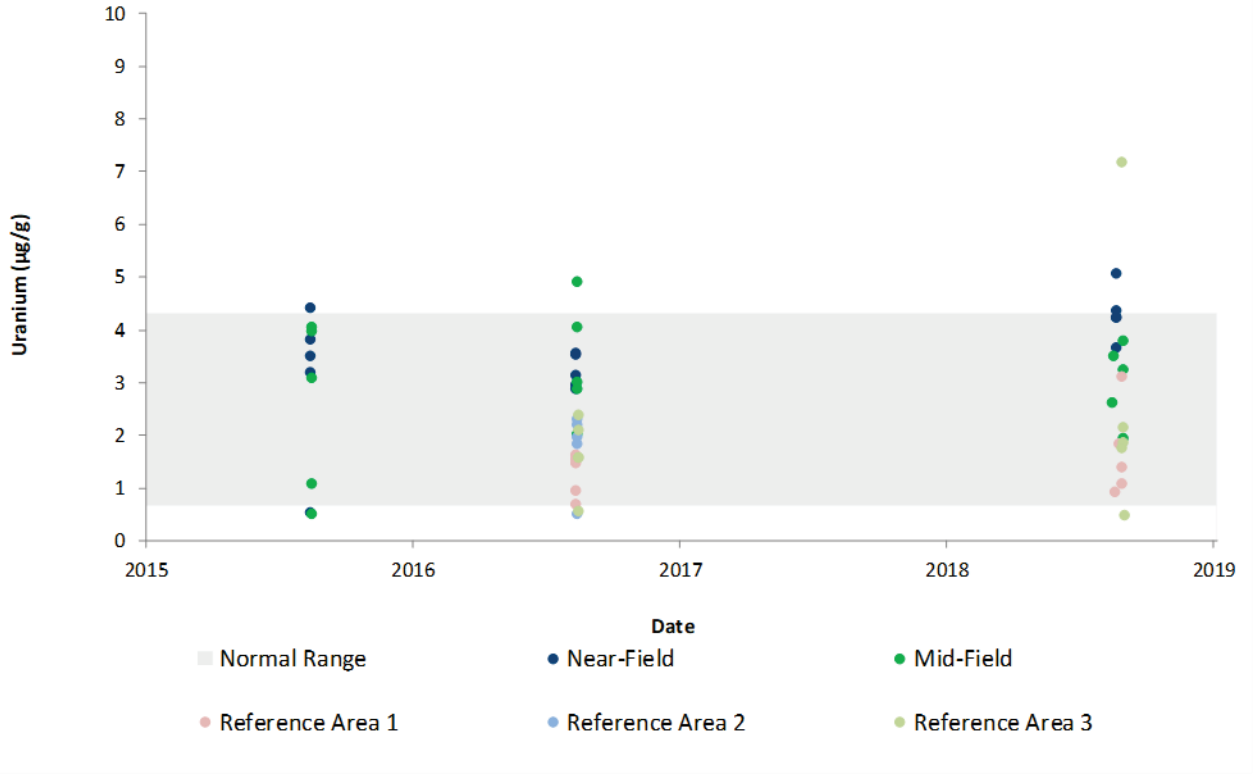
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-27: Concentrations of Tin in Meliadine Lake, 2015 to 2018



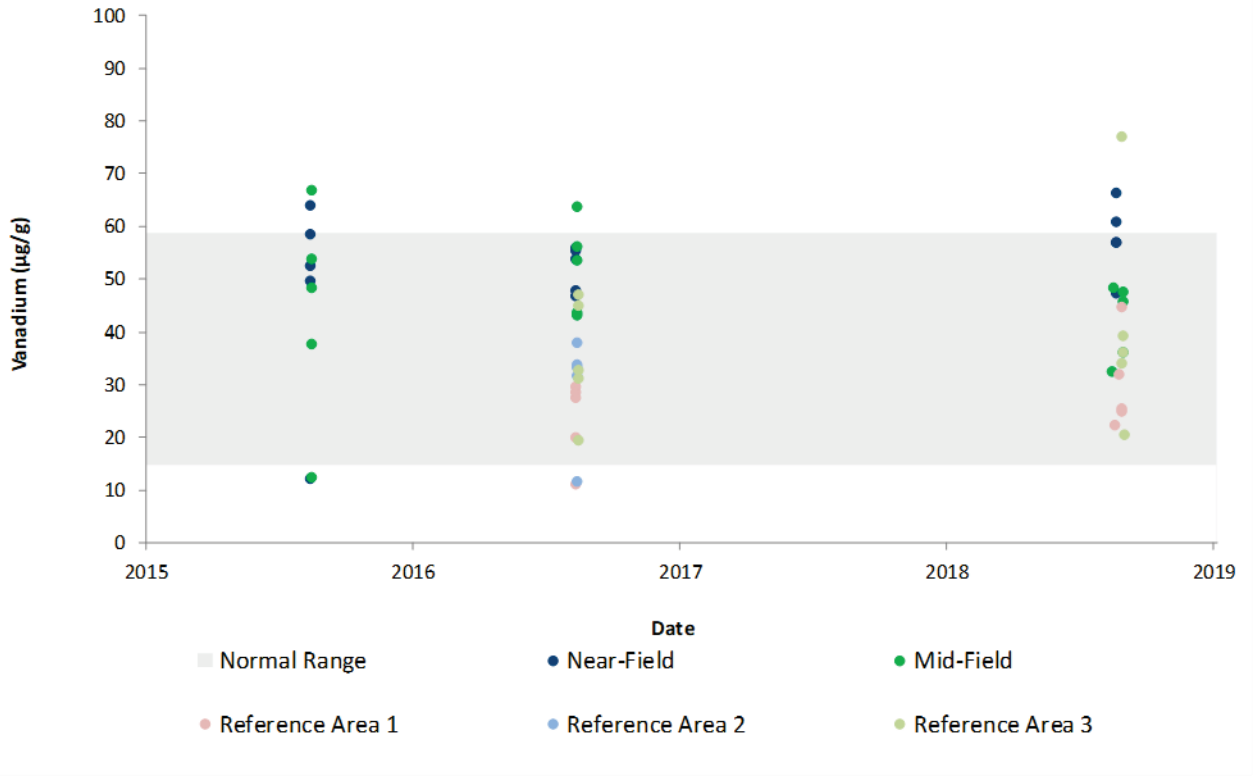
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-28: Concentrations of Titanium in Meliadine Lake, 2015 to 2018



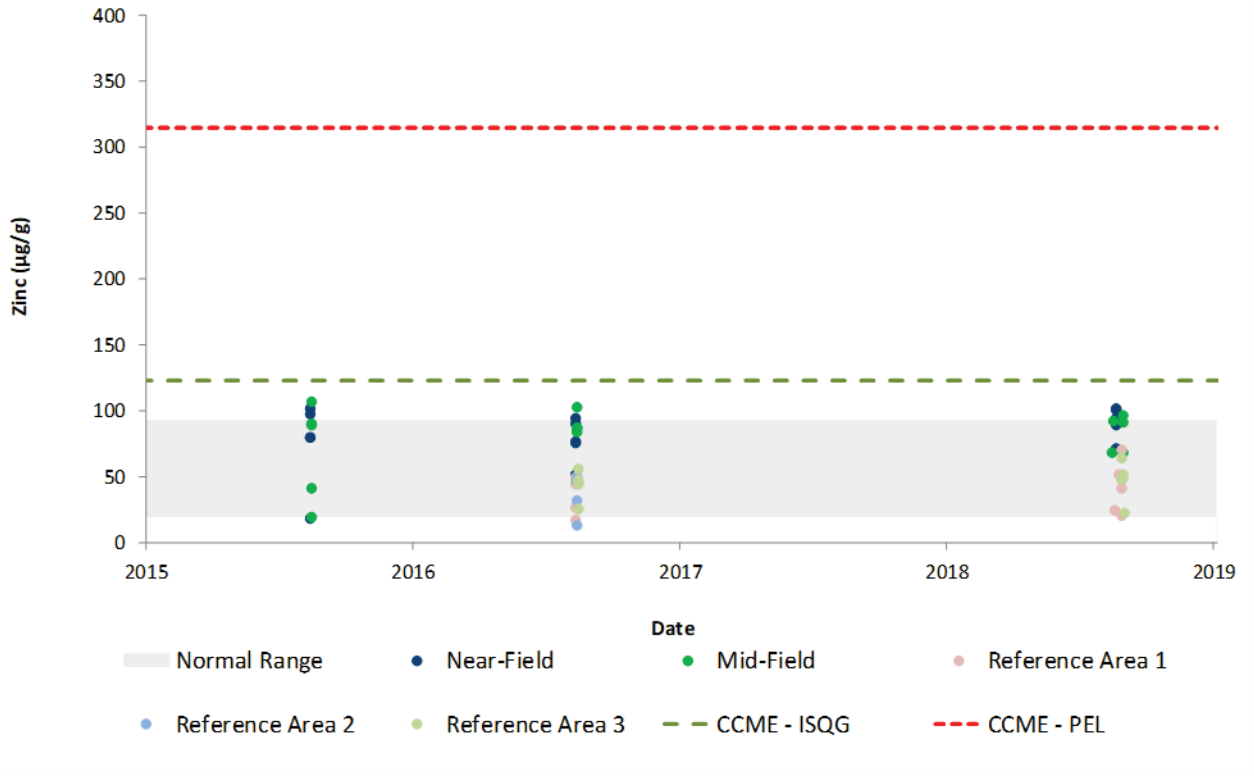
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-29: Concentrations of Uranium in Meliadine Lake, 2015 to 2018



µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8C.2-30: Concentrations of Vanadium in Meliadine Lake, 2015 to 2018



µg/g = micrograms per gram; Open symbols represent results that are less than the detection limit.

Figure 8C.2-31: Concentrations of Zinc in Meliadine Lake, 2015 to 2018

APPENDIX 8D

Box-and-Whisker Plots Comparing Areas

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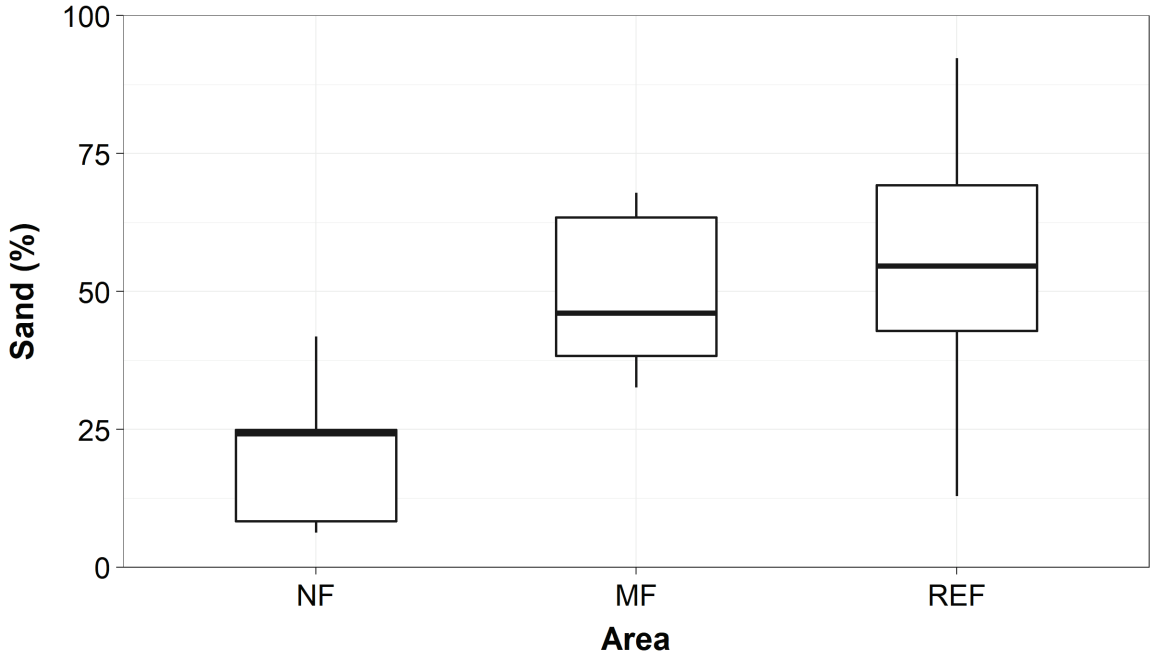
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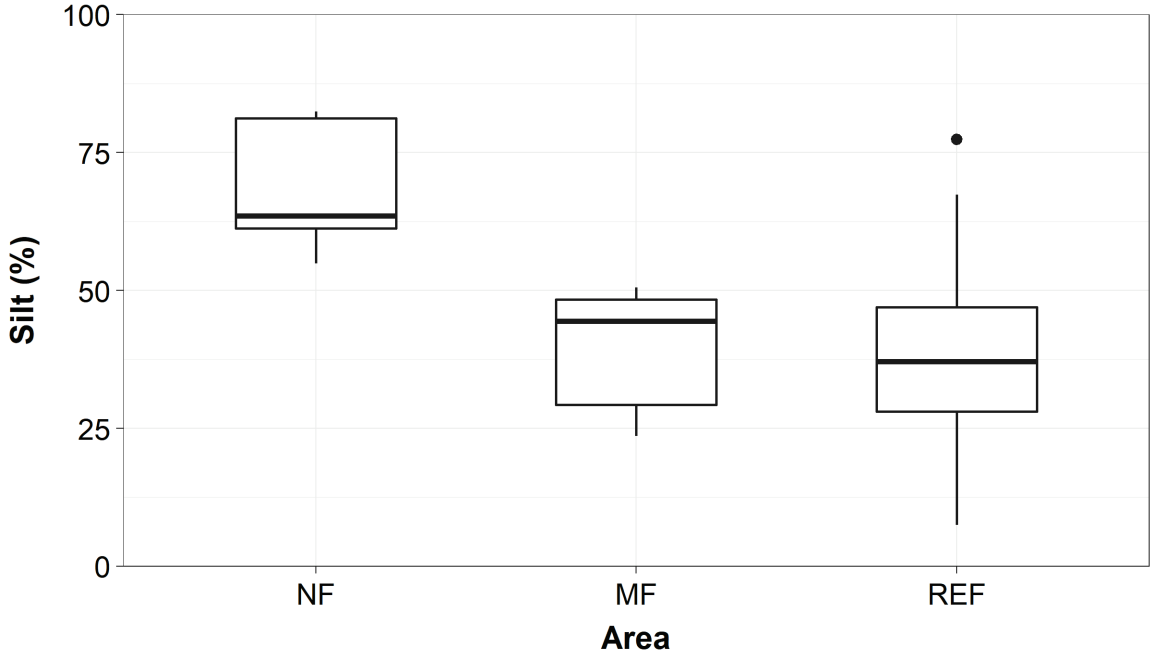
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1.0 PARTICLE-SIZE AND ORGANIC CARBON



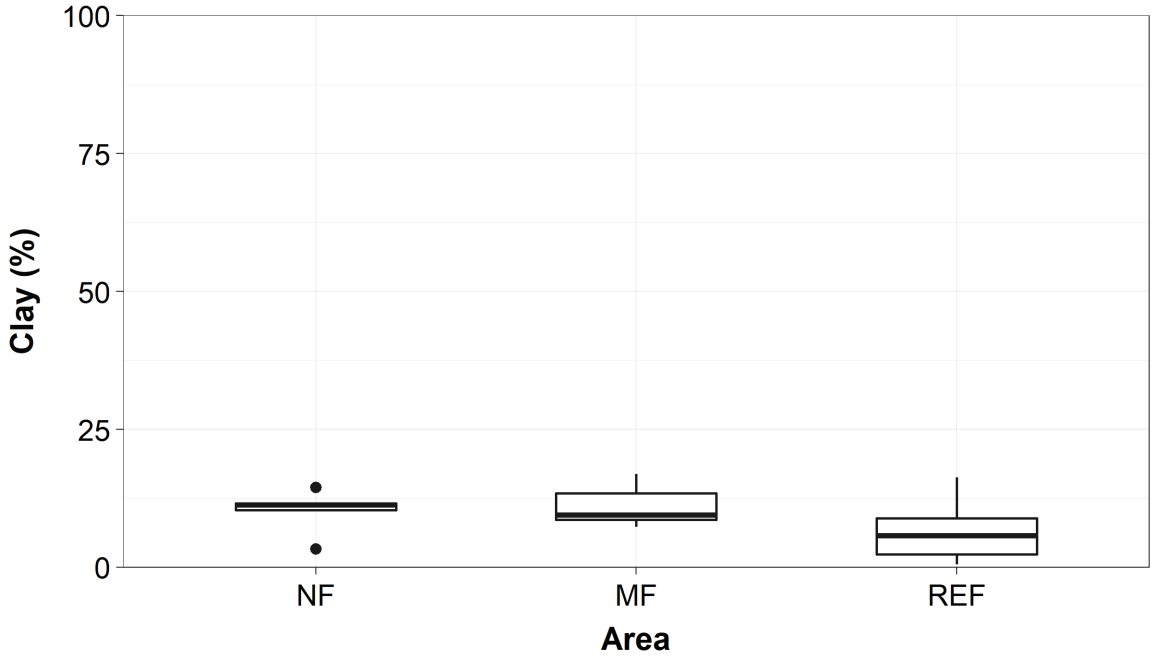
NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.1-1: Box-and-whisker Plots of Sand (%) in Meliadine Lake, 2018



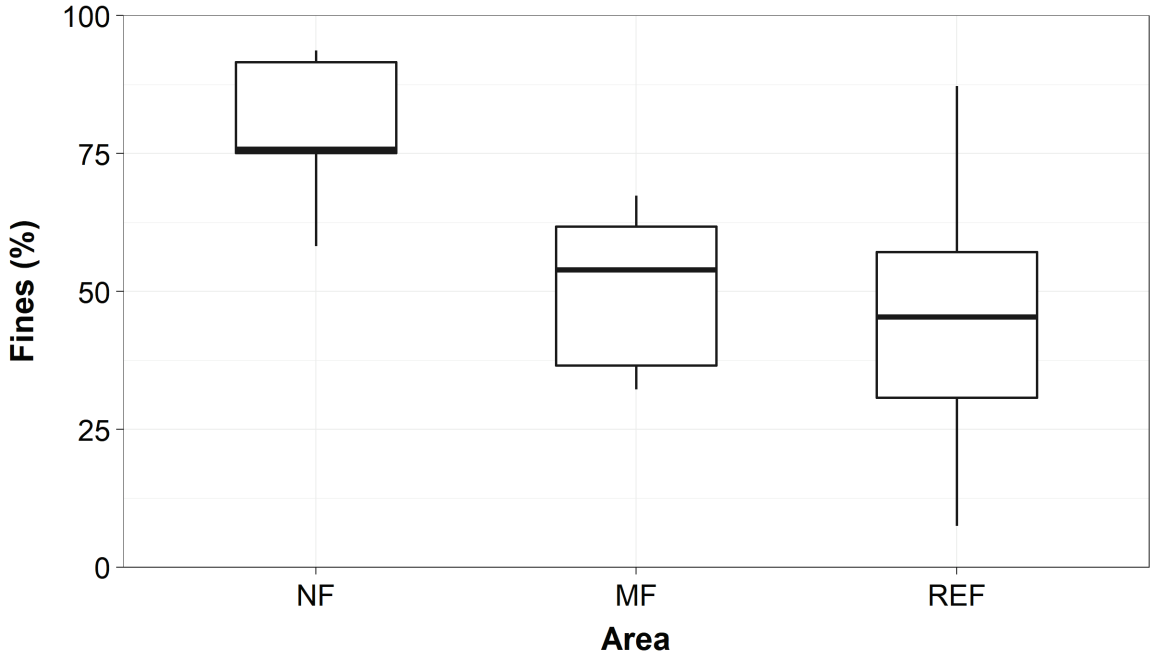
NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.1-2: Box-and-whisker Plots of Silt (%) in Meliadine Lake, 2018



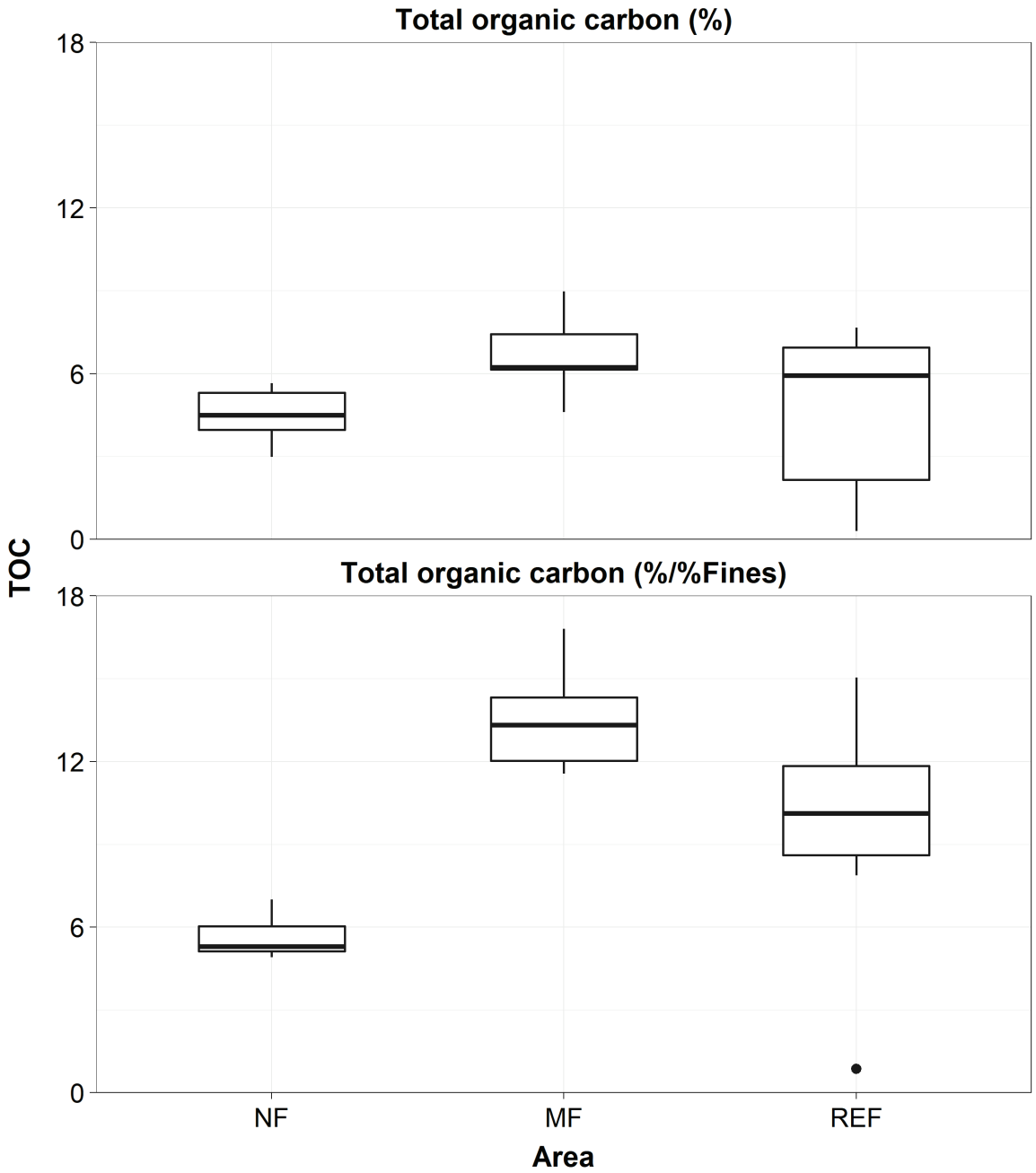
NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.1-3: Box-and-whisker Plots of Clay (%) in Meliadine Lake, 2018



NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

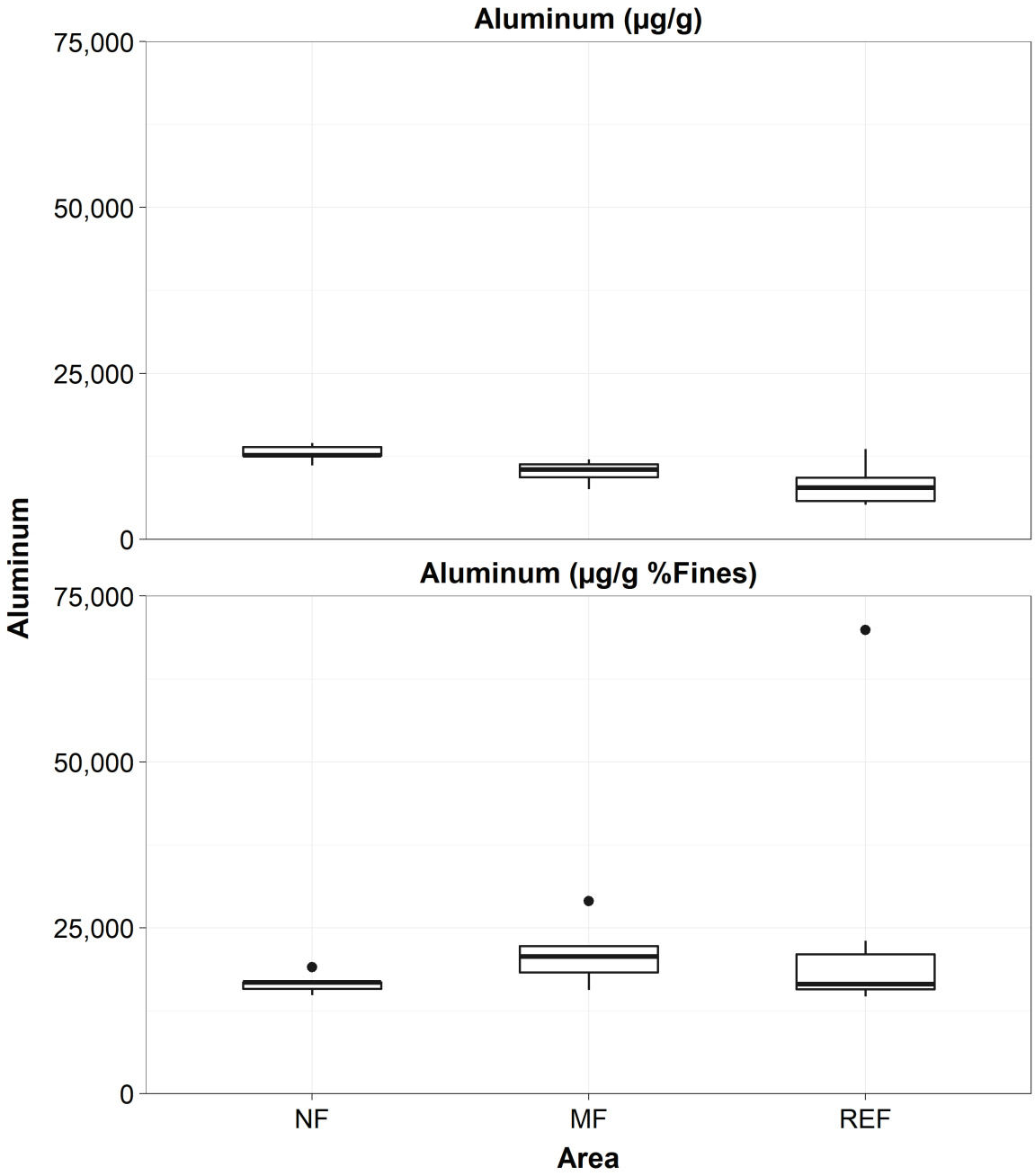
Figure 8D.1-4: Box-and-whisker Plots of Fines (Silt + Clay %) in Meliadine Lake, 2018



Note: top: non-normalized data; bottom: data normalized to % fines.
NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

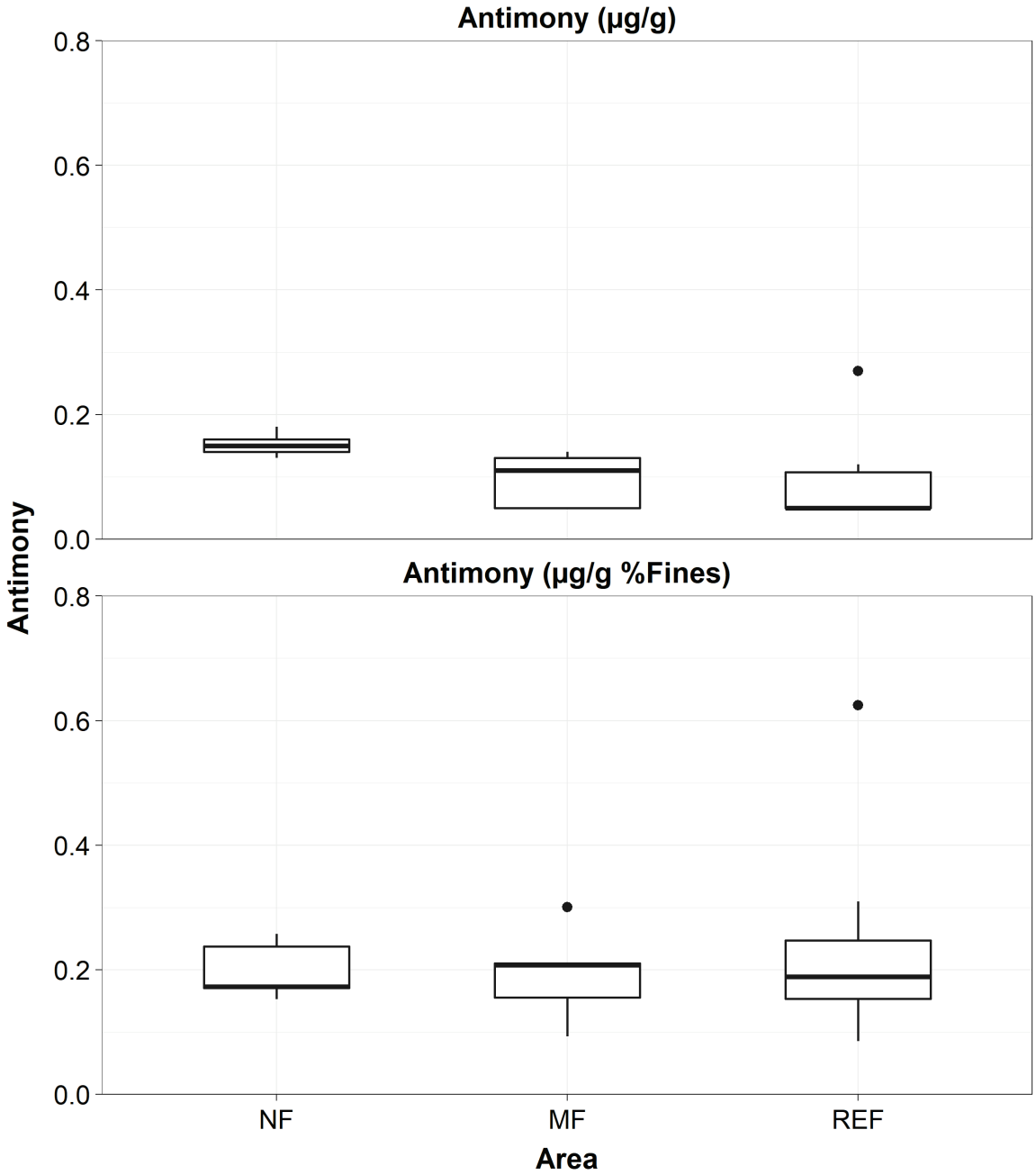
Figure 8D.1-5: Box-and-whisker Plots of Total Organic Carbon Concentrations in Meliadine Lake, 2018

2.0 METALS



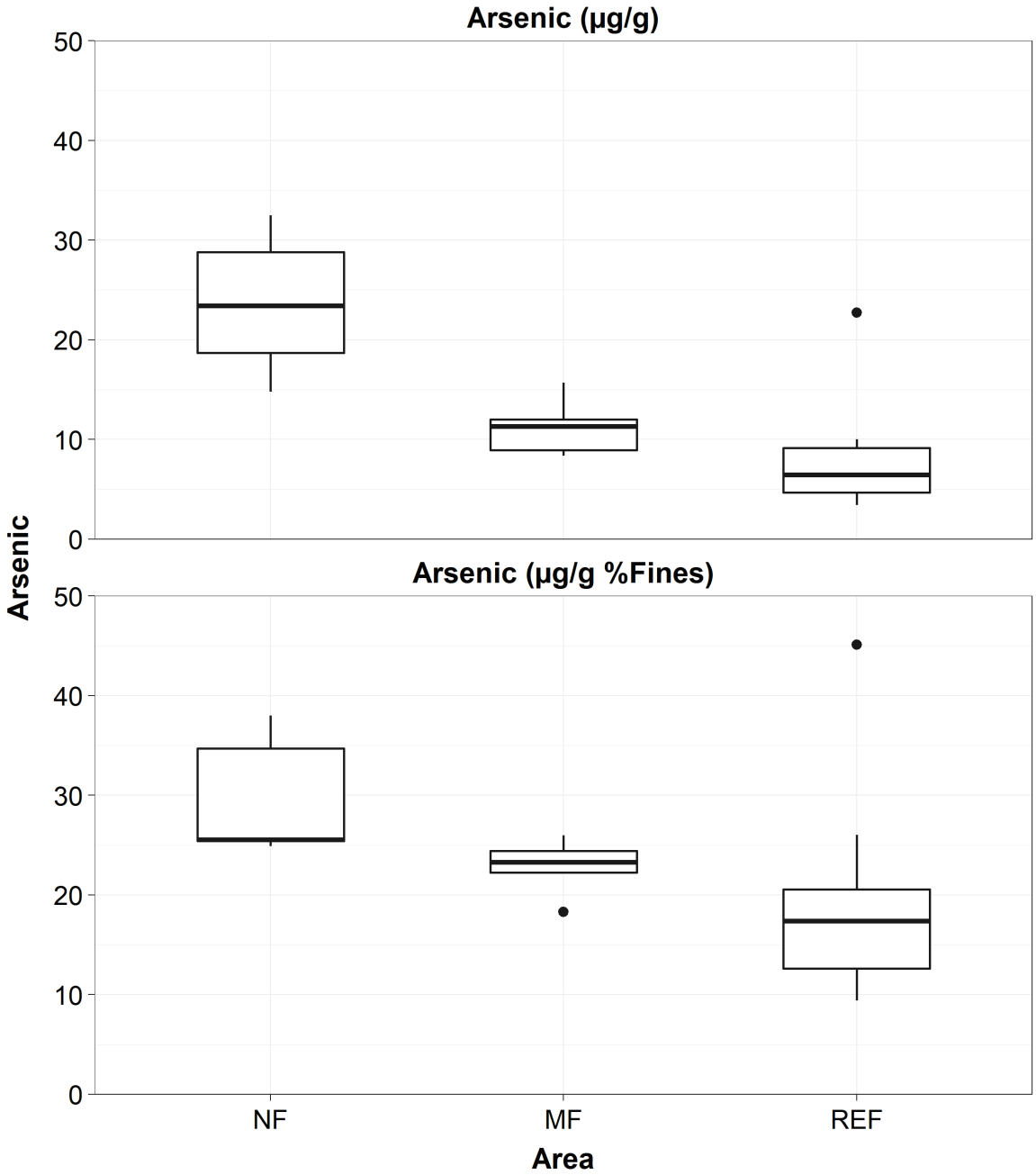
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-1: Box-and-whisker Plots of Aluminum Concentrations in Meliadine Lake, 2018



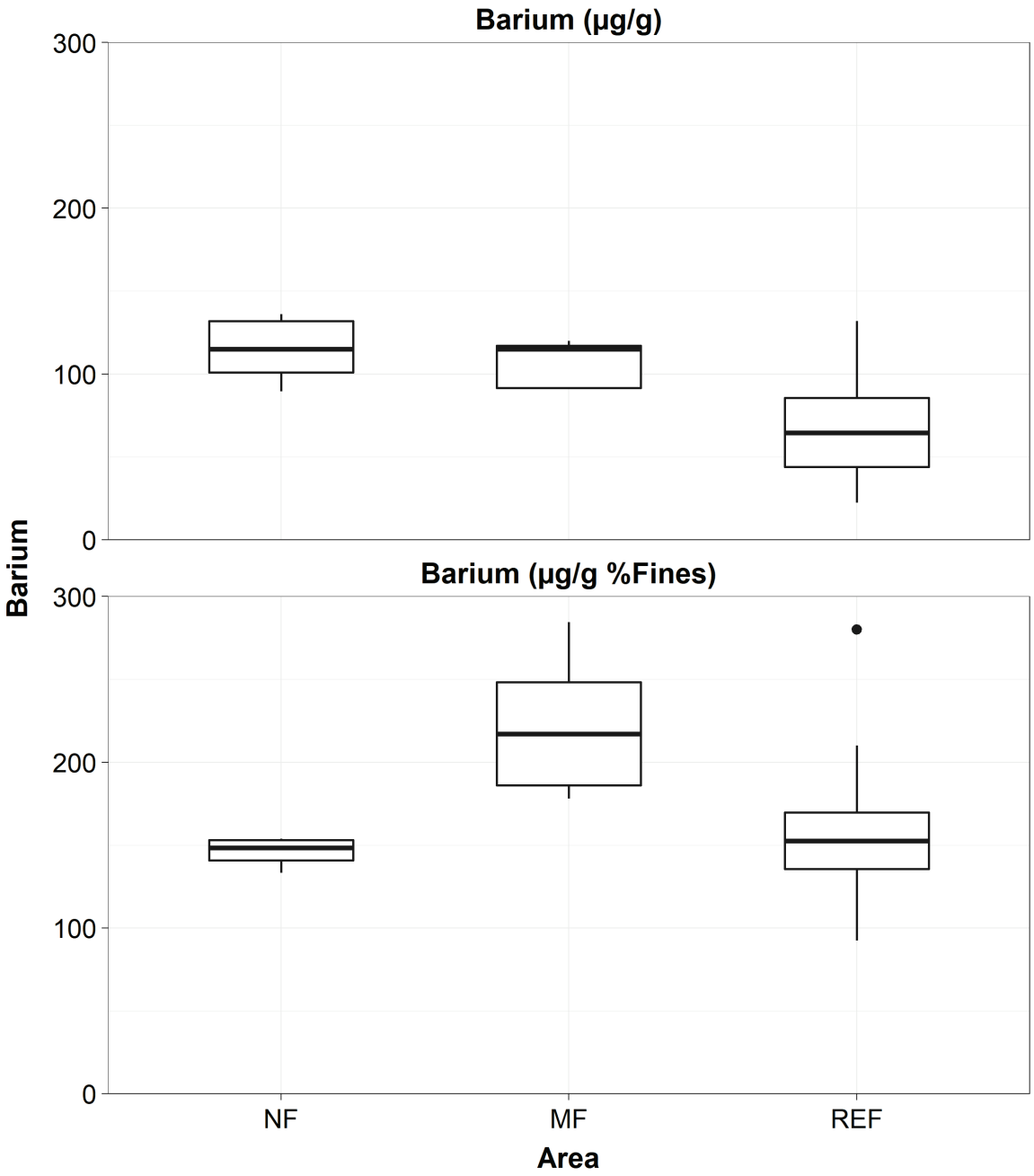
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-2: Box-and-whisker Plots of Antimony Concentrations in Meliadine Lake, 2018



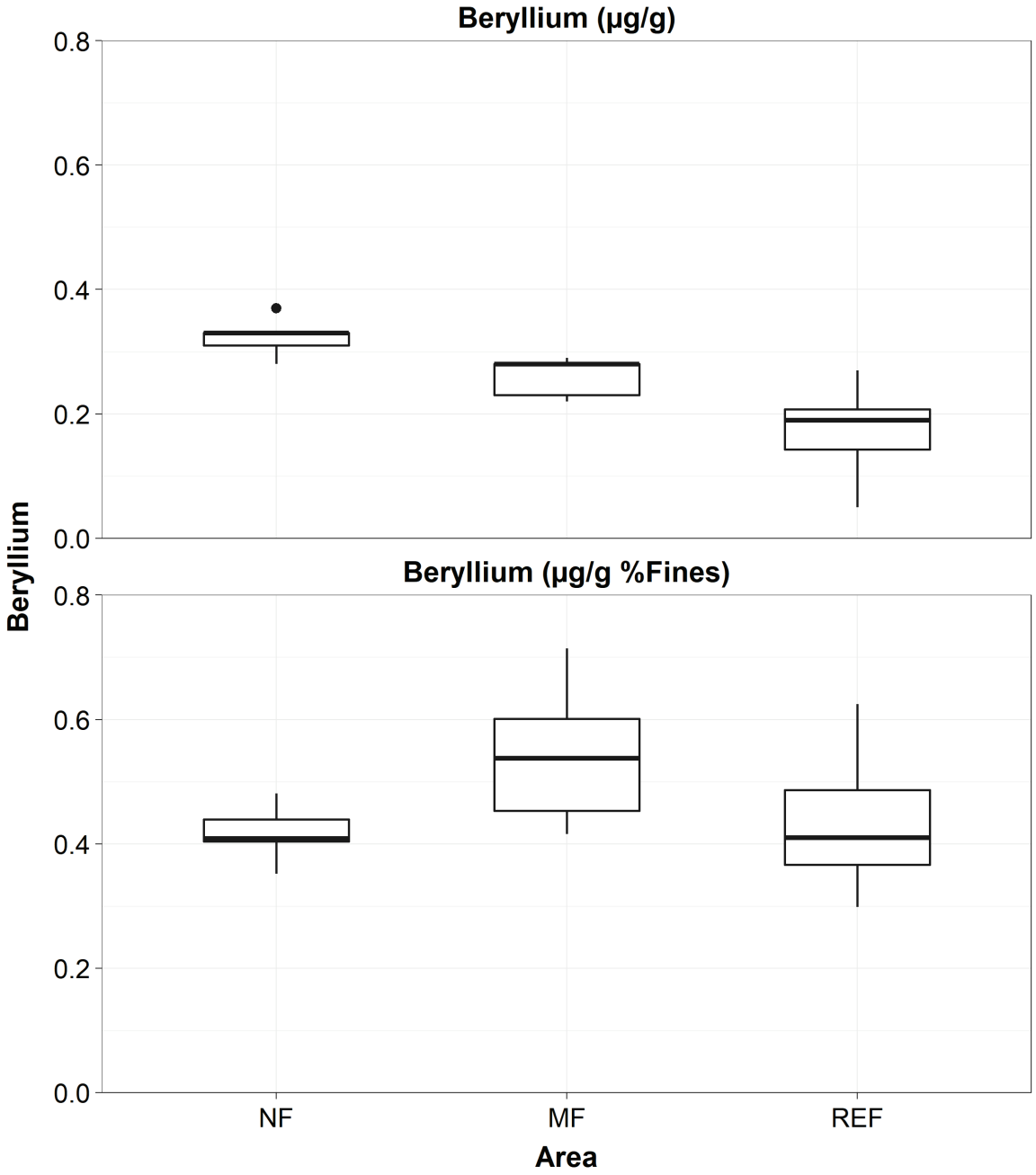
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-3: Box-and-whisker Plots of Arsenic Concentrations in Meliadine Lake, 2018



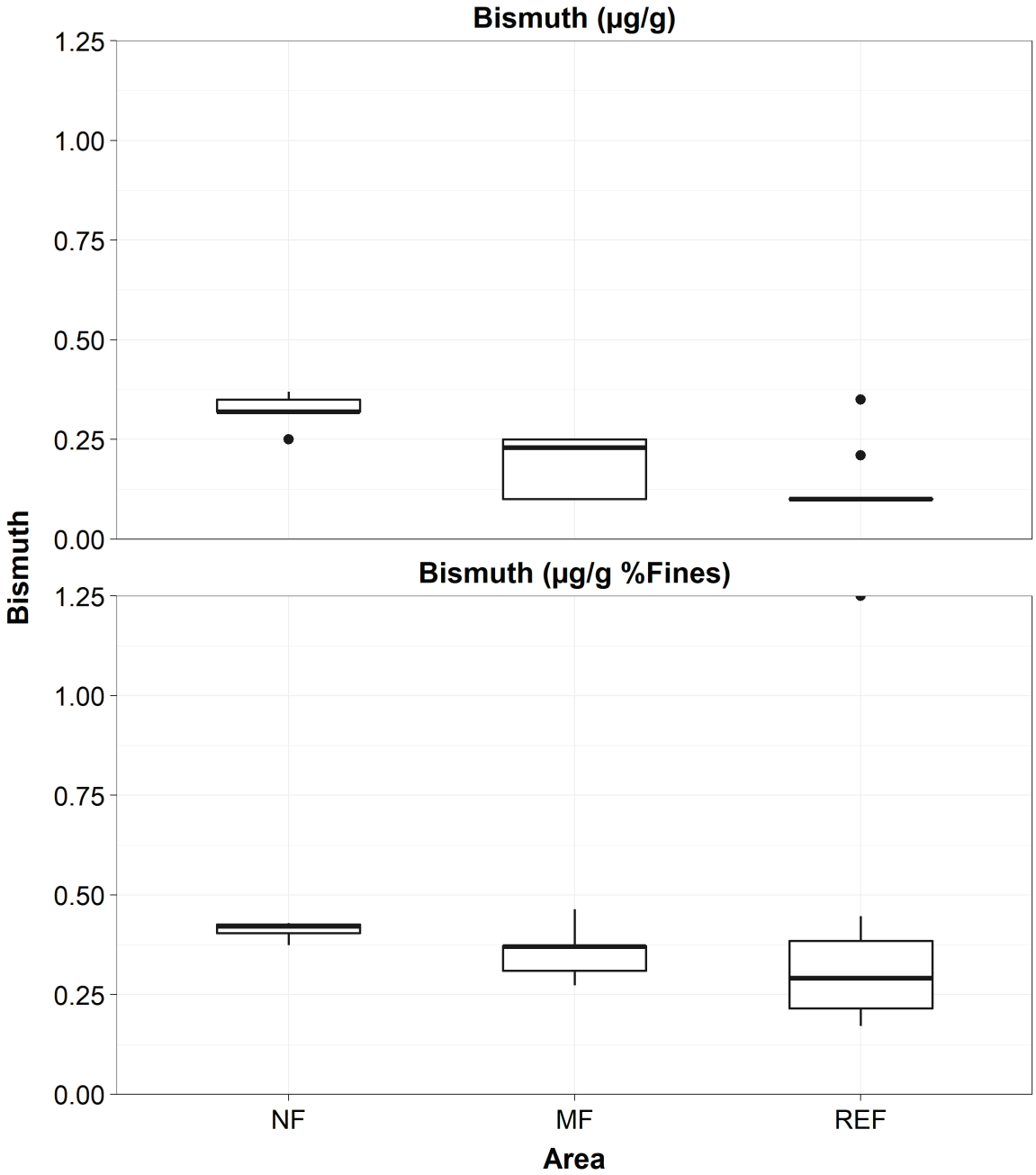
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-4: Box-and-whisker Plots of Barium Concentrations in Meliadine Lake, 2018



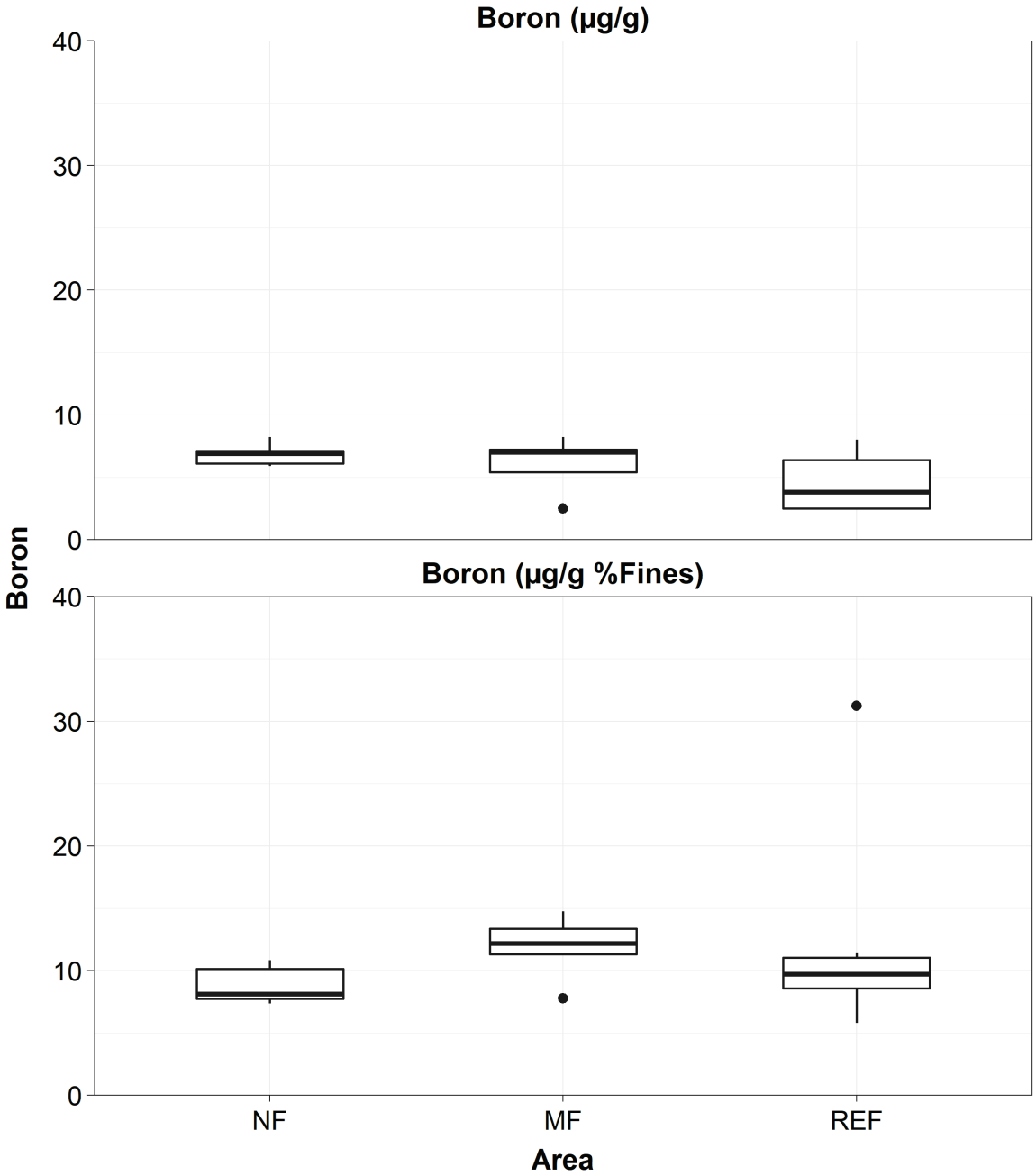
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-5: Box-and-whisker Plots of Beryllium Concentrations in Meliadine Lake, 2018



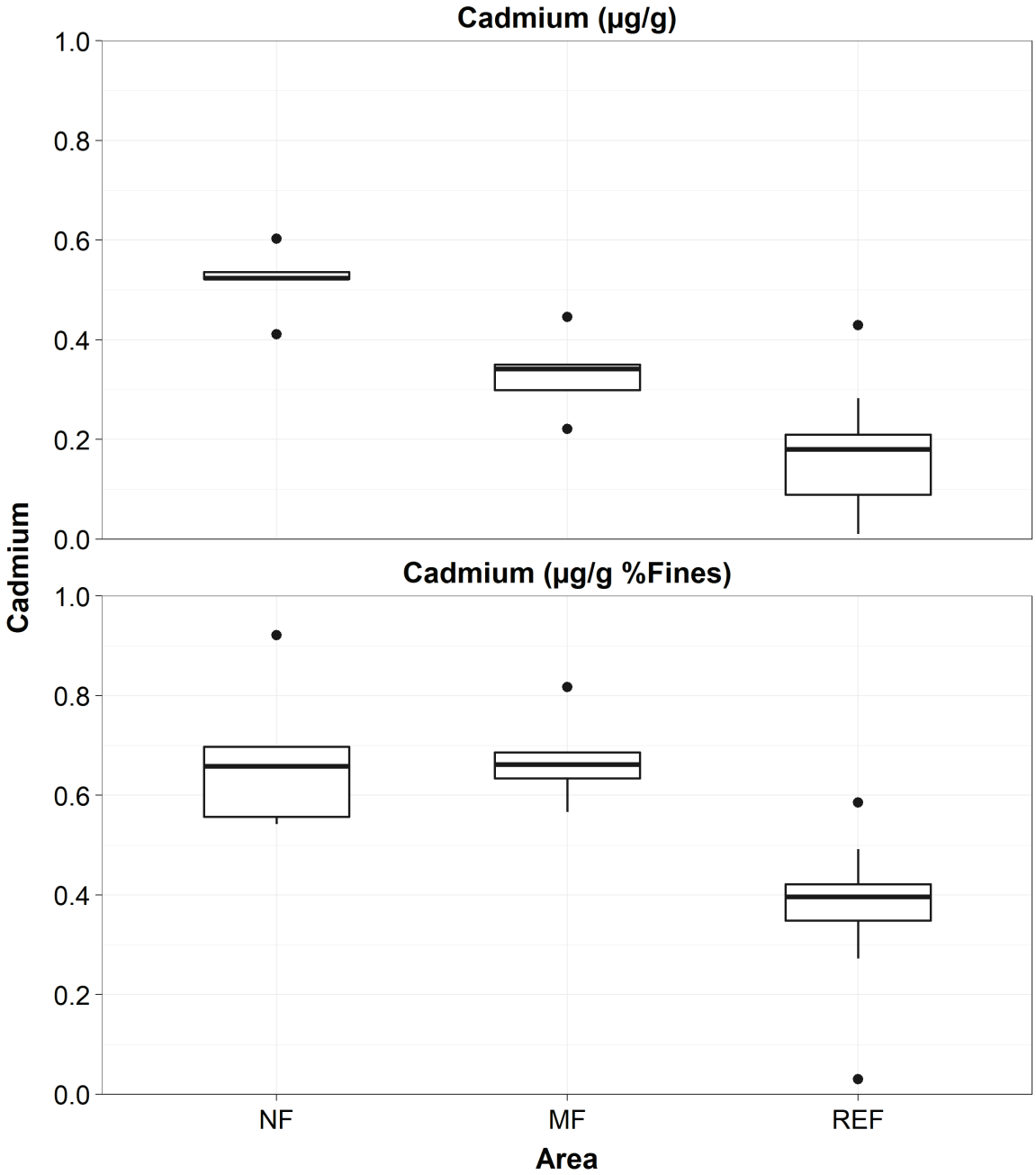
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-6: Box-and-whisker Plots of Bismuth Concentrations in Meliadine Lake, 2018



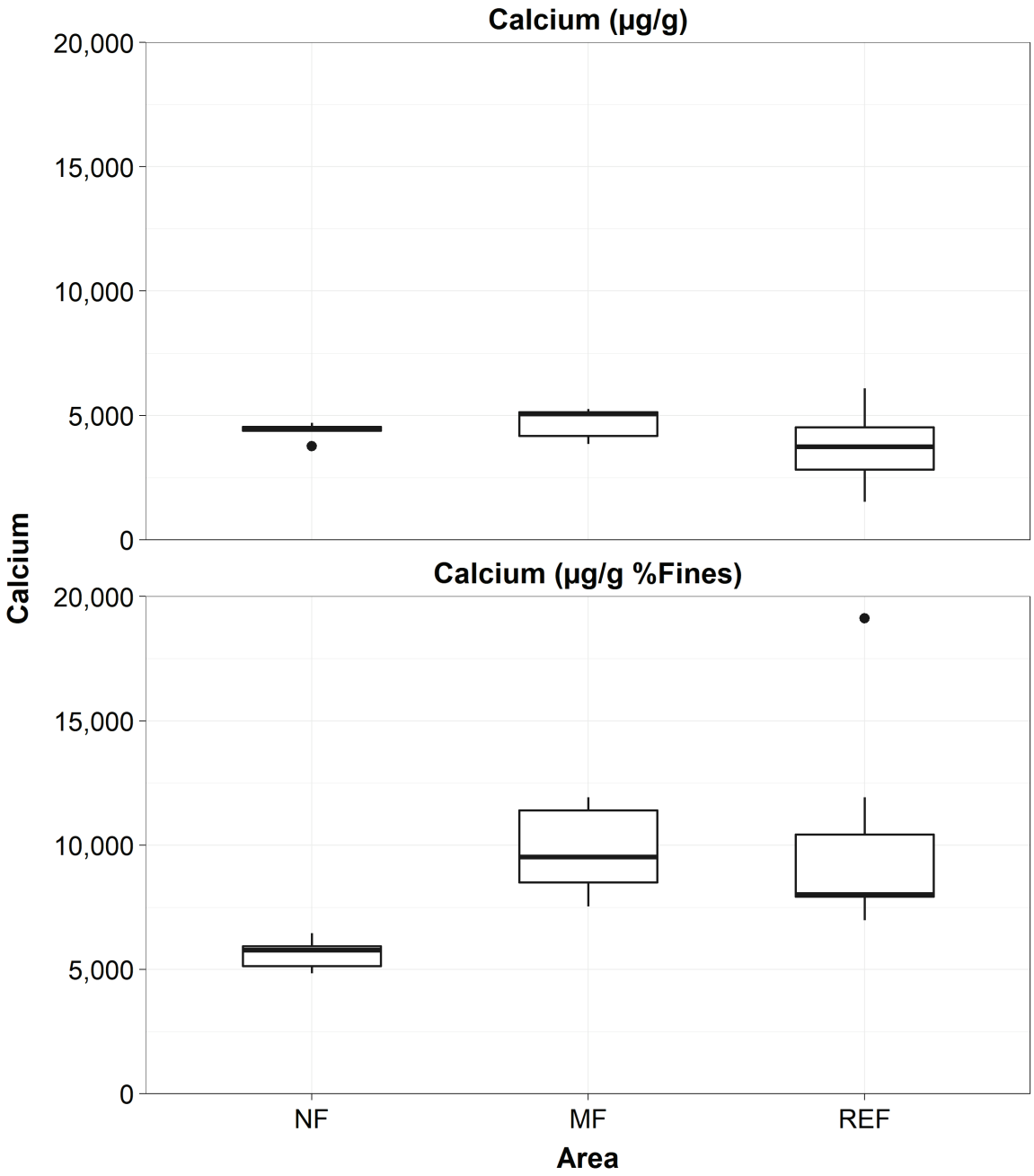
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-7: Box-and-whisker Plots of Boron Concentrations in Meliadine Lake, 2018



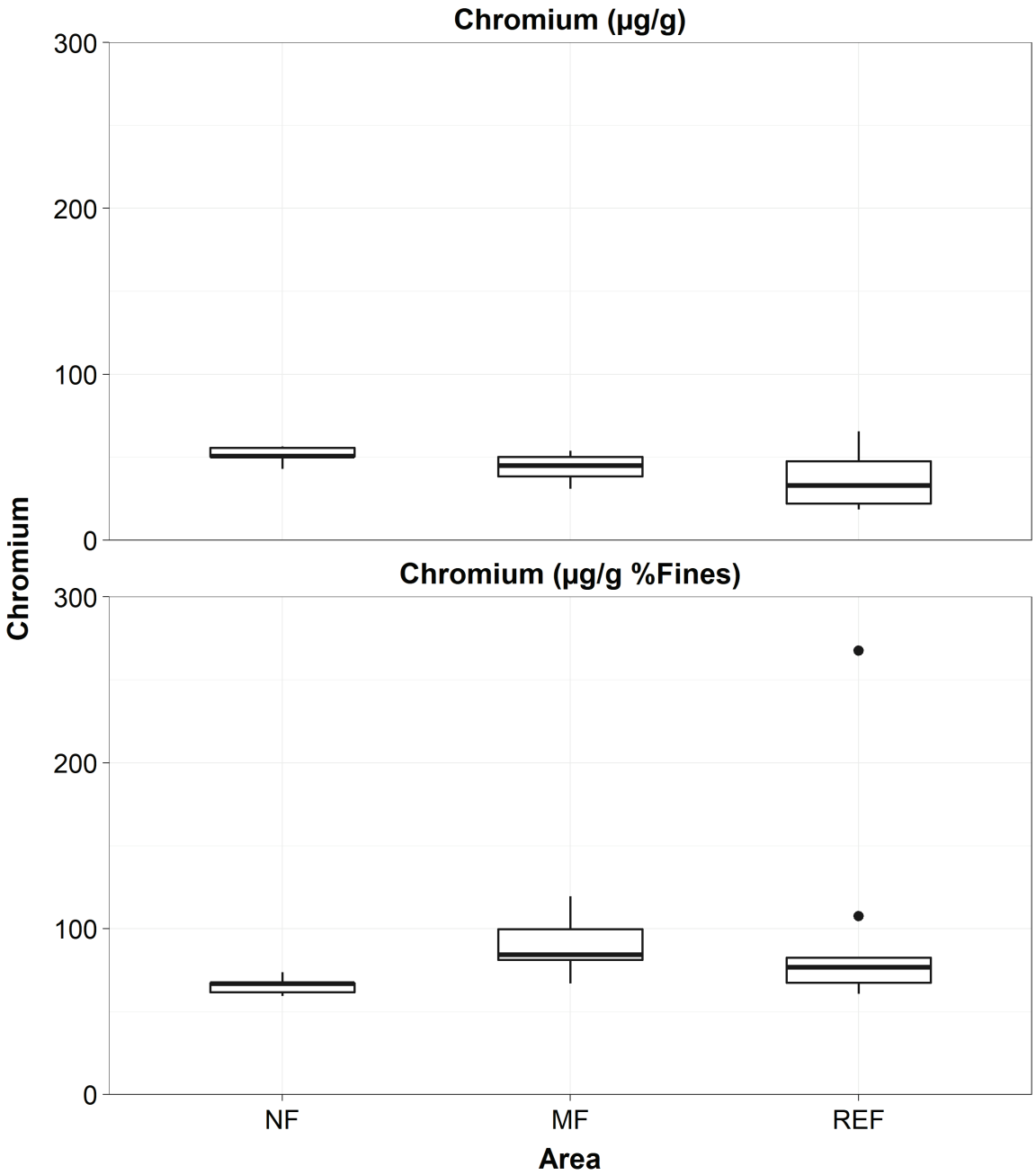
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-8: Box-and-whisker Plots of Cadmium Concentrations in Meliadine Lake, 2018



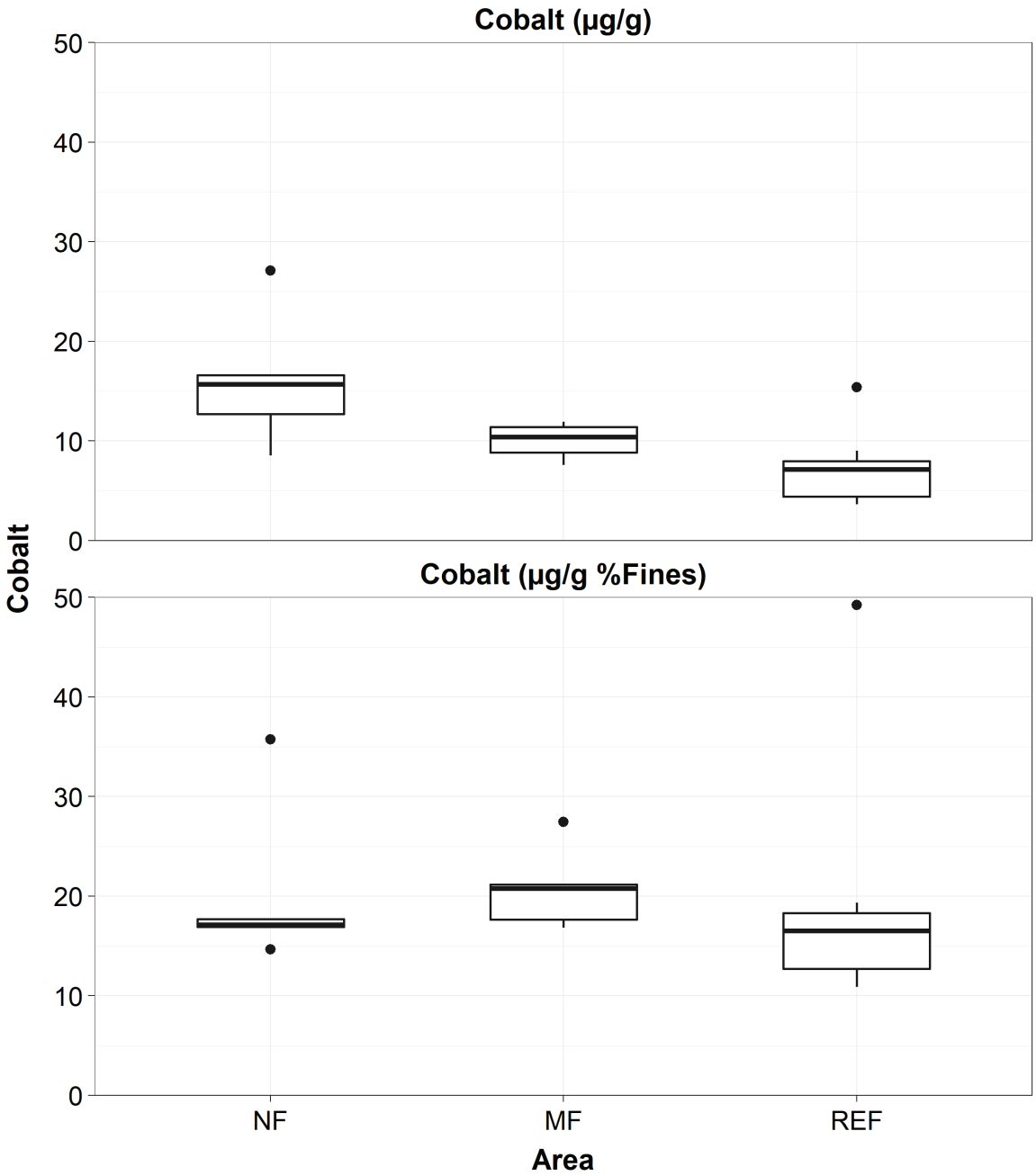
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-9: Box-and-whisker Plots of Calcium Concentrations in Meliadine Lake, 2018



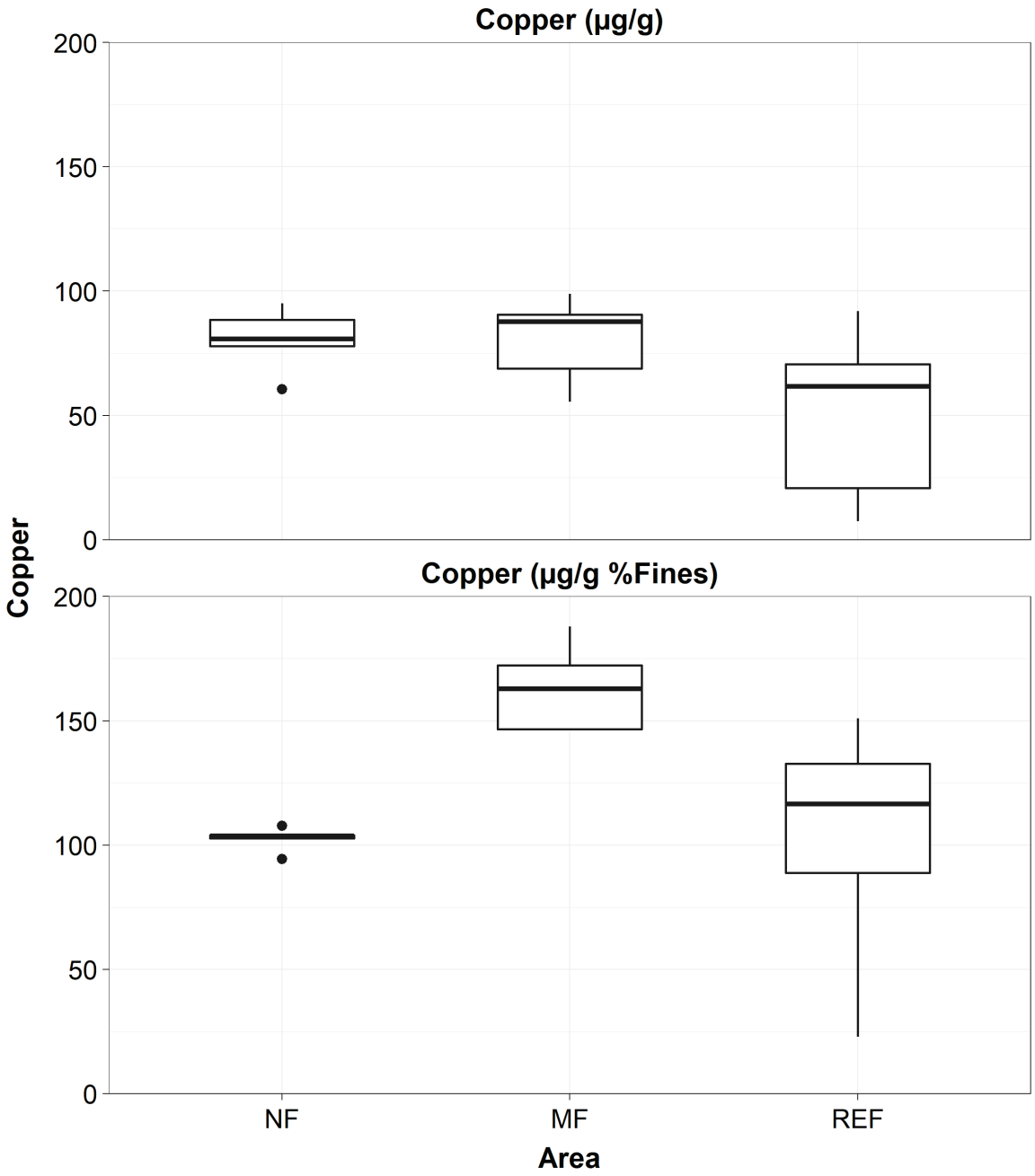
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-10: Box-and-whisker Plots of Chromium Concentrations in Meliadine Lake, 2018



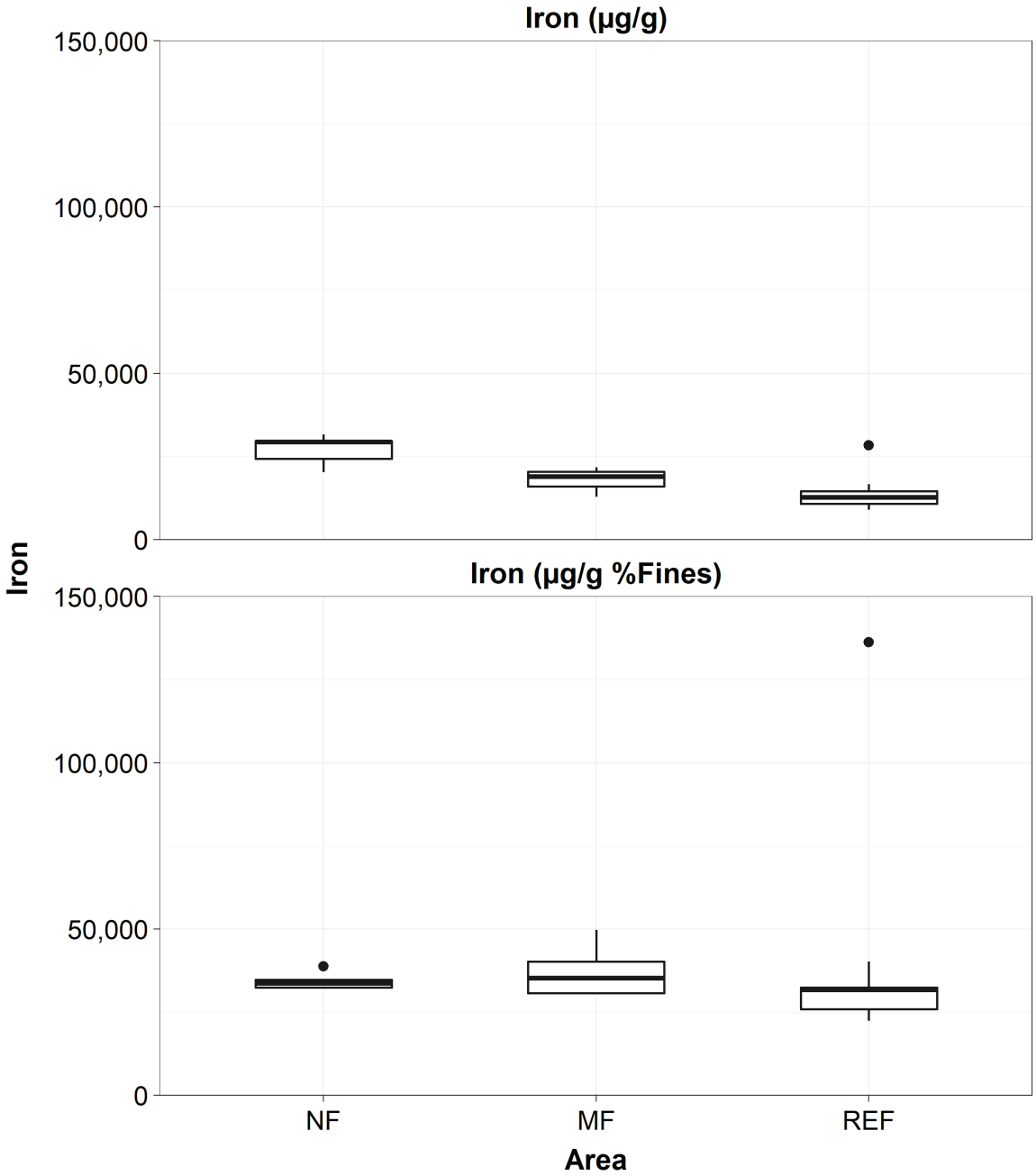
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-11: Box-and-whisker Plots of Cobalt Concentrations in Meliadine Lake, 2018



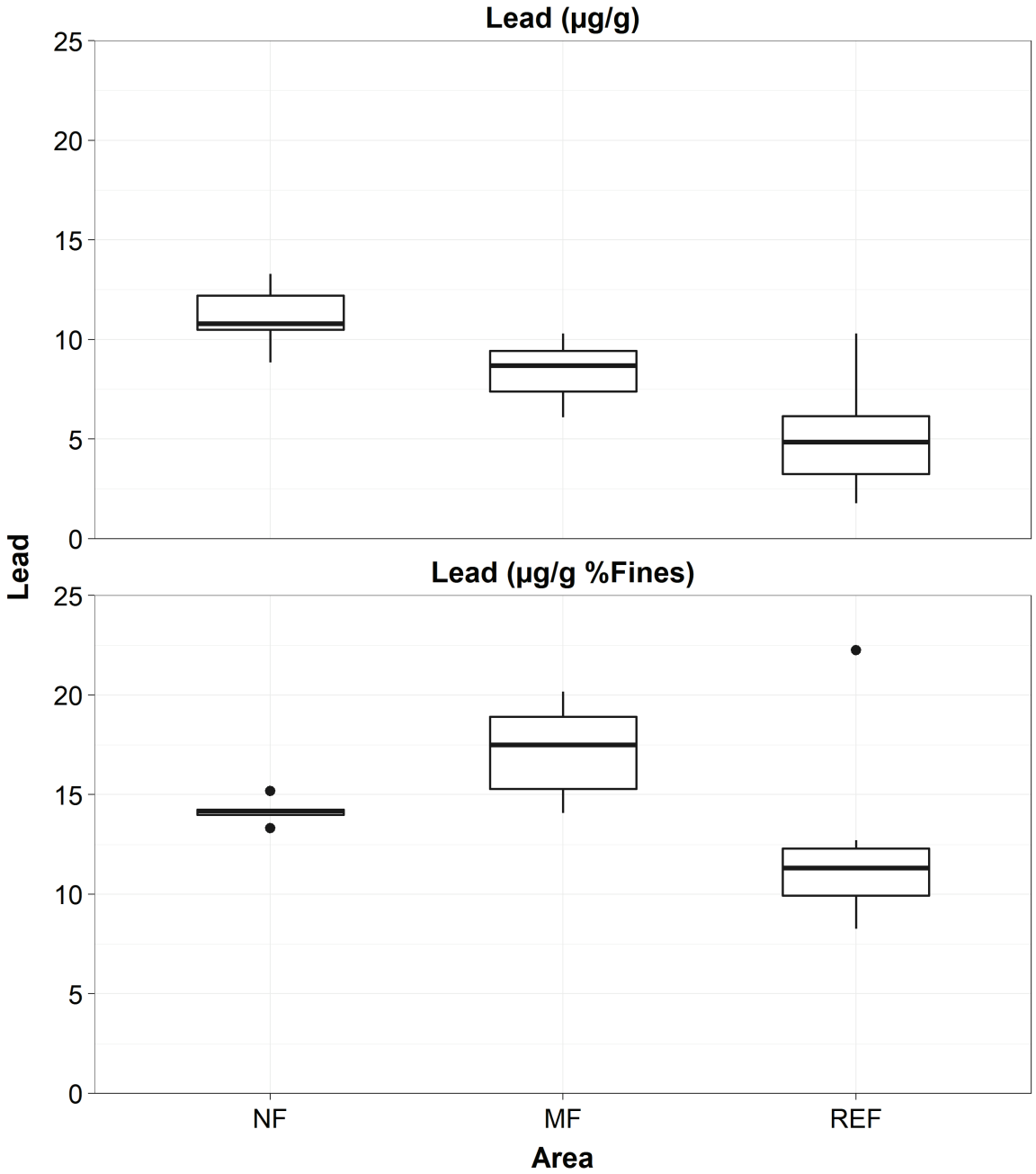
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µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-12: Box-and-whisker Plots of Copper Concentrations in Meliadine Lake, 2018



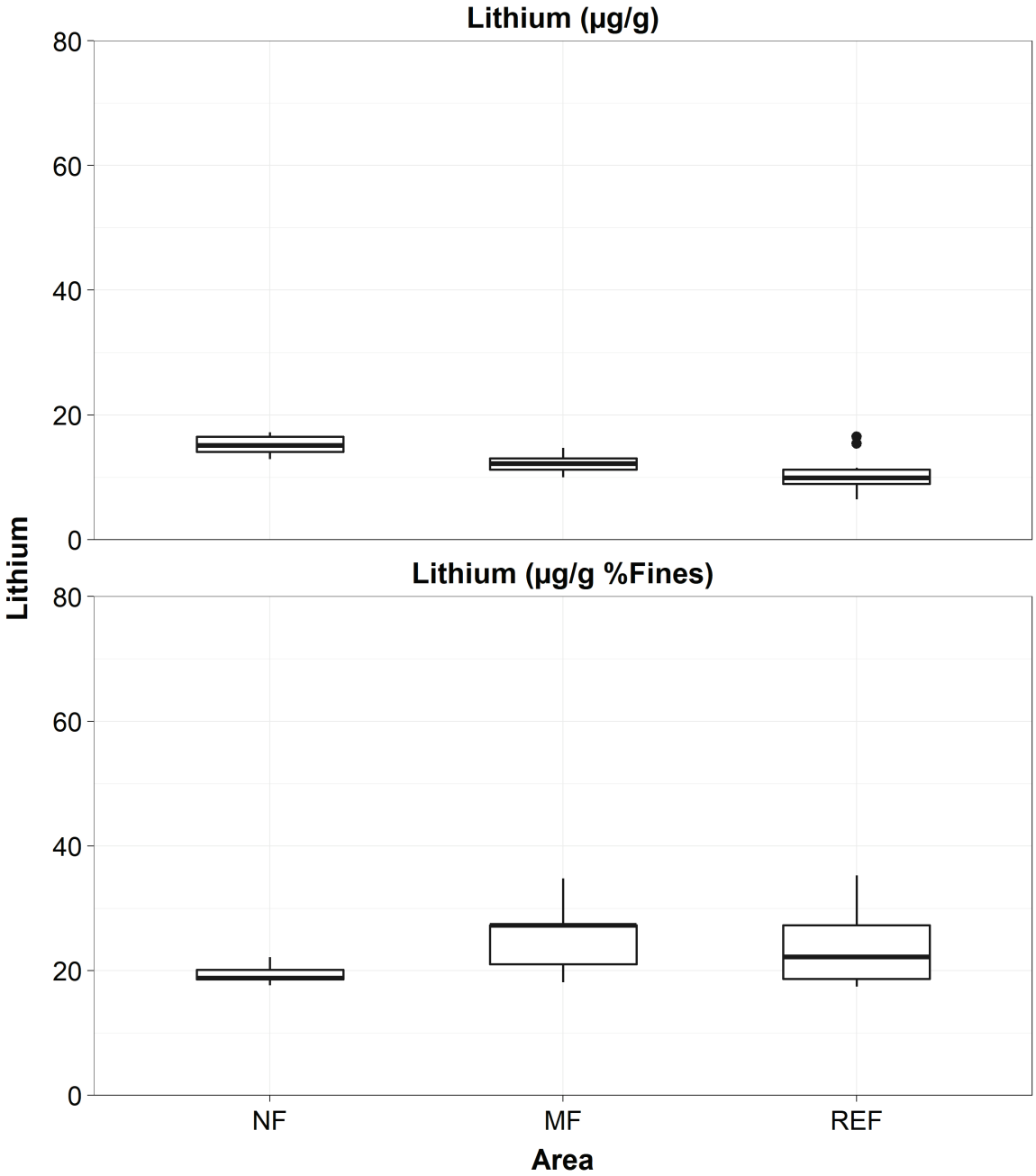
Note: top: non-normalized data; bottom: data normalized to % fines.
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Figure 8D.2-13: Box-and-whisker Plots of Iron Concentrations in Meliadine Lake, 2018



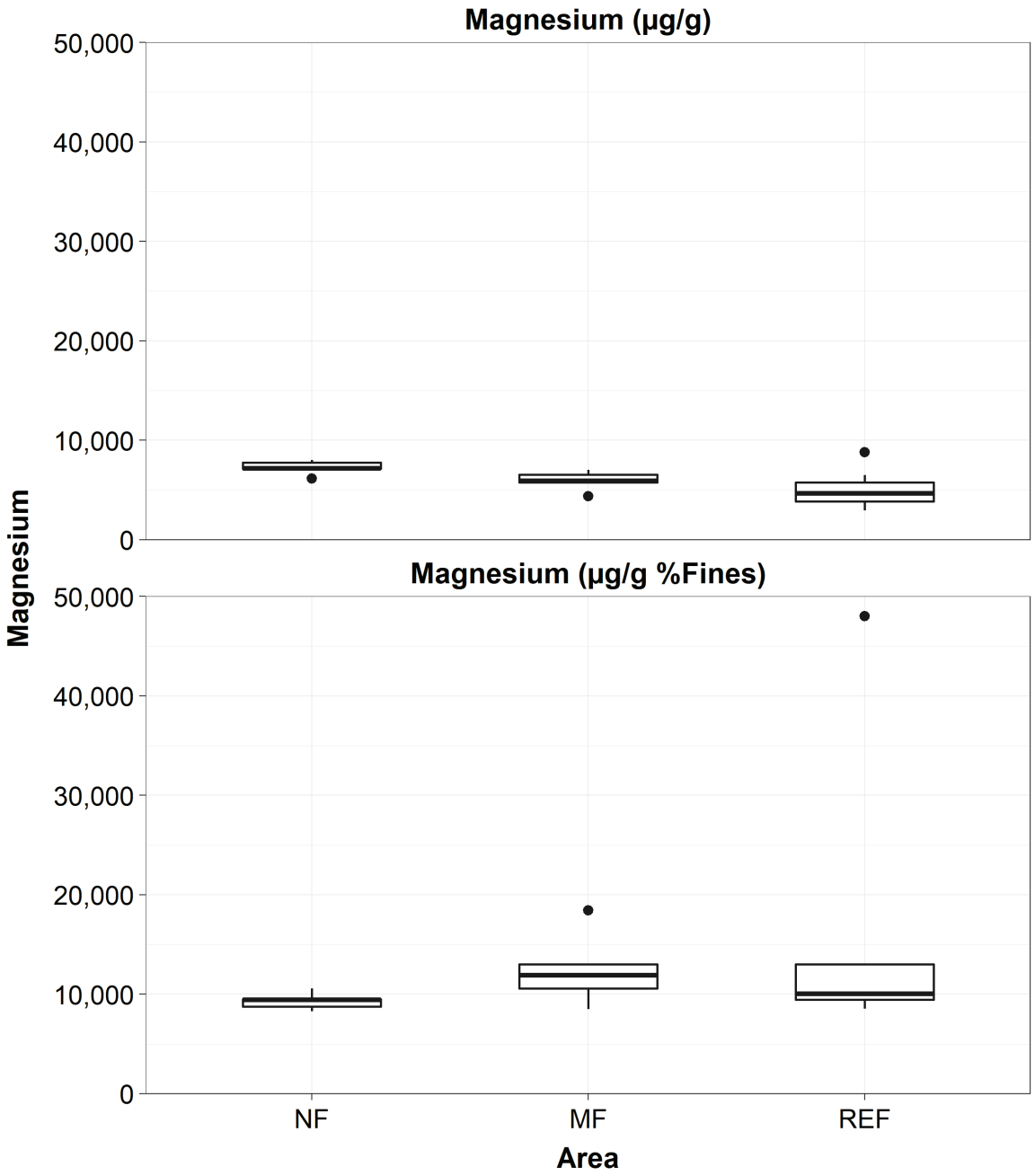
Note: top: non-normalized data; bottom: data normalized to % fines.
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Figure 8D.2-14: Box-and-whisker Plots of Lead Concentrations in Meliadine Lake, 2018



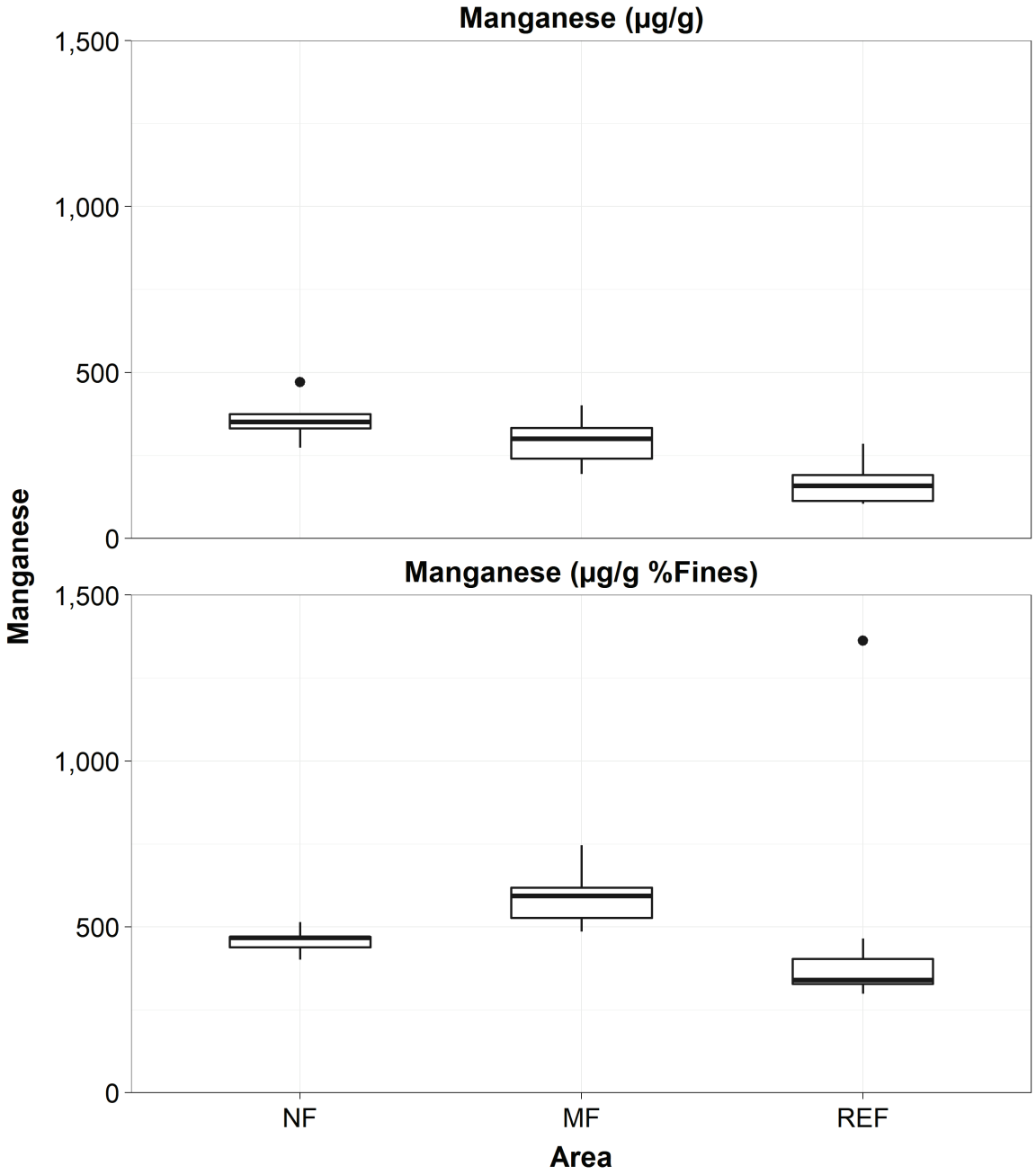
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-15: Box-and-whisker Plots of Lithium Concentrations in Meliadine Lake, 2018



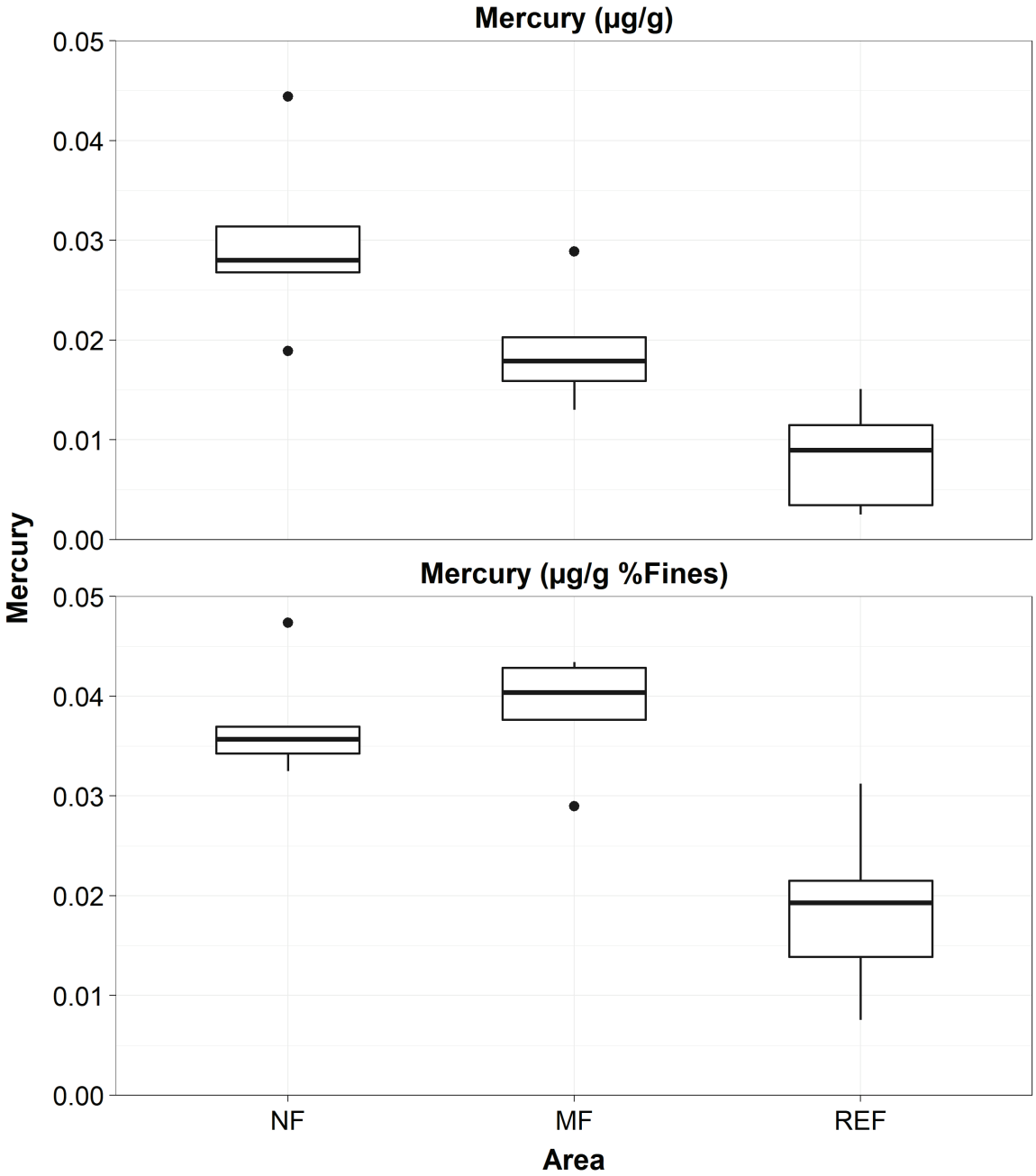
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-16: Box-and-whisker Plots of Magnesium Concentrations in Meliadine Lake, 2018



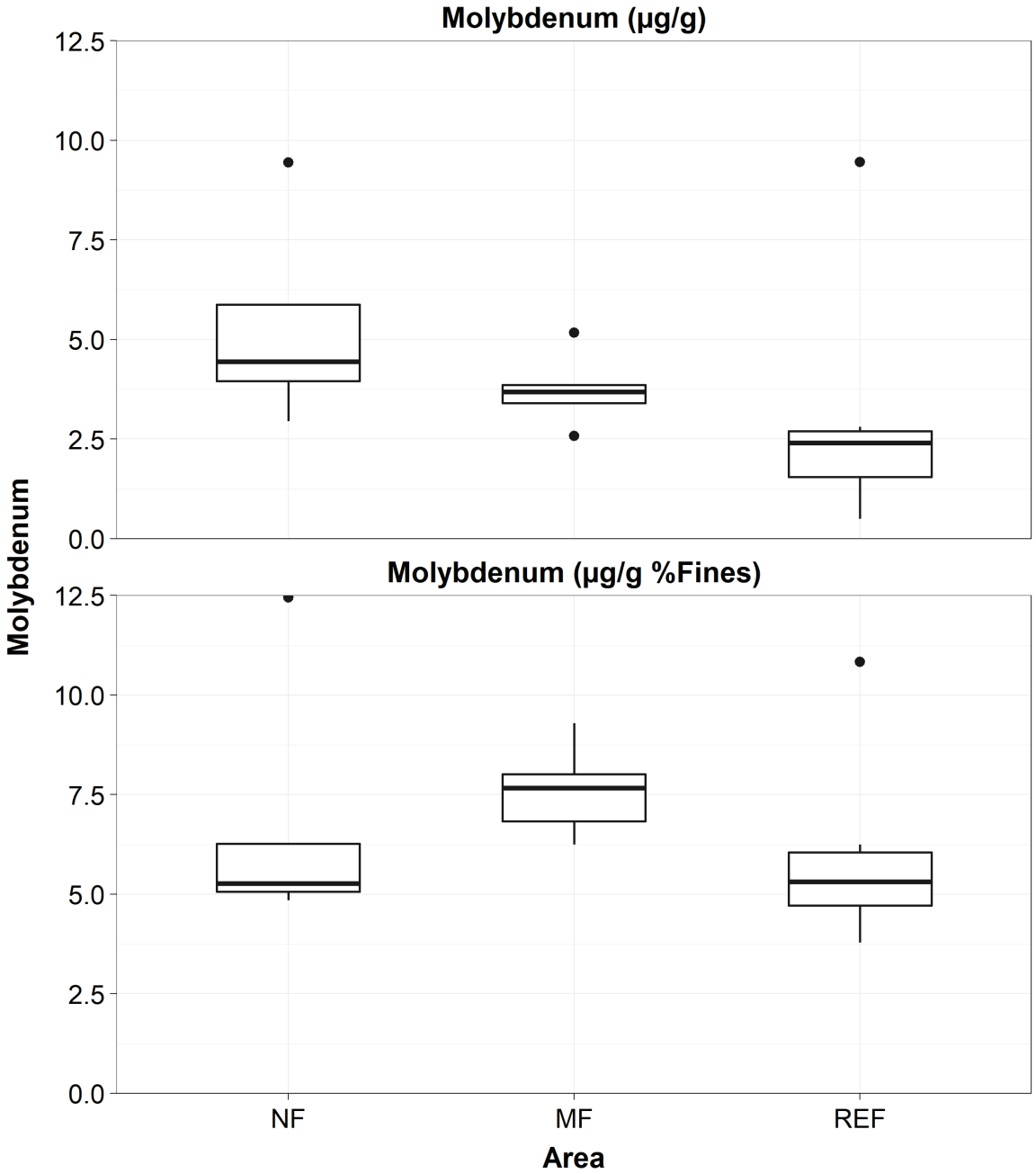
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-17: Box-and-whisker Plots of Manganese Concentrations in Meliadine Lake, 2018



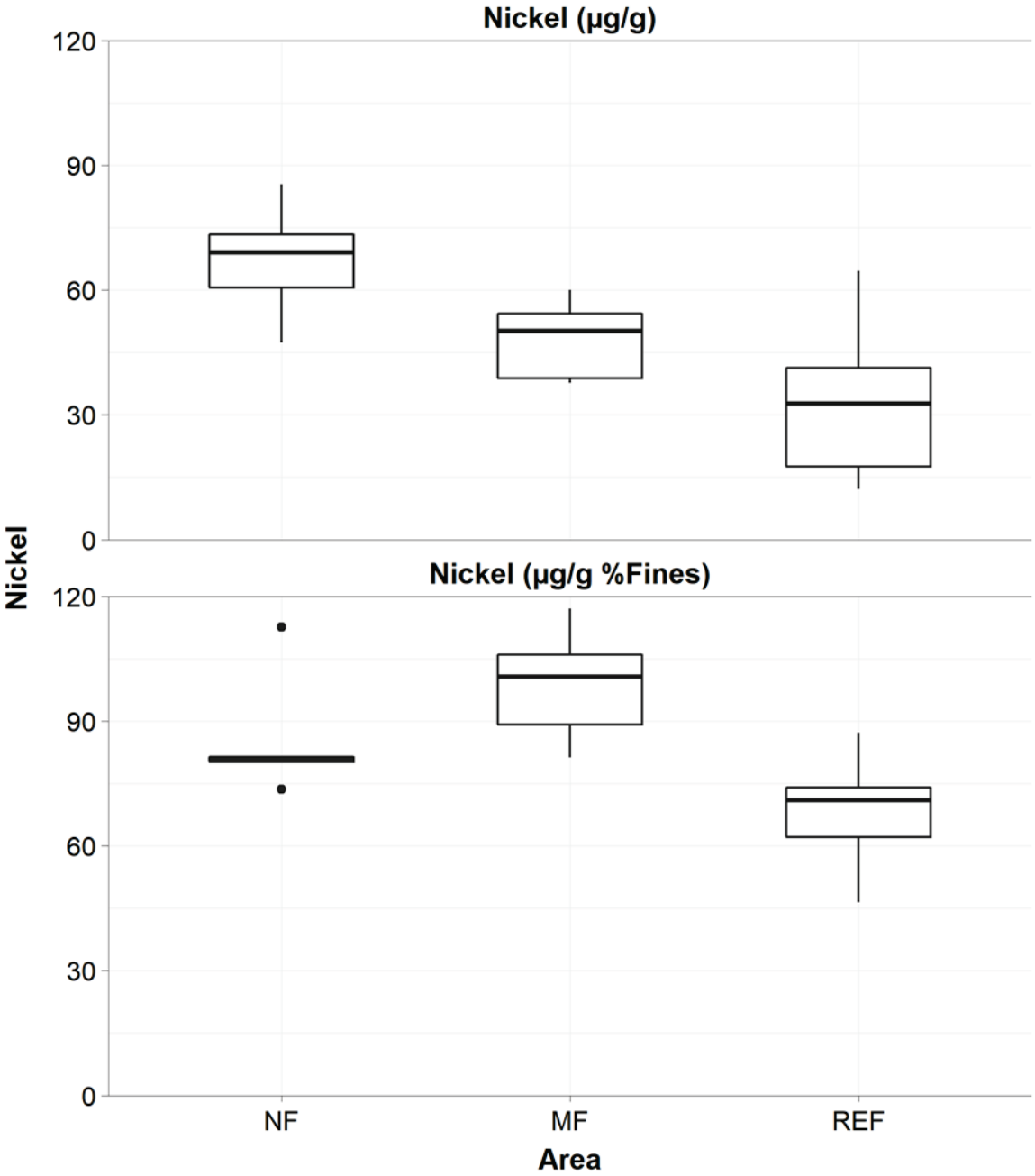
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-18: Box-and-whisker Plots of Mercury Concentrations in Meliadine Lake, 2018



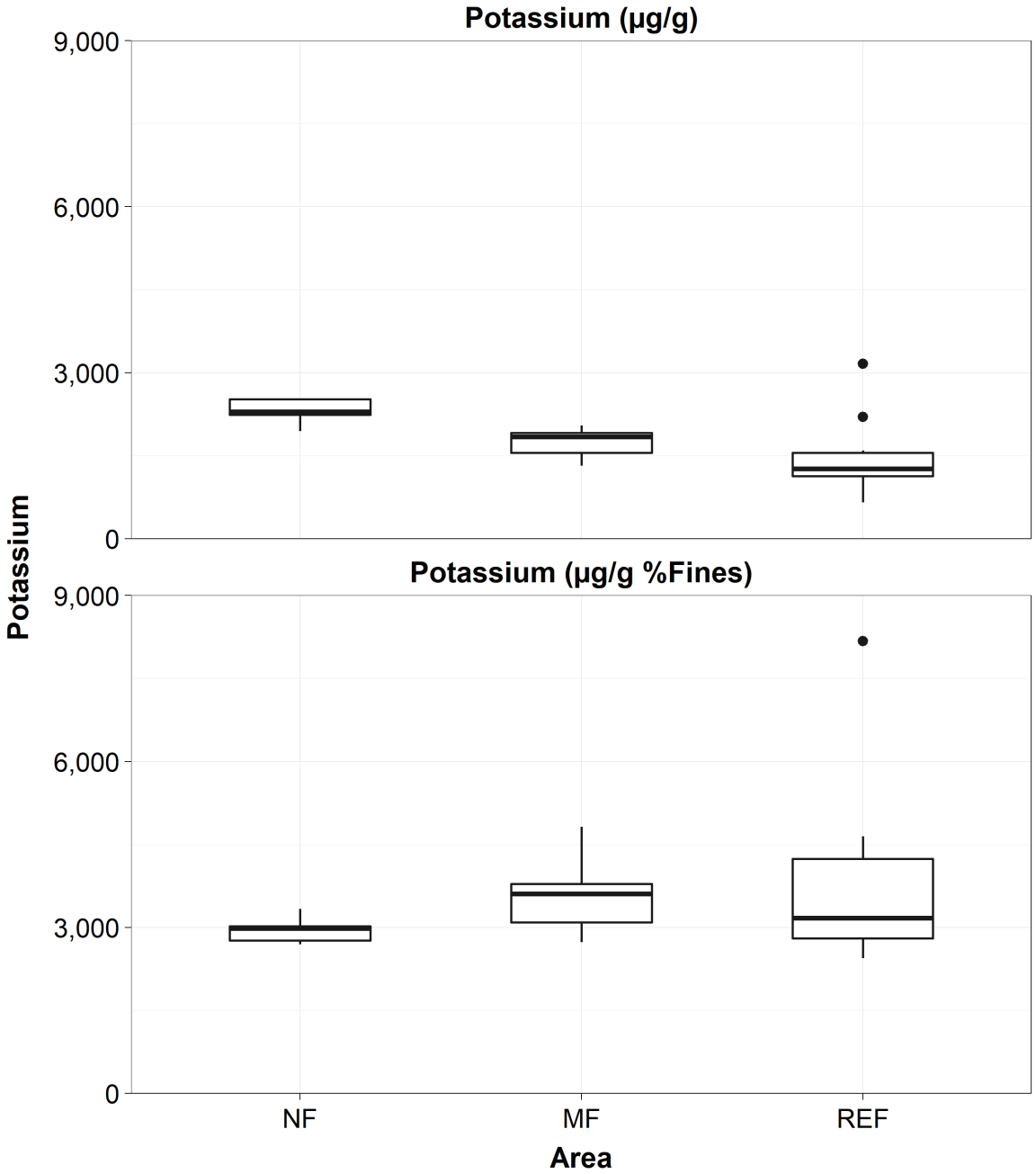
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-19: Box-and-whisker Plots of Molybdenum Concentrations in Meliadine Lake, 2018



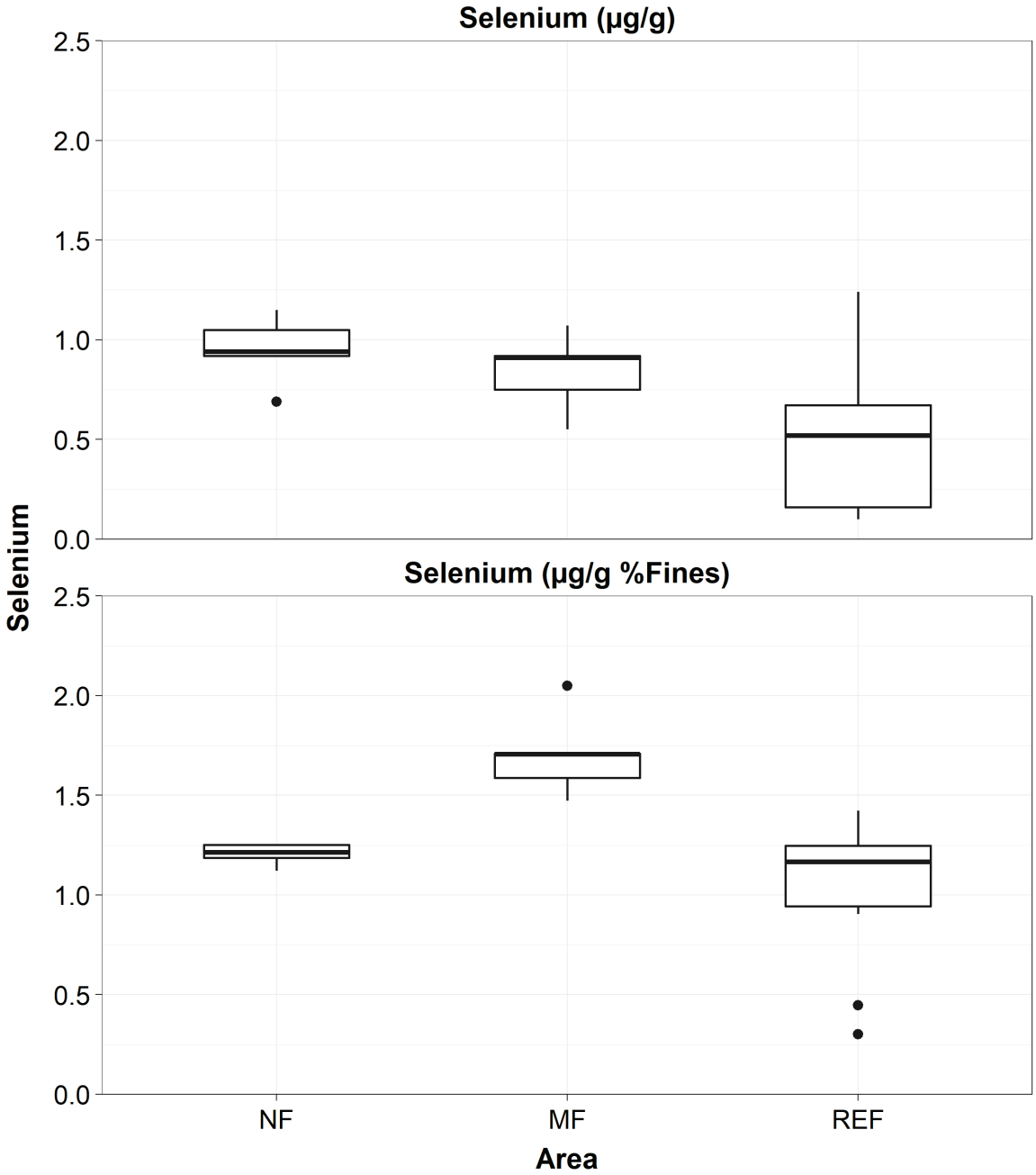
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-20: Box-and-whisker Plots of Nickel Concentrations in Meliadine Lake, 2018



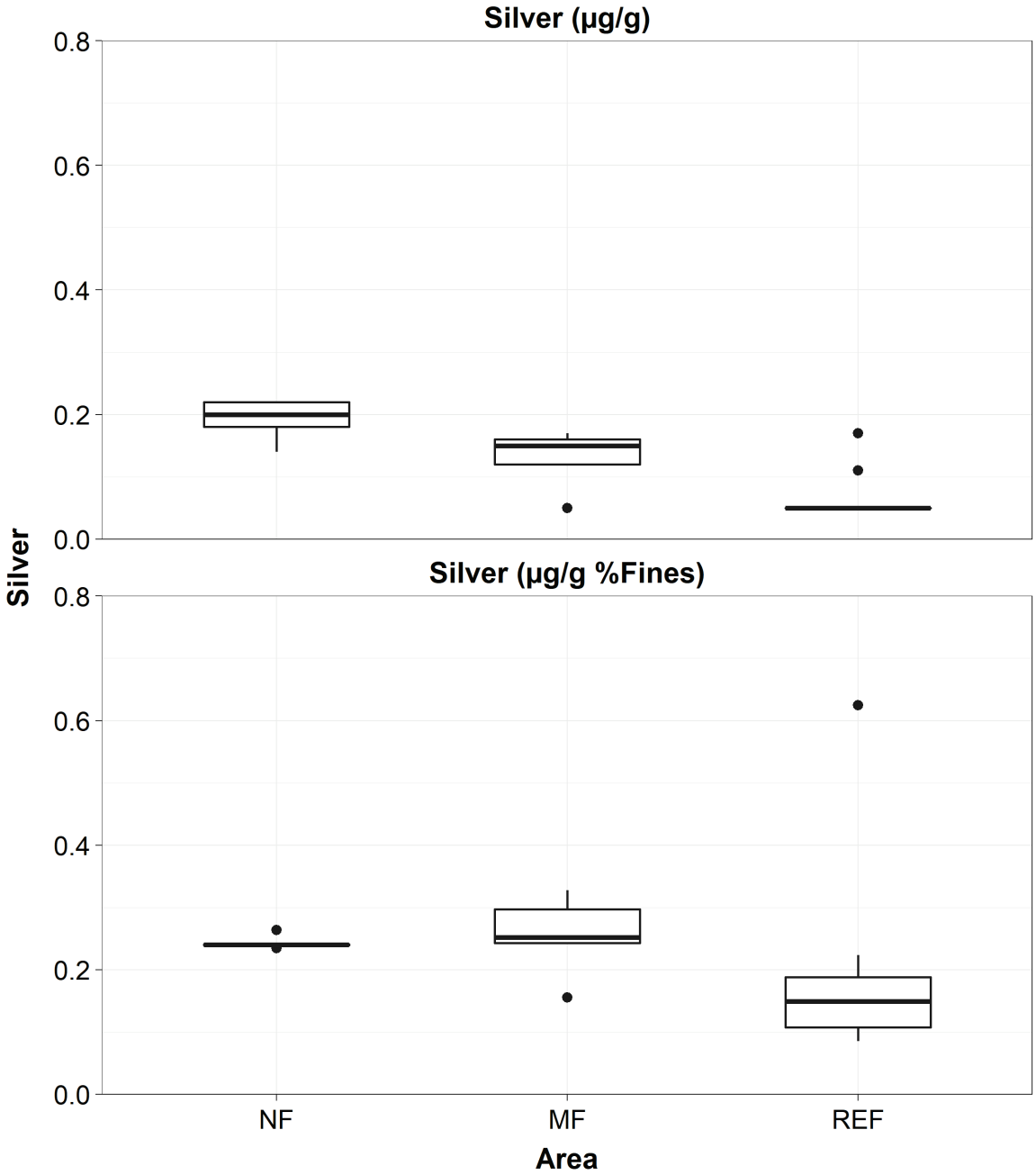
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-21: Box-and-whisker Plots of Potassium Concentrations in Meliadine Lake, 2018



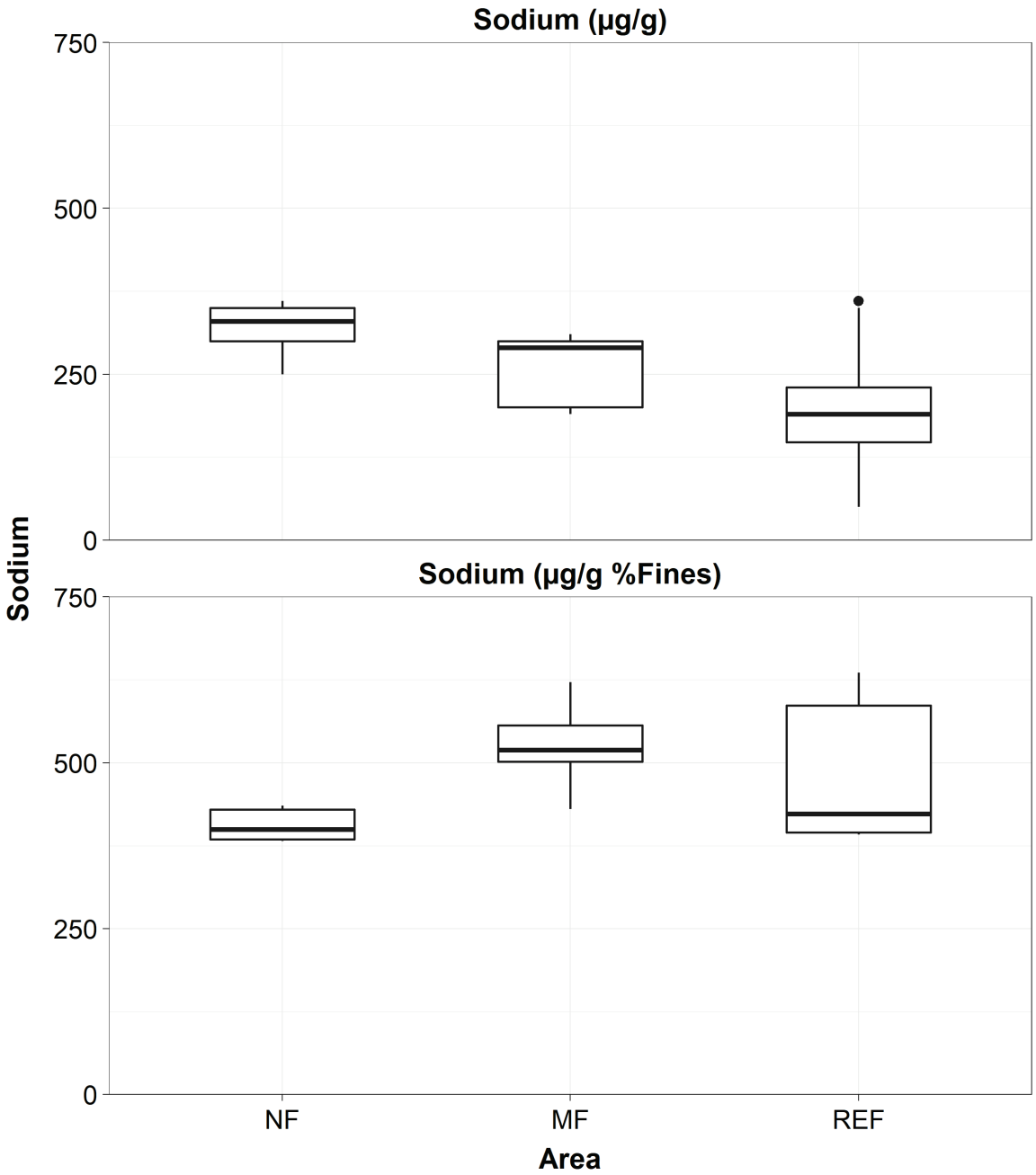
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Figure 8D.2-22: Box-and-whisker Plots of Selenium Concentrations in Meliadine Lake, 2018



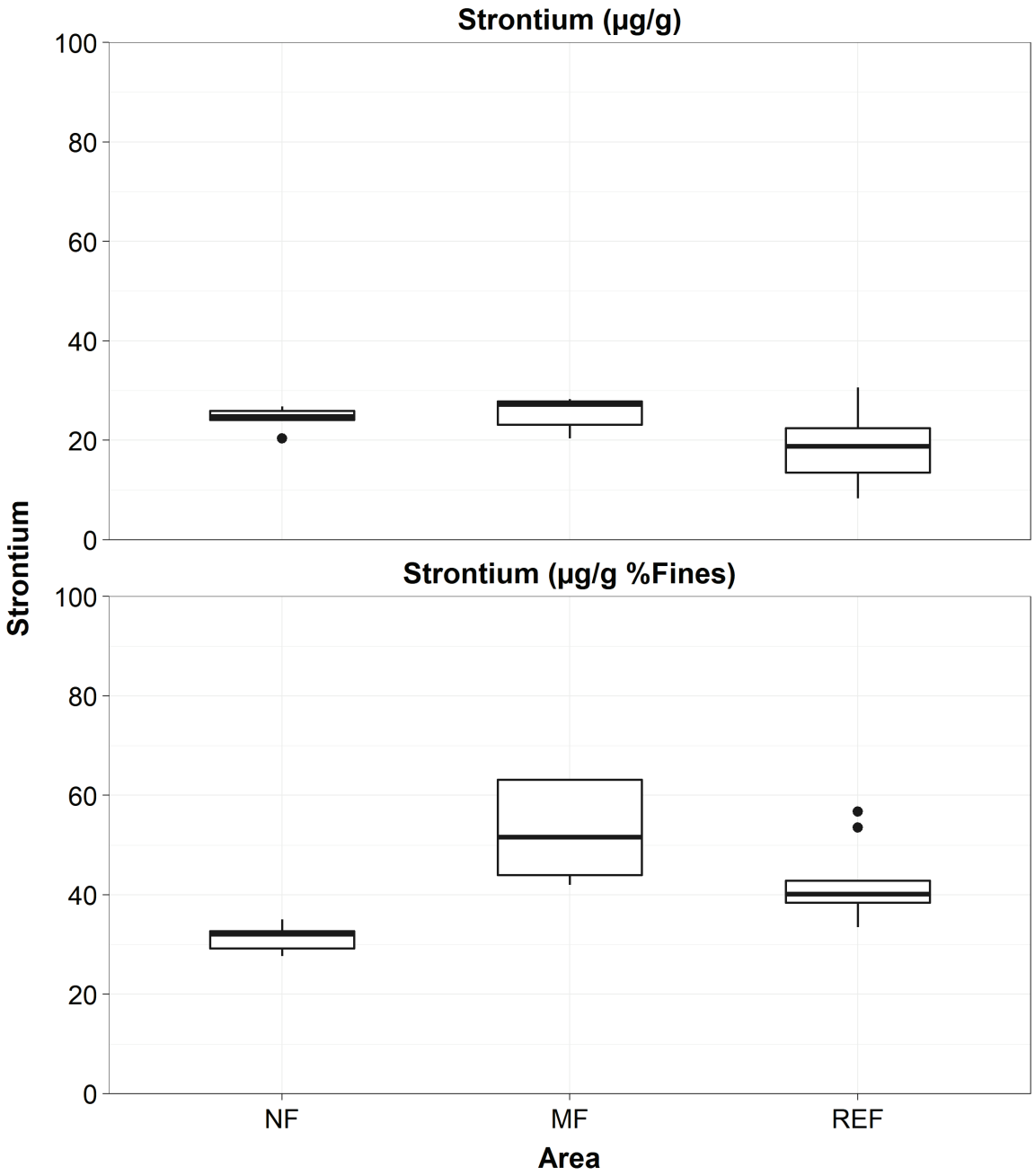
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Figure 8D.2-23: Box-and-whisker Plots of Silver Concentrations in Meliadine Lake, 2018



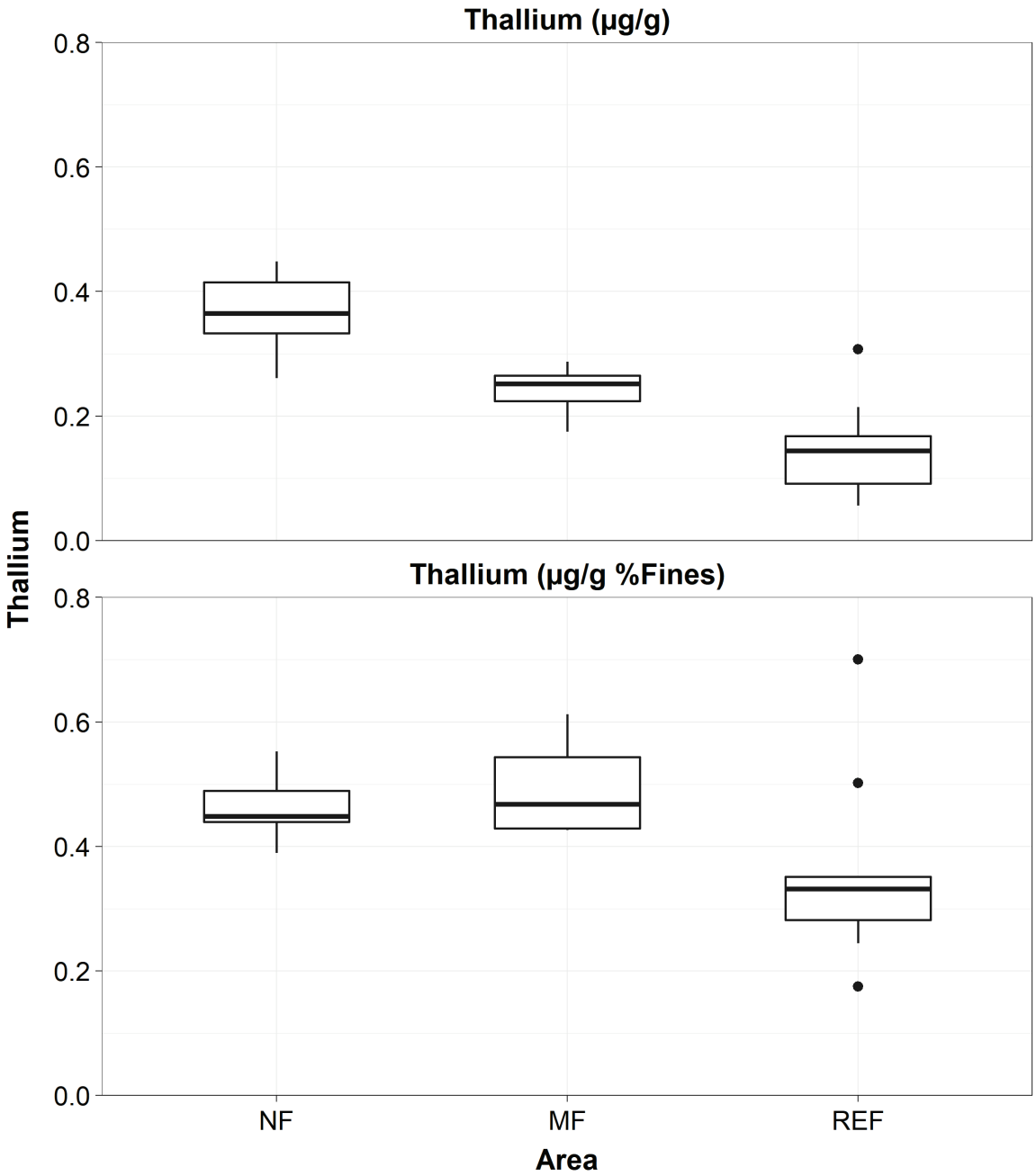
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-24: Box-and-whisker Plots of Sodium Concentrations in Meliadine Lake, 2018



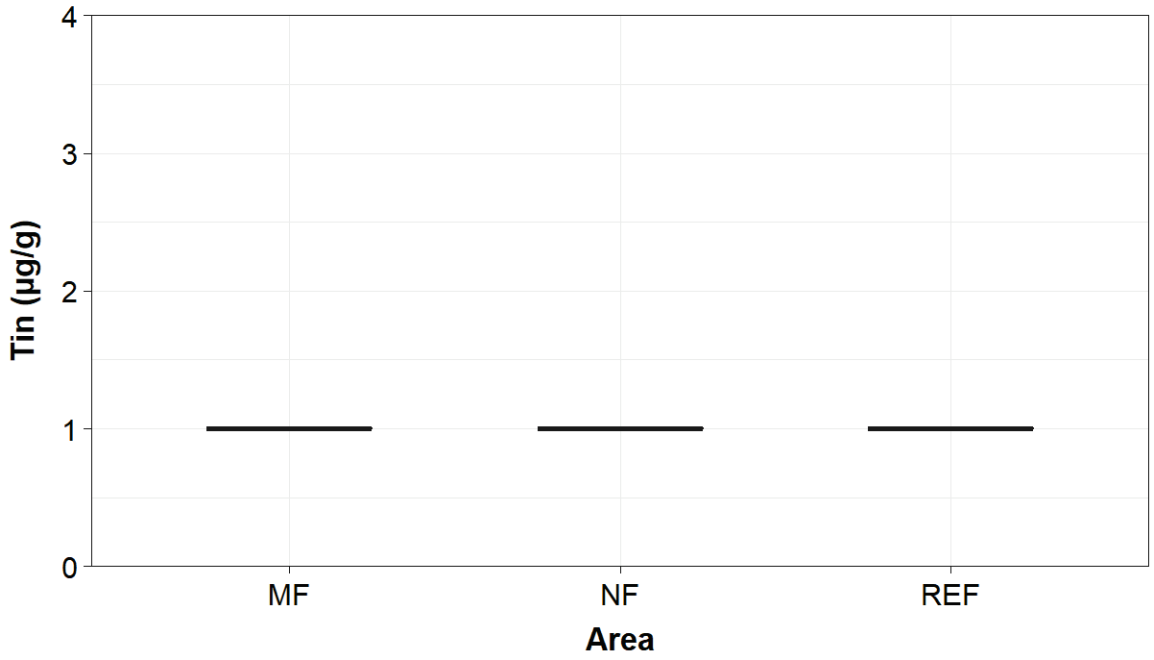
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µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.1-25: Box-and-whisker Plots of Strontium Concentrations in Meliadine Lake, 2018



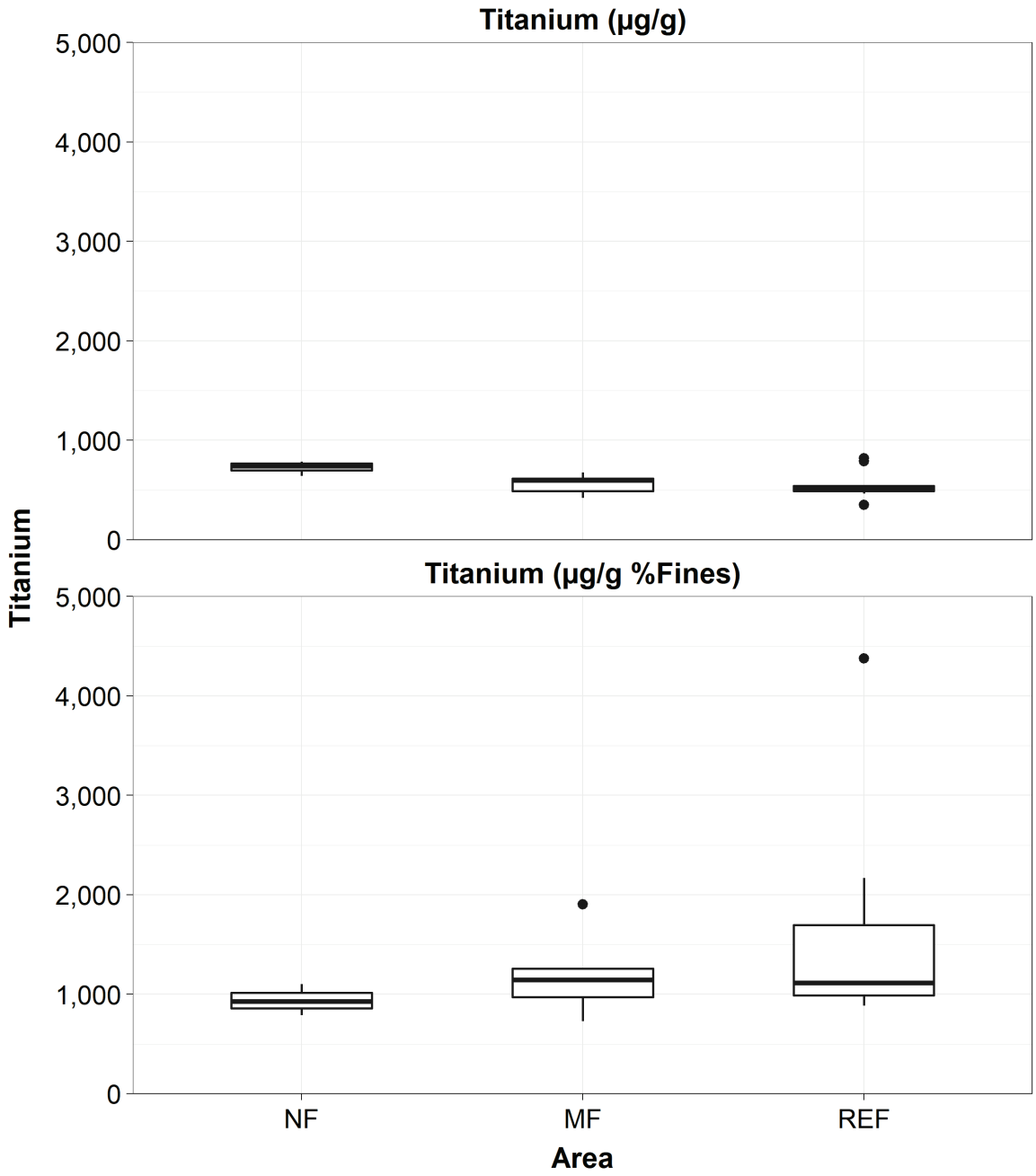
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µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-26: Box-and-whisker Plots of Thallium Concentrations in Meliadine Lake, 2018



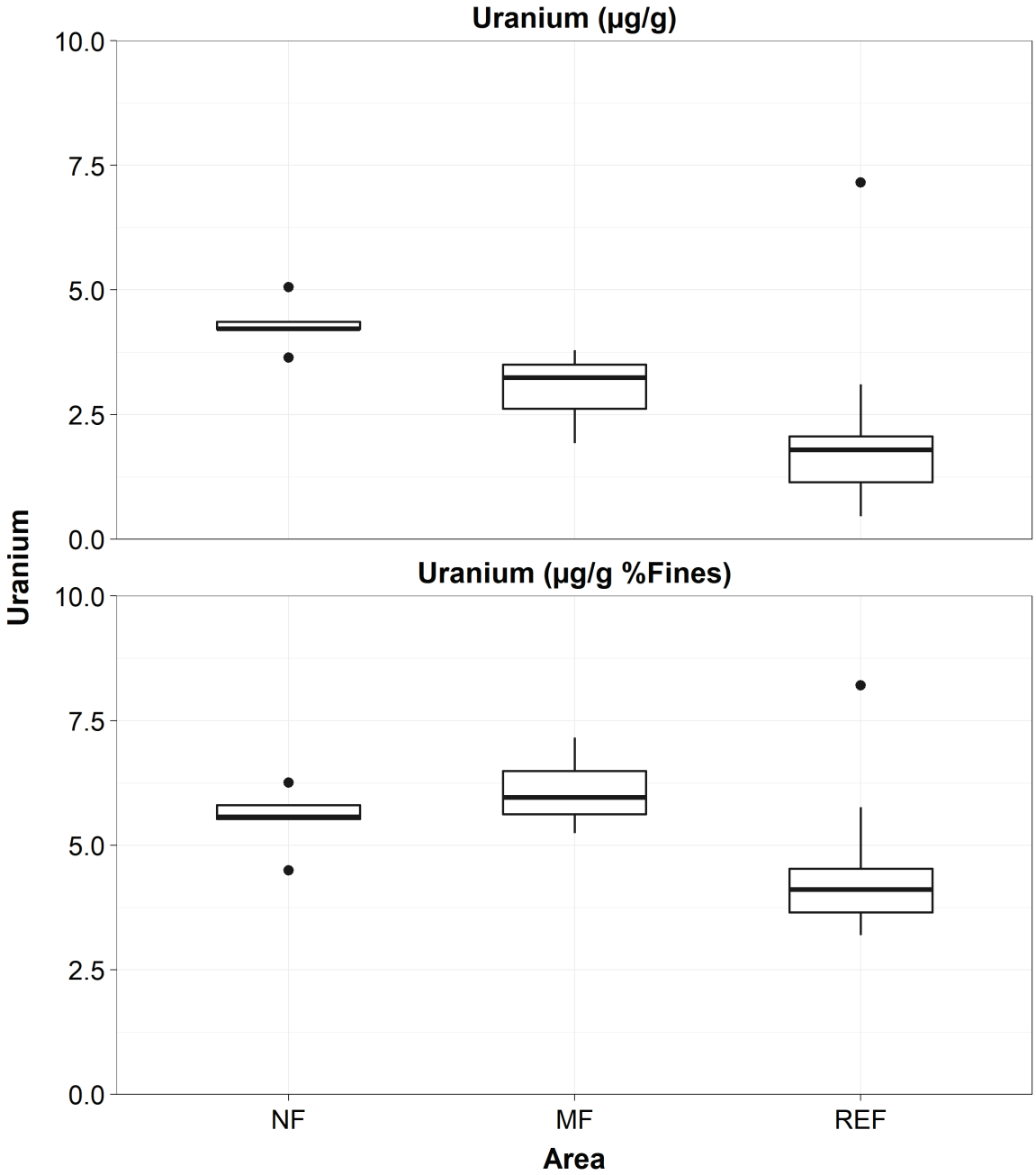
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Figure 8D.2-27: Box-and-whisker Plots of Tin Concentrations in Meliadine Lake, 2018



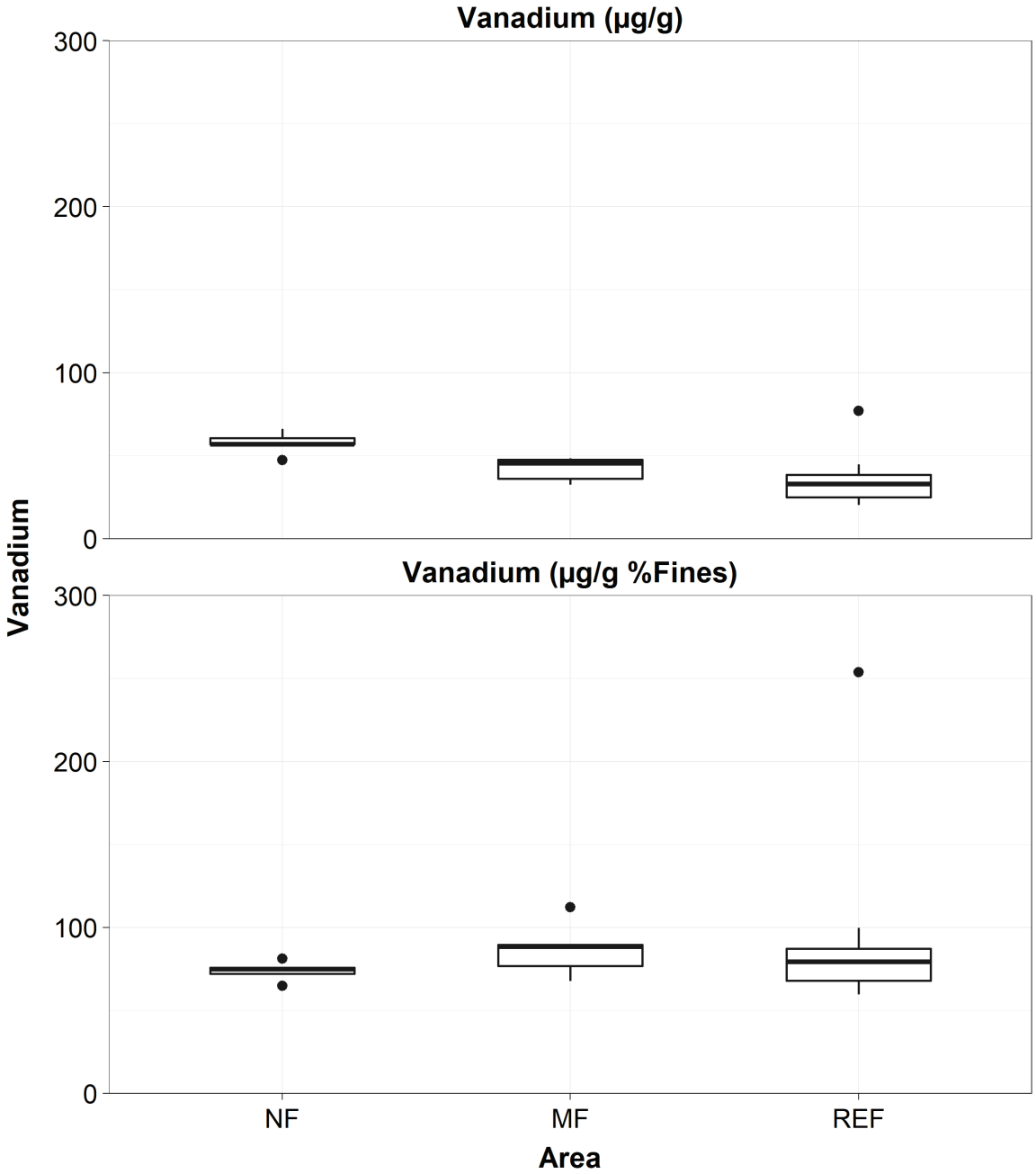
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Figure 8D.2-28: Box-and-whisker Plots of Titanium Concentrations in Meliadine Lake, 2018



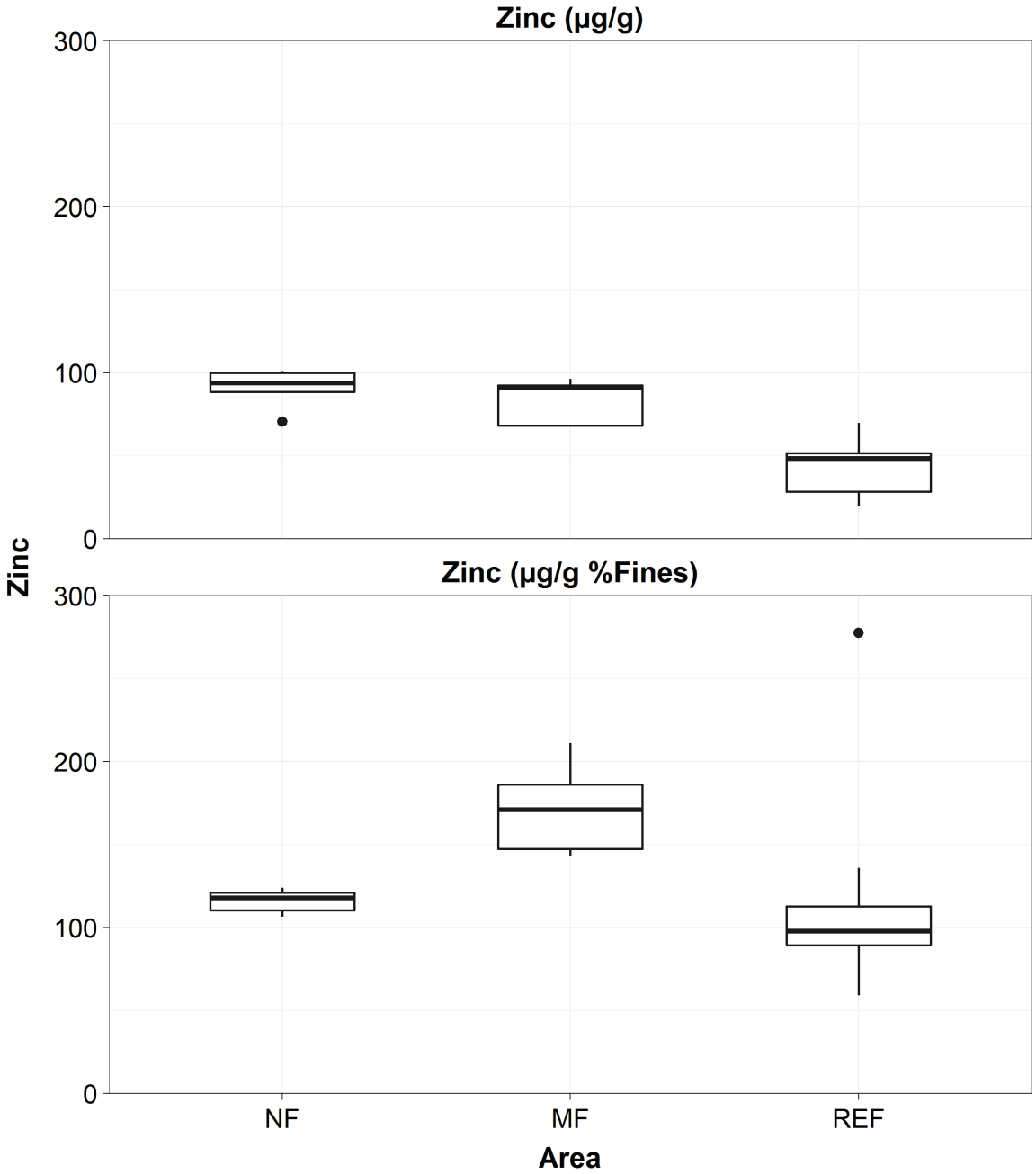
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µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-29: Box-and-whisker Plots of Uranium Concentrations in Meliadine Lake, 2018



Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-30: Box-and-whisker Plots of Vanadium Concentrations in Meliadine Lake, 2018



Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram; NF = Near-field; MF = Mid-field; REF = Pooled Reference areas.

Figure 8D.2-31: Box-and-whisker Plots of Zinc Concentrations in Meliadine Lake, 2018

APPENDIX 8E

Scatter Plots of Sediment Quality Parameters versus Fines

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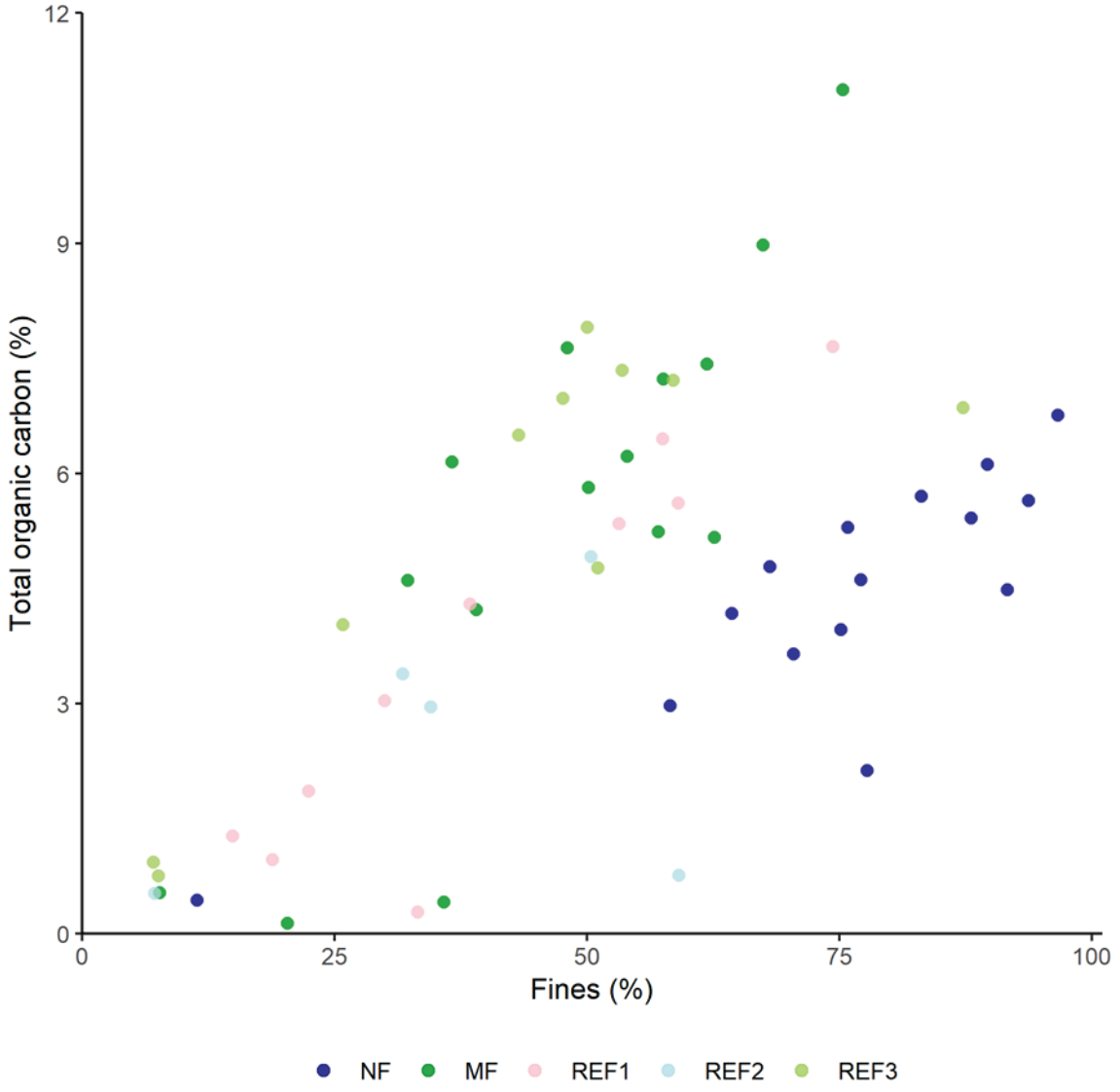
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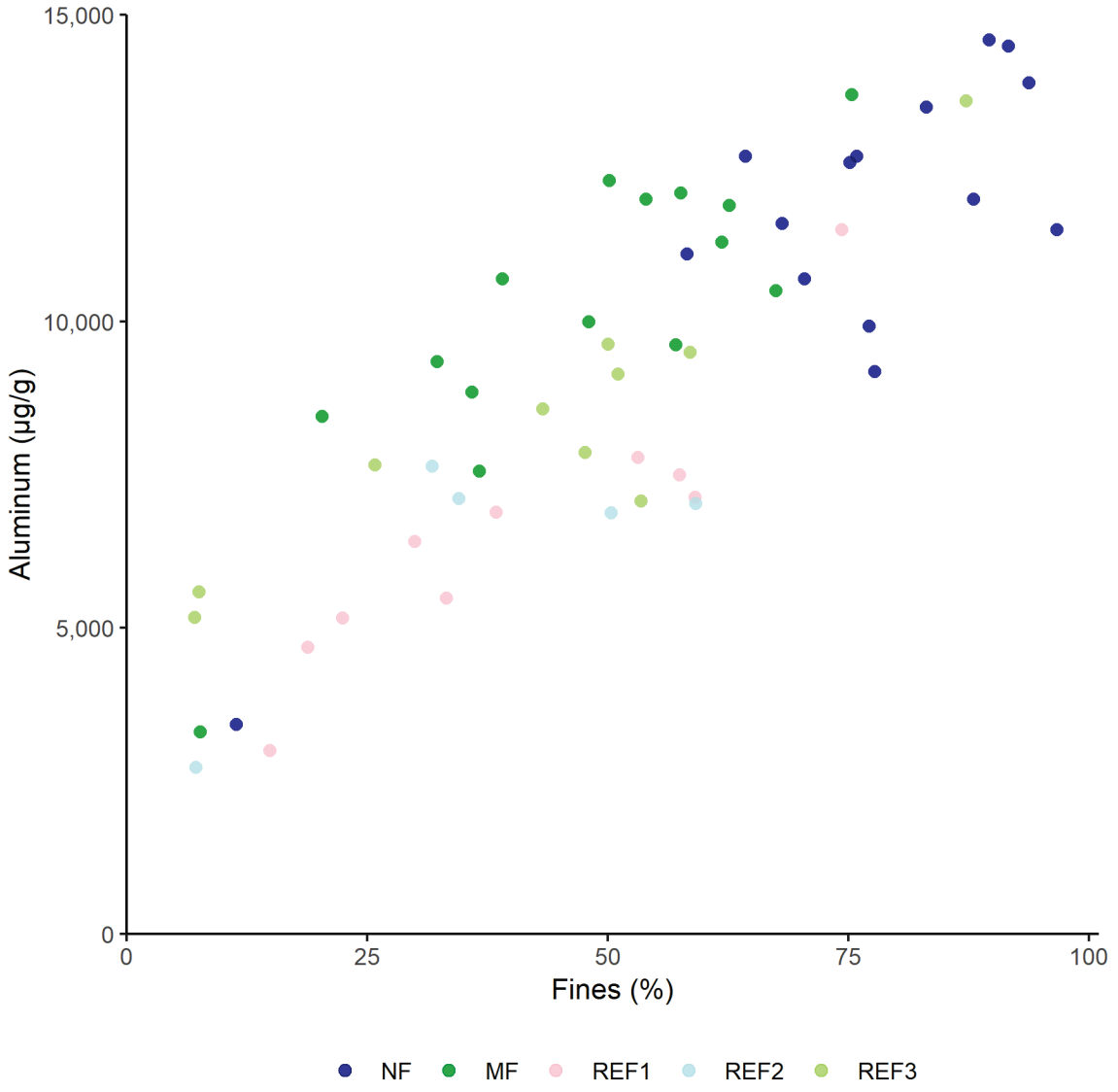
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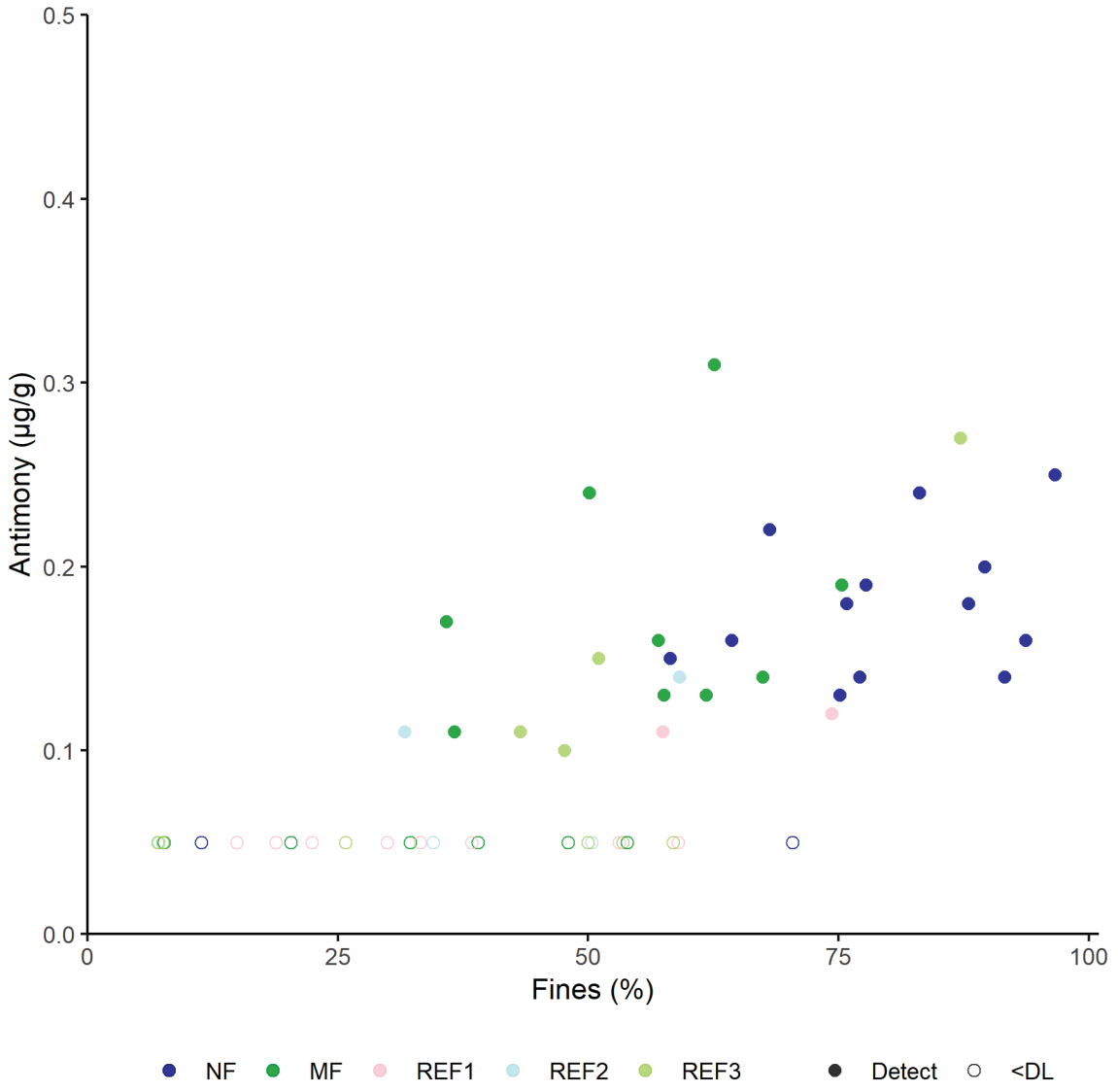
Open symbols represent results that are less than the detection limit.

Figure 8E.1-1: Concentrations of Total Organic Carbon Versus Fines in Meliadine Lake, 2015 to 2018



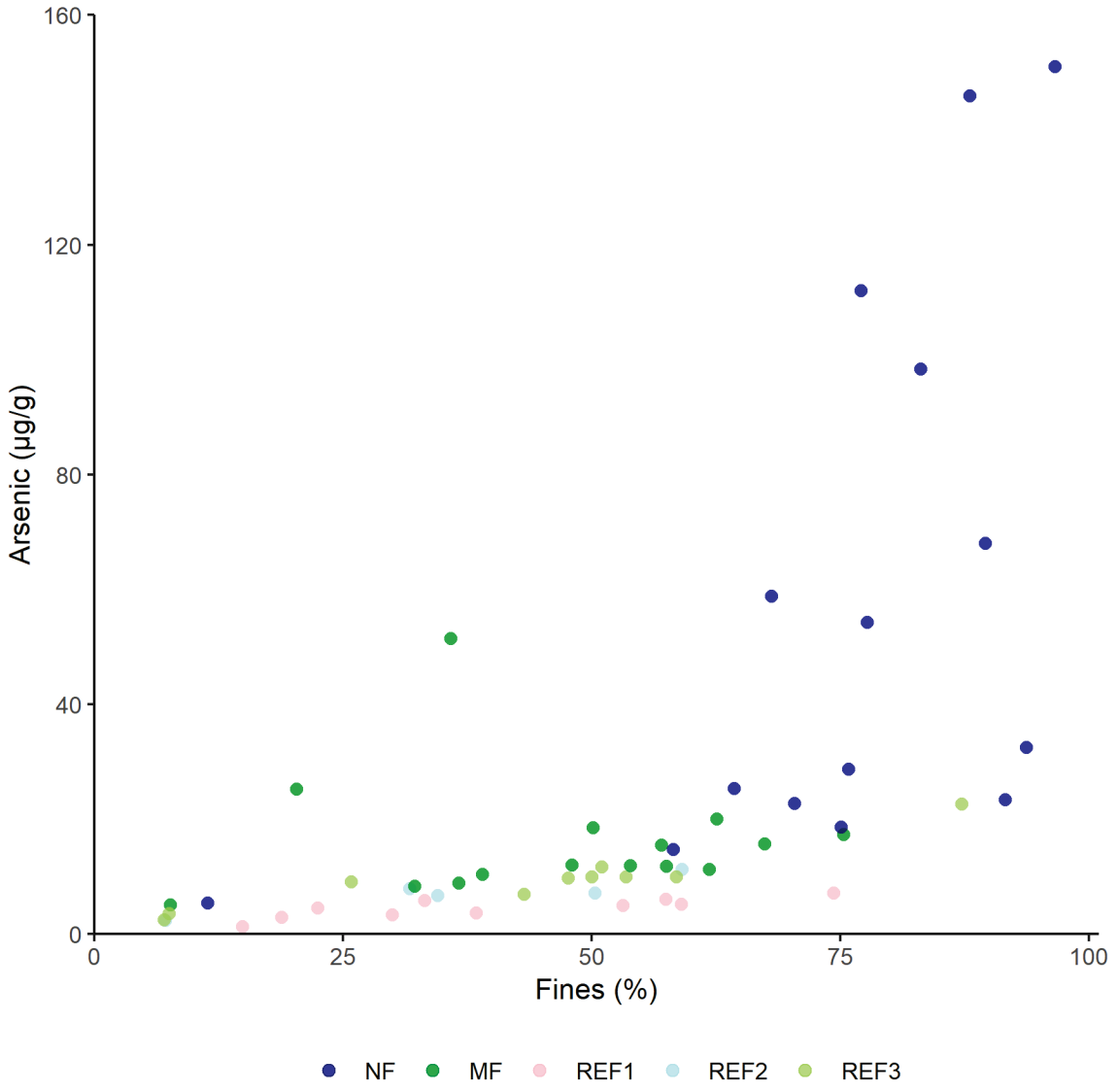
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-2: Concentrations of Aluminum Versus Fines in Meliadine Lake, 2015 to 2018



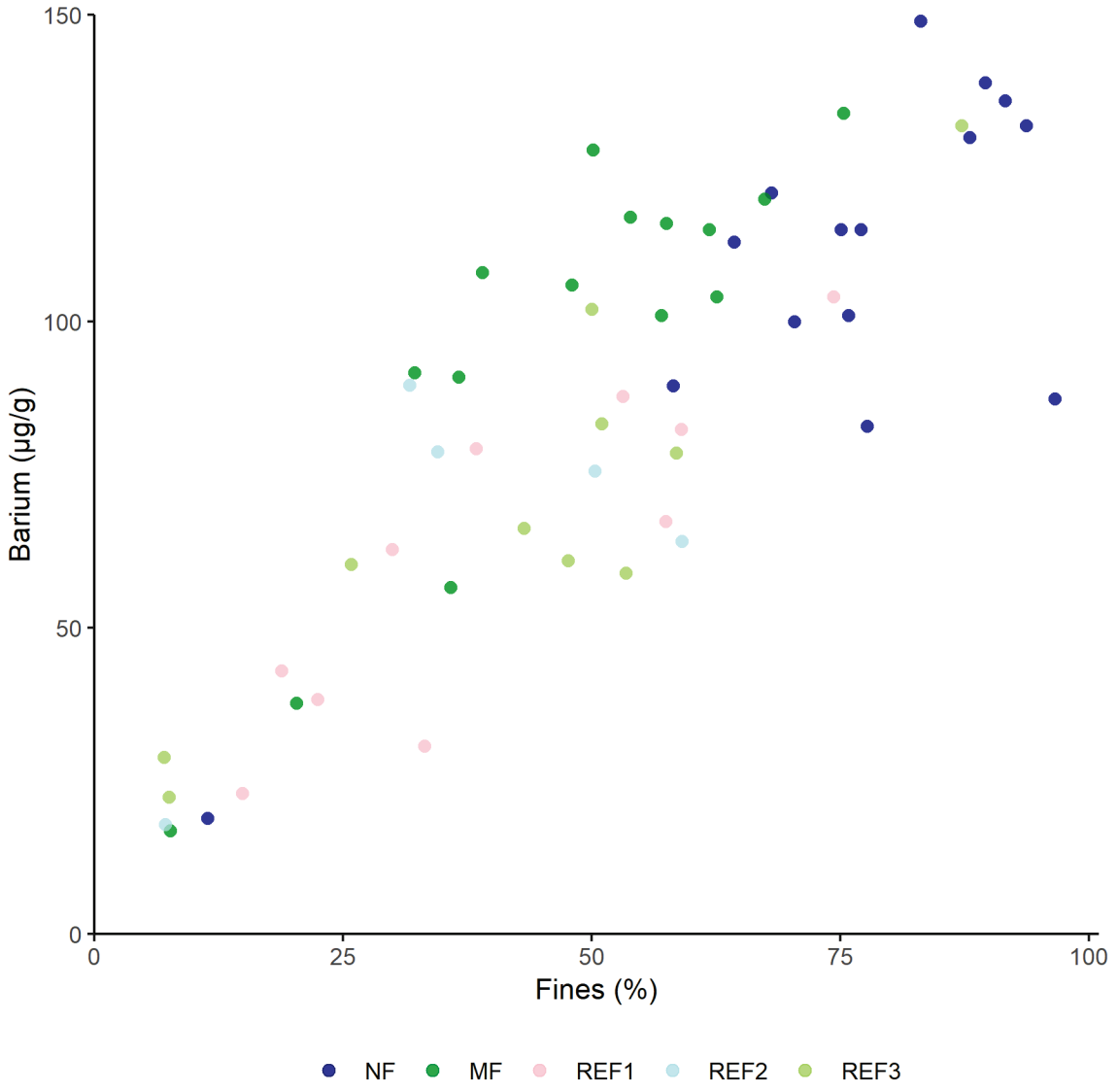
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-3: Concentrations of Antimony Versus Fines in Meliadine Lake, 2015 to 2018



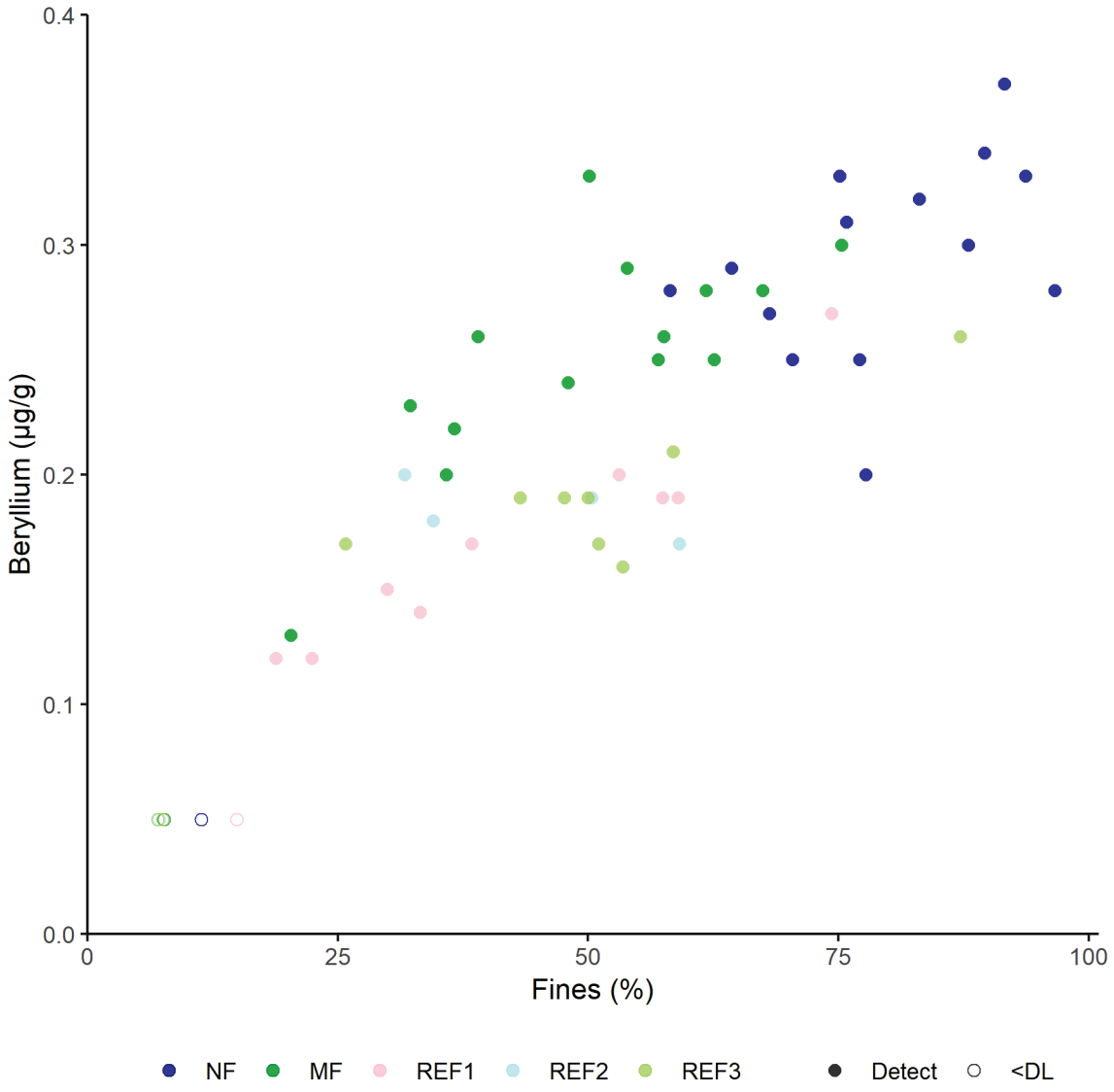
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-4: Concentrations of Arsenic Versus Fines in Meliadine Lake, 2015 to 2018



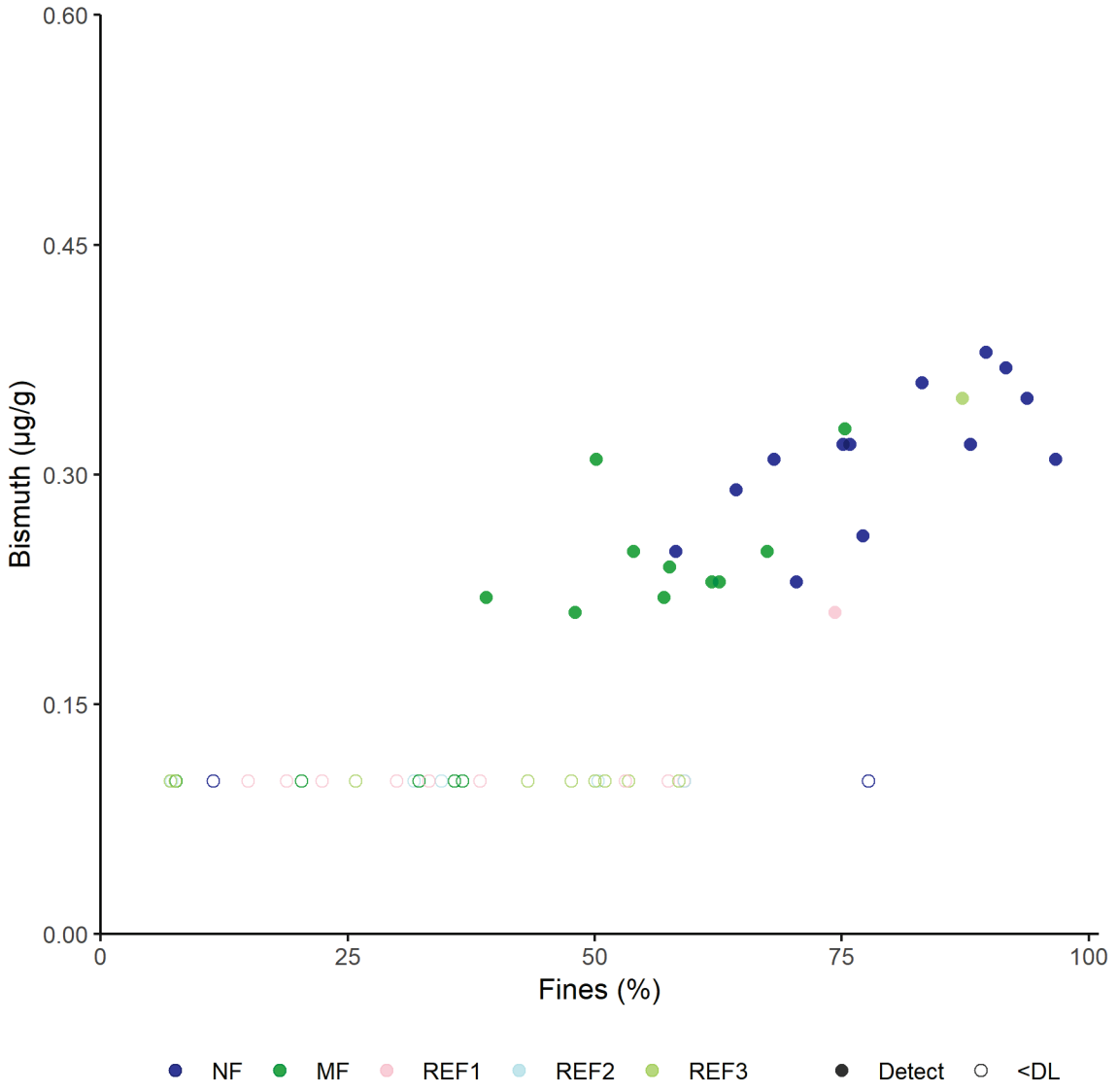
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-5: Concentrations of Barium Versus Fines in Meliadine Lake, 2015 to 2018



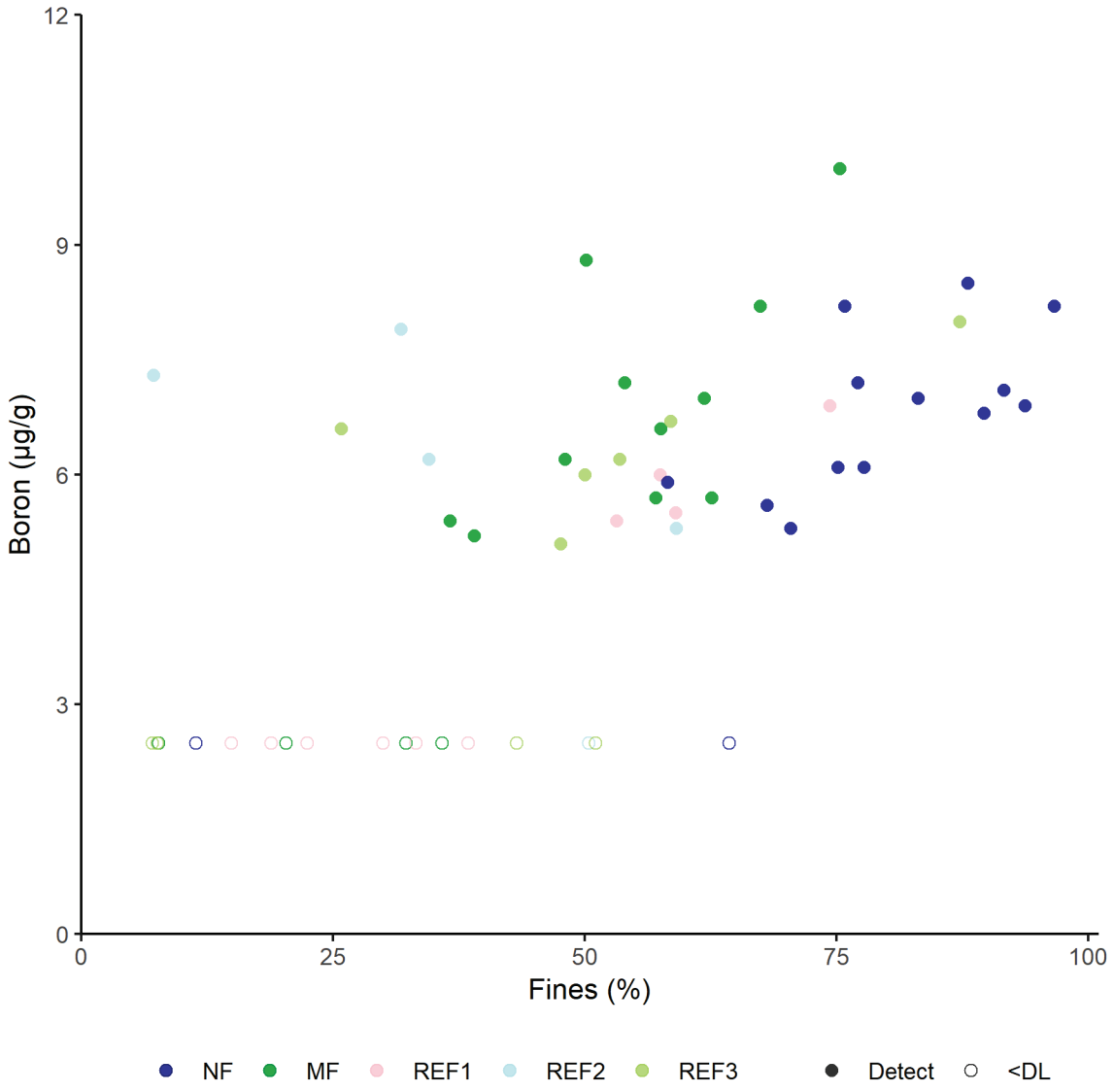
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-6: Concentrations of Beryllium Versus Fines in Meliadine Lake, 2015 to 2018



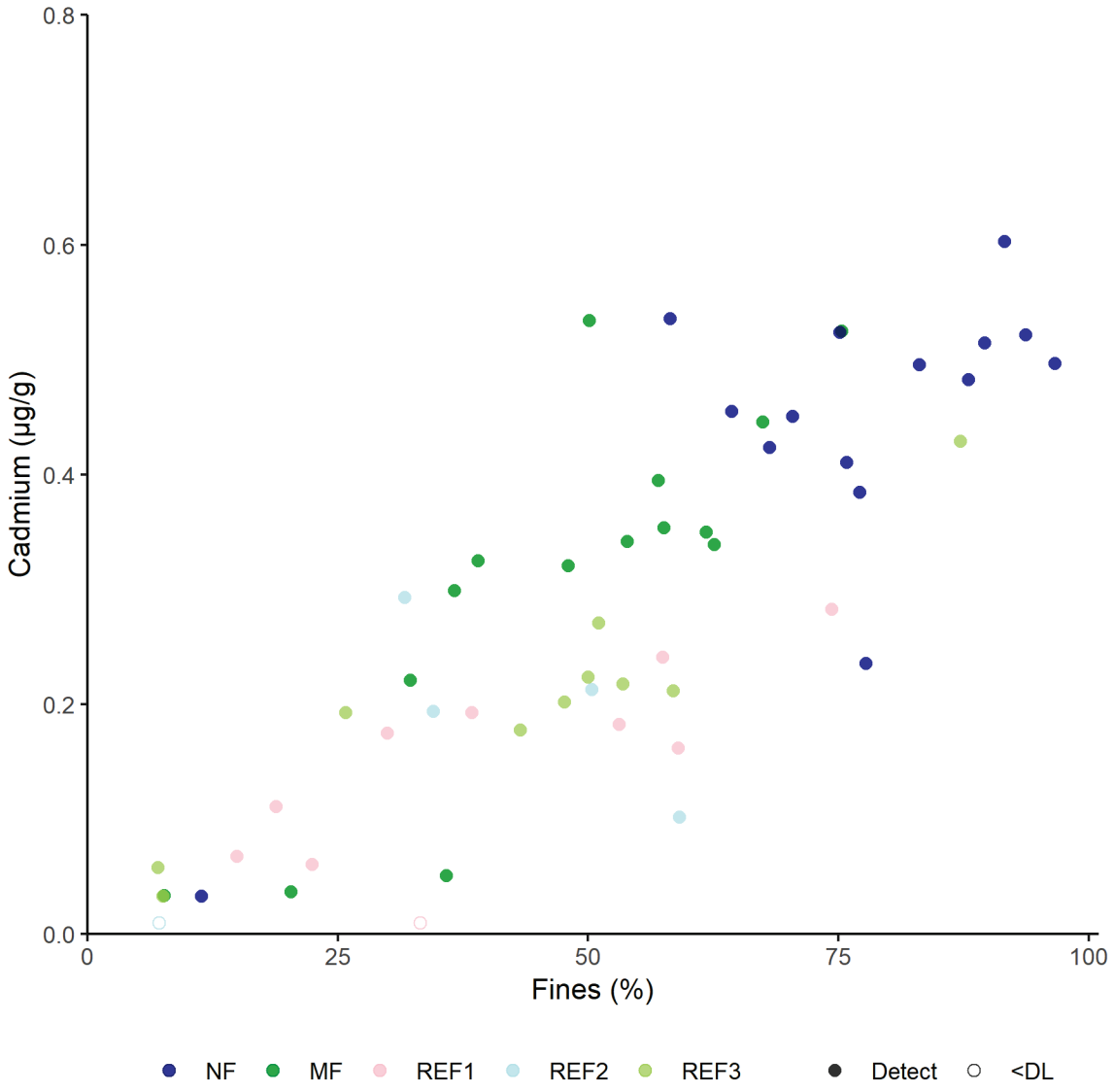
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-7: Concentrations of Bismuth Versus Fines in Meliadine Lake, 2015 to 2018



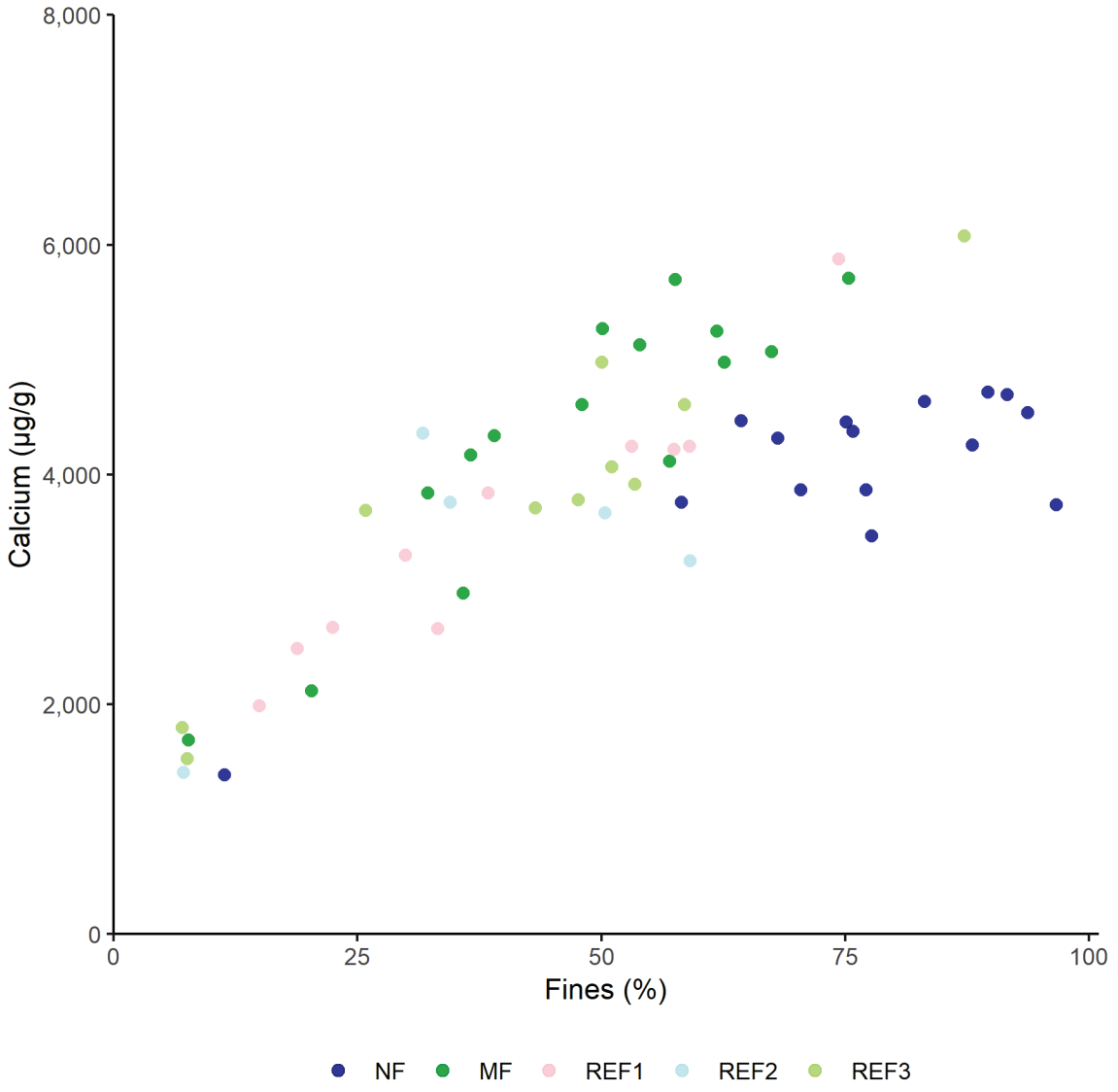
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-8: Concentrations of Boron Versus Fines in Meliadine Lake, 2015 to 2018



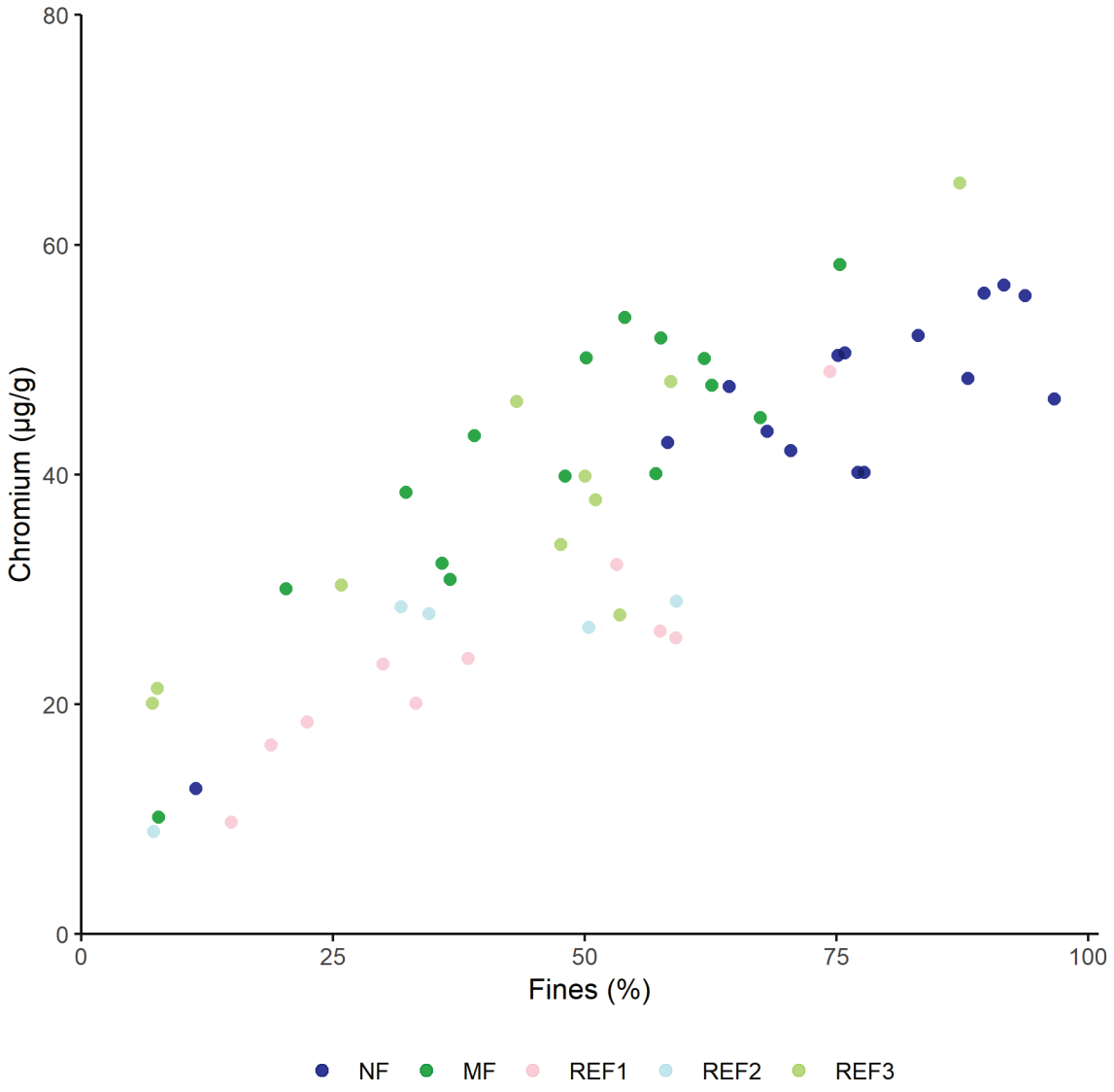
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-9: Concentrations of Cadmium Versus Fines in Meliadine Lake, 2015 to 2018



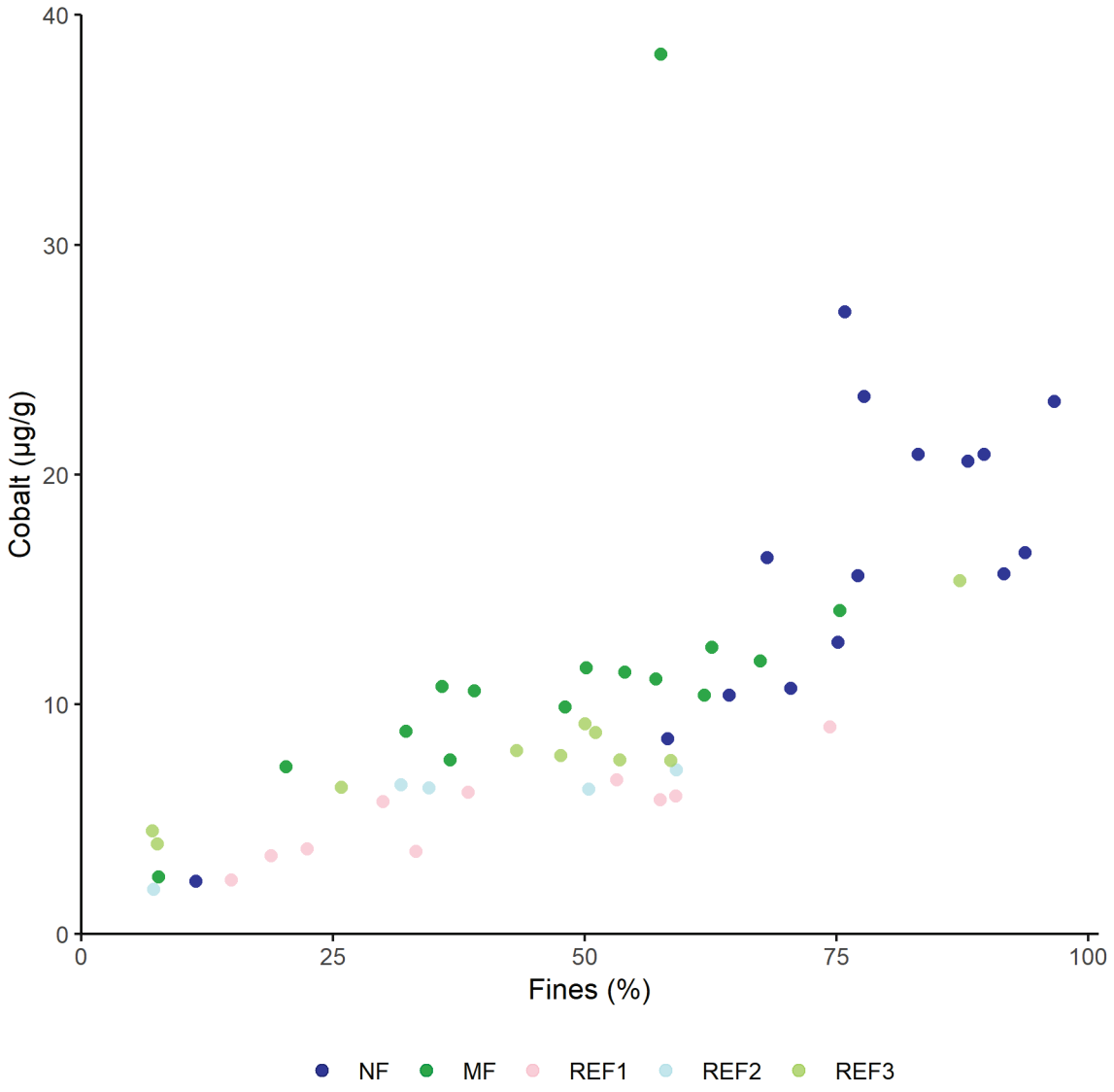
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-10: Concentrations of Calcium Versus Fines in Meliadine Lake, 2015 to 2018



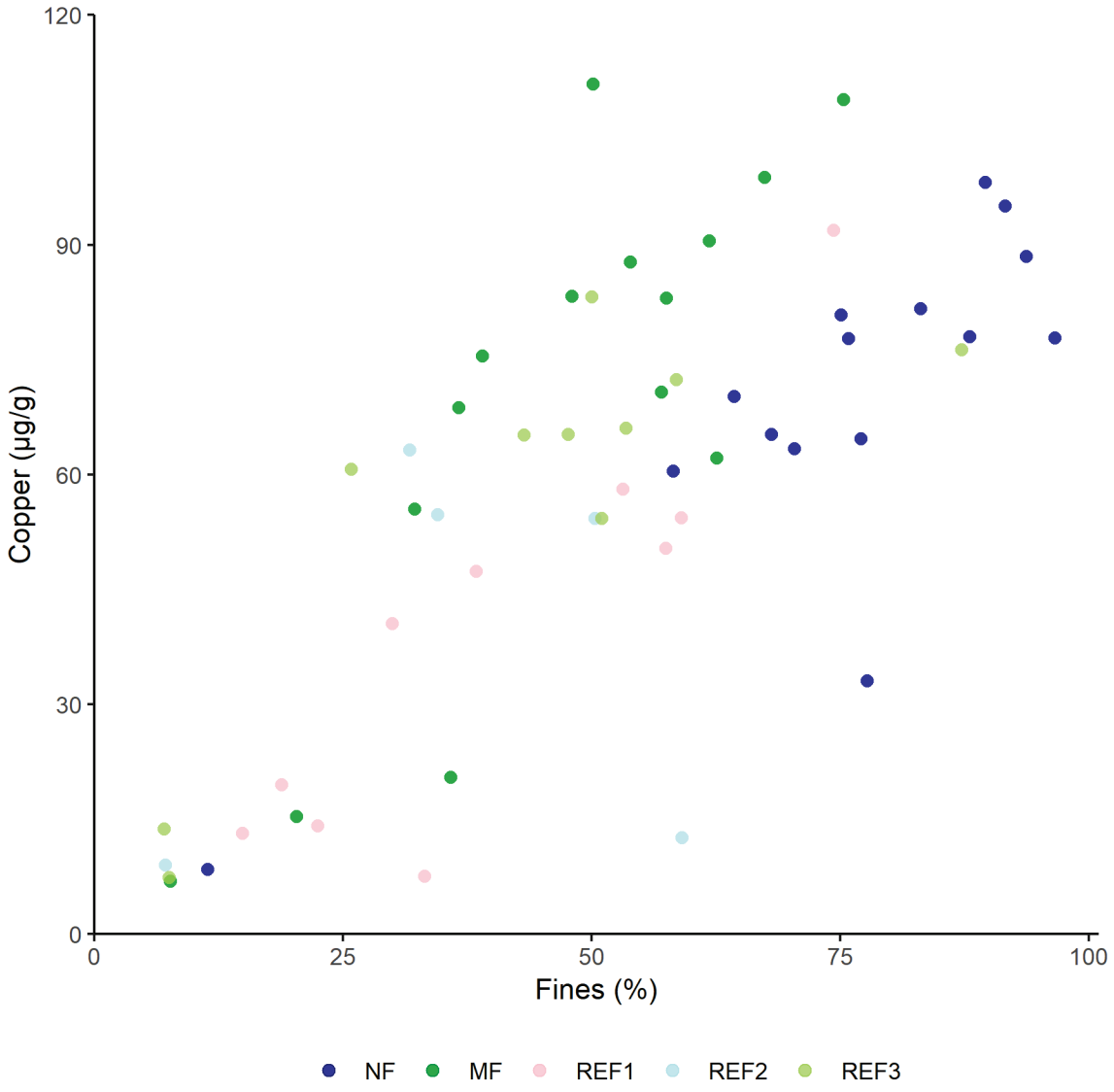
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-11: Concentrations of Chromium Versus Fines in Meliadine Lake, 2015 to 2018



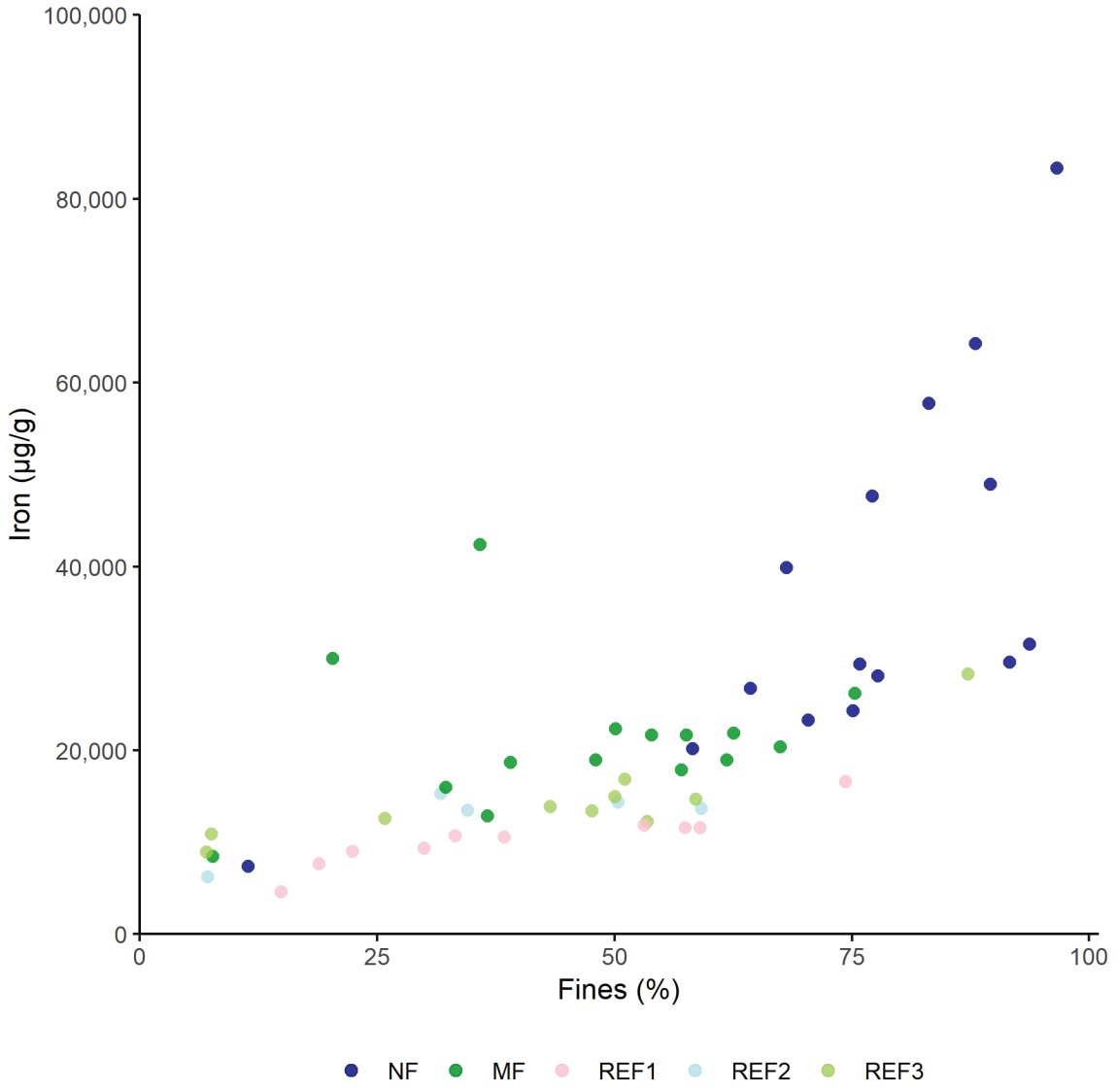
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-12: Concentrations of Cobalt Versus Fines in Meliadine Lake, 2015 to 2018



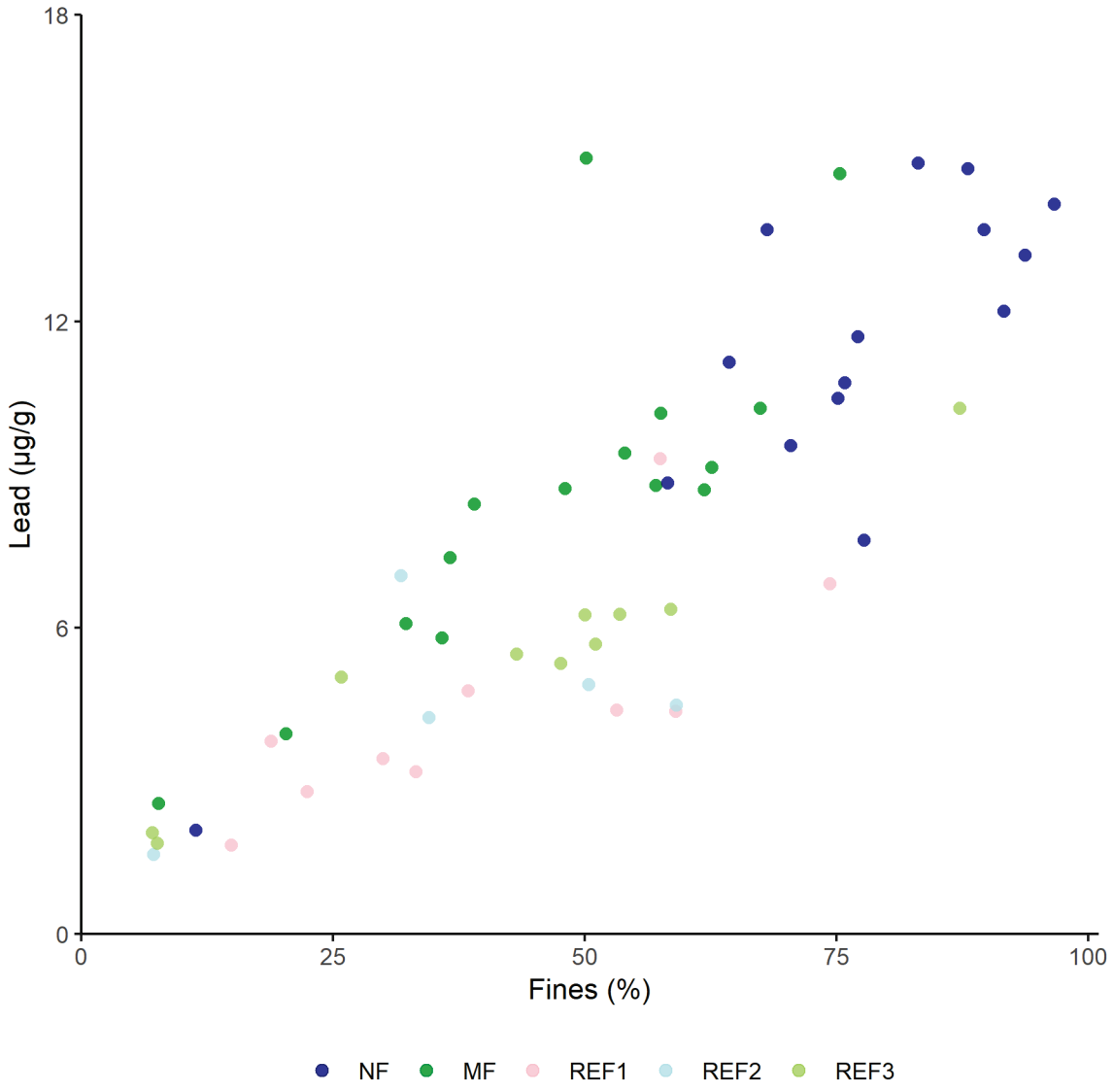
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-13: Concentrations of Copper Versus Fines in Meliadine Lake, 2015 to 2018



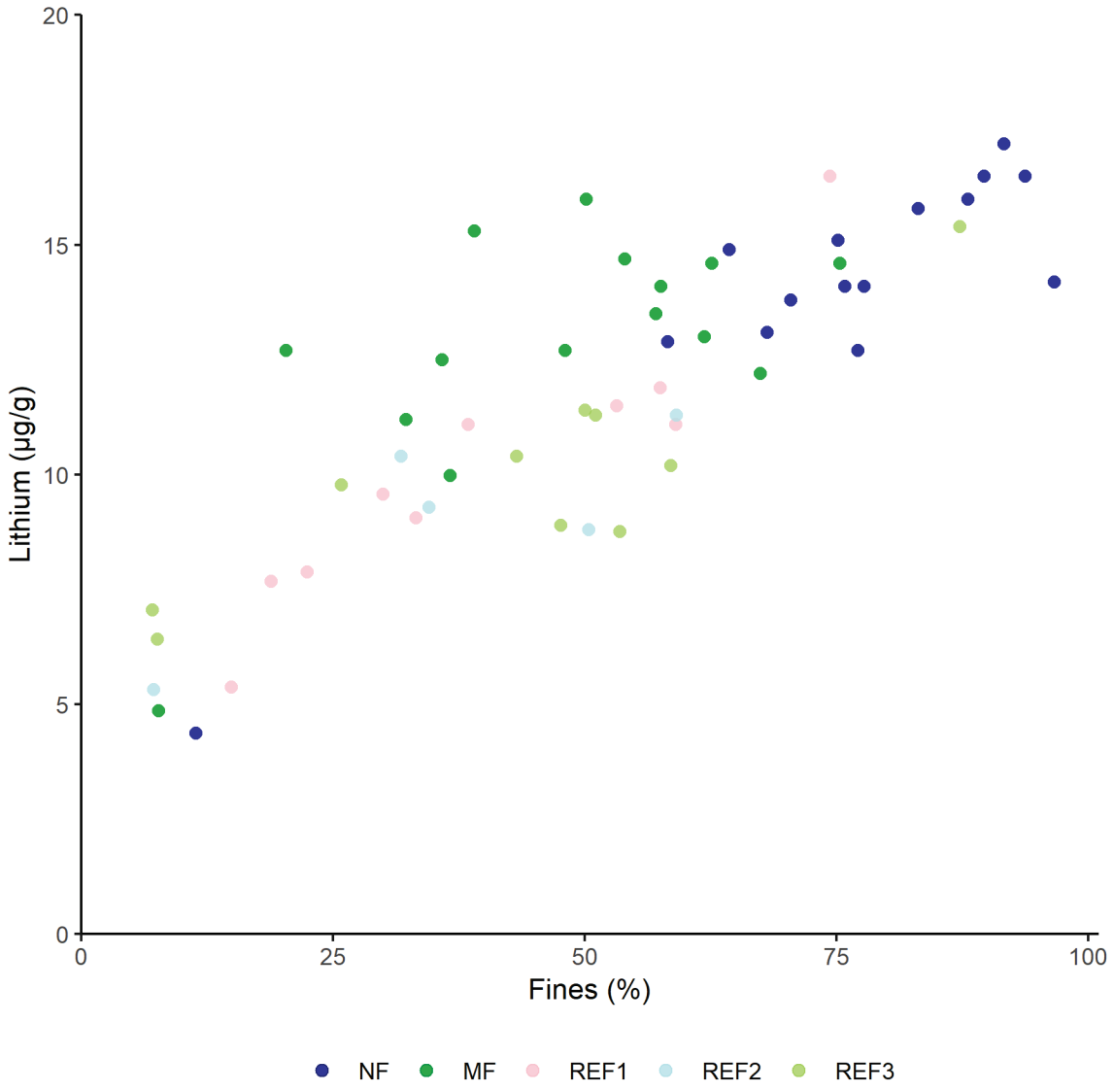
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-14: Concentrations of Iron Versus Fines in Meliadine Lake, 2015 to 2018



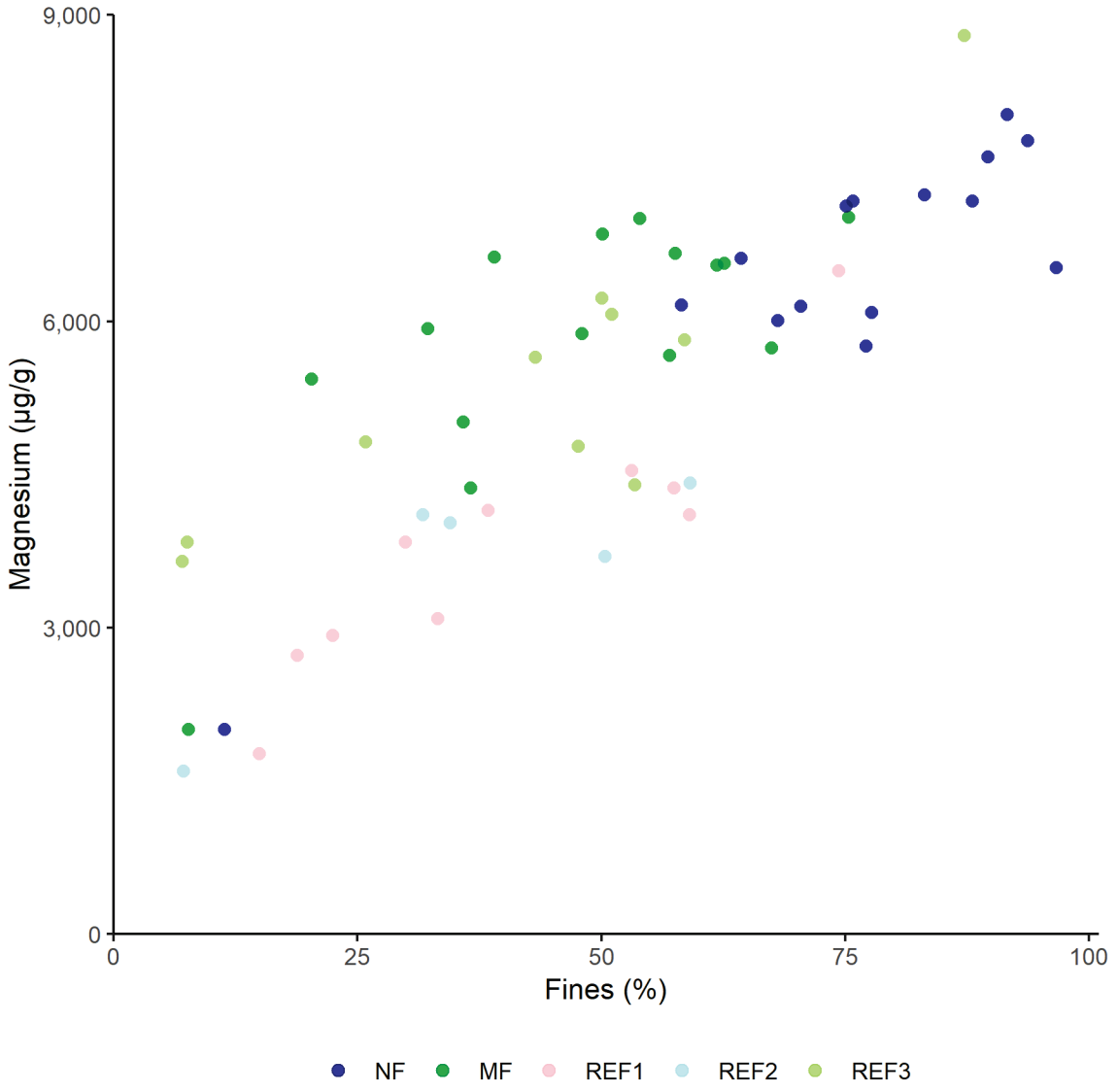
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-15: Concentrations of Lead Versus Fines in Meliadine Lake, 2015 to 2018



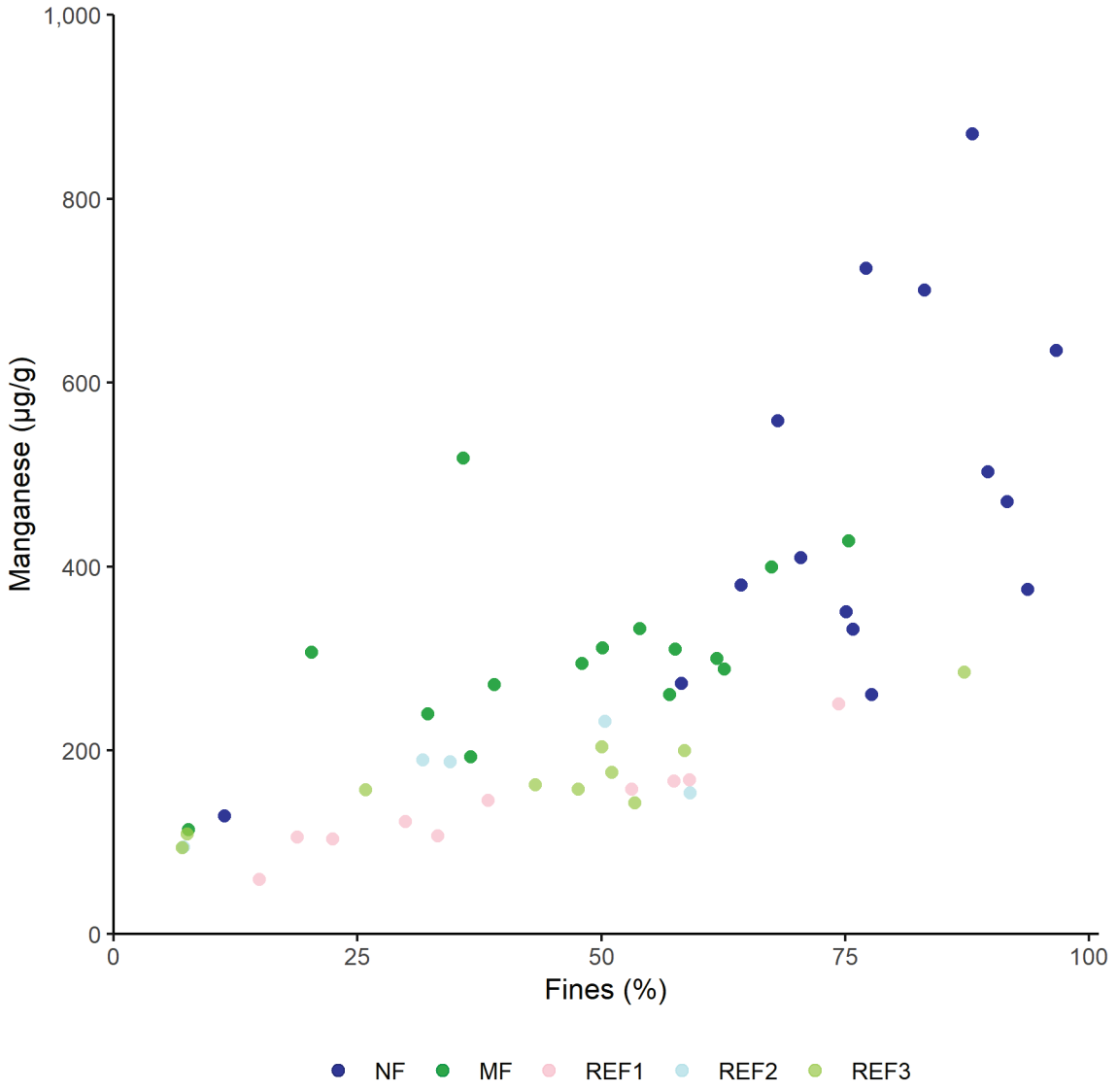
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-16: Concentrations of Lithium Versus Fines in Meliadine Lake, 2015 to 2018



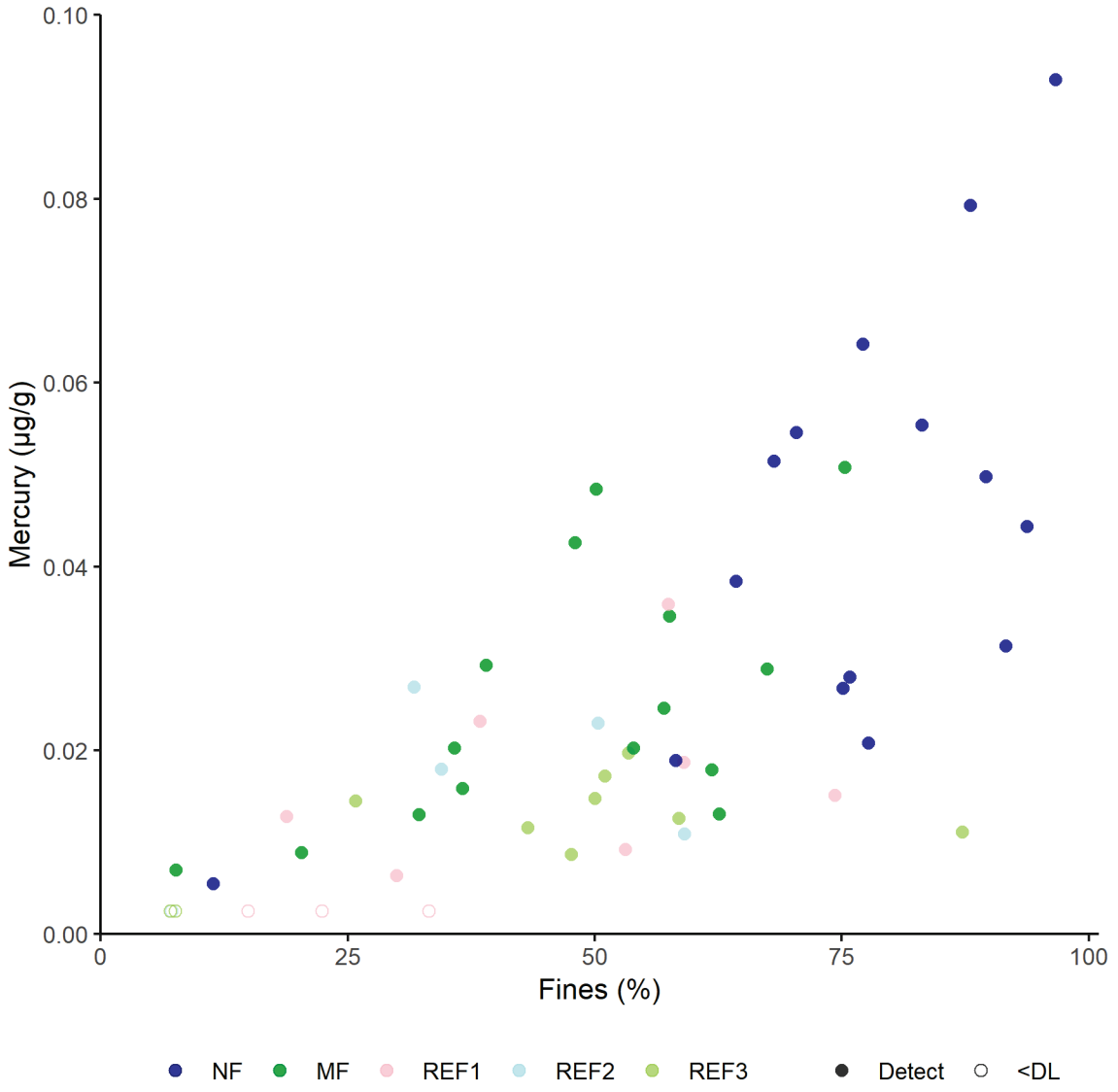
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-17: Concentrations of Magnesium Versus Fines in Meliadine Lake, 2015 to 2018



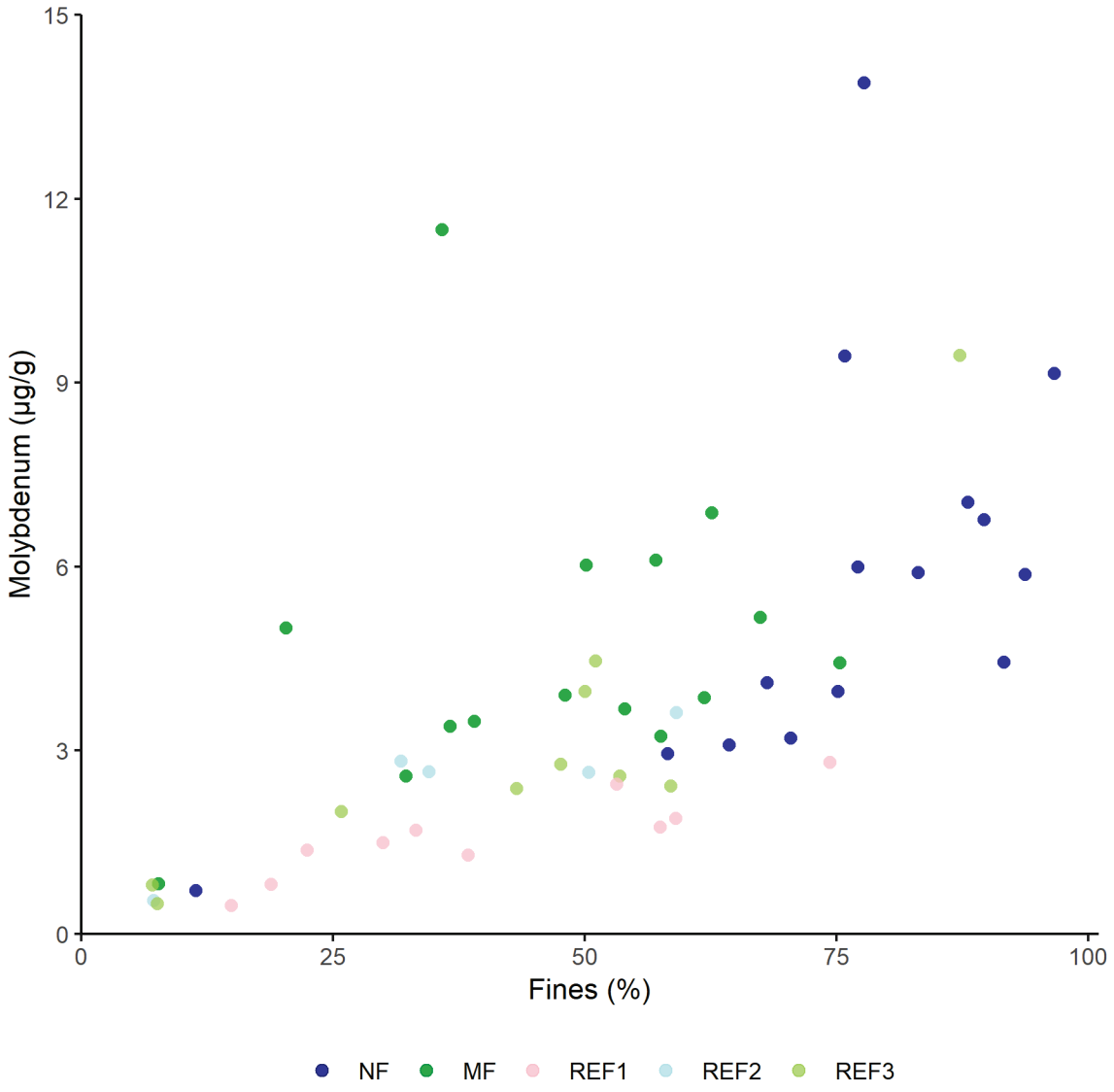
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-18: Concentrations of Manganese Versus Fines in Meliadine Lake, 2015 to 2018



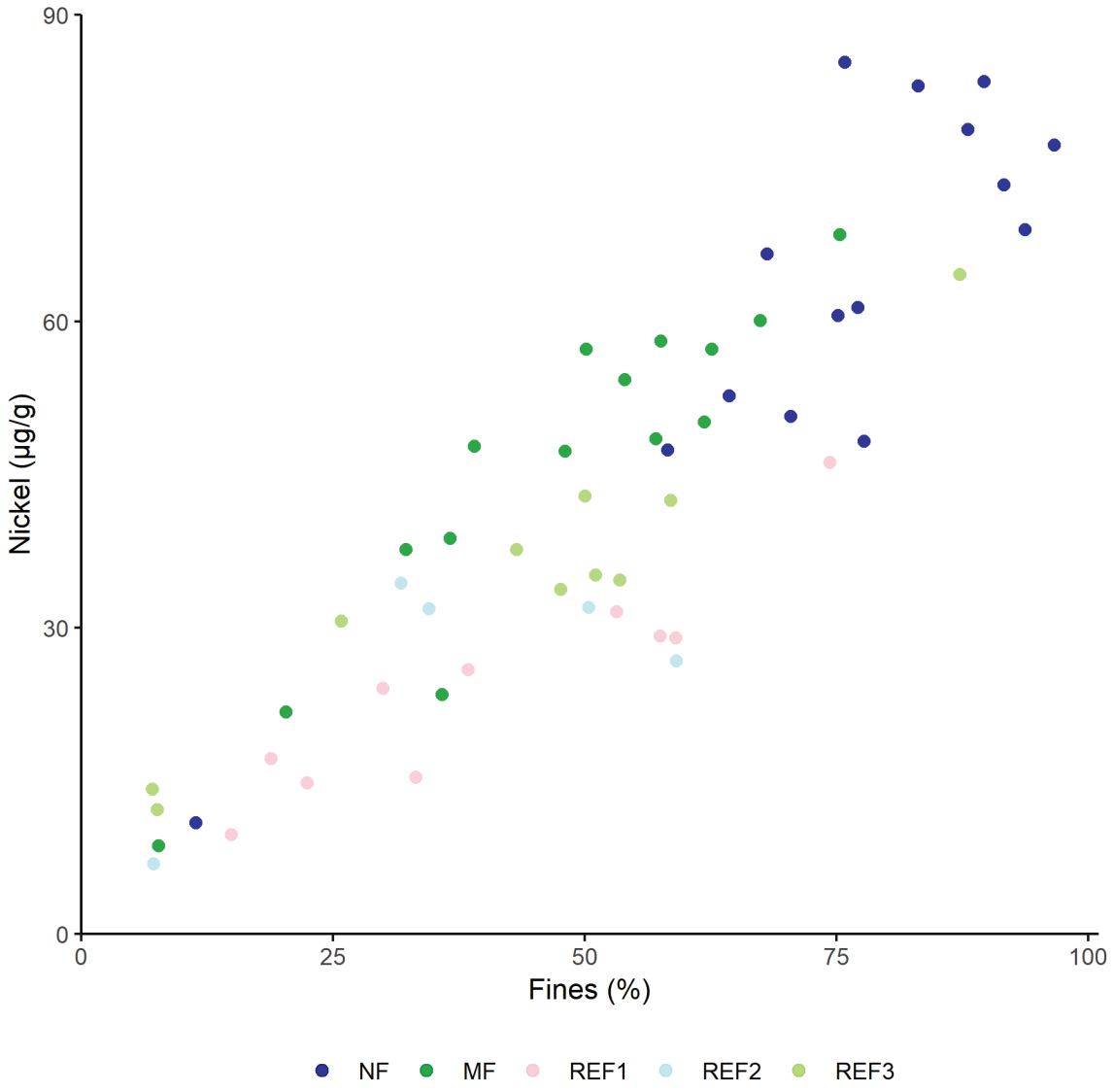
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-19: Concentrations of Mercury Versus Fines in Meliadine Lake, 2015 to 2018



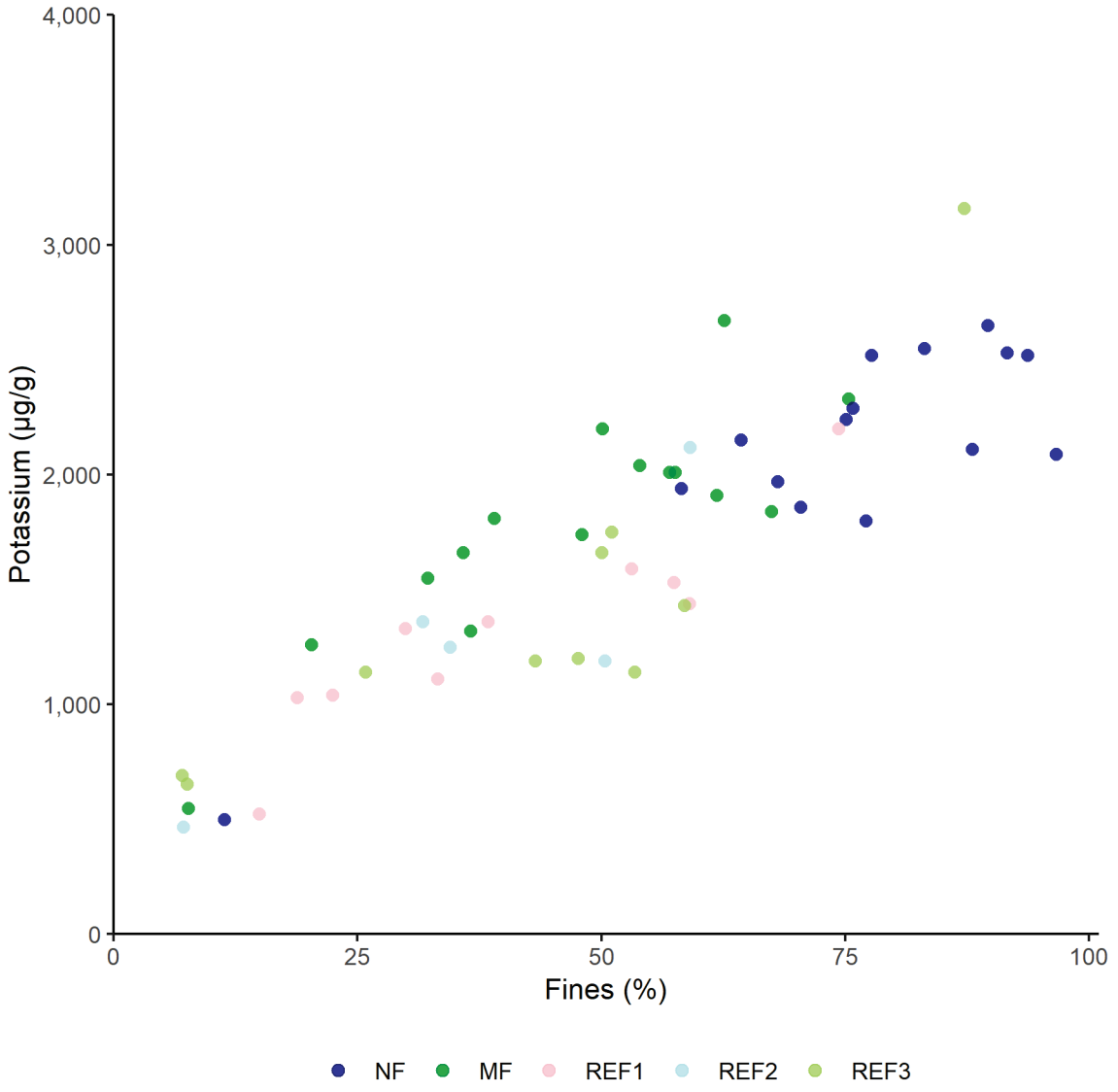
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-20: Concentrations of Molybdenum Versus Fines in Meliadine Lake, 2015 to 2018



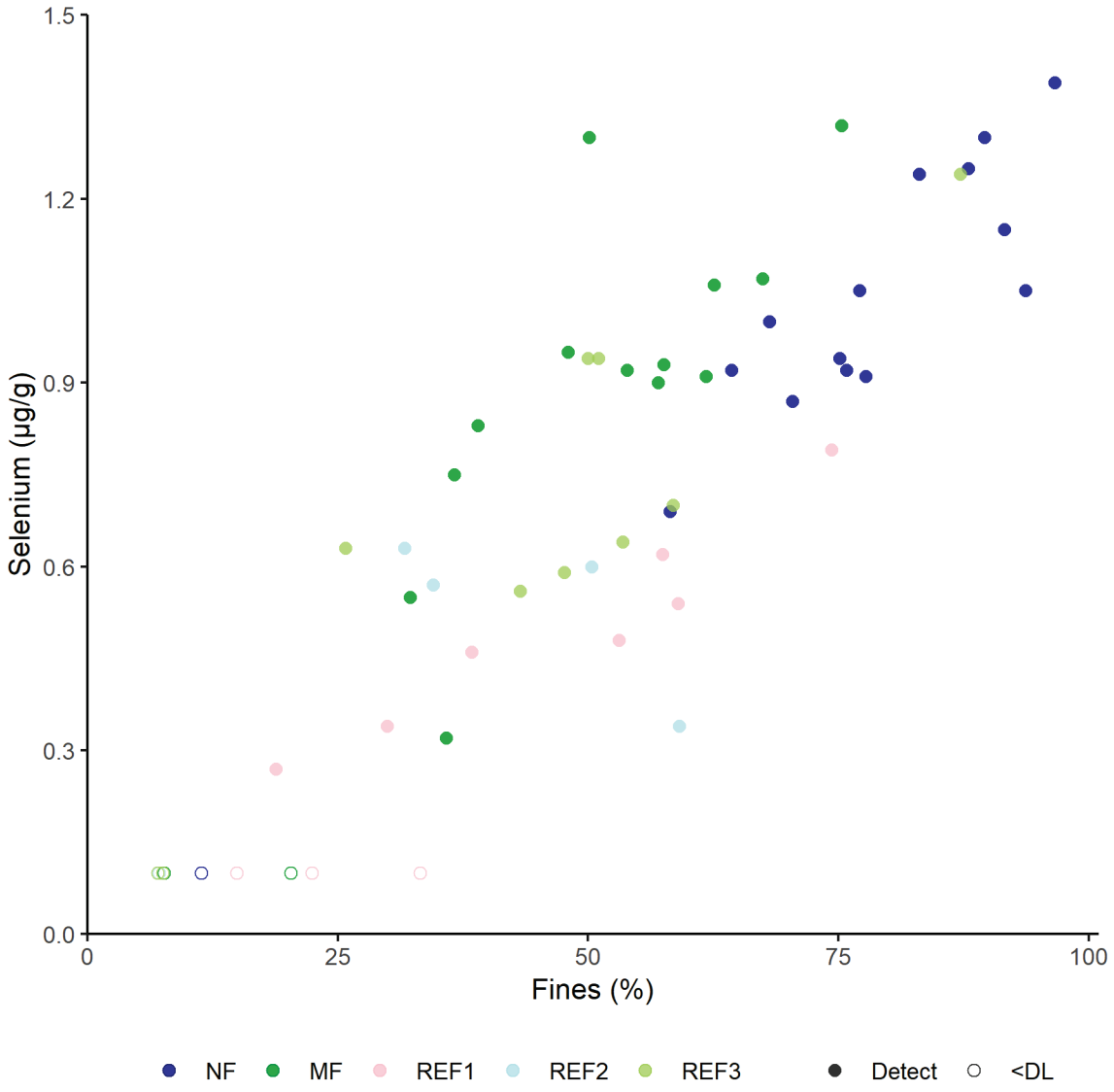
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-21: Concentrations of Nickel Versus Fines in Meliadine Lake, 2015 to 2018



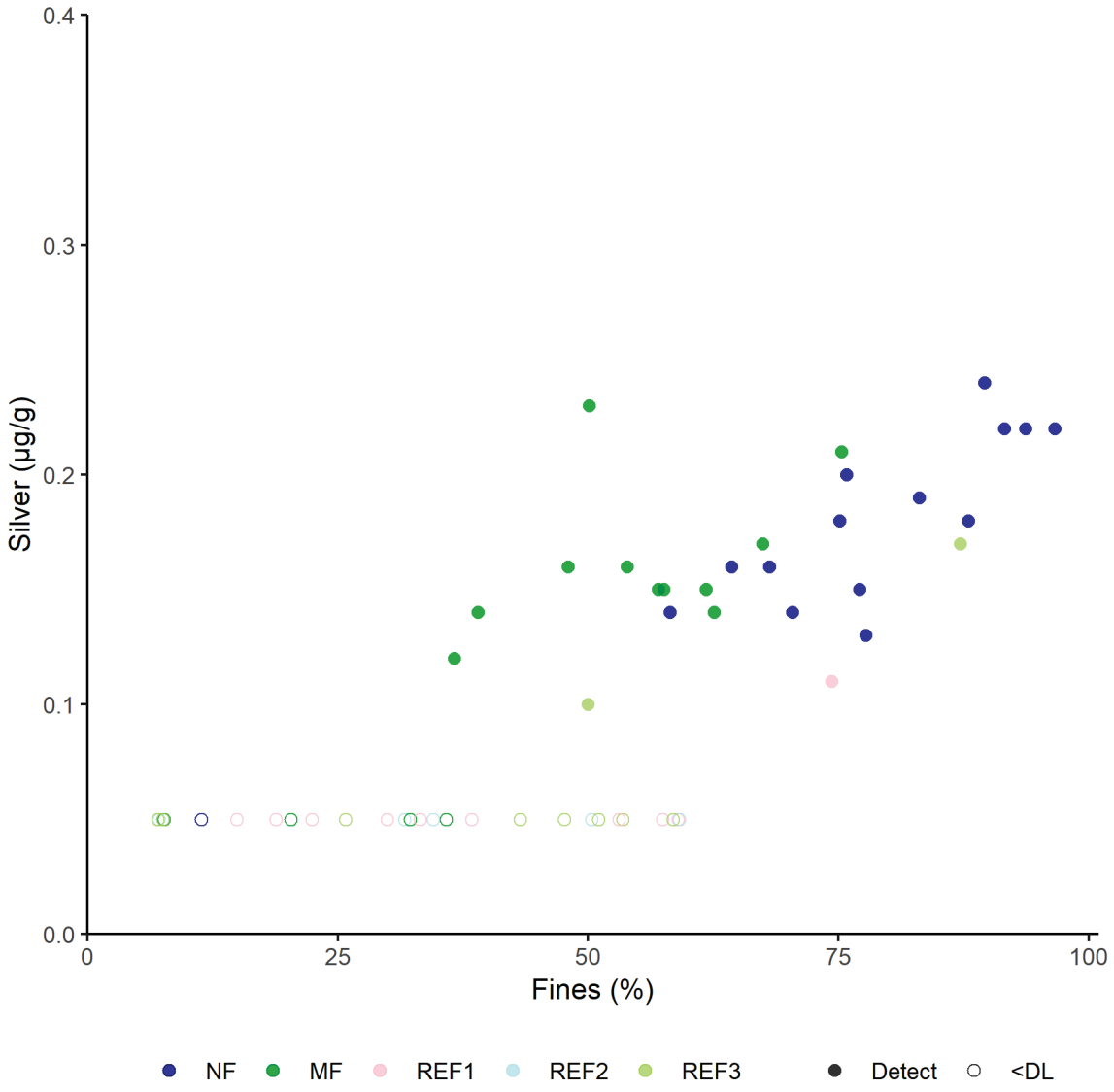
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-22: Concentrations of Potassium Versus Fines in Meliadine Lake, 2015 to 2018



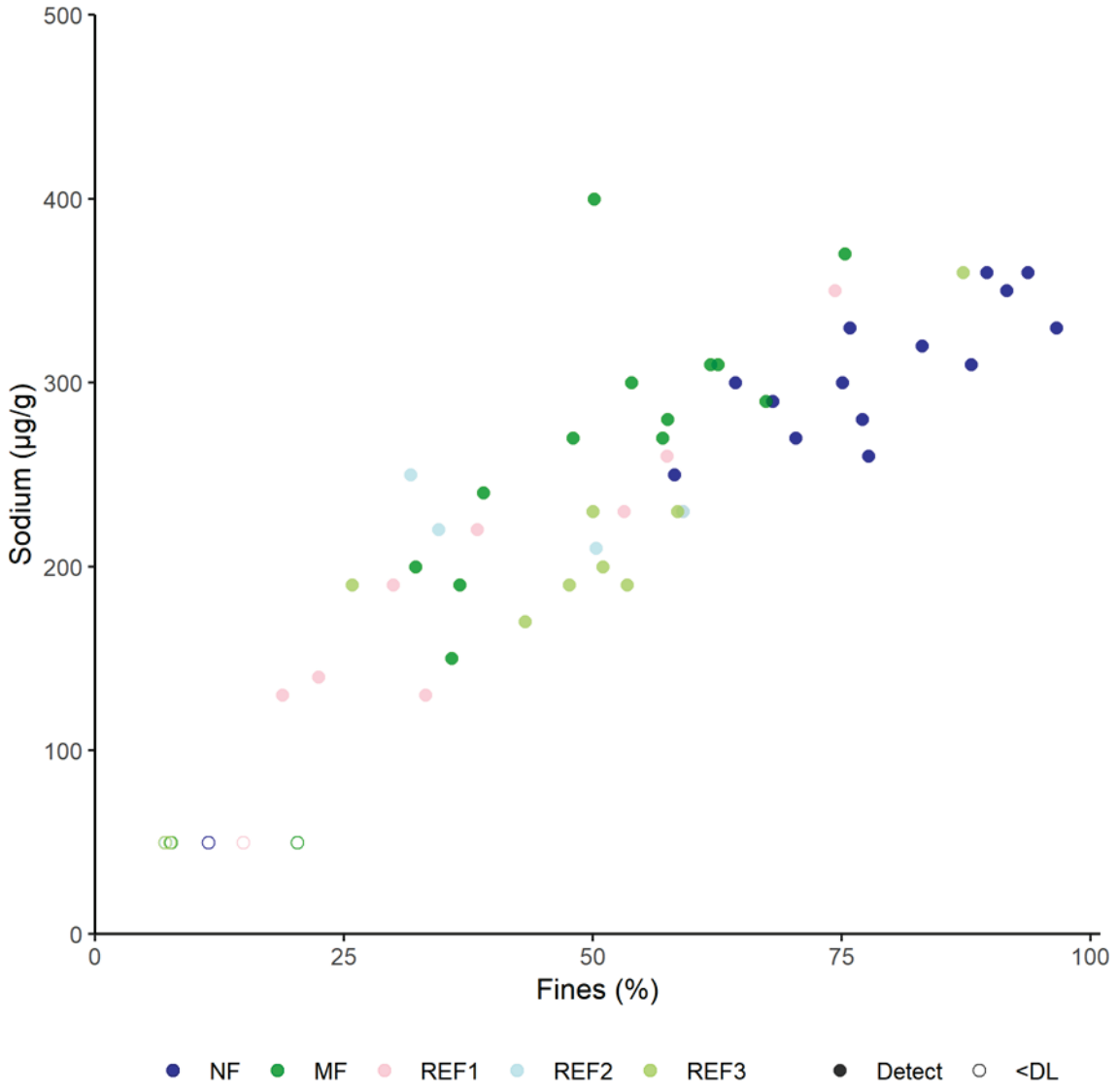
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-23: Concentrations of Selenium Versus Fines in Meliadine Lake, 2015 to 2018



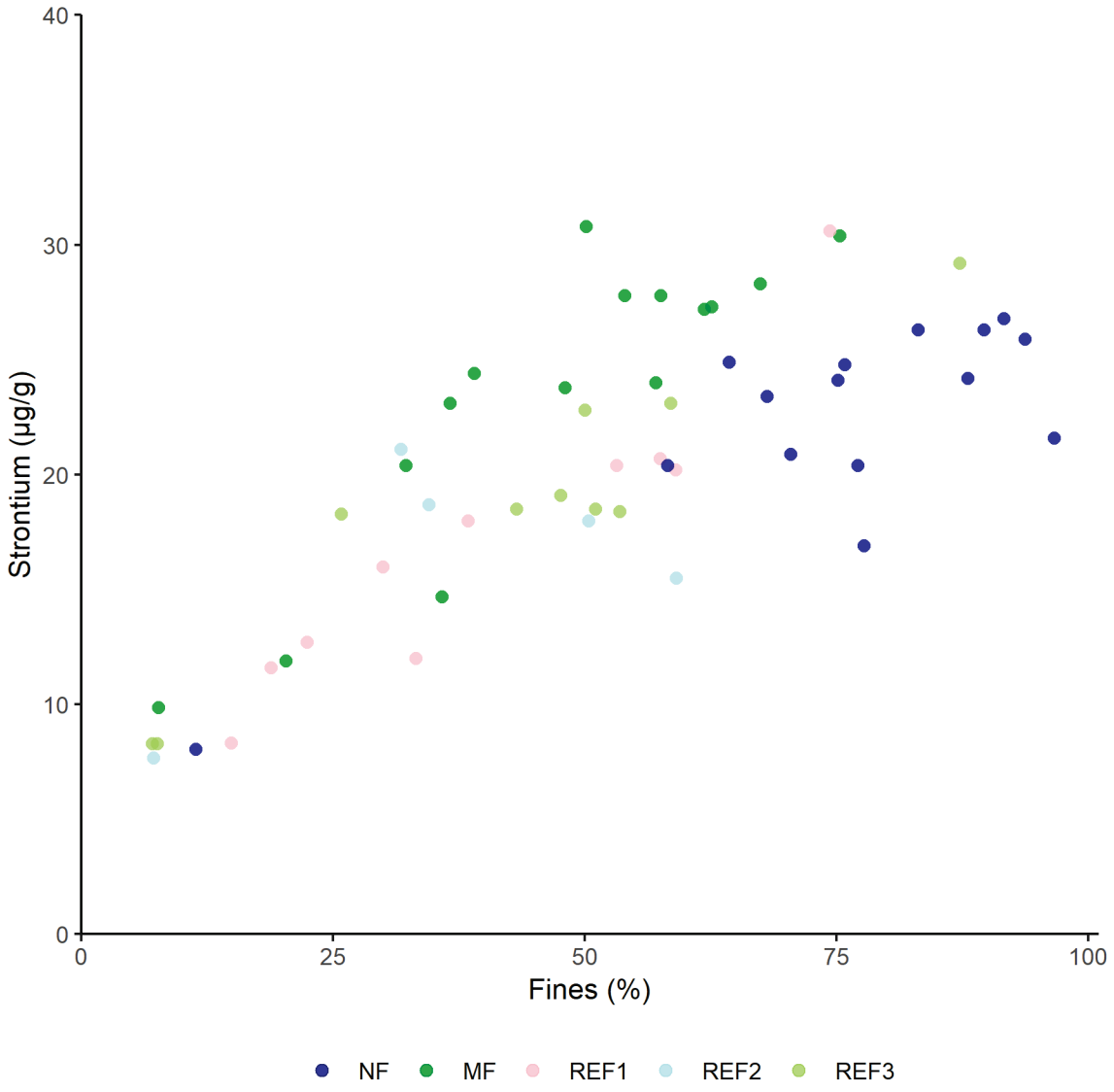
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-24: Concentrations of Silver Versus Fines in Meliadine Lake, 2015 to 2018



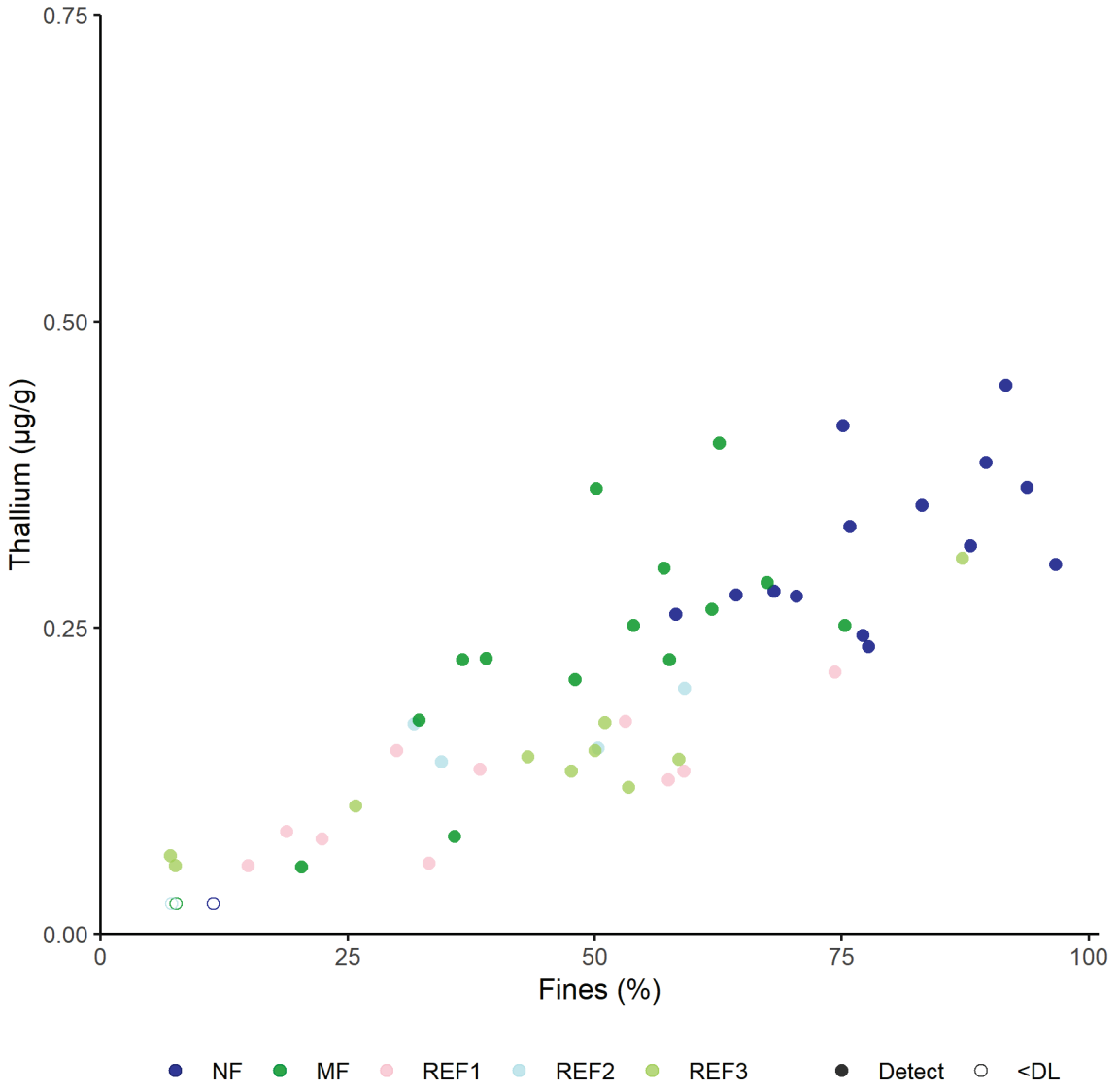
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-25: Concentrations of Sodium Versus Fines in Meliadine Lake, 2015 to 2018



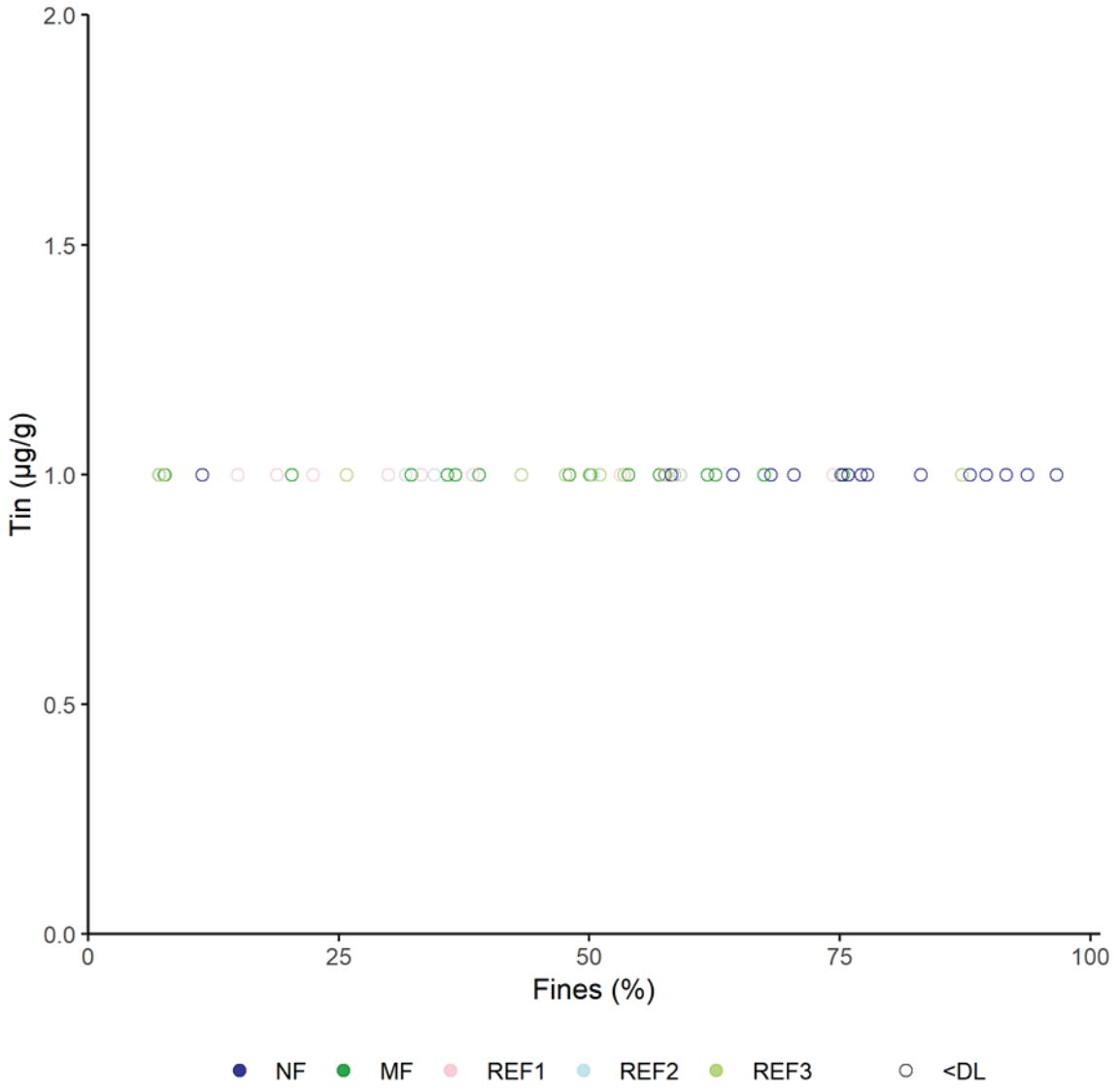
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-26: Concentrations of Strontium Versus Fines in Meliadine Lake, 2015 to 2018



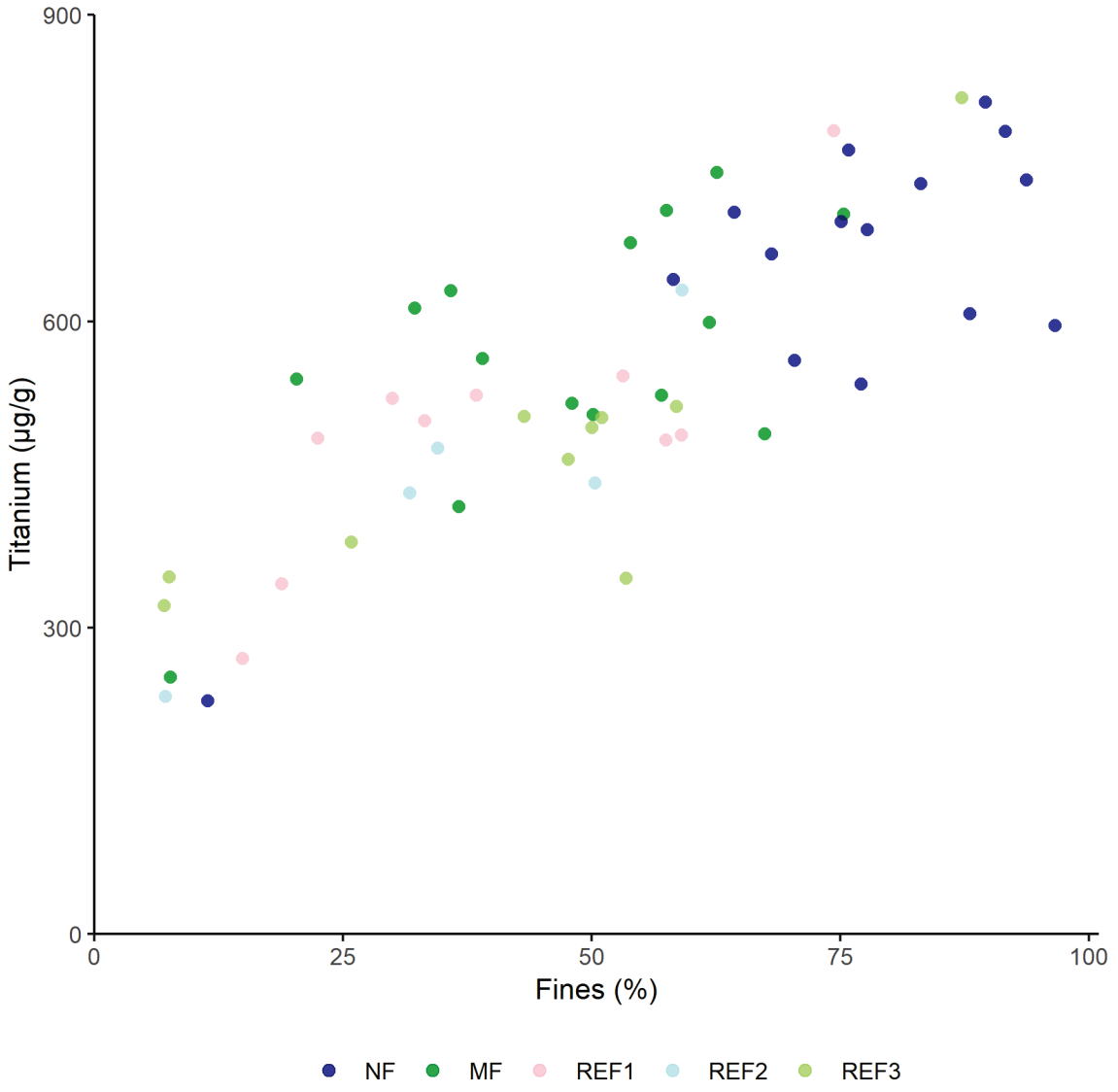
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-27: Concentrations of Thallium Versus Fines in Meliadine Lake, 2015 to 2018



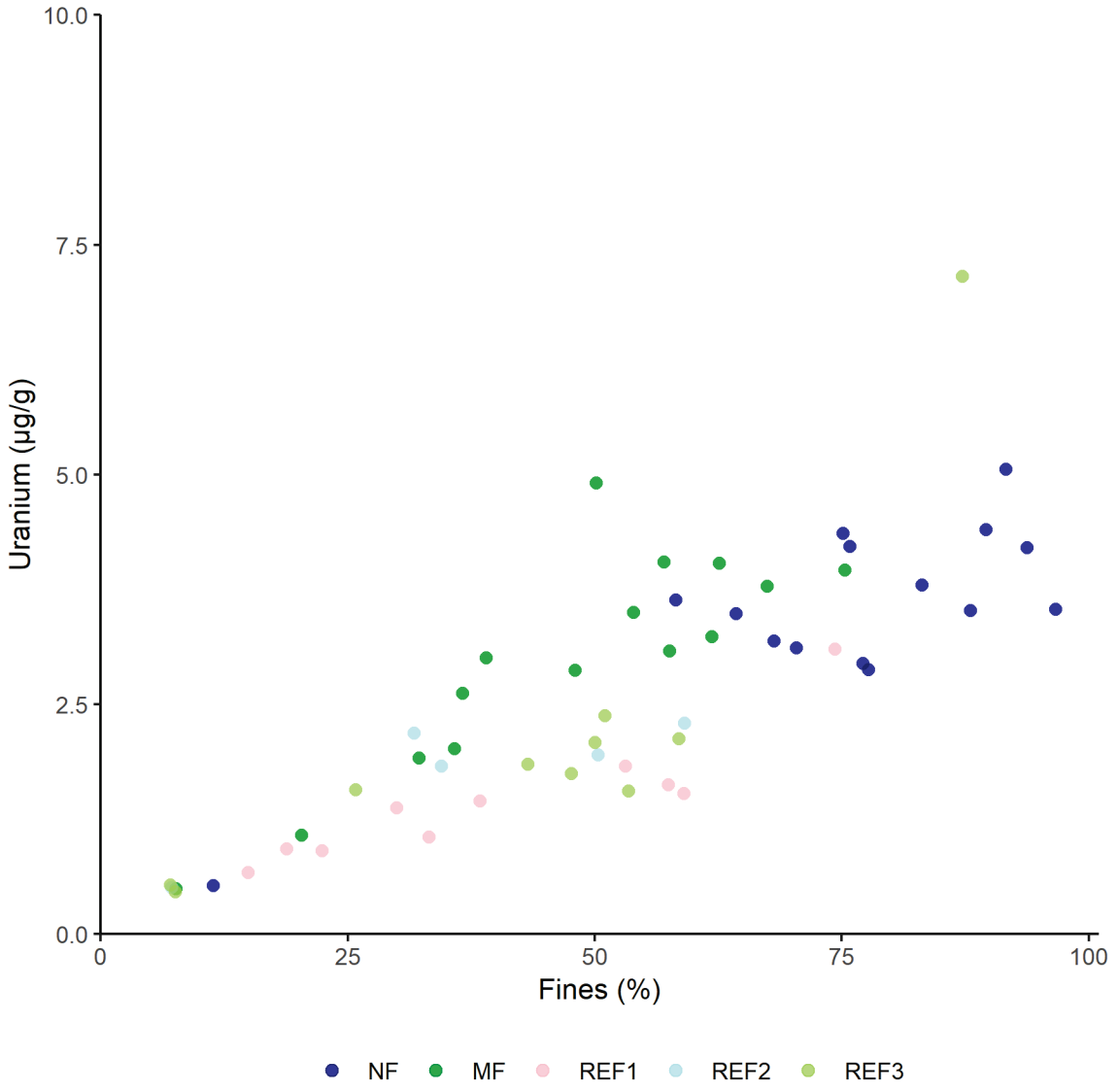
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-28: Concentrations of Tin Versus Fines in Meliadine Lake, 2015 to 2018



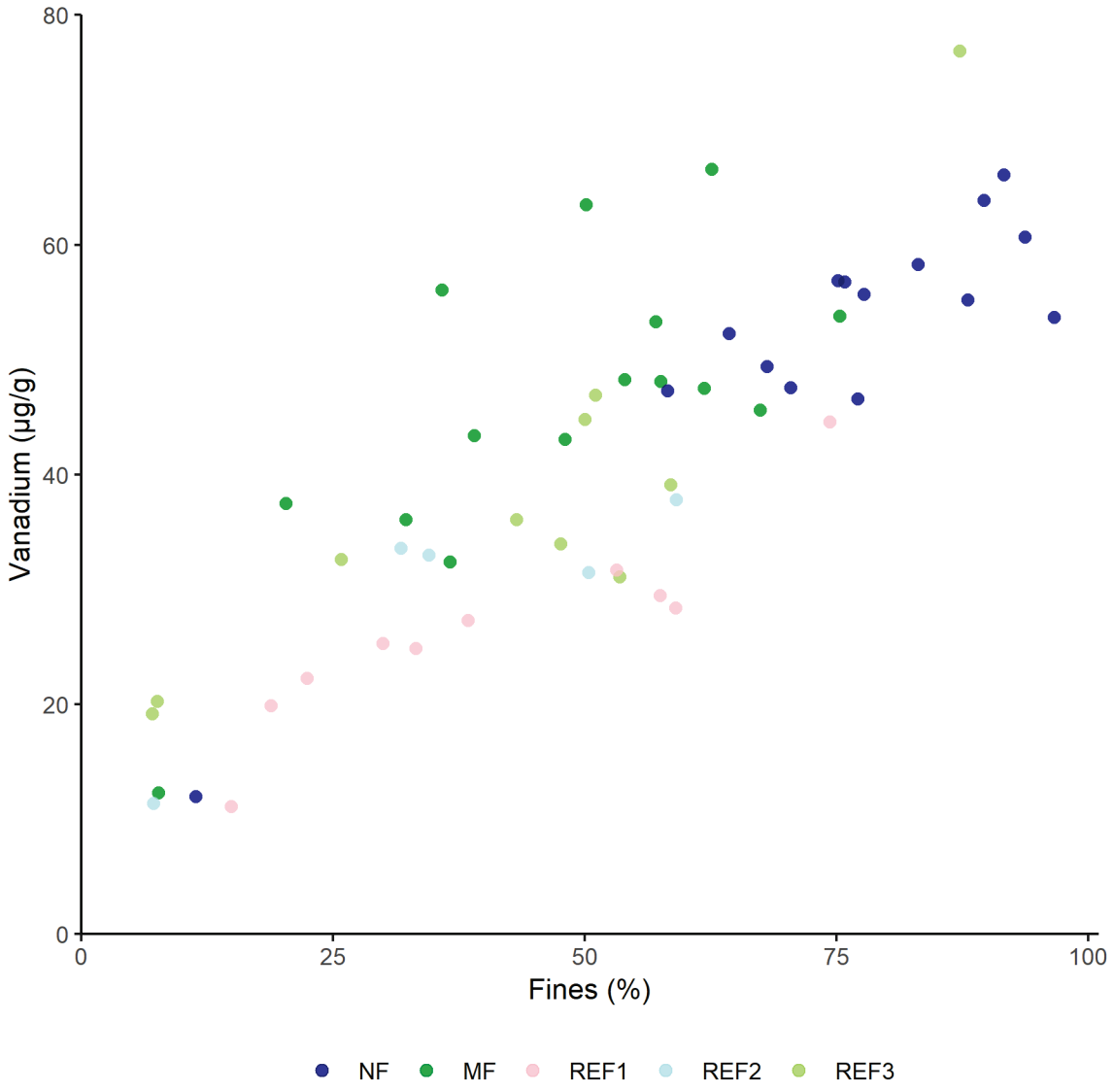
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-29: Concentrations of Titanium Versus Fines in Meliadine Lake, 2015 to 2018



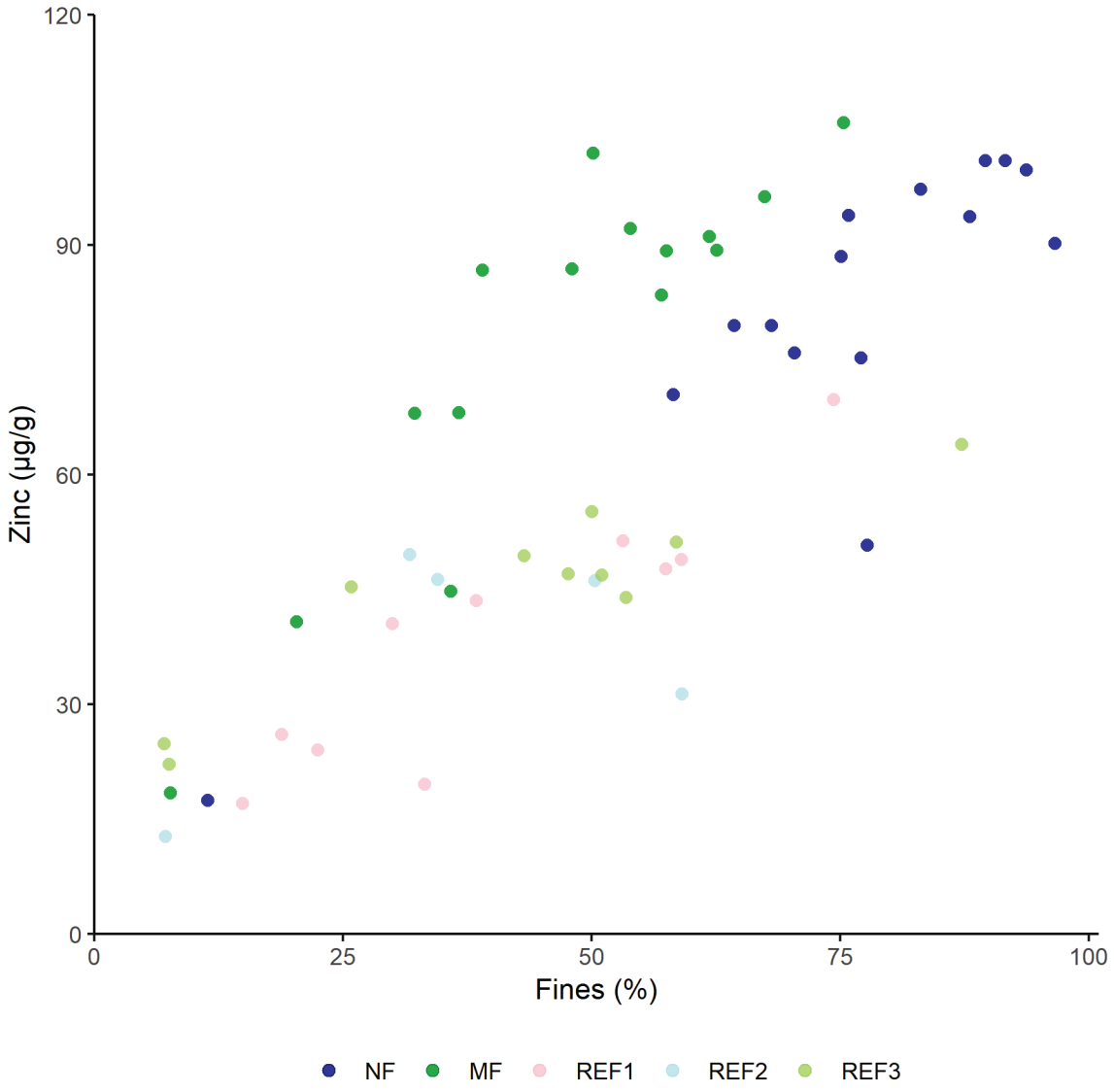
µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-30: Concentrations of Uranium Versus Fines in Meliadine Lake, 2015 to 2018



µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

Figure 8E.1-31: Concentrations of Vanadium Versus Fines in Meliadine Lake, 2015 to 2018



µg/g = micrograms per gram; open symbols represent results that are less than the detection limit.

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APPENDIX 8F

Statistical Outliers

Table 8F-1: Outliers Identified in the Sediment Quality Dataset During Statistical Analysis

Parameter	Unit	Year	Area	Station	Outlier	SR Value	*P*-value with Outlier included	Change in Analysis	Data Entry Error
2018 Spatial Analysis									
Total Organic Carbon	% / %Fines	2018	Reference Area 1	MEL-03-02	0.86	-4.454	**0.003**	N	N
Arsenic	µg/g %Fines	2018	Reference Area 3	MEL-05-01	45.1	5.217	0.104	**Y**	N
Barium	µg/g %Fines	2018	Reference Area 3	MEL-05-01	280	3.845	**0.026**	N	N
Calcium	µg/g %Fines	2018	Reference Area 3	MEL-05-01	19125	6.476	**0.038**	N	N
Cobalt	µg/g %Fines	2018	Reference Area 3	MEL-05-01	49.3	6.106	0.214	**Y**	N
Copper	µg/g %Fines	2018	Reference Area 1	MEL-03-02	22.9	-3.941	**0.007**	N	N
Lead	µg/g %Fines	2018	Reference Area 3	MEL-05-01	22.3	6.425	**0.006**	N	N
Molybdenum	µg/g %Fines	2018	Near-field	MEL-01-09	12.5	3.93	**0.064**	N	N
Nickel	µg/g %Fines	2018	Reference Area 3	MEL-05-01	152.5	5.887	0.263	**Y**	N
Strontium	µg/g %Fines	2018	Reference Area 3	MEL-05-01	103.8	7.65	**0.097**	N	N
Thallium	µg/g %Fines	2018	Reference Area 3	MEL-05-01	0.7	4.479	**0.085**	N	N
Uranium	µg/g %Fines	2018	Reference Area 3	MEL-05-05	8.2	5.3150	**0.060**	N	N
Zinc	µg/g %Fines	2018	Reference Area 3	MEL-05-01	277.5	7.981	**0.090**	N	N

Note:
Outliers were identified during statistical testing as those having SR values greater than or equal to an absolute value of 3.5.
Bold values indicate statistical significance. Tests were considered significant at $P < 0.1$.
Underlined values indicate that the results of the analysis was influenced by the outlier.
SR = studentized residual; µg/g = micrograms per gram.

APPENDIX 8G

Box-and-Whisker Plots from the Near-field Comparing Years

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Figure 8G.2-31: Box-and-whisker Plots of Zinc Concentrations in Meliadine Lake Near-field Area, 2018.....34

1.0 PARTICLE-SIZE AND ORGANIC CARBON

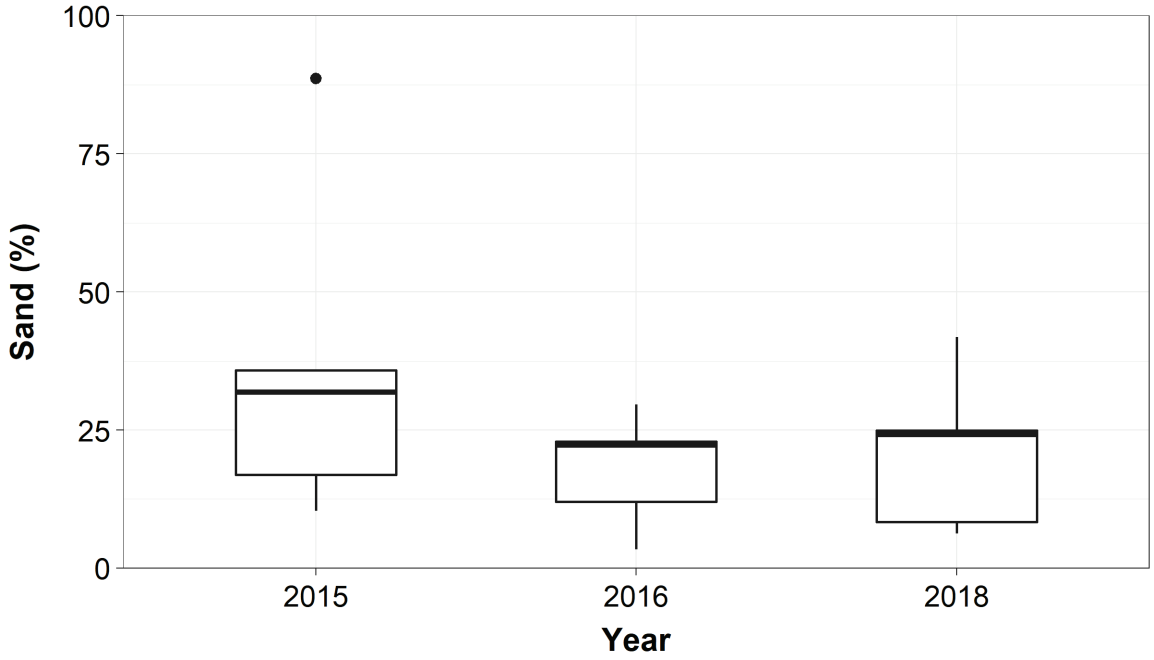


Figure 8G.1-1: Box-and-whisker Plots of Sand (%) Concentrations in Meliadine Lake Near-field Area, 2018

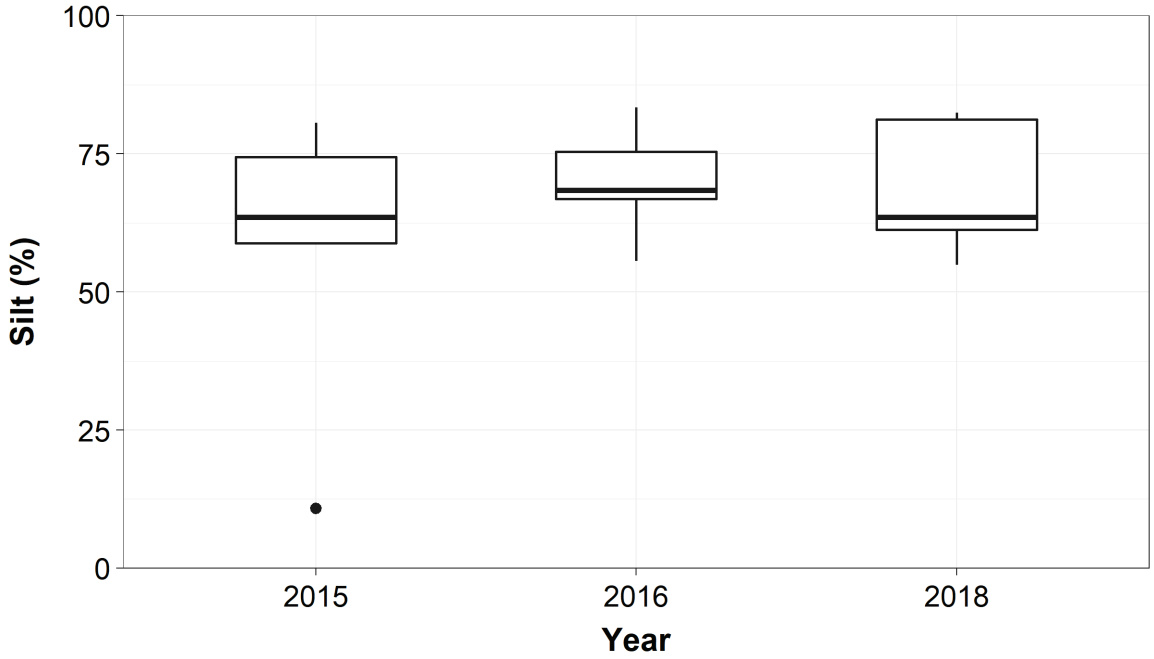


Figure 8G.1-2: Box-and-whisker Plots of Silt (%) Concentrations in Meliadine Lake Near-field Area, 2018

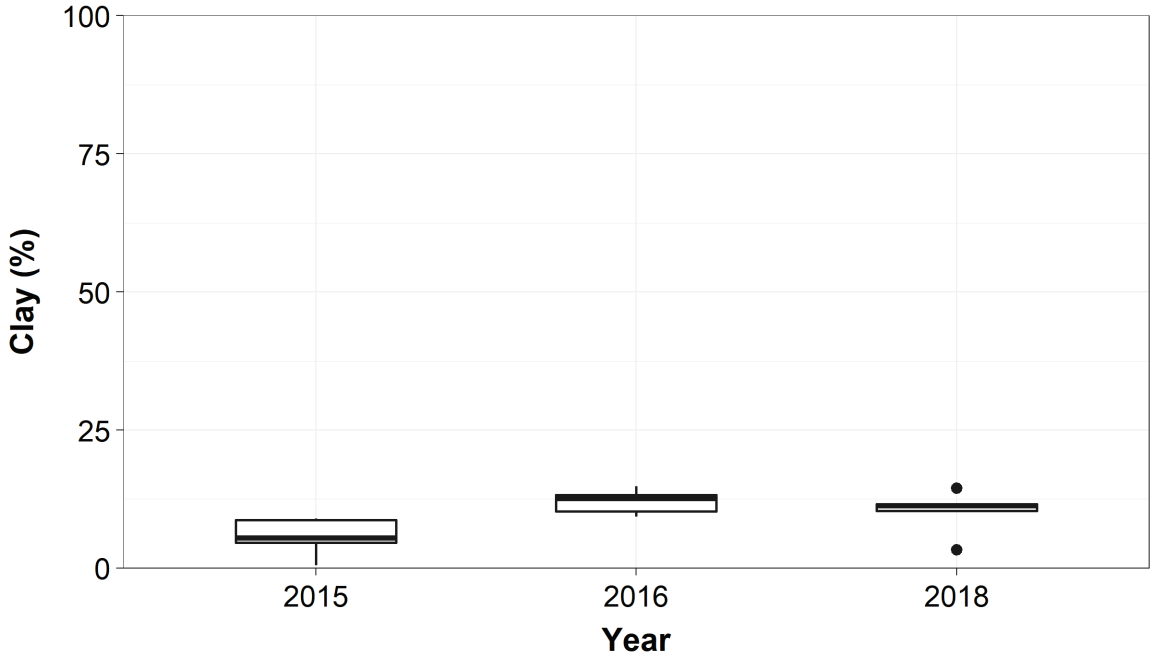


Figure 8G.1-3: Box-and-whisker Plots of Clay (%) Concentrations in Meliadine Lake Near-field Area, 2018

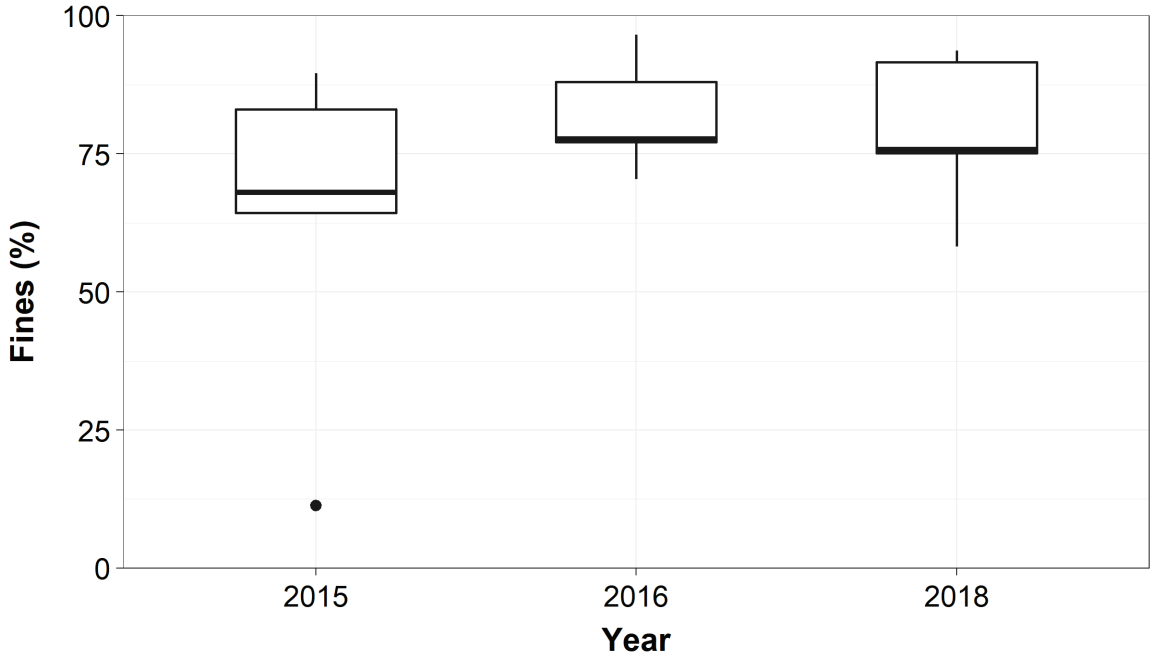
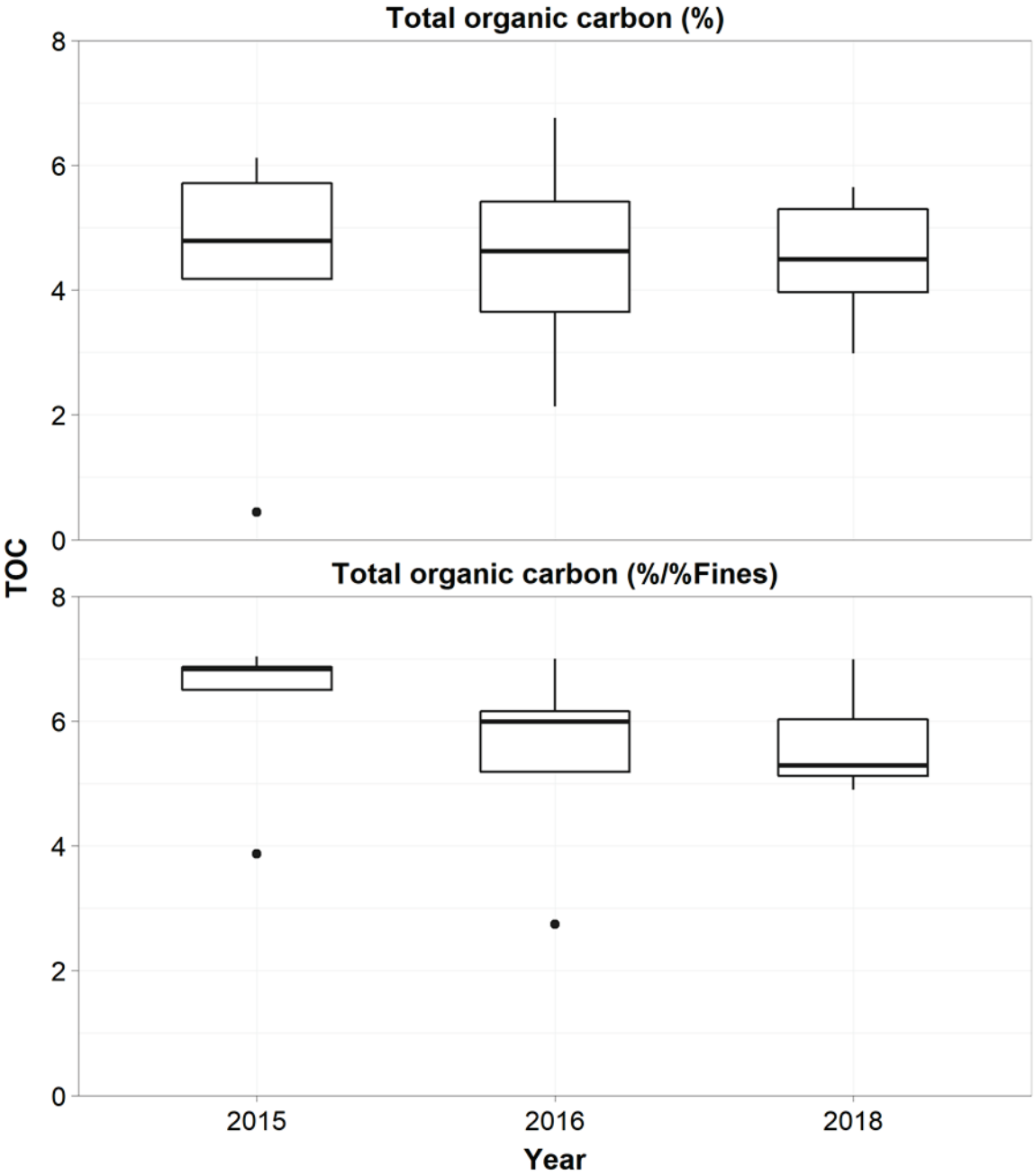


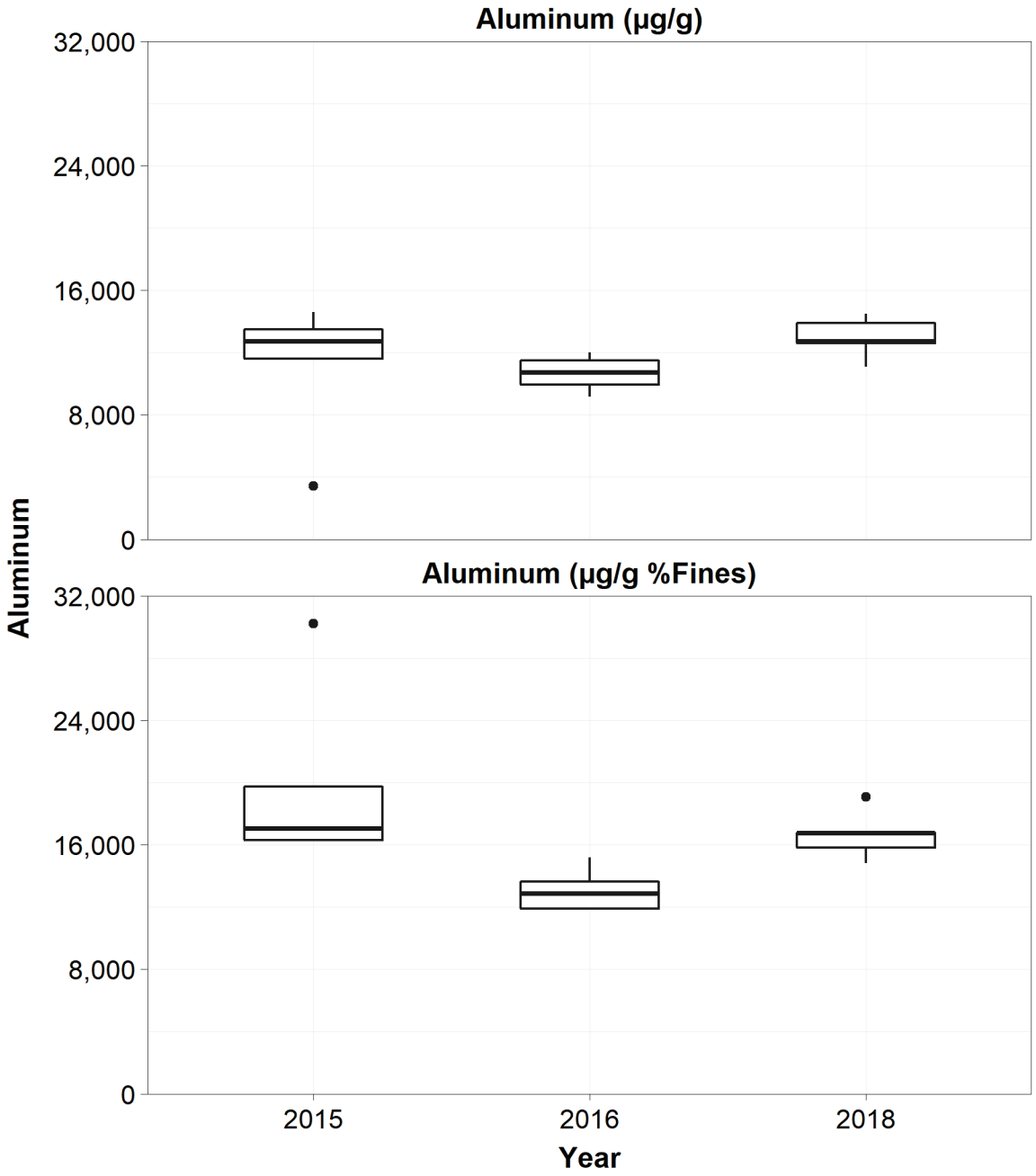
Figure 8G.1-4: Box-and-whisker Plots of Fines (Silt + Clay %) Concentrations in Meliadine Lake Near-field Area, 2018



Note: top: non-normalized data; bottom: data normalized to % fines.

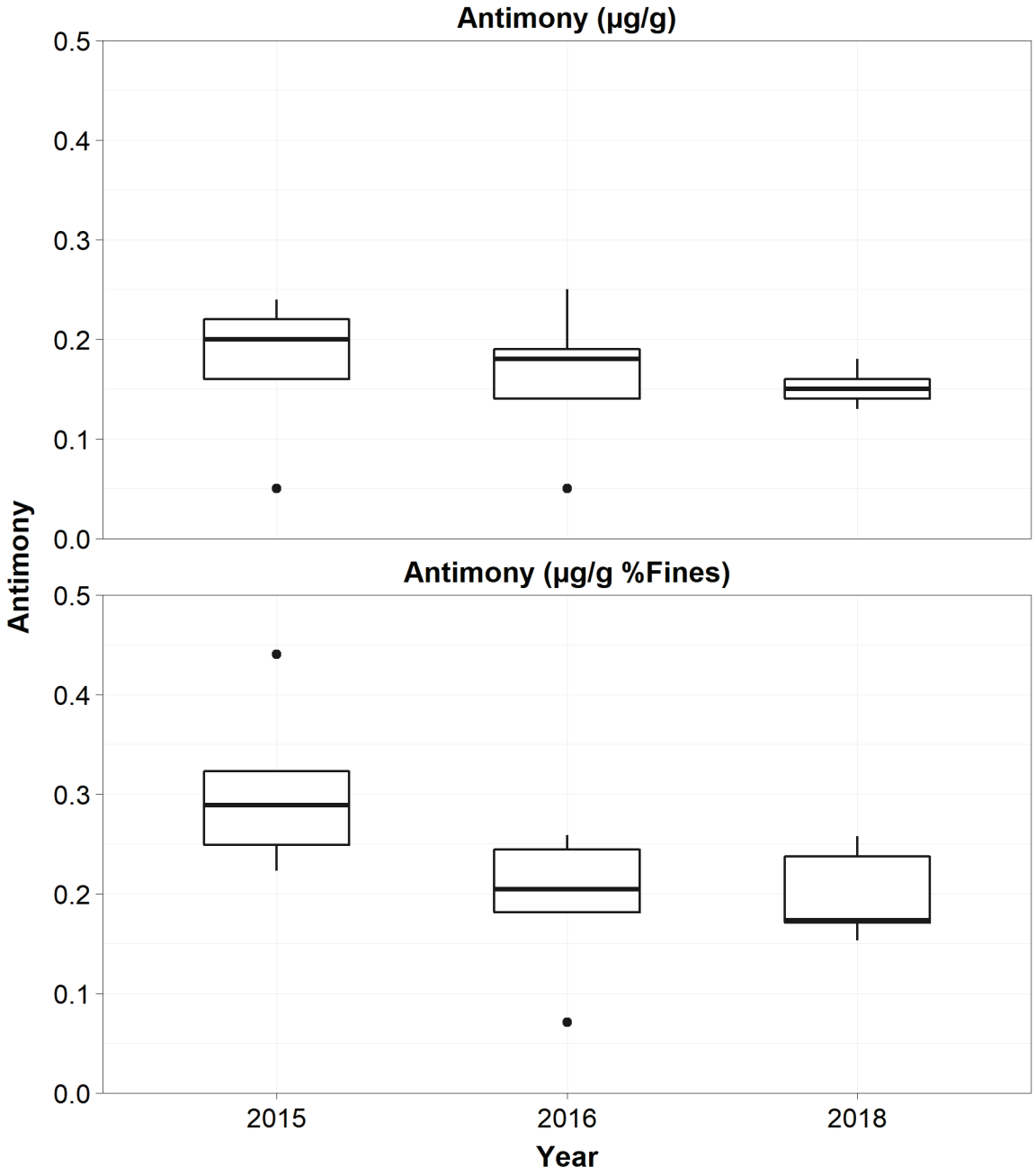
Figure 8G.1-5: Box-and-whisker Plots of Total Organic Carbon Concentrations in Meliadine Lake Near-field Area, 2018

2.0 METALS



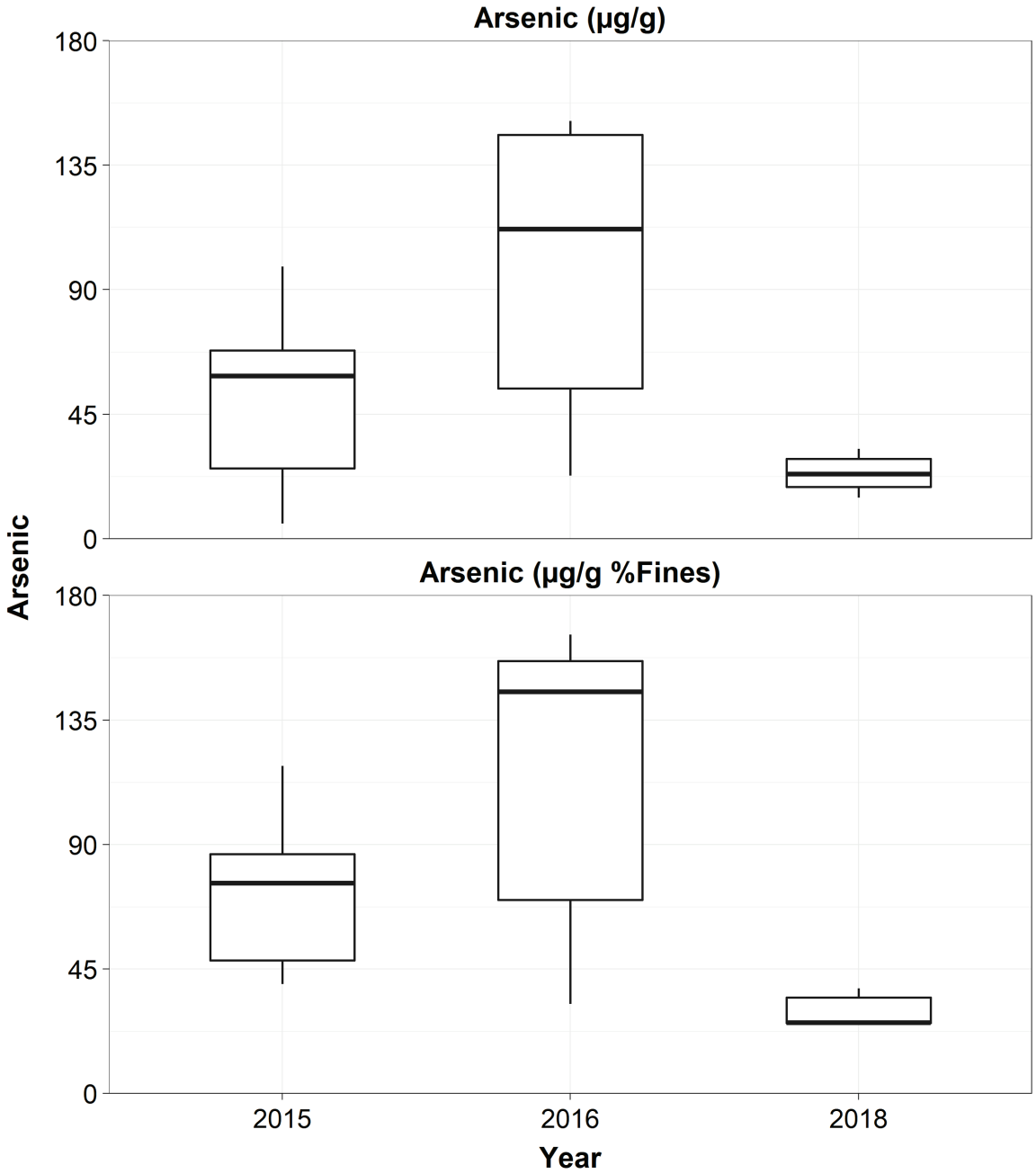
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µg/g = micrograms per gram.;

Figure 8G.2-1: Box-and-whisker Plots of Aluminum Concentrations in Meliadine Lake Near-field Area, 2018



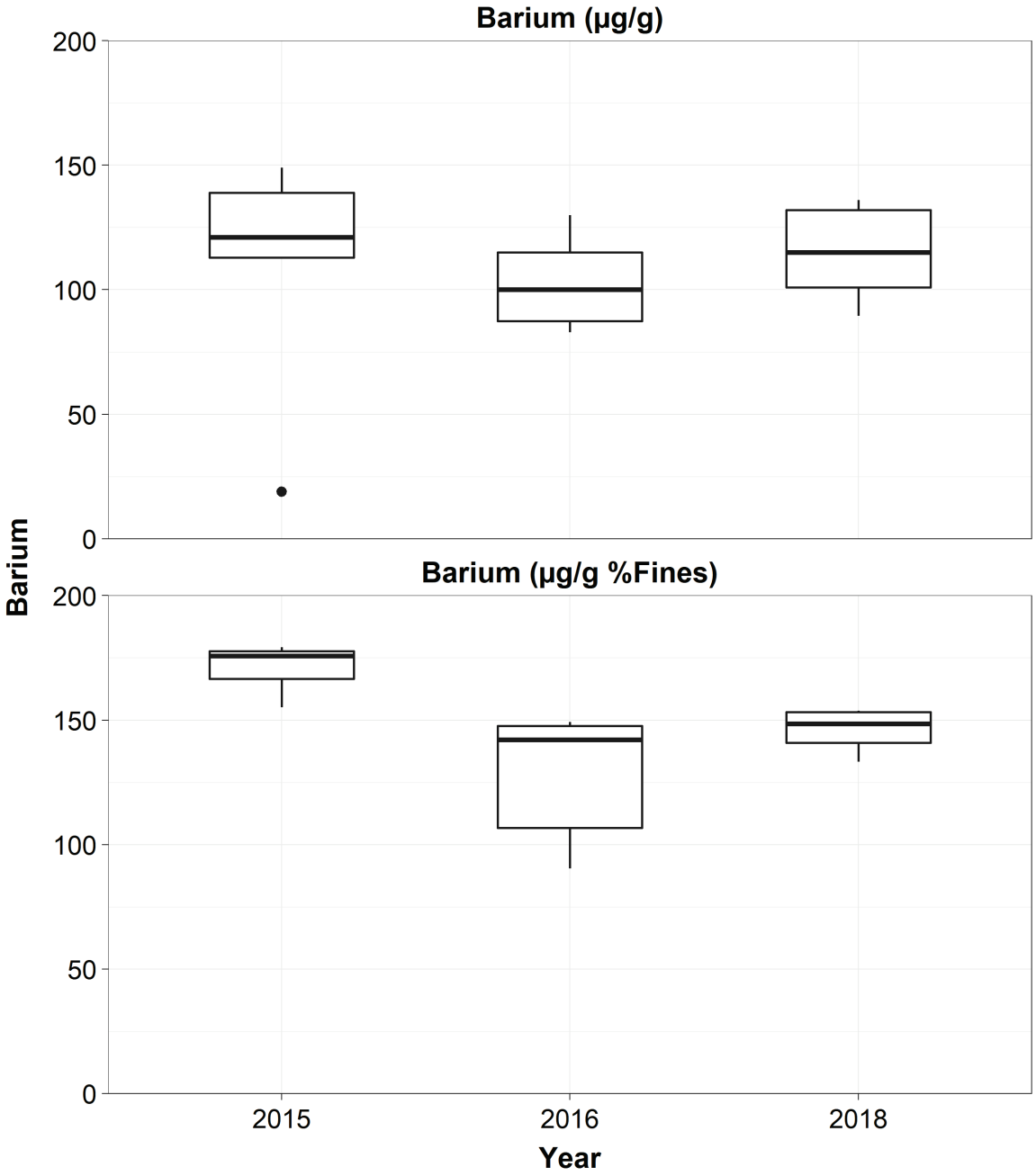
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µg/g = micrograms per gram.

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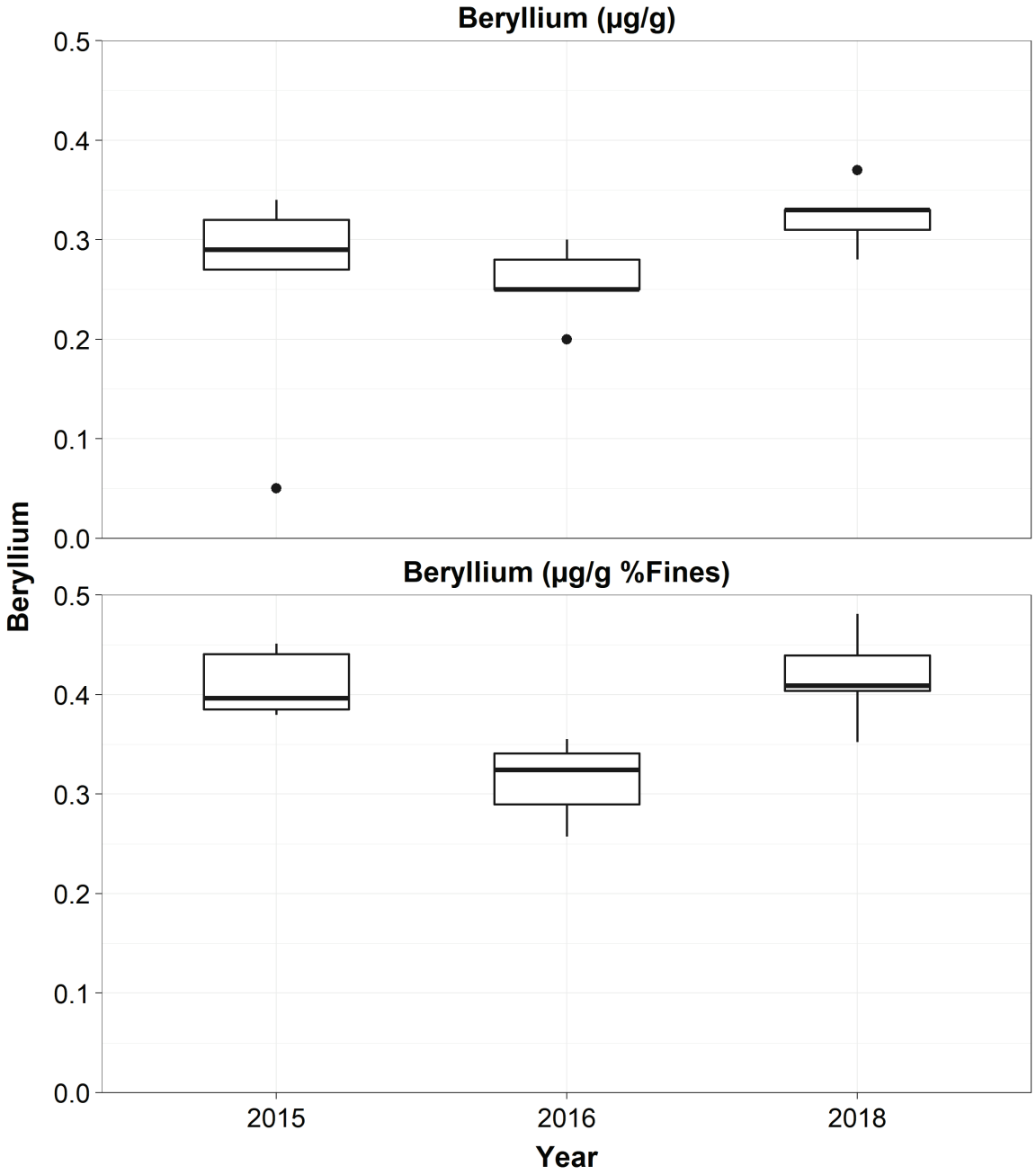
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Figure 8G.2-3: Box-and-whisker Plots of Arsenic Concentrations in Meliadine Lake Near-field Area, 2018



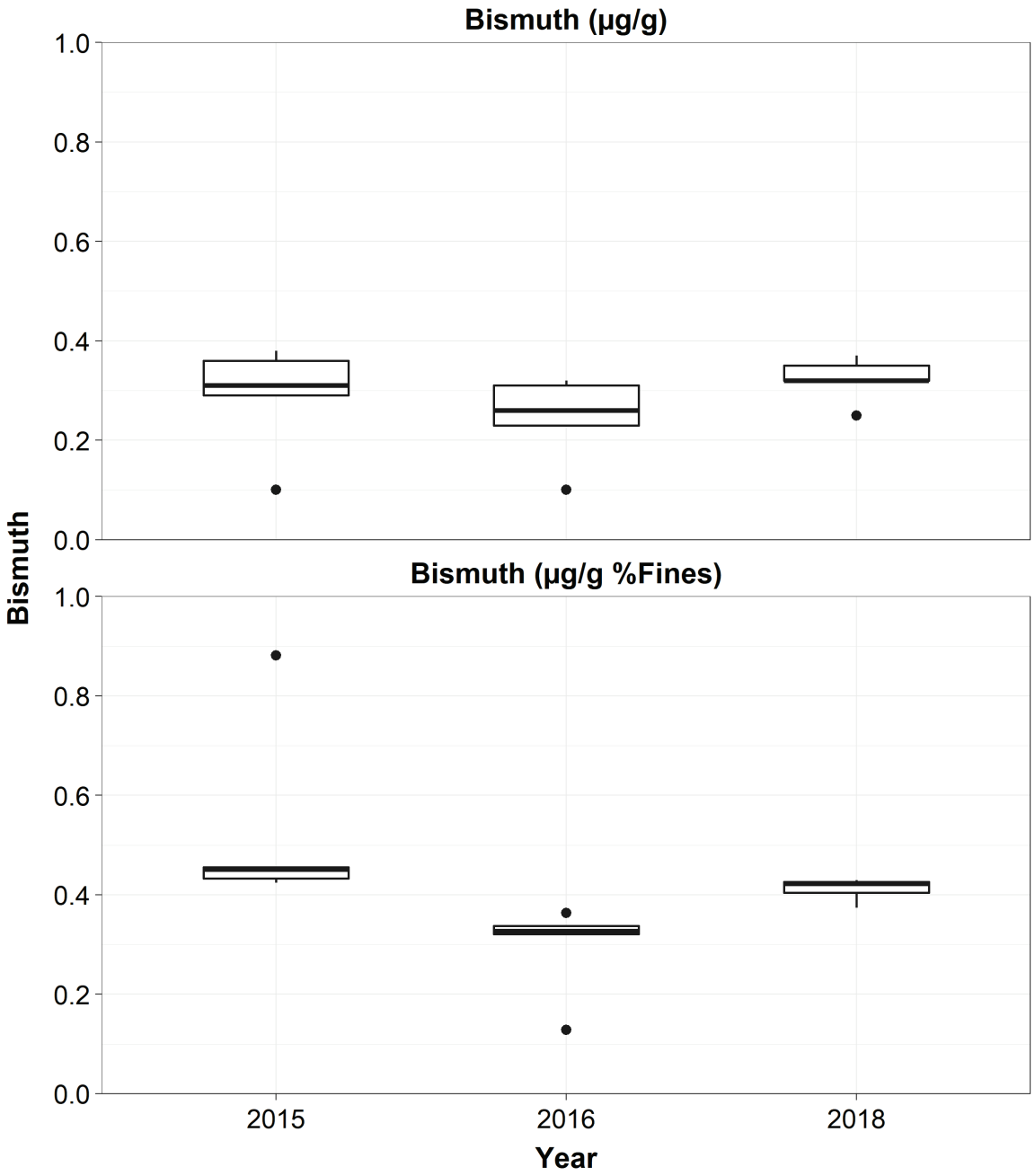
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Figure 8G.2-4: Box-and-whisker Plots of Barium Concentrations in Meliadine Lake Near-field Area, 2018



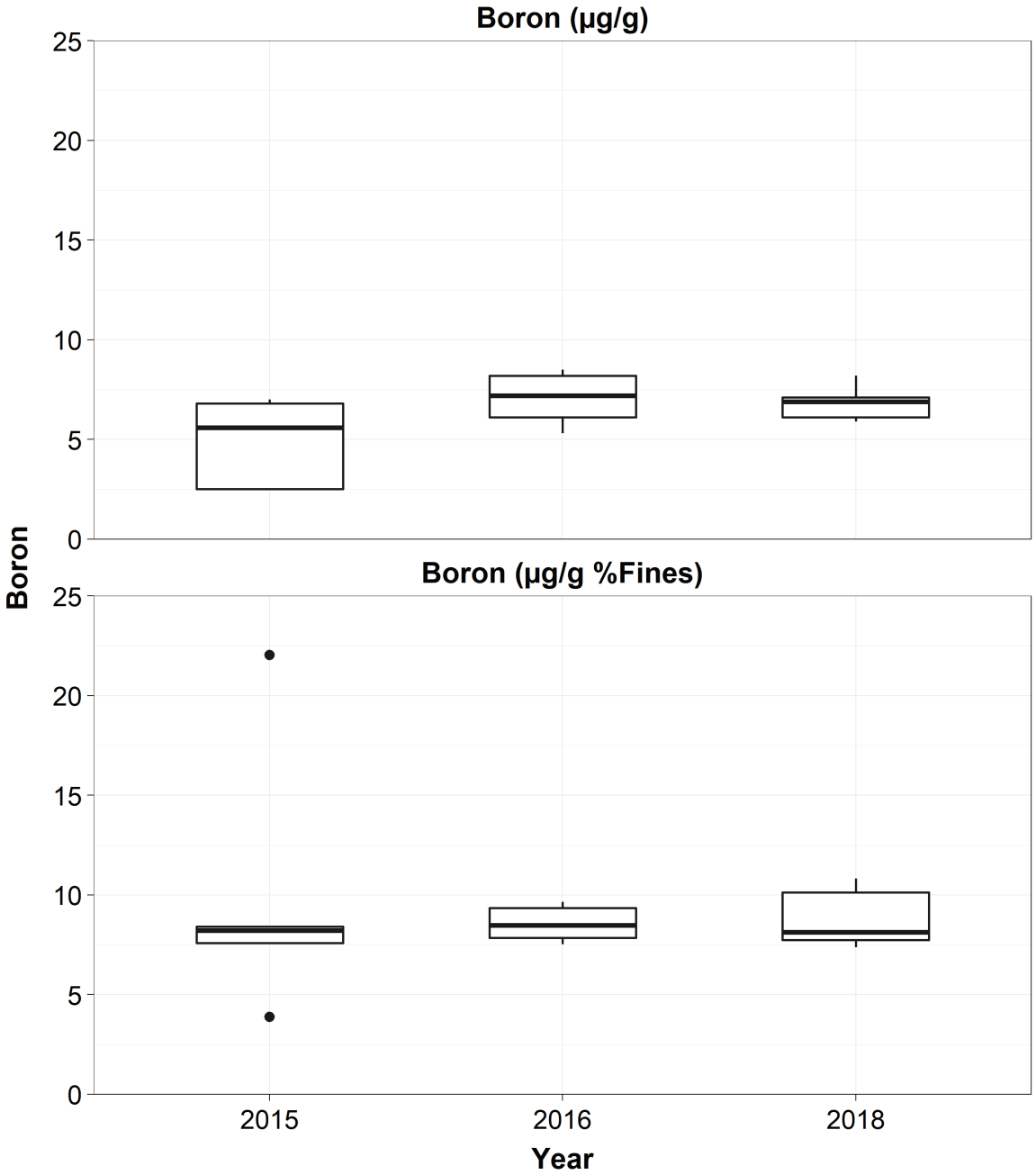
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µg/g = micrograms per gram.

Figure 8G.2-5: Box-and-whisker Plots of Beryllium Concentrations in Meliadine Lake Near-field Area, 2018



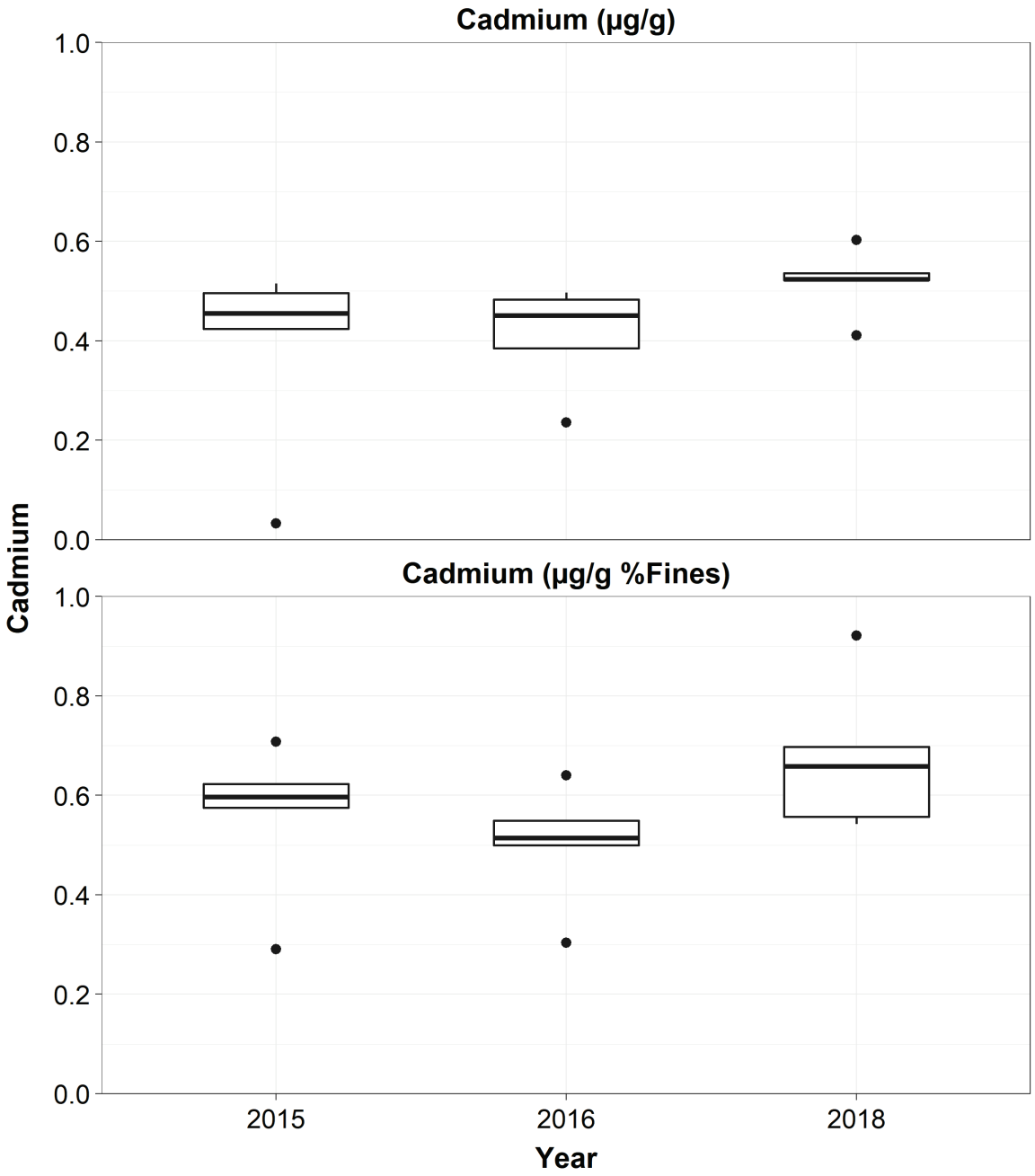
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Figure 8G.2-6: Box-and-whisker Plots of Bismuth Concentrations in Meliadine Lake Near-field Area, 2018



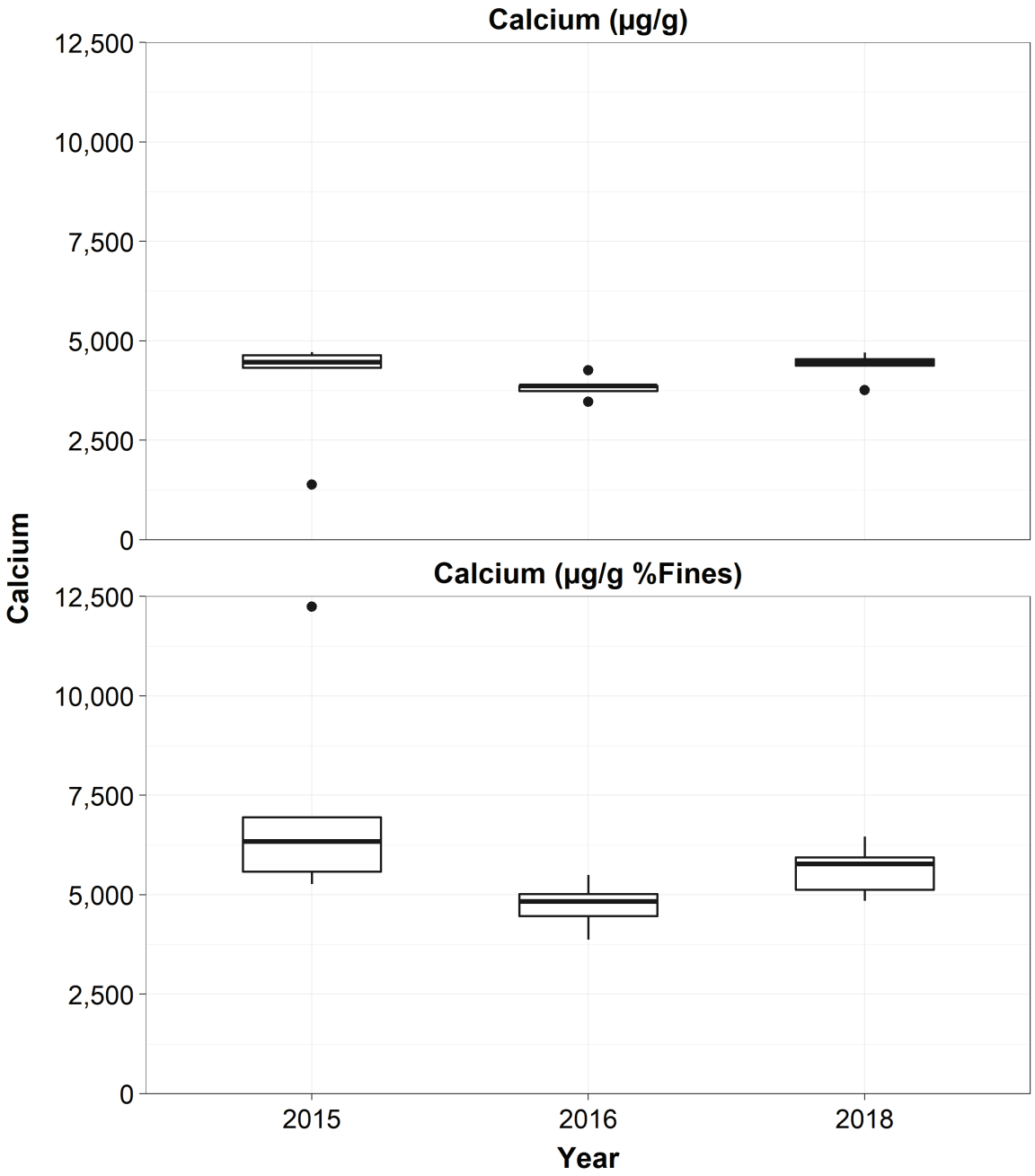
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µg/g = micrograms per gram.

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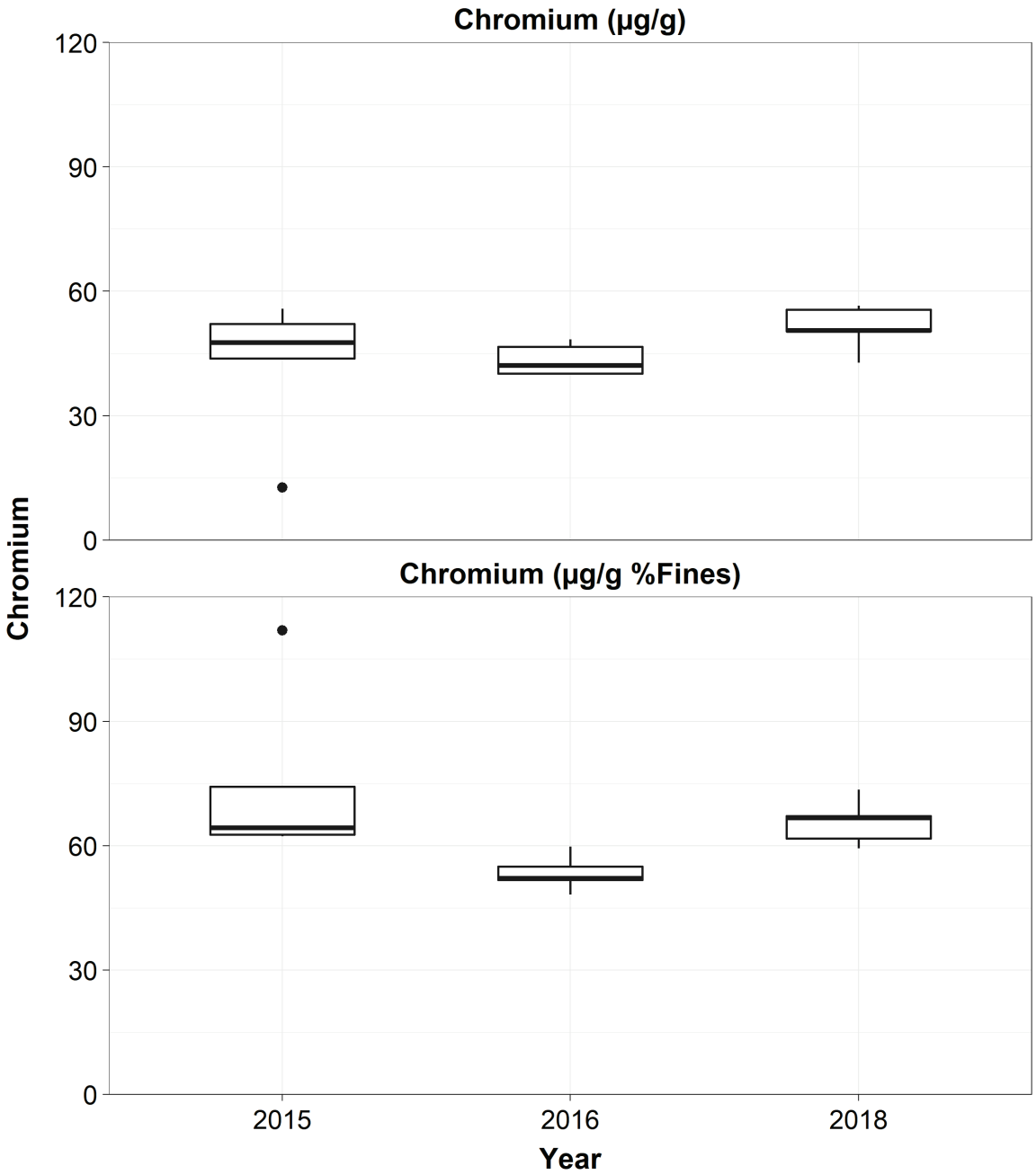
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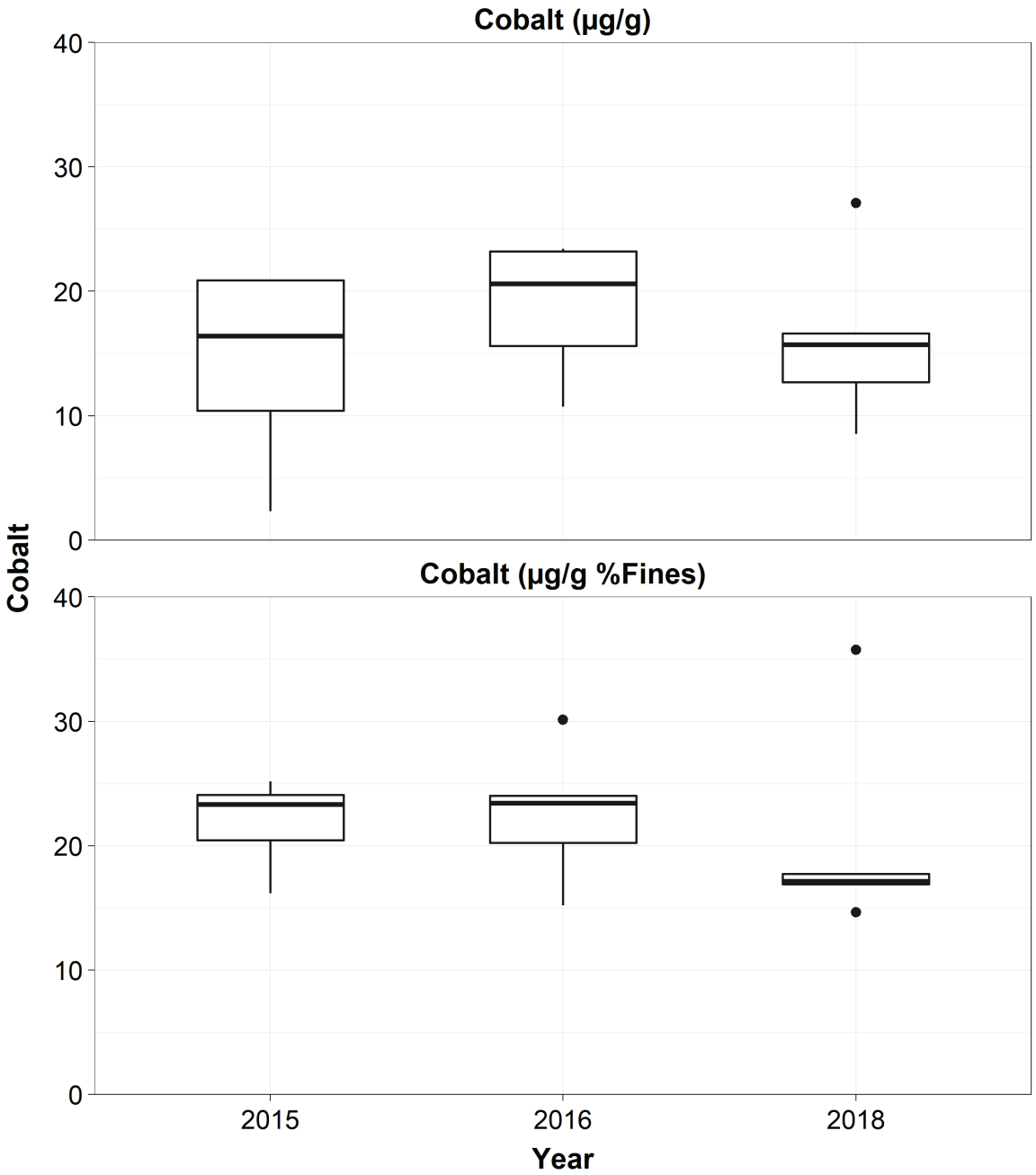
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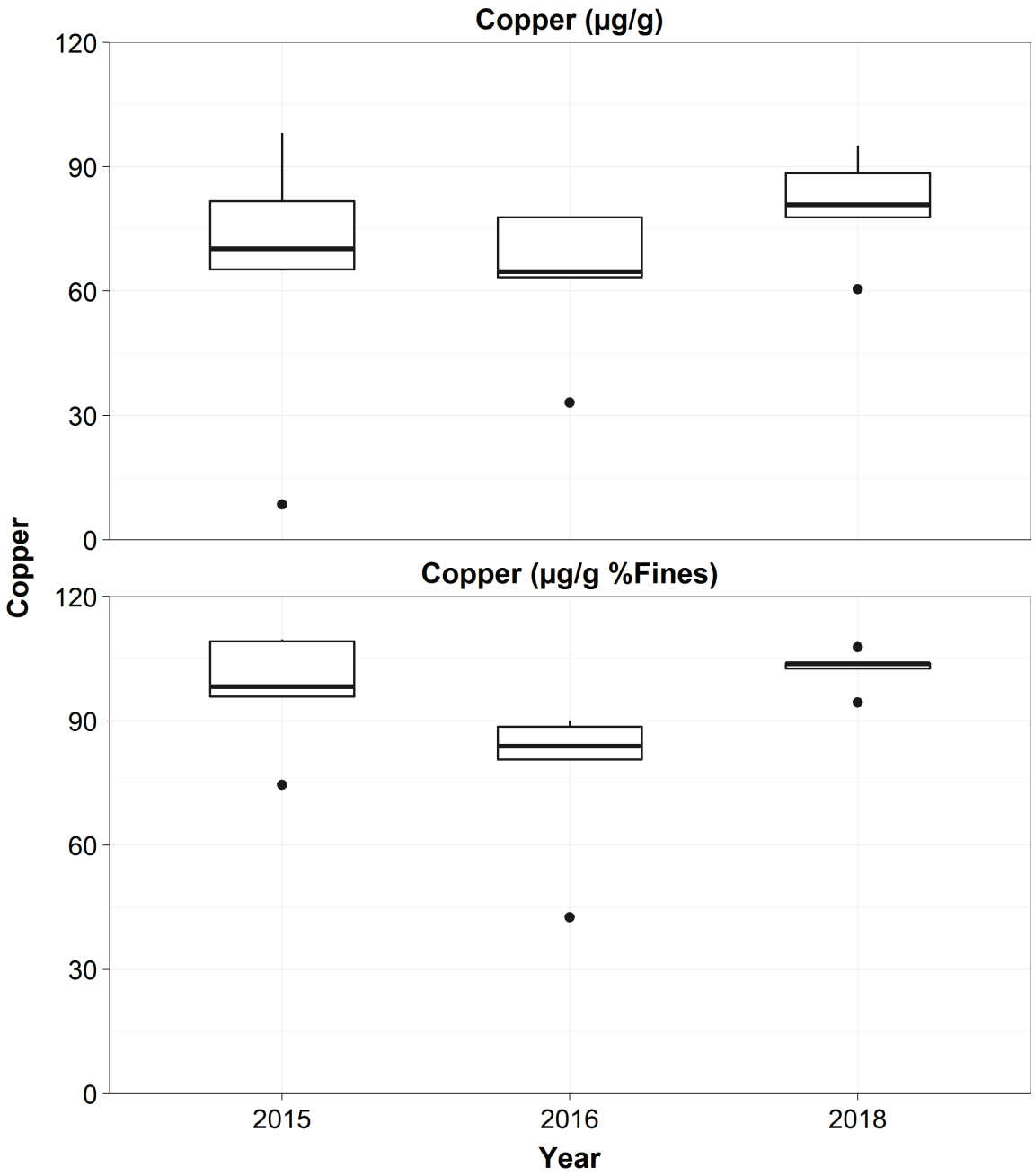
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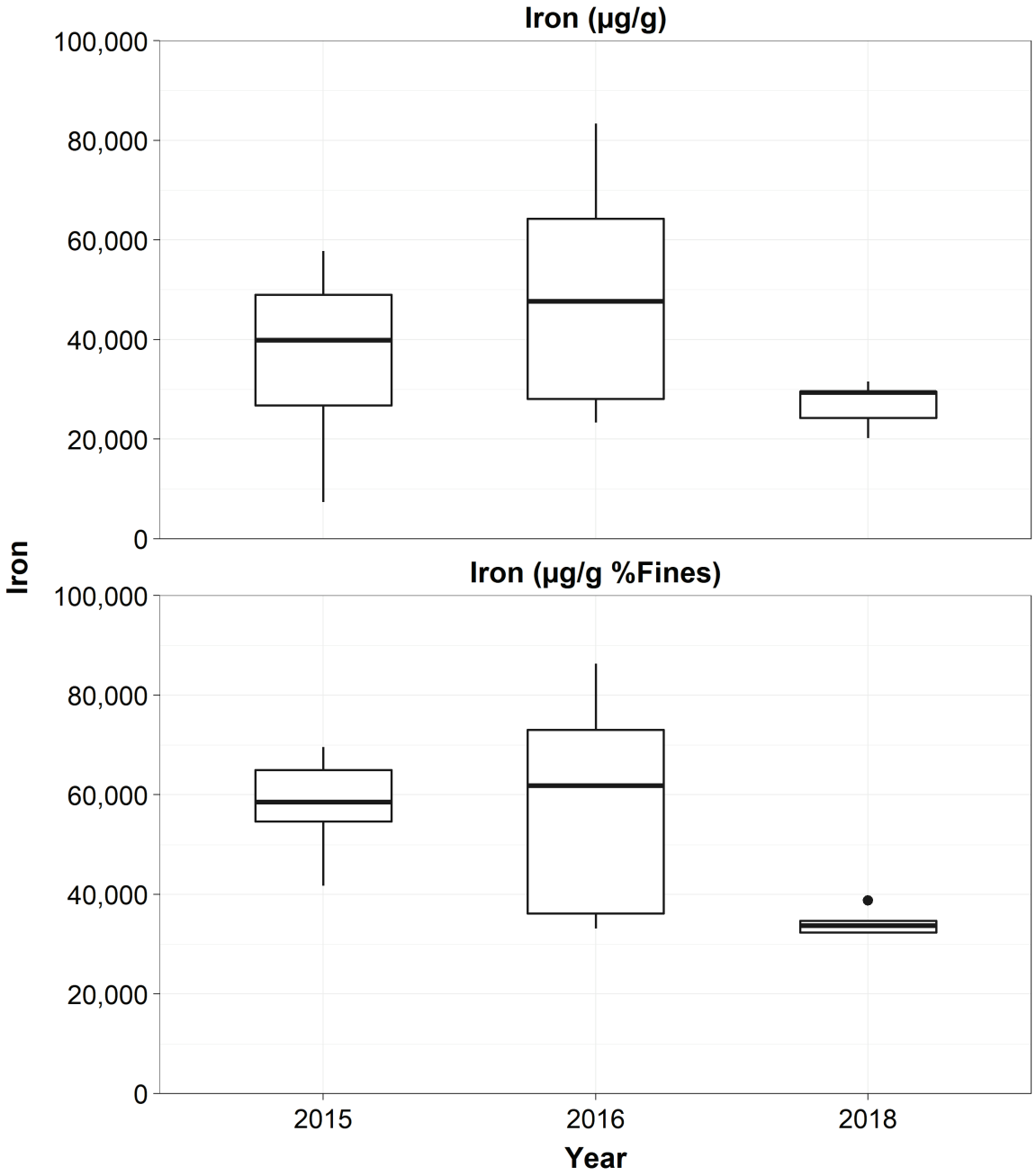
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µg/g = micrograms per gram.

Figure 8G.2-11: Box-and-whisker Plots of Cobalt Concentrations in Meliadine Lake Near-field Area, 2018



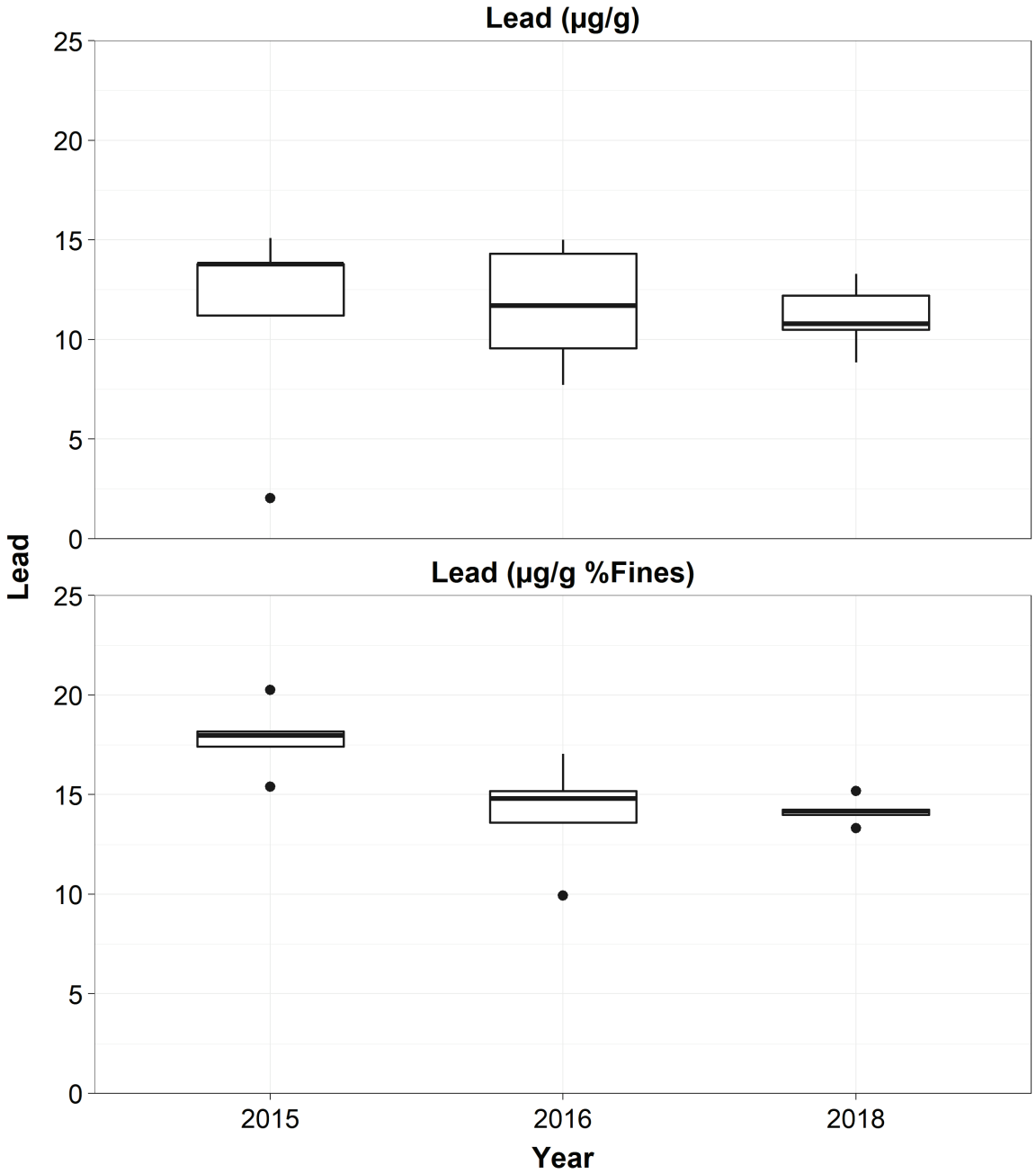
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Figure 8G.2-12: Box-and-whisker Plots of Copper Concentrations in Meliadine Lake Near-field Area, 2018



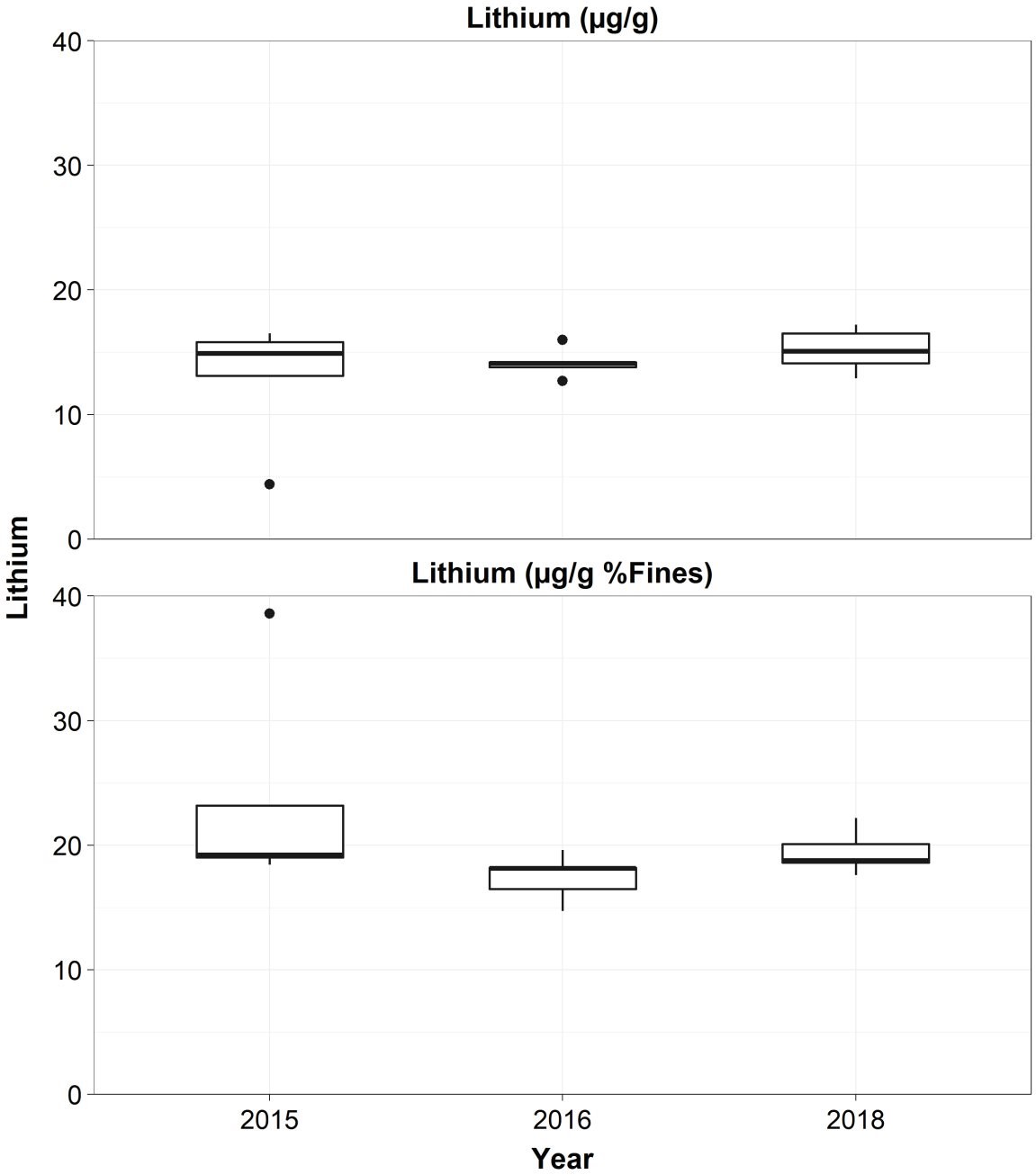
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-13: Box-and-whisker Plots of Iron Concentrations in Meliadine Lake Near-field Area, 2018



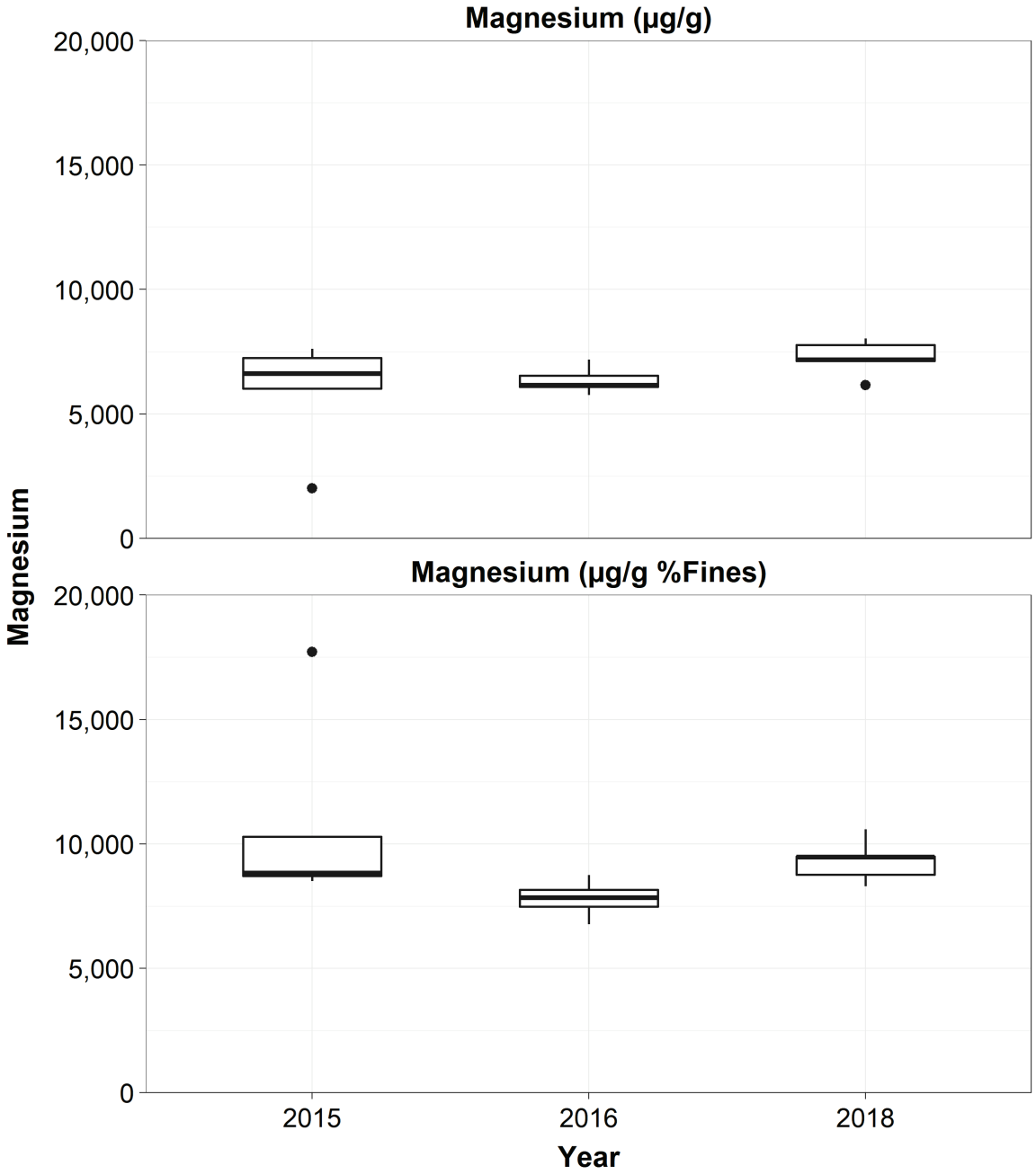
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-14: Box-and-whisker Plots of Lead Concentrations in Meliadine Lake Near-field Area, 2018



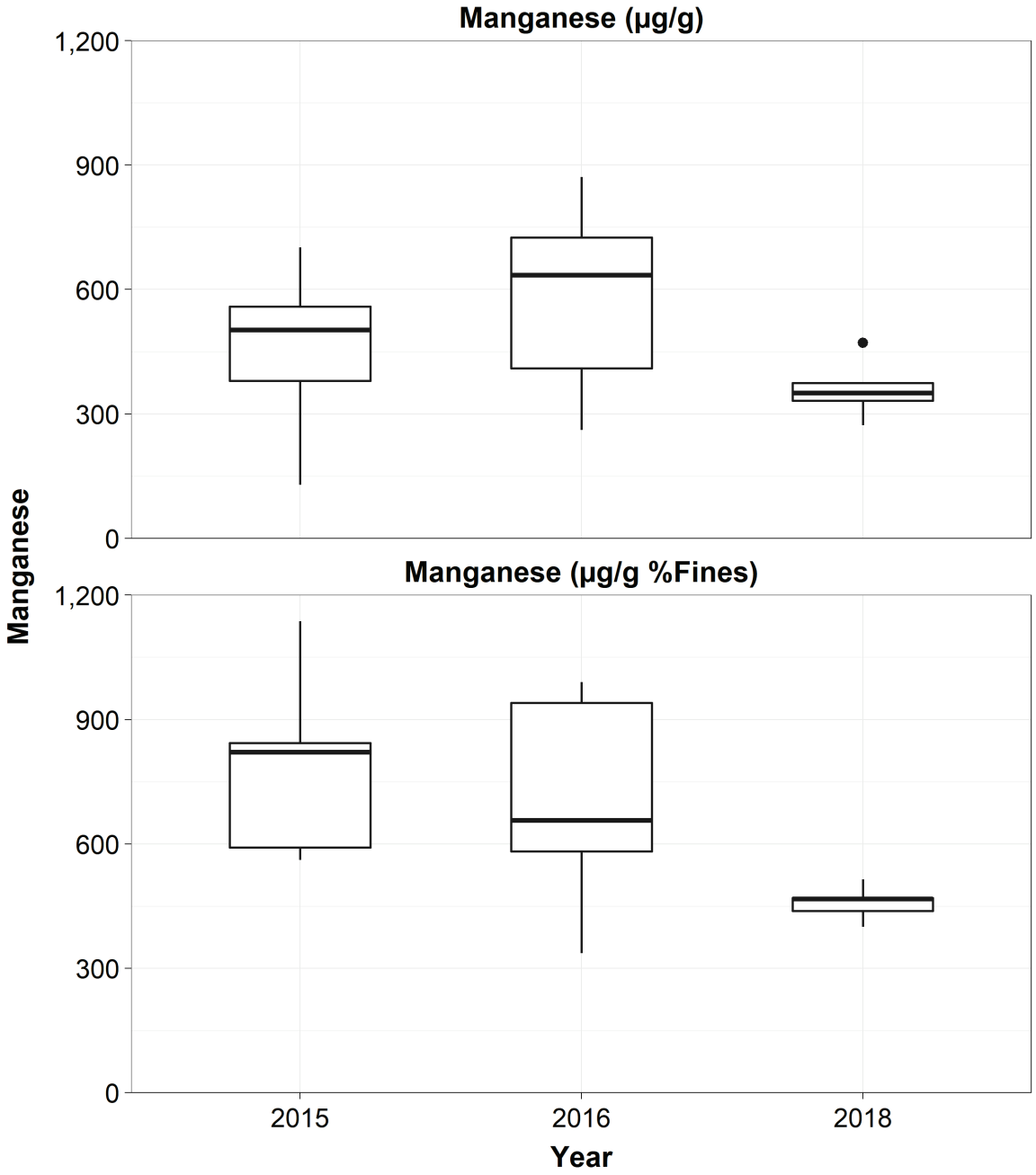
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-15: Box-and-whisker Plots of Lithium Concentrations in Meliadine Lake Near-field Area, 2018



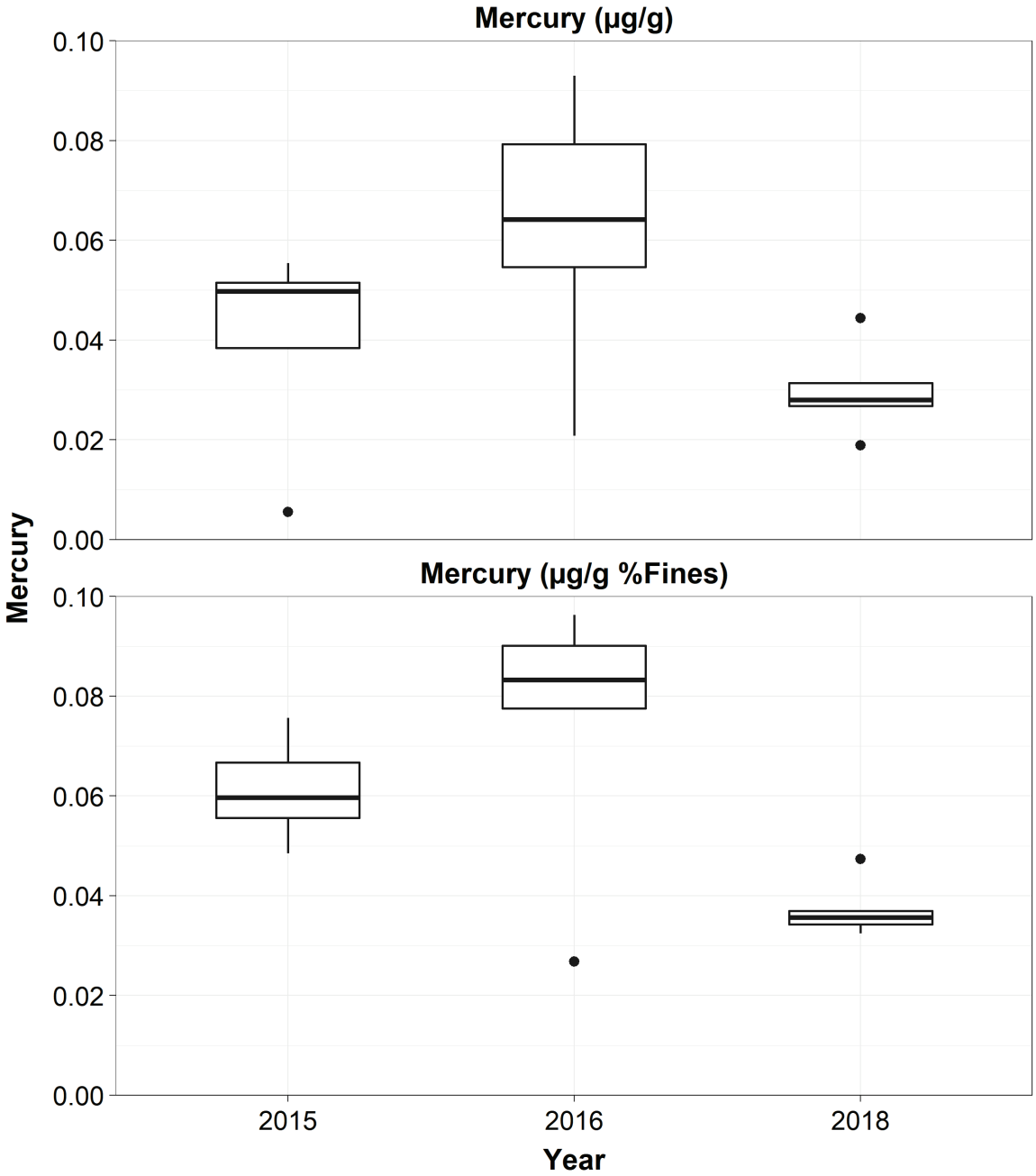
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µg/g = micrograms per gram.

Figure 8G.2-16: Box-and-whisker Plots of Magnesium Concentrations in Meliadine Lake Near-field Area, 2018



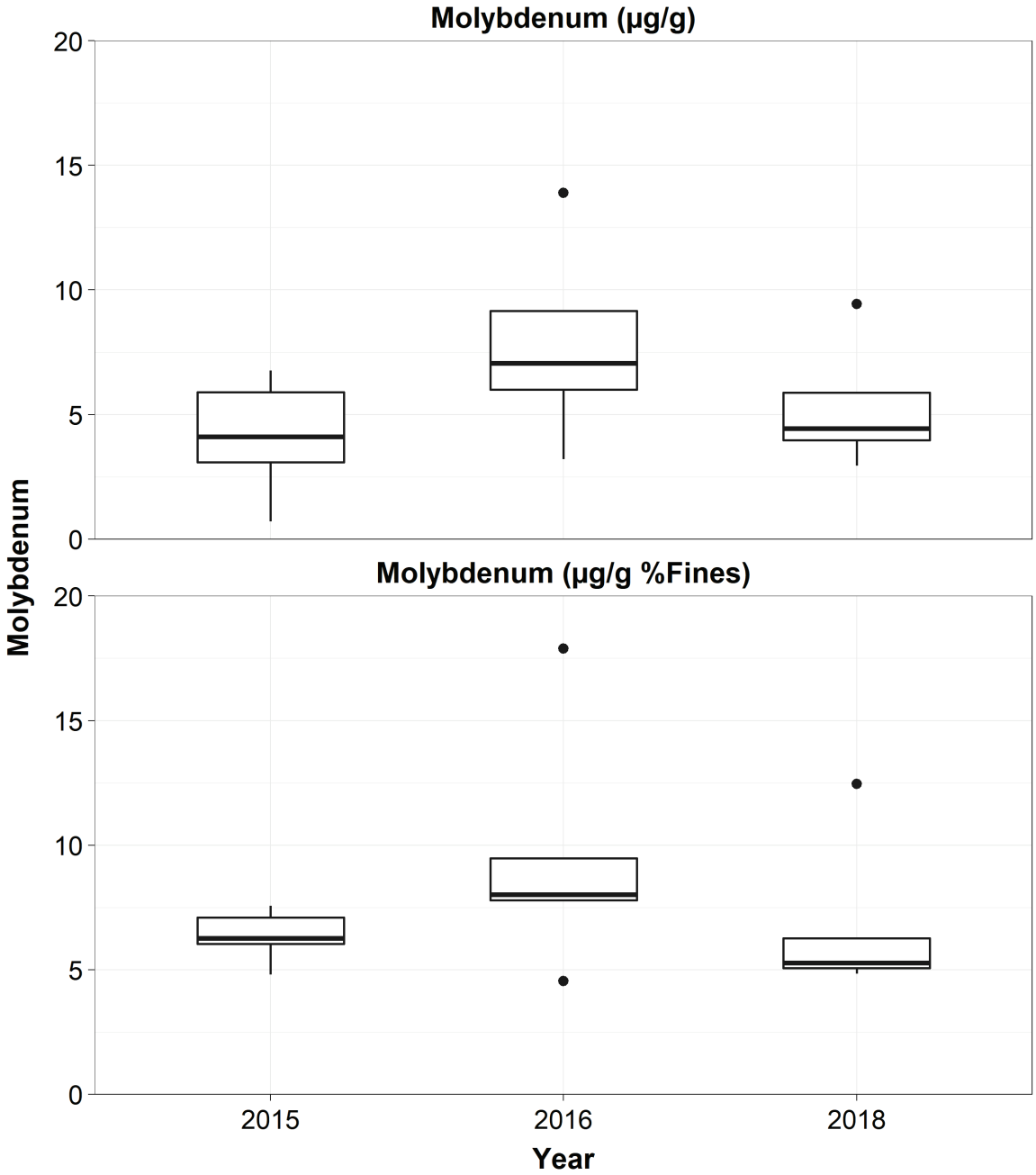
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-17: Box-and-whisker Plots of Manganese Concentrations in Meliadine Lake Near-field Area, 2018



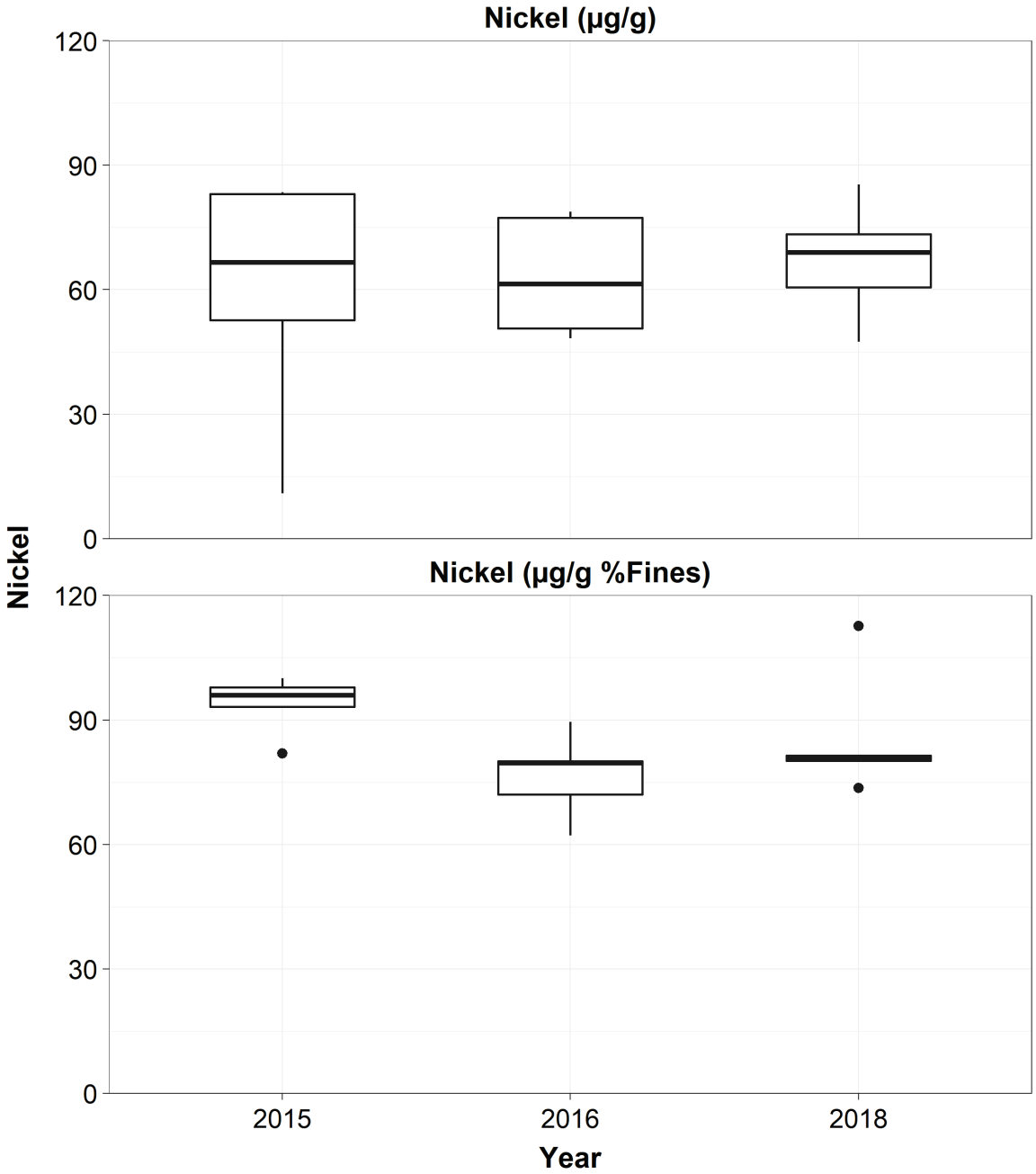
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-18: Box-and-whisker Plots of Mercury Concentrations in Meliadine Lake Near-field Area, 2018



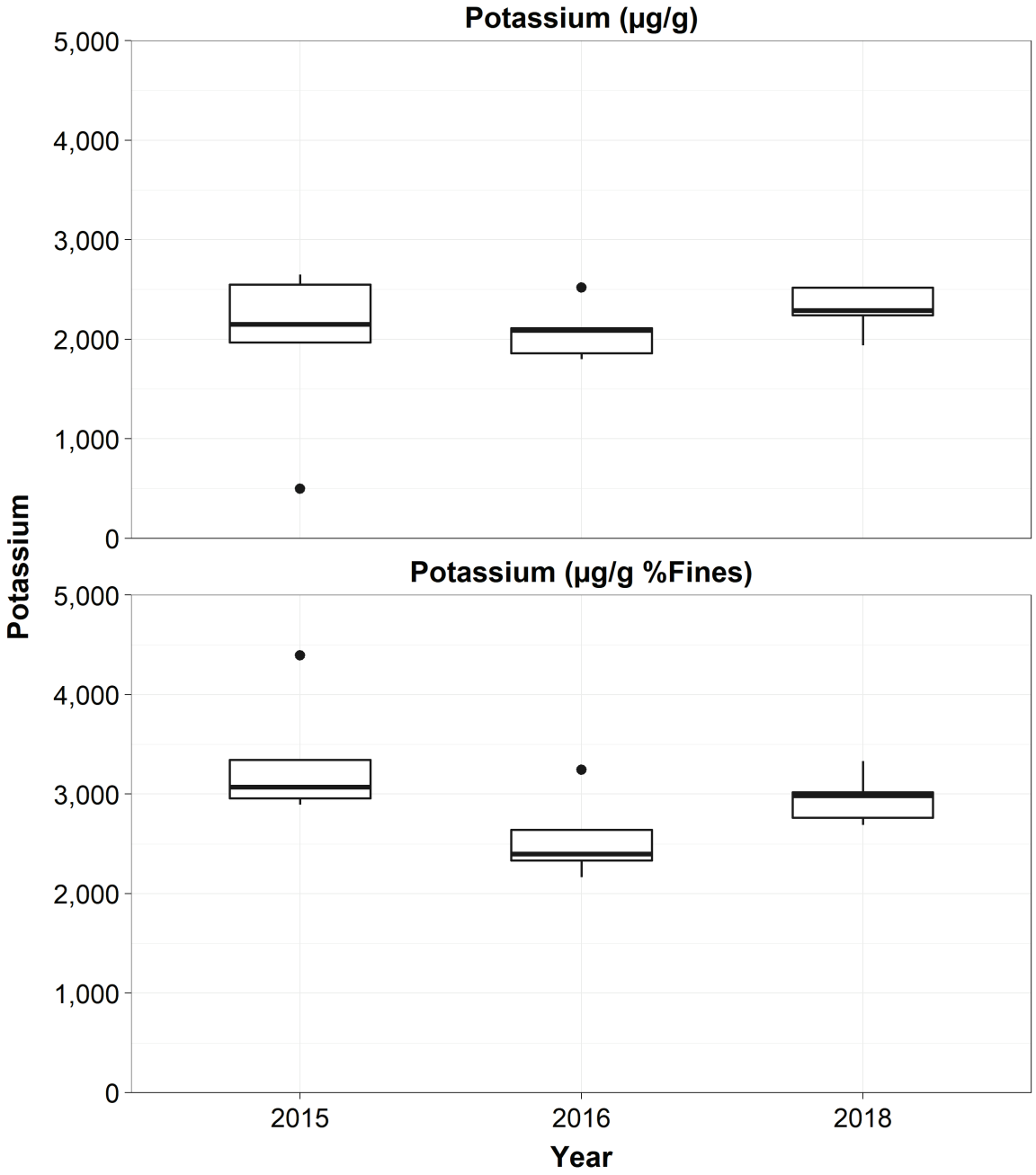
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-19: Box-and-whisker Plots of Molybdenum Concentrations in Meliadine Lake Near-field Area, 2018



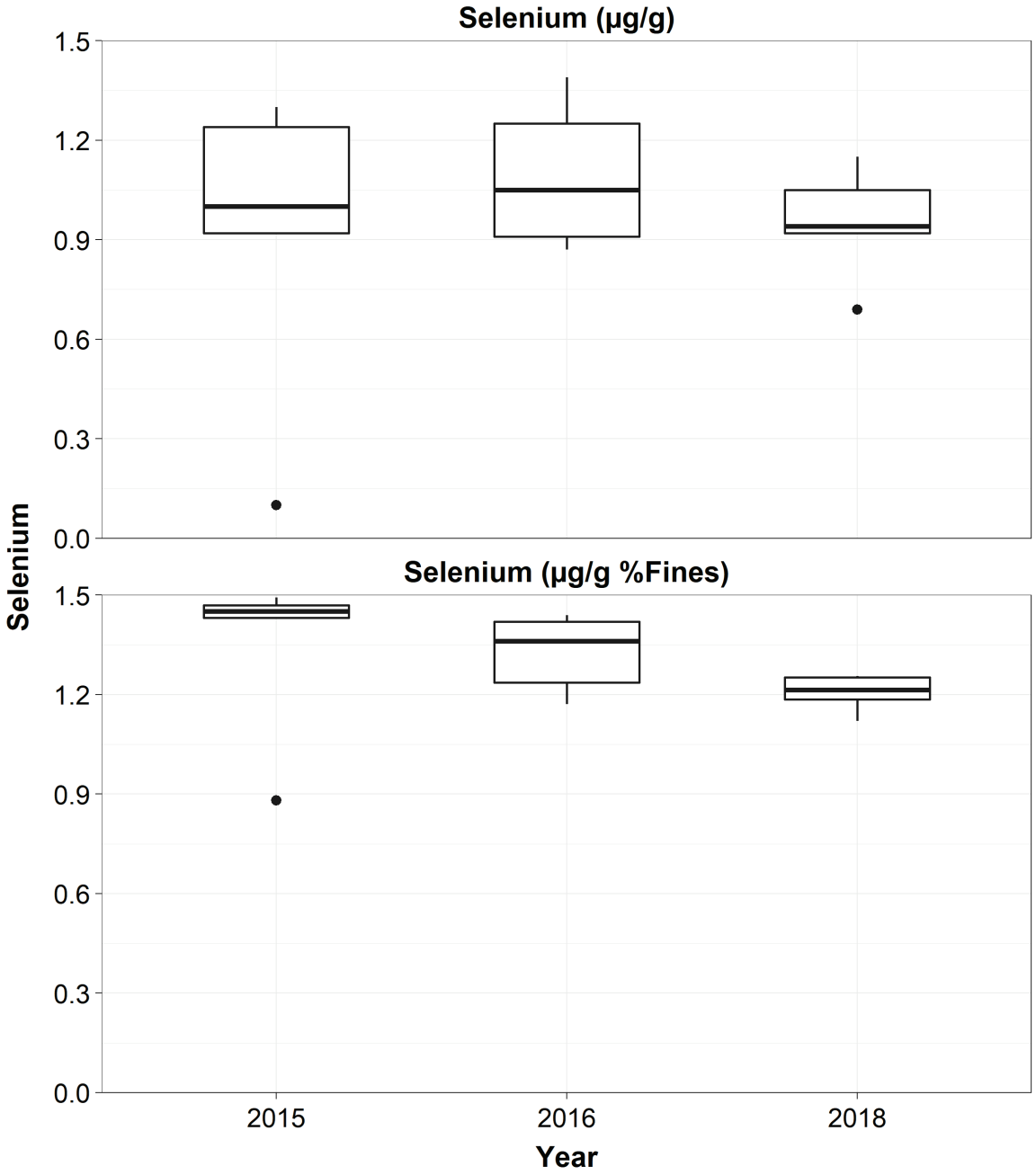
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µg/g = micrograms per gram.

Figure 8G.2-20: Box-and-whisker Plots of Nickel Concentrations in Meliadine Lake Near-field Area, 2018



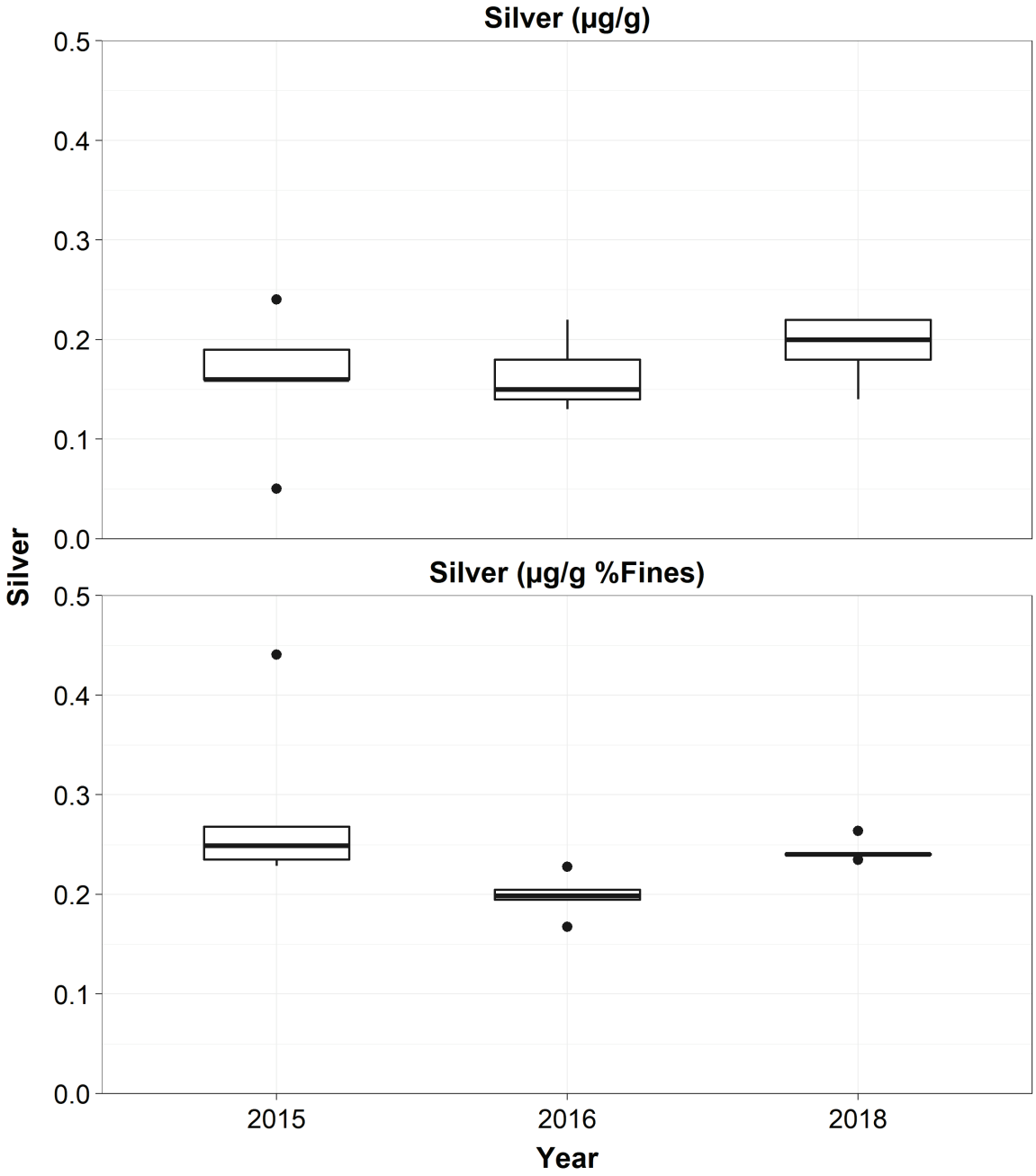
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-21: Box-and-whisker Plots of Potassium Concentrations in Meliadine Lake Near-field Area, 2018



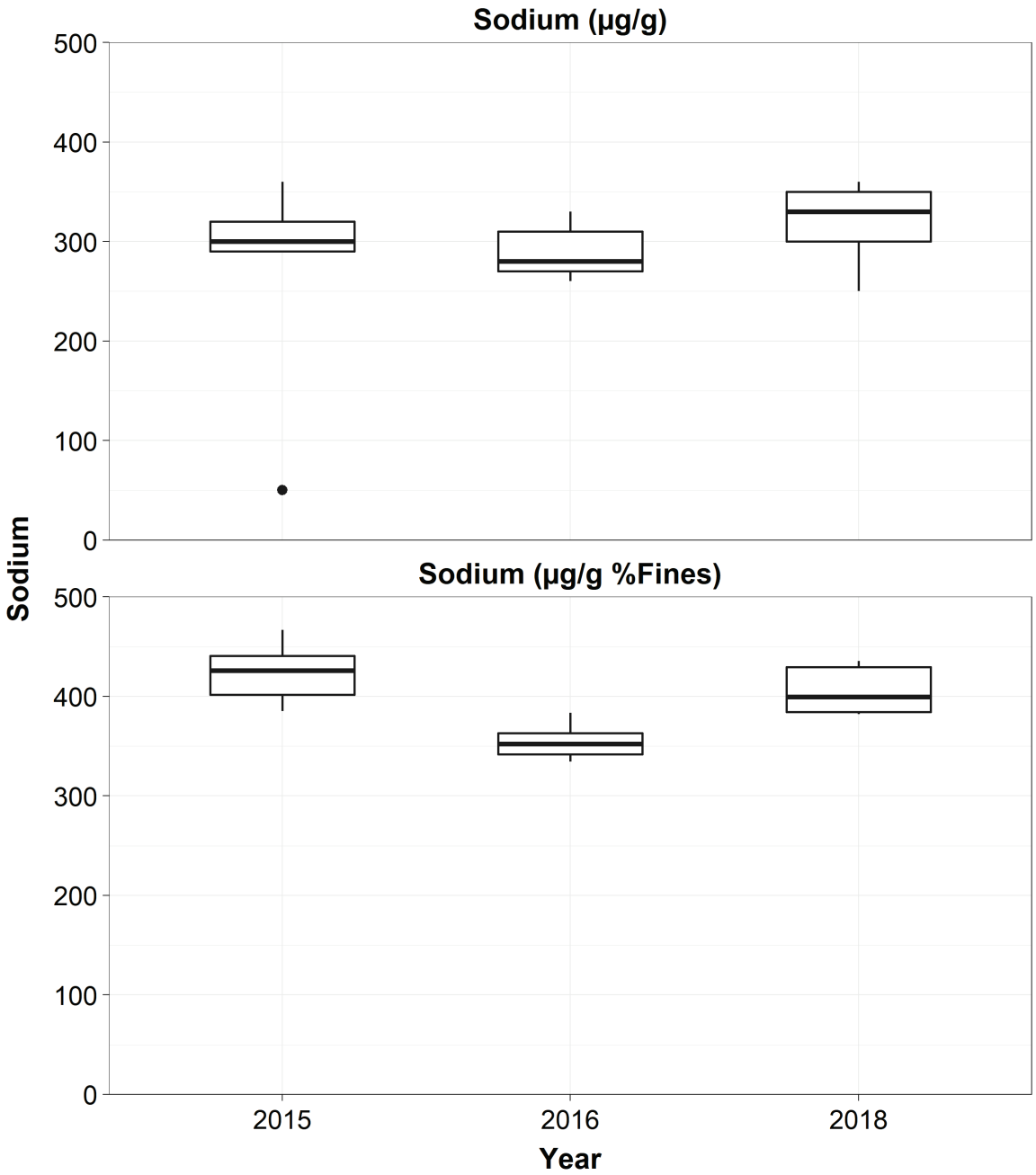
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-22: Box-and-whisker Plots of Selenium Concentrations in Meliadine Lake Near-field Area, 2018



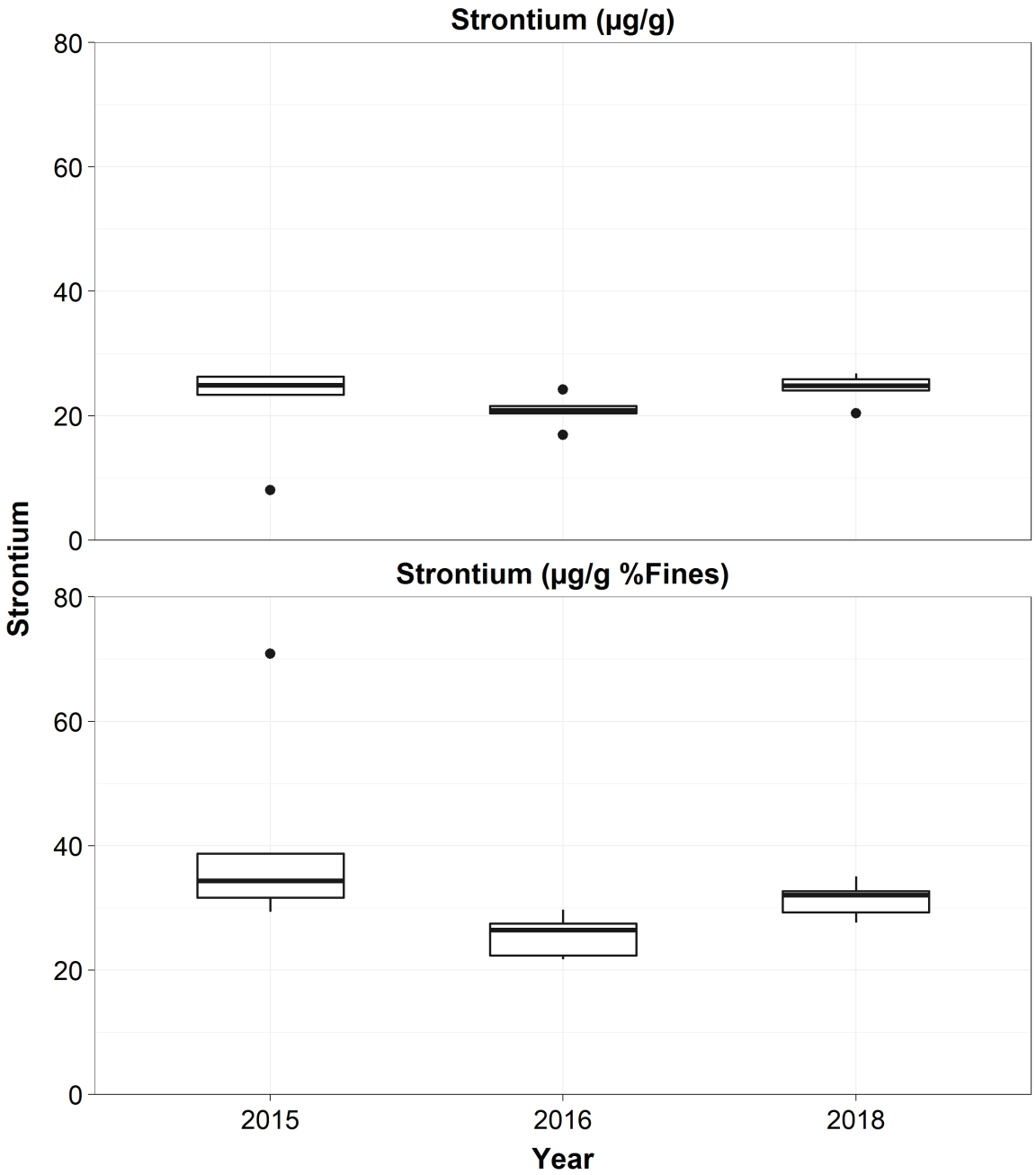
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-23: Box-and-whisker Plots of Silver Concentrations in Meliadine Lake Near-field Area, 2018



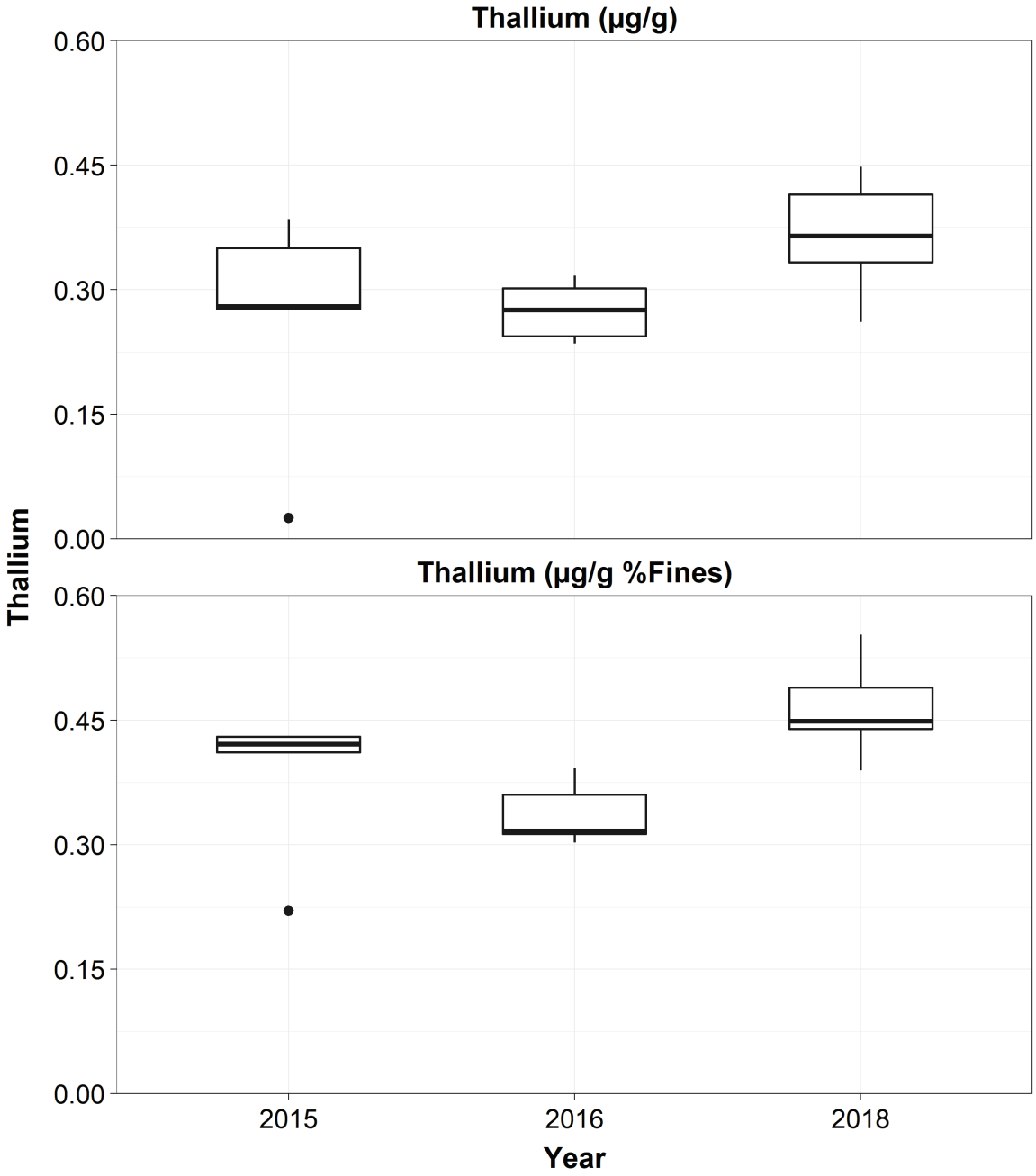
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-24: Box-and-whisker Plots of Sodium Concentrations in Meliadine Lake Near-field Area, 2018



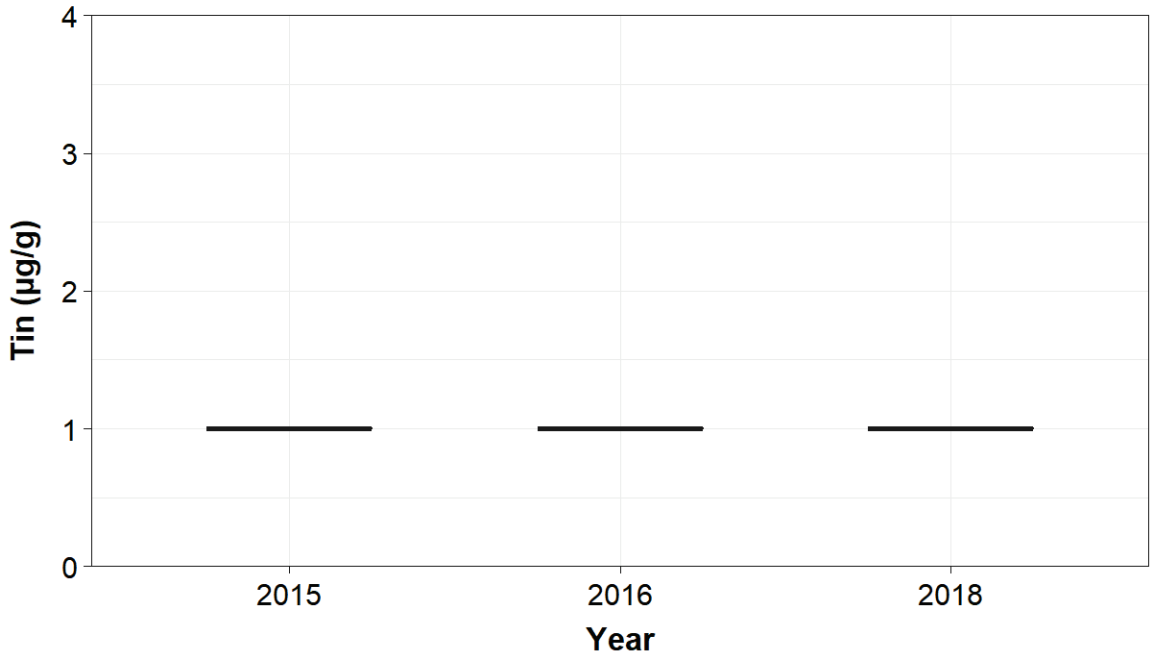
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.1-25: Box-and-whisker Plots of Strontium Concentrations in Meliadine Lake Near-field Area, 2018



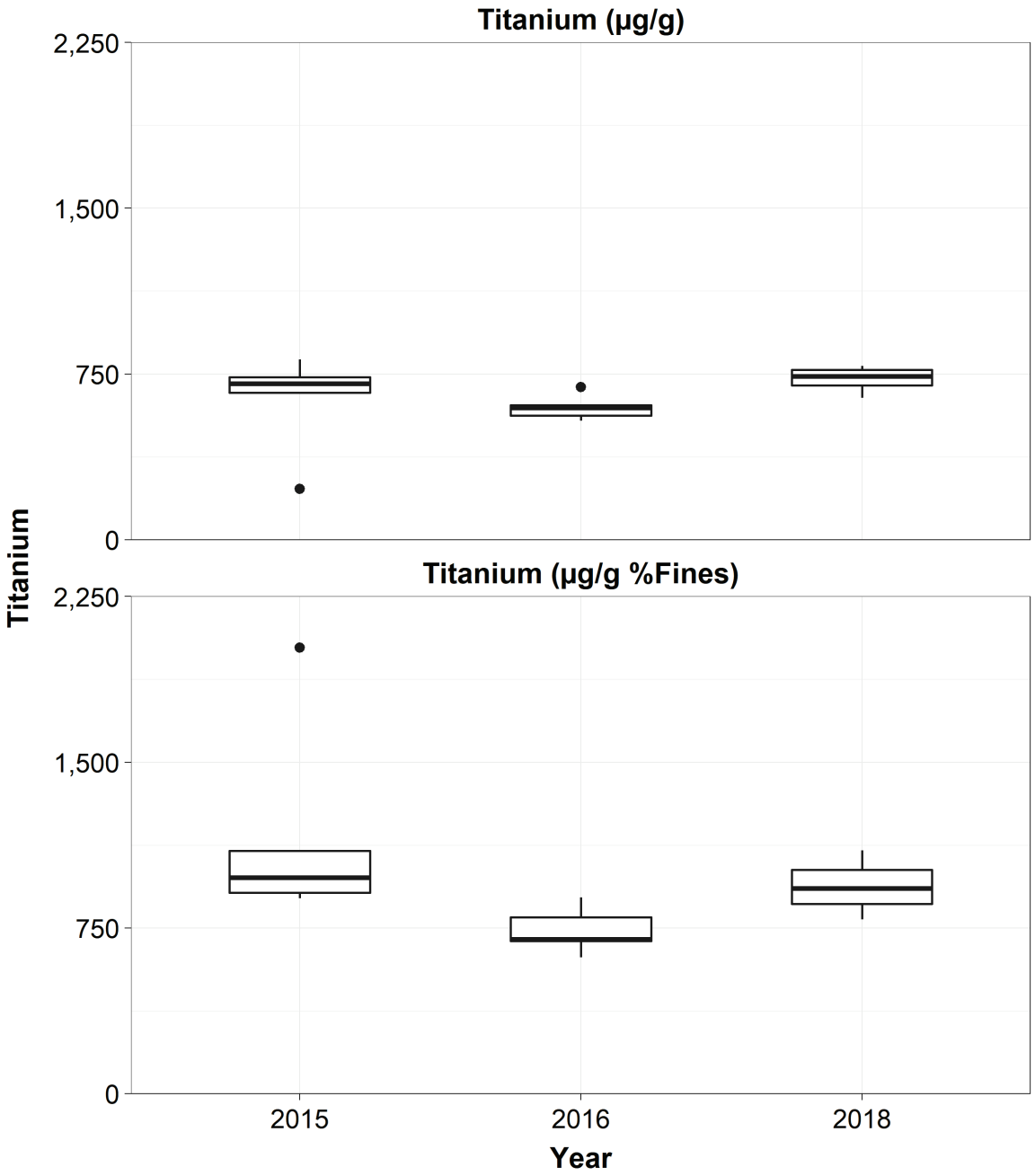
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-26: Box-and-whisker Plots of Thallium Concentrations in Meliadine Lake Near-field Area, 2018



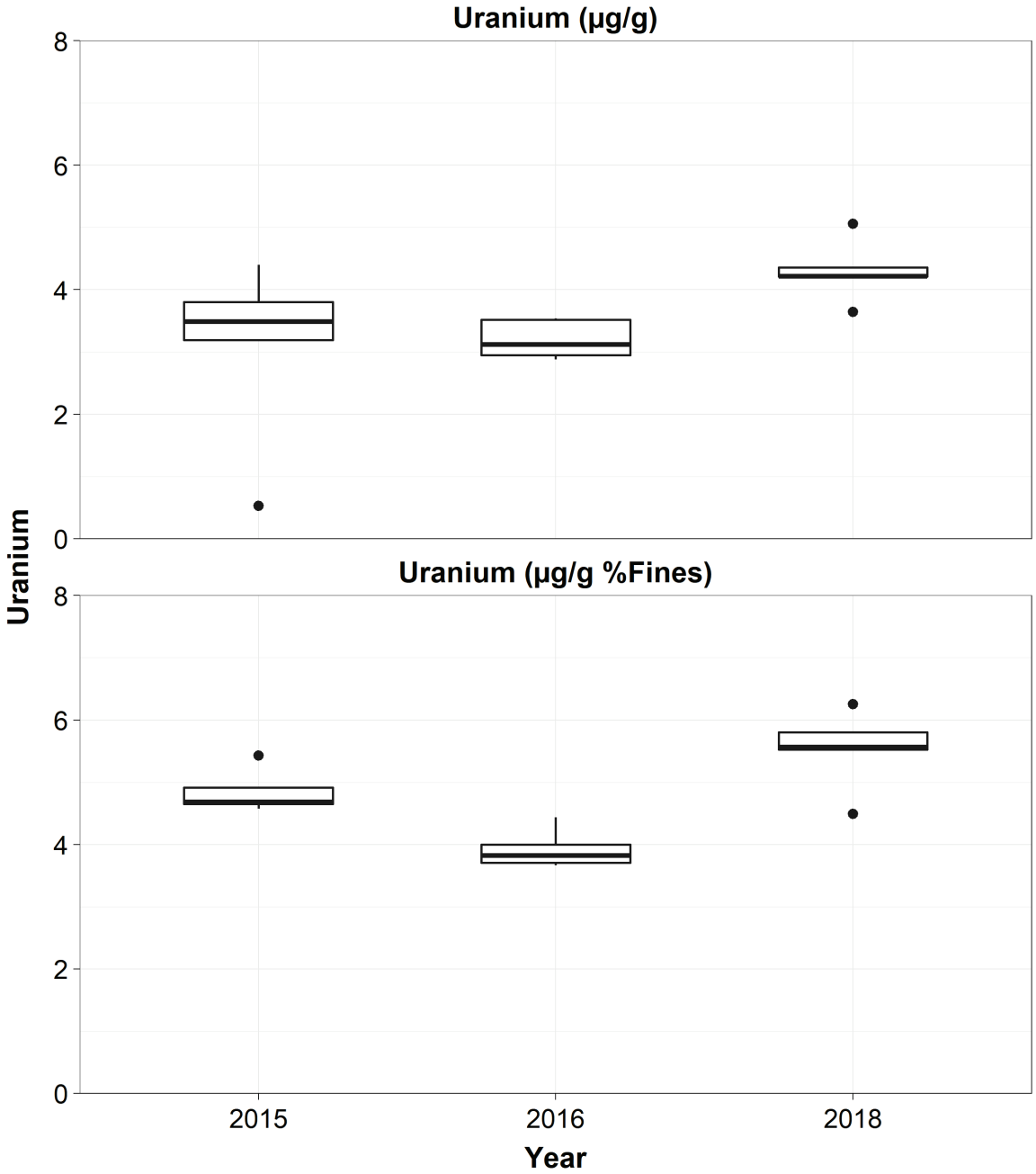
µg/g = micrograms per gram.

Figure 8G.2-27: Box-and-whisker Plots of Tin Concentrations in Meliadine Lake Near-field Area, 2018



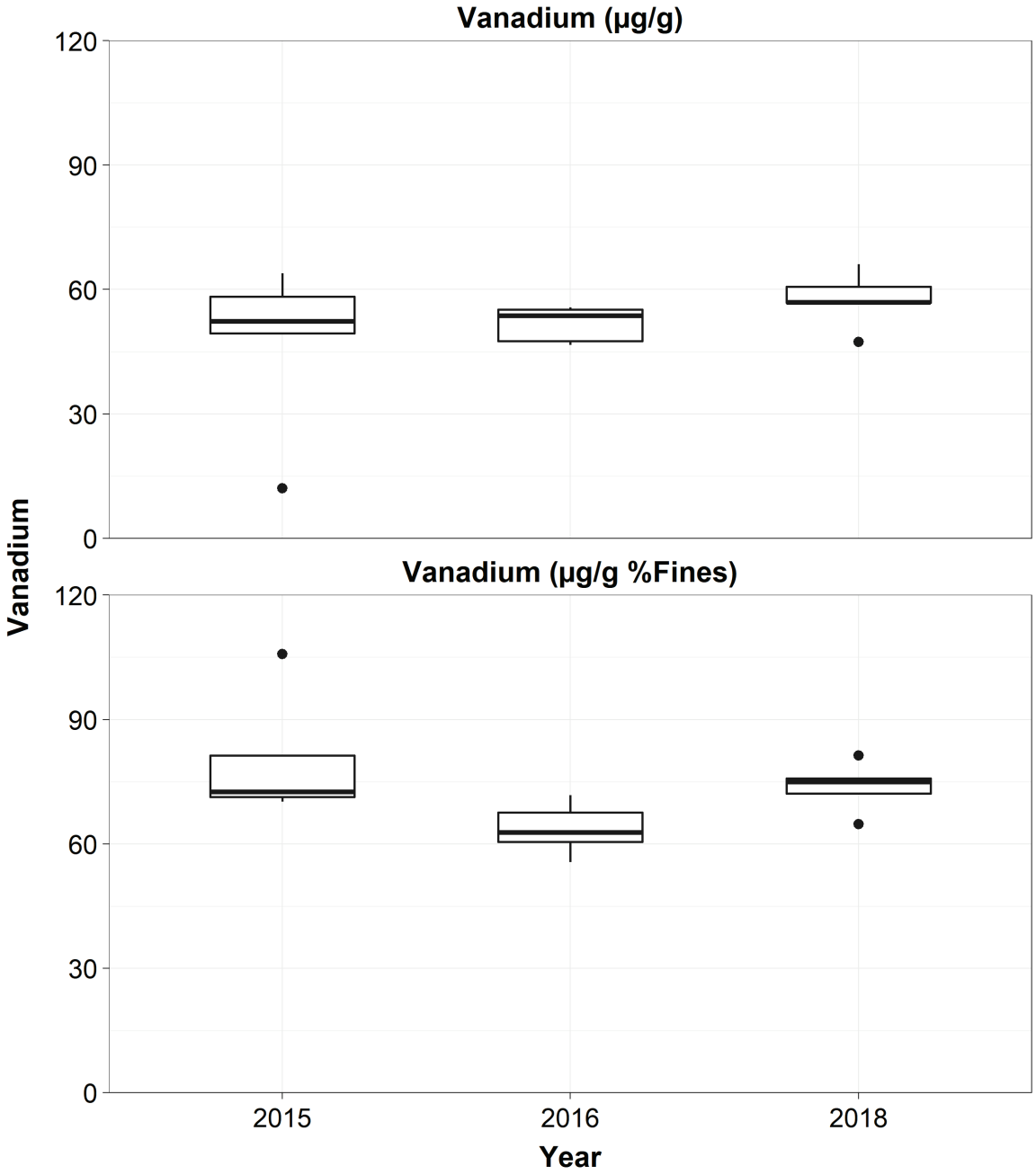
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-28: Box-and-whisker Plots of Titanium Concentrations in Meliadine Lake Near-field Area, 2018



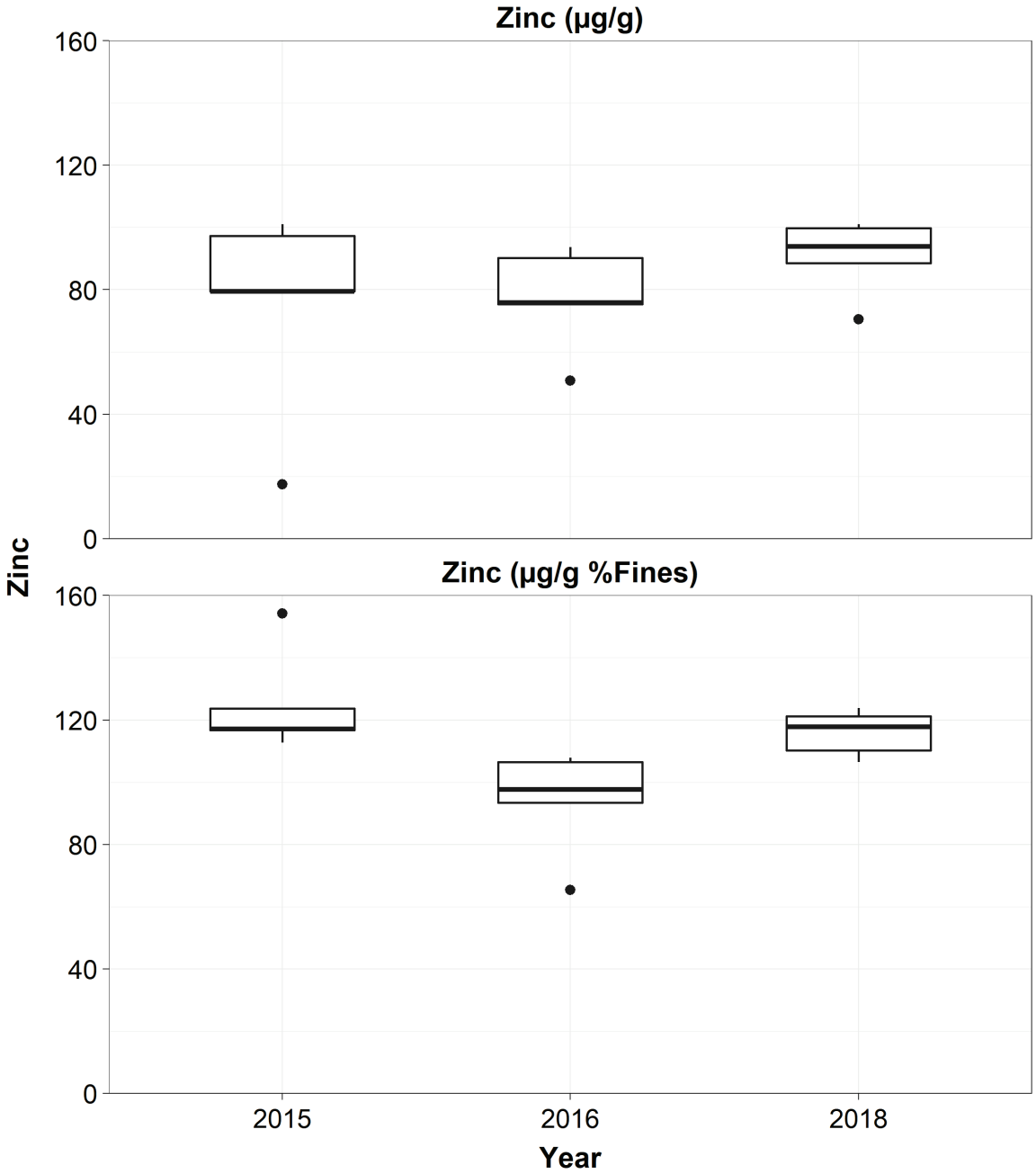
Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-29: Box-and-whisker Plots of Uranium Concentrations in Meliadine Lake Near-field Area, 2018



Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-30: Box-and-whisker Plots of Vanadium Concentrations in Meliadine Lake Near-field Area, 2018



Note: top: non-normalized data; bottom: data normalized to % fines.
µg/g = micrograms per gram.

Figure 8G.2-31: Box-and-whisker Plots of Zinc Concentrations in Meliadine Lake Near-field Area, 2018

APPENDIX 9A

Sediment Reconnaissance Survey

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1.0 INTRODUCTION

Meliadine Lake sediments were characterized under baseline conditions as having a higher proportion of sand compared to silt, and limited amounts of clay (Golder 2014). However, the 2015 and 2016 sampling programs carried out under baseline conditions identified variability in substrate composition as a potential confounding factor for the combined 2018 Environmental Effects Monitoring (EEM) Program/Aquatic Effects Monitoring Program (AEMP) for the Mine (Golder 2018a). Specifically, the Near-field area had a higher proportion of fines (clay and silt) compared to the Mid-field area and reference areas, where bottom sediments consisted predominantly of sand. This study design consideration was also acknowledged by Agnico Eagle Mines Limited, in response to review comments from Environment and Climate Change Canada (ECCC), Indigenous and Northern Affairs Canada (INAC) and Kivalliq Inuit Association (KIA) on the 2017 AEMP Annual Report (Golder 2018b).

Prior to the 2018 EEM/AEMP benthic invertebrate and sediment sampling event, a Sediment Reconnaissance Survey was conducted in Meliadine Lake to assess substrate composition in greater detail in planned sampling areas. The reconnaissance survey was intended to collect information that could be used to optimize sampling station locations to further limit substrate variability between stations and areas, to the extent possible during field work.

The 2018 survey is documented in this appendix with respect to field methods, substrate analysis, and reporting of the data/information collected. Recommendations are also made to optimize 2018 station selection for the Sediment Quality and Benthic Invertebrate Community EEM/AEMP components. The recommendations consider results from both the 2018 Sediment Reconnaissance Survey and the 2018 Plume Delineation Study (Section 2.4.4 of the main report).

2.0 METHODS

2.1 Field Survey

Sediment quality samples were collected from Meliadine Lake from 17 to 27 July 2018, at or close to the existing Near-field, Mid-field, and Reference area stations previously sampled in 2015 and 2016 (see Figure 9A-1 and for stations sampled in July 2018). Existing stations and new reconnaissance stations were sampled in July 2018. Locations of all stations sampled for sediment since 2015 are listed in Table 9A-1. Some stations were relocated from the originally intended coordinates because of unfavourable sampling conditions that resulted in poor sampling efficiency, or to confirm suitable substrates at stations that align with the new permanent CP1 diffuser, which became operational in 2018.

Field crews were provided with the following sampling criteria, as listed in Specific Work Instructions (unpublished file information), to provide consistency among sampling stations and areas:

- Water depth of 7 to 10 m
- Grab sampler fullness of >40%
- High retrieval success

Retrieval success was defined as: (1) the grab sampler penetrated the sediments, without displacing/disturbing the sediments and upon retrieval; (2) the jaws of the sampler were fully closed and free from debris (e.g., rocks or vegetation); (3) sediment was not “overflowing” the top of the sampler; and (4) sampling success, as defined by the three previous criteria, was repeatable over three grab samples.

If the above sampling criteria could not be achieved at a station previously sampled in 2015 or 2016, sampling was repeated within the general location of the station for a sampling effort of up to three grabs. The stations were then adjusted to within a 5 to 10 m radius of the original sample locations for additional attempts (while maintaining the original station code).

At each station, sediment samples were collected using a petite Ponar grab (15.24 cm x 15.24 cm). Three grabs were composited for sample submission, with the exception of stations MEL-02-07 and MEL05-04, where four grabs were composited. Supporting environmental data and observations were recorded during each sampling attempt to facilitate data interpretation and station selection for the 2018 EEM/AEMP. Specifically, the following information was recorded at each station:

- water depth
- sediment composition based on visual observation (% sand,% fines)
- sediment odour/colour
- sampler fullness
- sampling success rate/ease of collection
- presence of coarse substrates (gravel/cobble/bedrock)
- presence of vegetation

The total sampling effort undertaken comprised 248 grab attempts at the stations shown in Figure 9A-1. In total, 21 composite sediment samples were collected and submitted to ALS Environmental (ALS) for particle size and total organic carbon (TOC) analysis. Samples were stored in food grade polyethylene bags and kept cool before being submitted to ALS.

2.2 Data Evaluation

A desktop analysis was conducted to evaluate the information available for each station, in terms of water depth, grab sample fullness (as% fullness), and consistency of particle size/TOC relative to other stations/areas. The findings informed the optimization of station selection for the 2018 EEM/AEMP field program in August, along with findings from the 2018 Plume Delineation Study and information available from the 2018 water quality monitoring program.

525000
530000
535000
540000
545000
7000000
6995000
6990000
6985000

REFERENCE AREA 2 (Mel-04)

REFERENCE AREA 1 (Mel-03)

Mel-03-03
Mel-03-04

Mel-02-01
Mel-02-05
Mel-02-06
Mel-02-02
Mel-02-04
Mel-02-07
Mel-02-03
Mel-02-08

MID-FIELD EXPOSURE AREA (Mel-02)

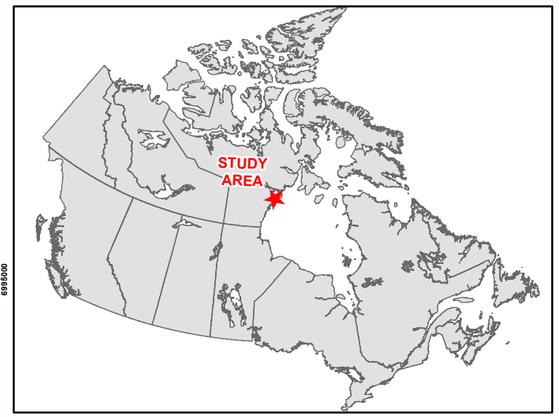
Mel-05-03
Mel-05-04
Mel-05-05
Mel-05-02

REFERENCE AREA 3 (Mel-05)

Mel-01-10
Mel-01-09
Mel-01-07
Mel-01-12
Mel-01-08
Mel-01-01
Mel-01-06

LEGEND

- SEDIMENT RECONNAISSANCE
- DE-WATERING EFFLUENT DISCHARGE
- DIFFUSOR LOCATION
- DIRECTION OF FLOW AT WATERSHED
- MINE FOOTPRINT
- WATERSHED BOUNDARY
- BATHYMETRIC CONTOUR (0.5 AND 2m
- WATERCOURSE
- WATERBODY



DRAFT

0 1.5 3
1:75,000 KILOMETRES

REFERENCE(S)
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

CLIENT
AGNICO EAGLE MINES LIMITED

PROJECT
MELIADINE GOLD PROJECT
NUNAVUT

TITLE
STATIONS SAMPLED DURING JULY 2018 SEDIMENT RECONNAISSANCE SURVEY

CONSULTANT
GOLDER

YYYY-MM-DD	2019-01-23
DESIGNED	CP
PREPARED	MH
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
1899052	1000	A	9A-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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PATH: \\golder.gds\gal\burnaby\CAD-GIS\Client\Agnico_Eagle_Mines_Ltd\Meliadine_Gold_Project\09_PROJECTS\1811088802_PRODUCTION\2000\MXD\Report\1811088802_2100_Sediment_Reconnaissance_Survey_July2018.mxd PRINTED ON: 2019-01-23 AT: 11:40:59 AM

Table 9A-1: Sediment Sampling Stations in 2015 and 2016 AEMP Sampling Events, and the 2018 Sediment Reconnaissance Survey

Area	Station	2015 AEMP		2016 AEMP		2018 Reconnaissance	
		Easting (m)	Northing (m)	Easting (m)	Northing (m)	Easting (m)	Northing (m)
Near-field area	Mel-01-01	542691	6989132	542681	6989147	542692	6989141
	Mel-01-02	542665	6989282	542663	6989292	-	-
	Mel-01-03	542638	6988979	542624	6988989	-	-
	Mel-01-04	543145	6989086	543158	6989086	-	-
	Mel-01-05	542140	6989358	542093	6989369	-	-
	Mel-01-06	-	-	-	-	542907	6988773
	Mel-01-07	-	-	-	-	542877	6989199
	Mel-01-08	-	-	-	-	543044	6989067
	Mel-01-09	-	-	-	-	542555	6899188
	Mel-01-10	-	-	-	-	542752	6989286
	Mel-01-12	-	-	-	-	543280	6989106
Mid-field area	Mel-02-01	537511	6992932	537470	6993003	537536	6993197
	Mel-02-02	537093	6992642	537092	6992635	537082	6992609
	Mel-02-03	540730	6990162	537499	6992324	537500	6992327
	Mel-02-04	537961	6992341	537962	6992347	537750	6992528
	Mel-02-05	537831	6992692	537826	6992705	537850	6992828
	Mel-02-06	-	-	-	-	536926	6992848
	Mel-02-07	-	-	-	-	537794	6992140
	Mel-02-08	-	-	-	-	538338	6991953
Reference area 1	Mel-03-01	533305	6998519	533311	6998501	-	-
	Mel-03-02	533265	6998567	533268	6998695	-	-
	Mel-03-03	532974	6998835	532979	6998850	532954	6998860
	Mel-03-04	533624	6998668	533637	6998694	533629	6998660
	Mel-03-05	533999	6998628	534001	6998290	-	-
Reference area 2	Mel-04-01	525647	7000880	525651	7000873	-	-
	Mel-04-02	526149	7001520	526159	7001527	-	-
	Mel-04-03	525351	7001360	525350	7001359	-	-
	Mel-04-04	525401	7001080	525406	7001079	-	-
	Mel-04-05	525735	7001130	525757	7001140	-	-
Reference area 3	Mel-05-01	530926	6990860	530941	6990853	-	-
	Mel-05-02	530669	6990880	530665	6990896	530699	6990881
	Mel-05-03	530735	6991370	530742	6991380	530728	5991366
	Mel-05-04	530570	6991220	530568	6991227	530571	6991216
	Mel-05-05	530240	6991160	530237	6991177	530234	6991158

Note: UTM coordinates are shown, NAD 83, Zone 15V.

UTM = Universal transverse Mercator; AEMP = Aquatic Effects Monitoring Program.

3.0 RESULTS

3.1 Field Sampling and Sediment Characterization

Due to inclement weather and resulting unsafe conditions that occurred during the July sampling event, preference was given to the two exposure areas (Near-field and Mid-field) and two of the three reference areas (Reference area 1 and Reference area 3). Of the two reference areas, priority was given to Reference area 3, because the 2016 data indicated the substrates in this area were most similar to Near-field area substrates. Reference area 1 was sampled because it was identified as the reference area for the 2018 EEM program.

All reconnaissance stations sampled were located within the profundal zone of the lake. Most locations sampled were within the 7 to 10 m depth range, which was targeted the 2018 EEM/AEMP survey.

Results from the field survey and the subsequent laboratory determination of particle size and TOC for a subset of stations are summarized in Table 9A-1. The following observations suggest that sediment composition is inherently variable in the EEM and AEMP sampling areas of Meliadine Lake, both within and among areas, to various degrees.

- Sampling efficiency (i.e., the effort required to obtain the minimum of three sediment samples) differed both within and across areas, but was generally lowest in the Mid-field area, where up to 36 attempts were needed for successful grabs, followed by the Near-field area. Sampling at Reference area 3 stations was the most efficient, with three of four samples having a 100% success rate. The two stations sampled in Reference area 1 had lower retrieval success (i.e., 50% and 60%), but still met acceptability criteria.
- Sediments at the Near-field area stations were primarily composed of silt (mean = 76%) with some sand present up to a maximum of 26%.
- Sediments in the Mid-field area and reference areas had a more even mix of sand and silt. Of these areas, the Mid-field area and Reference area 3 had proportionally more sand, whereas Reference area 1 had proportionally more silt.
- Clay content was relatively low in all samples, ranging from 1.2% to 6.1% across all areas sampled; however, the field crews noted that the Ponar grab frequently encountered bedrock or hard-packed clay substrates when sampling in some EEM and AEMP areas.
- TOC varied from 1.5% to 9.9% across all areas sampled during the reconnaissance survey; the average across all areas and stations was 5.3%.

Table 9A-2: Summary of Field Data from 2015 and 2016 AEMP Sampling Events, and the July 2018 Sediment Reconnaissance Survey

Area	Station	2015							2016									2018								
		Depth (m)	Sand (%)	Silt (%)	Clay (%)	TOC (%)	Grab Fullness[b] (%)	Grabs / Sample	Depth (m)	Sand (%)	Silt (%)	Clay (%)	TOC (%)	Grab Fullness[b] (%)	Grabs / Sample	Grab Attempts	Efficiency[c] (%)	Depth (m)	Sand (%)	Silt (%)	Clay (%)	TOC (%)	Grab Fullness[b] (%)	Grabs / Sample	Grab Attempts	Efficiency[c] (%)
Near-field area	Mel-01-01[a]	8.6	35.8	58.8	5.5	4.2	70	3	8.6	29.6	55.6	14.8	3.7	85-100	5	7	71.4	10.0	30.2	67.0	2.8	4.0	90	3	8	37.5
	Mel-01-02	7.7	16.9	74.4	8.7	5.7	60-70	3	7.7	12.0	75.4	12.6	5.4	60-90	5	12	41.7	-	-	-	-	-	-	-	-	-
	Mel-01-03	8.8	31.9	63.5	4.6	4.8	70	3	8.8	22.9	66.8	10.3	4.6	85-95	5	14	35.7	-	-	-	-	-	-	-	-	-
	Mel-01-04	8.8	10.4	80.6	9.0	6.1	60-70	3	8.8	3.4	83.4	13.2	6.8	80-95	5	6	83.3	-	-	-	-	-	-	-	-	-
	Mel-01-05	8.2	88.6	10.8	0.6	0.4	5	5	8.2	22.3	68.4	9.3	2.1	85-90	5	23	21.7	-	-	-	-	-	-	-	-	-
	Mel-01-06[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.5	32.6	64.8	2.6	3.1	80 - 90	3	14	21.4
	Mel-01-07[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	15.7	80.1	4.3	5.0	80	3	12	25.0
	Mel-01-08[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1	18.3	76.0	5.7	4.4	70	3	11	27.3
	Mel-01-09[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	9.6	86.1	4.3	5.3	80	3	6	50.0
	Mel-01-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.8	16.3	79.3	4.4	4.5	90	3	4	75.0
	Mel-01-12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.4	16.3	77.8	5.9	5.6	70	3	17	17.6
Mid-field area	Mel-02-01[a]	7.9	37.5	56.5	6.1	5.2	60	3	7.9	64.2	32.2	3.6	0.4	60-75	5	35	14.3	9.7	27.0	66.9	6.1	9.9	80	3	36	8.3
	Mel-02-02[a]	9.0	24.7	60.4	14.9	11.0	80	3	9.0	51.9	35.9	12.1	7.6	90-100	5	5	100.0	8.6	74.1	24.6	1.3	4.6	-	3	10	30.0
	Mel-02-03[a]	9.0	42.5	49.3	8.2	7.2	70	3	9.0	61.0	28.1	10.9	4.2	90-100	5	13	38.5	9.0	86.5	13.0	<1.0	3.4	-	3	6	50.0
	Mel-02-04[a]	9.3	92.4	7.2	0.4	0.5	5	8	9.3	43.0	42.0	15.0	5.2	60-75	5	12	41.7	9.3	53.9	44.7	1.4	1.5	60-70	3	24	12.5
	Mel-02-05[a]	10.1	79.7	17.9	2.4	0.1	5	12	10.1	49.9	35.2	14.9	5.8	60-75	5	5	100.0	8.6	60.3	38.3	1.4	8.9	100	3	21	14.3
	Mel-02-06$_a$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.6	30.7	65.8	3.5	9.5	60-70	3	12	25.0
	Mel-02-07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.7	78.9	19.9	1.2	5.4	60-80	4	36	11.1
	Mel-02-08[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.4	86.4	12.8	<1.0	4.6	90-100	3	4	75.0
Reference area 1	Mel-03-01	7.2	85.2	14.1	0.8	-	-	-	7.2	85.2	14.1	0.8	1.3	85-100	5	6	83.3	-	-	-	-	-	-	-	-	-
	Mel-03-02	9.5	81.2	18.5	0.3	-	-	-	9.5	81.2	18.5	0.3	1.0	70-80	5	9	55.6	-	-	-	-	-	-	-	-	-
	Mel-03-03[a]	9.8	42.6	48.7	8.7	-	-	-	9.8	42.6	48.7	8.7	6.5	100	5	9	55.6	9.5	28.4	67.5	4.1	6.8	100	3	5	60.0
	Mel-03-04[a]	7.8	41.0	47.5	11.5	-	-	-	7.8	14.0	47.5	11.5	5.6	90-95	5	5	100.0	7.8	48.4	49.1	2.5	6.1	100	3	6	50.0
	Mel-03-05	7.6	61.7	32.7	5.7	-	-	-	7.6	61.7	32.7	5.7	4.3	90	5	9	55.6	-	-	-	-	-	-	-	-	-
Reference area 2	Mel-04-01	8.2	65.5	30.1	4.4	-	-	-	8.2	65.5	30.1	4.4	3.0	80-95	5	6	83.3	-	-	-	-	-	-	-	-	-
	Mel-04-02	10.5	40.9	49.7	9.4	-	-	-	10.5	40.9	49.7	9.4	0.8	65-80	5	25	20.0	-	-	-	-	-	-	-	-	-
	Mel-04-03	9.7	68.3	24.7	7.0	-	-	-	9.7	68.3	24.7	7.0	3.4	75-100	5	12	41.7	-	-	-	-	-	-	-	-	-
	Mel-04-04	9.1	49.7	40.4	9.9	-	-	-	9.1	49.7	40.4	9.9	4.9	90-10	5	8	62.5	-	-	-	-	-	-	-	-	-
	Mel-04-05	7.4	92.9	6.3	0.9	-	-	-	7.4	92.9	6.3	1.0	0.5	70-75	5	10	50.0	-	-	-	-	-	-	-	-	-

Table 9A-2: Summary of Field Data from 2015 and 2016 AEMP Sampling Events, and the July 2018 Sediment Reconnaissance Survey

Area	Station	2015							2016									2018								
		Depth (m)	Sand (%)	Silt (%)	Clay (%)	TOC (%)	Grab Fullness[b] (%)	Grabs / Sample	Depth (m)	Sand (%)	Silt (%)	Clay (%)	TOC (%)	Grab Fullness[b] (%)	Grabs / Sample	Grab Attempts	Efficiency[c] (%)	Depth (m)	Sand (%)	Silt (%)	Clay (%)	TOC (%)	Grab Fullness[b] (%)	Grabs / Sample	Grab Attempts	Efficiency[c] (%)
Reference area 3	Mel-05-01	9.2	93.0	6.9	0.1	-	-	-	9.2	93.0	6.9	0.1	0.9	10-90	5	16	31.3	-	-	-	-	-	-	-	-	-
	Mel-05-02[a]	9.2	49.0	42.7	8.3	-	-	-	9.2	49.0	42.7	8.3	4.8	75-95	5	8	62.5	9.1	63.1	34.5	2.4	6.1	10	3	3	100.0
	Mel-05-03[a]	8.3	46.6	44.4	9.0	-	-	-	8.3	46.6	44.4	9.0	7.4	90-100	5	8	62.5	8.2	66.6	31.2	2.2	6.3	100	3	3	100.0
	Mel-05-04[a]	9.9	74.2	21.6	4.2	-	-	-	9.9	74.2	21.6	4.2	4.0	90-100	5	8	62.5	9.8	80.2	19.1	<1.0	2.6	100	4	4	100.0
	Mel-05-05	8.4	50.0	39.7	10.3	-	-	-	8.4	50.0	39.7	10.3	7.9	70-90	5	11	45.5	7.4	23.2	70.9	5.9	4.5	100	3	6	50.0

a) Indicates that the station will also be used for water quality sampling.

b) Fullness values only include grabs that were retained for sediment analysis (i.e., successful grabs).

c) Efficiency is the% of successful grabs out of the total attempts for that station.

Note: Grab attempts and efficiency are not available for 2015. TOC = total organic carbon; - = not applicable or not available.

3.2 Sampling Station Optimization for the EEM/AEMP 2018 August Program

In consideration of the results of the Sediment Reconnaissance Survey (Section 3.1) and Plume Delineation Study (Section 2.4.4 of the main report) results, five stations within each of the EEM and AEMP areas were selected for sampling during the August 2018 EEM/AEMP program, as summarized below:

- **Near-field Stations (EEM/AEMP):** MEL-01-01 was retained because it was also retained as part of the water quality component Near-field station re-alignment, after review of the 2018 Plume Delineation Study results. Furthermore, sampling in July 2018 confirmed that sampling efficiency and grab fullness at this station were acceptable. The other four stations confirmed by the water quality re-alignment (i.e., MEL01-06, MEL01-07, MEL01-08 and MEL01-09) were adopted as 2018 sediment and benthic monitoring stations, because they also had acceptable sampling efficiency and grab fullness. Furthermore, substrate composition was relatively consistent among the five 2018 Near-field water quality stations.
- **Mid-field Stations**: 2018 sediment stations were selected to maintain alignment with water quality but to also avoid excessive sampling effort in retrieving acceptable grab samples. Therefore, MEL-02-06 and MEL-02-08 were chosen to replace MEL-02-01 and MEL-02-04, because of difficulty retrieving acceptable samples from MEL-02-01 and MEL-02-04. For stations that were re-sampled for consistency with previous years, locations were adjusted to within 5 to 10 m of the original sample locations based on sampling success.
- **Reference Area Stations (EEM/AEMP):** Stations were selected to align monitoring stations between water quality and the benthic invertebrate community surveys. Reconnaissance data at these areas were limited, but served as a confirmation of the characteristics of these sampling stations compared to previous years, and whether they are suitable as a reference to the exposure areas. For stations that were resampled for consistency with previous years, some stations were adjusted to within 5 to 10 m of the original sample locations.

References

Golder. 2014. Final Environmental Impact Statement, Meliadine Gold Project. Nunavut. April 2017.

Golder. 2018a. Meliadine Gold Project, Nunavut Aquatic Effects Monitoring Program (AEMP) – 2017 Annual Report. Prepared for Agnico Eagle Mines Limited, Rouyn Noranda, Quebec.

Golder. 2018b. Response to Comments on the Cycle 1 EEM Study Design for Meliadine Mine. Technical Memorandum. May 2018.

APPENDIX 9B

Laboratory Methods and Reference Collection

Methods and QC Report 2018

Project ID: Meliadine AEMP (1787610)

Client: Golder Associates Inc.

Prepared by:
Cordillera Consulting Inc.
Scott Finlayson
Summerland, BC
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Sample Reception

On September 14, 2018, Cordillera Consulting received 24 samples from Golder Associates Inc. When samples arrived to Cordillera Consulting, exterior packaging was initially inspected for damage or wet spots that would have indicated damage to the interior containers.

Next, samples were logged into a proprietary software database (INSTAR1) where the clients assigned sample name was recorded along with a Cordillera Consulting (CC) number for cross-reference. Each sample was checked to ensure that all sites and replicates recorded on field sheets or packing lists were delivered intact and with adequate preservative. Any missing, mislabelled or extra samples were reported to the client immediately to confirm the total numbers and correct names on the sample jars. The client representative was notified of the arrival of the shipment and provided a sample inventory once intake was completed.
See table below for sample inventory:

Table 1: Summary of sample information including Cordillera Consulting (CC) number

Site	Sample	CC#	Date	Size	# of Jars
MEL-01	MEL-01-01	CC190795	8/22/2018	500µM	2
MEL-01	MEL-01-06	CC190796	8/22/2018	500µM	1
MEL-01	MEL-01-07	CC190797	8/22/2018	500µM	1
MEL-01	MEL-01-08	CC190798	8/22/2018	500µM	1
MEL-01	MEL-01-09	CC190799	8/22/2018	500µM	1
MEL-02	MEL-02-02	CC190800	8/31/2018	500µM	1
MEL-02	MEL-02-03	CC190801	8/18/2018	500µM	1
MEL-02	MEL-02-05	CC190802	8/31/2018	500µM	1
MEL-02	MEL-02-06	CC190803	8/31/2018	500µM	1
MEL-02	MEL-02-08	CC190804	8/15/2018	500µM	1
MEL-03	MEL-03-01	CC190805	8/28/2018	500µM	1
MEL-03	MEL-03-02	CC190806	8/28/2018	500µM	1
MEL-03	MEL-03-03	CC190807	8/26/2018	500µM	1
MEL-03	MEL-03-04	CC190808	8/20/2018	500µM	1
MEL-03	MEL-03-05	CC190809	8/28/2018	500µM	2
MEL-05	MEL-05-01	CC190810	9/1/2018	500µM	2
MEL-05	MEL-05-02	CC190811	8/30/2018	500µM	1

MEL-05	MEL-05-03	CC190812	8/29/2018	500µM	1
MEL-05	MEL-05-04-A	CC190813	8/30/2018	500µM	1
MEL-05	MEL-05-04-B	CC190814	8/30/2018	500µM	1
MEL-05	MEL-05-04-C	CC190815	8/30/2018	500µM	1
MEL-05	MEL-05-04-D	CC190816	8/30/2018	500µM	1
MEL-05	MEL-05-04-E	CC190817	8/30/2018	500µM	1
MEL-05	MEL-05-05	CC190818	8/29/2018	500µM	1

Sample Sorting

- Using a gridded Petri dish, fine forceps and a low power stereo-microscope (Olympus, Nikon, Leica) the sorting technicians removed the invertebrates and sorted them into family/orders.
- The sorting technician kept a running tally of total numbers excluding organisms from Porifera, Nemata, Platyhelminthes, Ostracoda, Copepoda, Cladocera and terrestrial drop-ins such as aphids. These organisms were marked for their presence (given a value of 1) only and left in the sample. They were not included towards the 300-organism subsample count.
- Where specimens are broken or damaged, only heads were counted.
- Subsampling was conducted with the use of a Marchant Box.
- When using the Marchant box, cells were extracted at the same time in the order indicated by a random number table. If the 300th organism was found part way into sorting a cell then the balance of that cell was sorted. If the organism count had not reached 300 by the 50th cell then the entire sample was sorted.
- The total number of cells sorted and the number of organisms removed were recorded manually on a bench sheet and then recorded into INSTAR1
- Organisms were stored in vials containing 80% ethanol and an interior label indicating the site names, date of sampling, site code numbers and portion subsampled. This information was also recorded on the laboratory bench sheet and on INSTAR1.
- The sorted portion of the debris was preserved and labeled separately from the unsorted portion and was tested for sorting efficiency (Sorting Quality Control – Sorting Efficiency). The unsorted portion was also labeled and preserved in separate jars.

Percent sub-sampled and total countable invertebrates pulled from the samples were summarized in the table below.

Table 2: Percent sub-sample and invertebrate count for each sample

Sample	Date	EMS	CC#	500 micron fraction	
				% Sampled	# Invertebrates
MEL-01-01	22-Aug-18		CC190795	100%	101
MEL-01-06	22-Aug-18		CC190796	100%	34
MEL-01-07	22-Aug-18		CC190797	100%	148
MEL-01-08	22-Aug-18		CC190798	100%	93
MEL-01-09	22-Aug-18		CC190799	100%	27
MEL-02-02	31-Aug-18		CC190800	100%	168
MEL-02-03	18-Aug-18		CC190801	100%	56
MEL-02-05	31-Aug-18		CC190802	100%	32

MEL-02-06	31-Aug-18		CC190803	100%	94
MEL-02-08	15-Aug-18		CC190804	100%	149
MEL-03-01	28-Aug-18		CC190805	100%	144
MEL-03-02	28-Aug-18		CC190806	100%	151
MEL-03-03	26-Aug-18		CC190807	100%	268
MEL-03-04	20-Aug-18		CC190808	100%	28
MEL-03-05	28-Aug-18		CC190809	100%	144
MEL-05-01	01-Sep-18		CC190810	100%	252
MEL-05-02	30-Aug-18		CC190811	100%	127
MEL-05-03	29-Aug-18		CC190812	100%	181
MEL-05-04-A	30-Aug-18		CC190813	100%	19
MEL-05-04-B	30-Aug-18		CC190814	100%	61
MEL-05-04-C	30-Aug-18		CC190815	100%	15
MEL-05-04-D	30-Aug-18		CC190816	100%	57
MEL-05-04-E	30-Aug-18		CC190817	100%	39
MEL-05-05	29-Aug-18		CC190818	100%	1

Sorting Quality Control - Sorting Efficiency

As a part of Cordillera's laboratory policy, all projects undergo sorting efficiency checks.

- As sorting progresses, 10% of samples were randomly chosen by senior members of the sorting team for resorting.
- All sorters working on a project had at least 1 sample resorted by another sorter.
- An efficiency of 90 % was expected (95% for CABIN samples).
- If 90/95% efficiency was not met, samples from that sorter were resorted.
- To calculated sorting efficiency the following formula was used:

$$\frac{\#OrganismsMissed}{TotalOrganismsFound} * 100 = \%OM$$

In sample CC191382, the subsample fell below the threshold for sorting efficiency. This was a result of a new sorter not understanding the difference between an anterior end and a posterior end of an Oligochaete. All samples by this individual were reanalyzed and to ensure proper sample enumeration.

Table 3: Summary of sorting efficiency

CC #	Number of Organisms Recovered (initial sort)	Number of Organisms in Re-sort	Percent Recovery
CC190804	149	0	100%
190816	57	2	96%
		Average Recovery	98%

Taxonomic Effort

The next procedure was the identification to genus-species level where possible of all the organisms in the sample.

- Identifications were made at the genus/species level for all insect organisms found including Chironomidae (Based on CABIN protocol).
- Non-insect organisms (except those not included in CABIN count) were identified to genus/species where possible and to a minimum of family level with intact and mature specimens.
- The Standard Taxonomic Effort lists compiled by the CABIN manual[1], SAFIT[2] , and PNAMP[3] were used as a guide line for what level of identification to achieve where the condition and maturity of the organism enabled.
- Organisms from the same families/order were kept in separate vials with 80% ethanol and an interior label of printed laser paper.
- Chironomidae was identified to genus/species level where possible and was aided by slide mounts. CMC-10 was used to clear and mount the slide.
- Oligochaetes was identified to family/genus level with the aid of slide mounts. CMC-10 was used to clear and mount the slide.
- Other Annelida (leeches, polychaetes) were identified to the family/genus/species level with undamaged, mature specimens.
- Mollusca was identified to family and genus/species where possible
- Decapoda, Amphipoda and Isopoda were identified at family/genus/species level where possible.
- Bryozoans and Nemata remained at the phylum level
- Hydrachnidae and Cnidaria were identified at the family/genus level where possible.
- When requested, reference collections were made containing at least one individual from each taxa listed. Organisms represented will have been identified to the lowest practical level.
- Reference collection specimens were stored in 55 mm glass vials with screw-cap lids with polyseal inserts (museum quality). They were labeled with taxa name, site code, date identified and taxonomist name. The same information was applied to labels on the slide mounts.

Taxonomy Staff

The taxonomists for this project were certified by the Society of Freshwater Science (SFS) Taxonomic Certification Program at level 2 which is the required certification for CABIN projects:

Scott Finlayson: Group 1 General Arthropods (West); Group 2 EPT (East/West); Group 3 Chironomidae (East/West); Group 4 Oligochaeta

Adam Bliss: Group 1 General Arthropods (East/West); Group 2 EPT (East/West); Group 3 Chironomidae (East/West)

Rita Avery: Group 1 General Arthropods (East/West); Group 2 EPT (East/West)

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[2] Southwest Association of Freshwater Invertebrate Taxonomists. (2015). www.safit.org

[3] Pacific Northwest Aquatic Monitoring Partnership (Accessed 2015). www.pnamp.org

Taxonomic Keys

Below is a reference list of taxonomic keys utilized by taxonomists at Cordillera Consulting. Cordillera taxonomists routinely seek out new literature to ensure the most accurate identification keys are being utilized. This is not reflective of the exhaustive list of resources that we use for identification. A more complete list of taxonomic resources can be found at Southwest Association of Freshwater Invertebrate Taxonomists. (2015). http://www.safit.org/Docs/SAFIT_Taxonomic_Literature_Database_1_March_2011.enl

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Wiggins, Glenn B. 1998. Larvae of the North American Caddisfly Genera (Tricoptera) 2nd ed. University of Toronto Press. Toronto Ontario.

Unit 1, 13216 Henry Ave. Summerland BC, V0H 1Z0
info@cordilleraconsulting.ca
Ph: 250 494 7553

Reference Collection
Golder
Meliadine Lake

Vial #	Identification	Year	Site Code	CC Number	Client	Project
1	Valvata	12-Aug-16	MEL-01-02	CC170193	Golder	Meliadine Lake
2	Pisidium	12-Aug-16	MEL-01-02	CC170193	Golder	Meliadine Lake
3	Gammarus	12-Aug-16	MEL-01-03	CC170194	Golder	Meliadine Lake
4	Sphaerium	12-Aug-16	MEL-01-03	CC170194	Golder	Meliadine Lake
5	Lebertia	12-Aug-16	MEL-01-04	CC170195	Golder	Meliadine Lake
6	Oxus	12-Aug-16	MEL-01-05-D5	CC170200	Golder	Meliadine Lake
7	Piona	13-Aug-16	MEL-02-05	CC170205	Golder	Meliadine Lake
8	Grensia praeterita	11-Aug-16	MEL-03-01-D2	CC170207	Golder	Meliadine Lake
9	Bezzia/ Palpomyia	22-Aug-16	B7-02	CC170419	Golder	Meliadine Lake
10	Baetis	30-Aug-18	MEL-05-02	CC190811	Golder	Meliadine Lake
11	Zapada columbiana	30-Aug-18	MEL-05-02	CC190811	Golder	Meliadine Lake
12	Limnephilus	30-Aug-18	MEL-05-02	CC190811	Golder	Meliadine Lake
13	Brachycentrus occidentalis	26-Aug-18	MEL-03-03	CC190807	Golder	Meliadine Lake
14	Lepidurus	22-Aug-18	MEL-01-08	CC190798	Golder	Meliadine Lake
15	Hydra	22-Aug-18	MEL-01-01	CC190795	Golder	Meliadine Lake
1	Tubifex	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
2a	Protanypus	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
2b	Procladius	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
2c	Zavrelimyia	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
3a	Microtendipes	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
4a	Tanytarsus	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
4b	Micropsectra	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
5a	Stictochironomus	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
6	Pagastiella	12-Aug-16	MEL-01-01	CC170192	Golder	Meliadine Lake
7a	Ablabesmyia	12-Aug-16	MEL-01-02	CC170193	Golder	Meliadine Lake
8a	Paracladius	12-Aug-16	MEL-01-02	CC170193	Golder	Meliadine Lake
8b	Heterotrissocladius	12-Aug-16	MEL-01-02	CC170193	Golder	Meliadine Lake
9a	Lumbriculus	12-Aug-16	MEL-01-03	CC170174	Golder	Meliadine Lake
10a	Paratanytarsus	12-Aug-16	MEL-01-03	CC170194	Golder	Meliadine Lake
10b	Stempellinella	12-Aug-16	MEL-01-03	CC170194	Golder	Meliadine Lake
11a	Corynocera	12-Aug-16	MEL-01-04	CC170195	Golder	Meliadine Lake
11b	Cryptochironomus	12-Aug-16	MEL-01-04	CC170195	Golder	Meliadine Lake
12a	Chironomus	12-Aug-16	MEL-01-04	CC170195	Golder	Meliadine Lake
13a	Phaenopsectra	12-Aug-16	MEL-01-04	CC170195	Golder	Meliadine Lake
13b	Polypedilum	12-Aug-16	MEL-01-04	CC170195	Golder	Meliadine Lake
14	Psectrocladius	12-Aug-16	MEL-01-04	CC170195	Golder	Meliadine Lake
15	Cladopelma	12-Aug-16	MEL-01-05-D5	CC170200	Golder	Meliadine Lake
16	Monodiamesa	13-Aug-16	MEL-02-01	CC170201	Golder	Meliadine Lake
17	Zalutschia	14-Aug-16	MEL-04-03	CC170217	Golder	Meliadine Lake
18	Thienemannimyia group	14-Aug-16	MEL-04-04	CC170218	Golder	Meliadine Lake
19a	Dicrotendipes	22-Aug-16	B7-02	CC170419	Golder	Meliadine Lake
20	Pseudosmittia	22-Aug-16	B7-02	CC170419	Golder	Meliadine Lake
21	Cladotanytarsus	31-Aug-18	MEL-02-02	CC190800	Golder	Meliadine Lake
22	Slavina appendiculata	15-Aug-18	MEL-02-08	CC190804	Golder	Meliadine Lake
23	Limnophyes	15-Aug-18	MEL-02-08	CC190804	Golder	Meliadine Lake
24	Sergentia	28-Aug-18	MEL-03-01	CC190805	Golder	Meliadine Lake
25	Nais	1-Sep-18	MEL-05-01	CC190810	Golder	Meliadine Lake

APPENDIX 9C

QC Results for Variability and Outlier Detection

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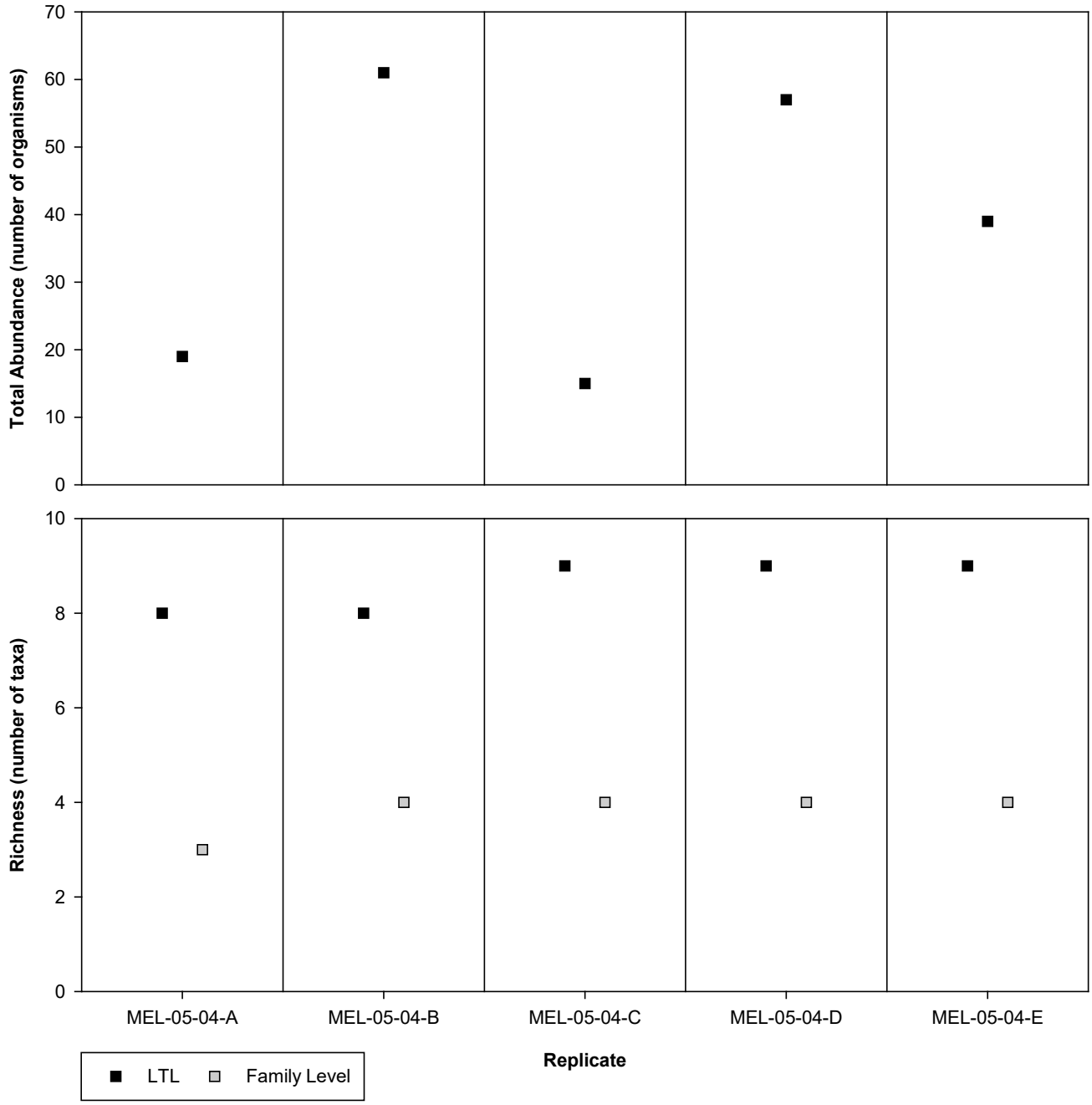
1.0 WITHIN-STATION VARIABILITY

Benthic invertebrate subsamples collected at Reference area Station MEL-05-04 were analyzed separately to provide information on the variability of benthic invertebrate endpoints within a single station, and the suitability of pooling subsamples in the field. Within-station estimates of variability for total invertebrate density and richness were summarized as the mean, summary statistics, and the % standard error (%SE = standard error expressed as the percentage of the mean) (Table 9C-1), and data for individual subsamples were plotted. Visual evaluation of the data for individual subsamples indicated a moderate degree of within-station variation (Figure 9C-1).

Values of %SE greater than 20% indicate a moderate level of variation at the subsample level and are slightly higher than desirable for benthic invertebrate data (Elliott 1971). At MEL-05-04, within-station variability was very low for richness and moderate for total abundance (Table 9C-1). These results are similar to those reported for other Arctic lakes in Northern Canada that are characterized by low invertebrate densities (e.g., Lac de Gras; Golder 2014) and where similar sampling methods were used for monitoring of benthic invertebrate communities under an Aquatic Effects Monitoring Program (AEMP).

Table 9C-1: Within-Station Variation in Benthic Community Variables in Meliadine Lake, 2018

Station-Replicate	Total Abundance (organisms/subsample)	Richness (no. of taxa/subsample)
MEL-05-04-A	19	8
MEL-05-04-B	61	8
MEL-05-04-C	15	9
MEL-05-04-D	57	9
MEL-05-04-E	39	9
Mean	**38.2**	**8.6**
% Standard error	**24.7**	**2.8**
Median	*39*	*9*
Maximum	*61*	*9*
Minimum	*15*	*8*
Standard deviation	*21.1*	*0.5*
Standard error	*9.4*	*0.2*

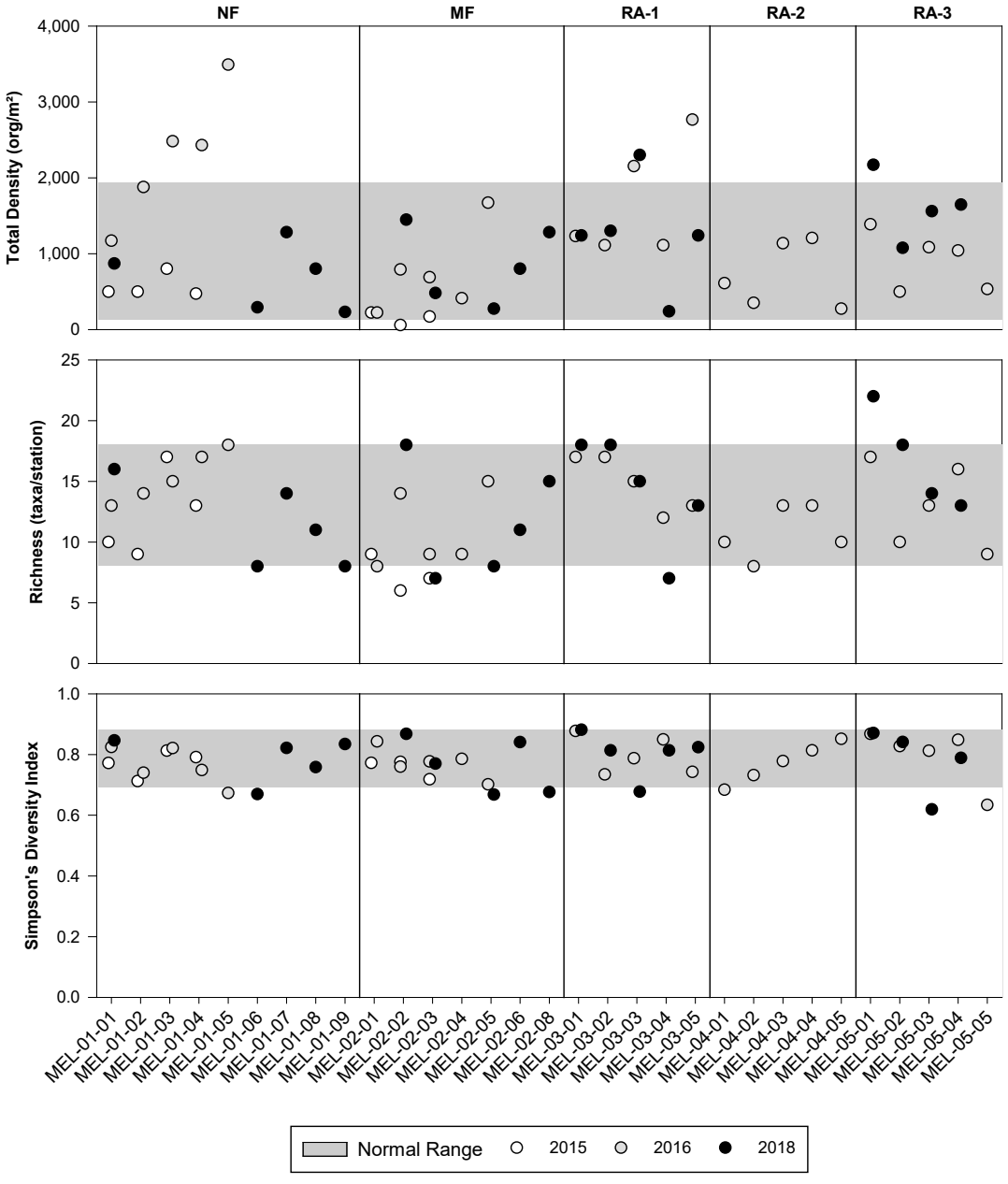


LTL = lowest taxonomic level.

Figure 9C-1: Within-station Variability for Total Abundance and Richness in Meliadine Lake, August 2018

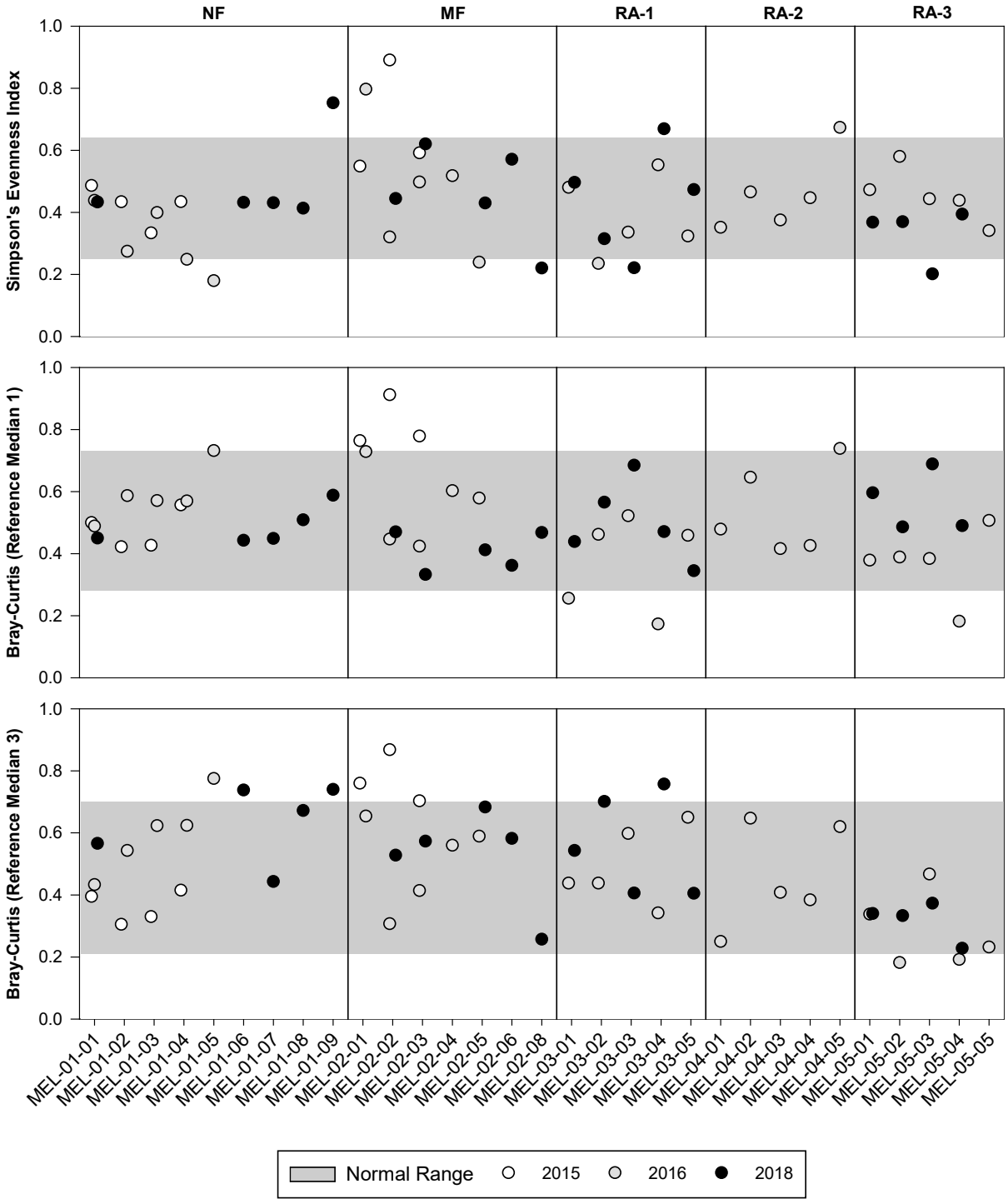
2.0 TEMPORAL VARIABILITY

Temporal variability within benthic invertebrate community sampling areas was plotted to provide information on the variability of benthic invertebrate variables, at the lowest taxonomic level, over the sampling years 2015, 2016 and 2018. Visual evaluation of the data for individual areas indicate a moderate degree of within-station variation (Figure 9C-2 to Figure 9C-4). The majority of the data fell within the normal range calculated for each of the benthic invertebrate variables.



NF = Near-field; MF = Mid-field; RA-1 = Reference area 1; RA-3 = Reference area 3.

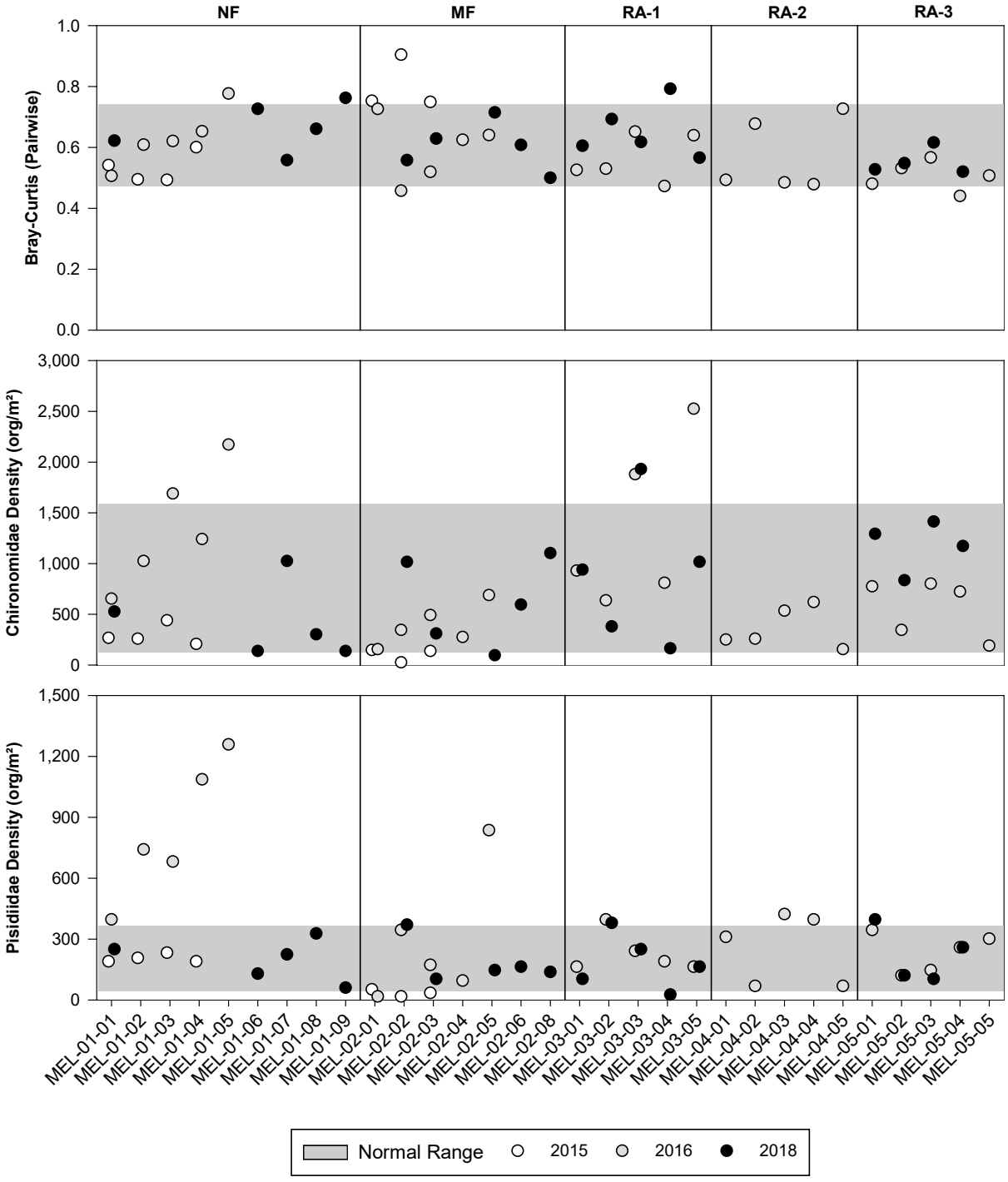
Figure 9C-2: Temporal Variability in Each Sampling Area for Total Benthic Invertebrate Density, Richness, Simpson's Diversity Index, Meliadine Lake 2015, 2016 and 2018



NF = Near-field; MF = Mid-field; RA-1 = Reference area 1; RA-3 = Reference area 3.

Note: BCI (Reference 1 Median and Reference 3 Median) were calculated using the EEM method.

Figure 9C-3: Temporal Variability in Each Sampling Area for Simpson's Evenness Index, Bray Curtis Index (EEM Reference 1 Median) and Bray Curtis Index (EEM Reference 3 Median), Meliadine Lake 2015, 2016 and 2018



NF = Near-field; MF = Mid-field; RA-1 = Reference area 1; RA-3 = Reference area 3.

Figure 9C-4: Temporal Variability in Each Sampling Area for Bray Curtis Index (Pairwise Method), Chironomidae Density and Pisidiidae Density, Meliadine Lake 2015, 2016 and 2018

3.0 OUTLIER SCREENING

Benthic invertebrate endpoint data for 2018 were displayed as box-and-whisker plots for visual assessment to identify potential outliers (Figure 9C-5) as per EEM TGD (EC 2012). The results for station MEL-05-05 resulted in an outlier for total density, richness, diversity and evenness. Only one invertebrate was present in the sample from MEL-05-05, which consisted of a composite of five grabs. The sample met all sampling criteria for grab sampler fullness and sediment particle size. However, based on initial data screening, MEL-05-05 was excluded from the statistical analysis, because the unusually low abundance in this sample suggested a data quality issue potentially related to improper sample preservation. Outliers from other stations were also examined, but there was no indication that the data were suspect, and the differences relative to station means were minor. Therefore, no other samples were excluded prior to statistical analysis.

Prior to statistical analyses, statistical outliers were identified using standardized residuals, which provide a measure of the difference between observed and expected values (i.e., residuals), normalized to the variance of the dataset, and were calculated as follows:

Standardized Residual: $x_z = \frac{x_i}{\sigma}$

Where:

x_z is the standardized residual

x_i is the residual of a data point

σ is the sample standard deviation

Data points with standardized residuals greater than |3.5| (i.e., more than 3.5 standard deviations from the sample mean), were identified as observations that may be unusual and were omitted from the statistical analysis. When an outlier was detected, the validity of the data point was examined. If the outlier was determined to be the result of a data entry error, it was corrected. If the outlier was not the result of data entry errors and could not be resolved otherwise, the analysis was completed with and without the outlier included.

Based on the above analysis, no statistical outliers were identified in the 2018 benthic invertebrate dataset.

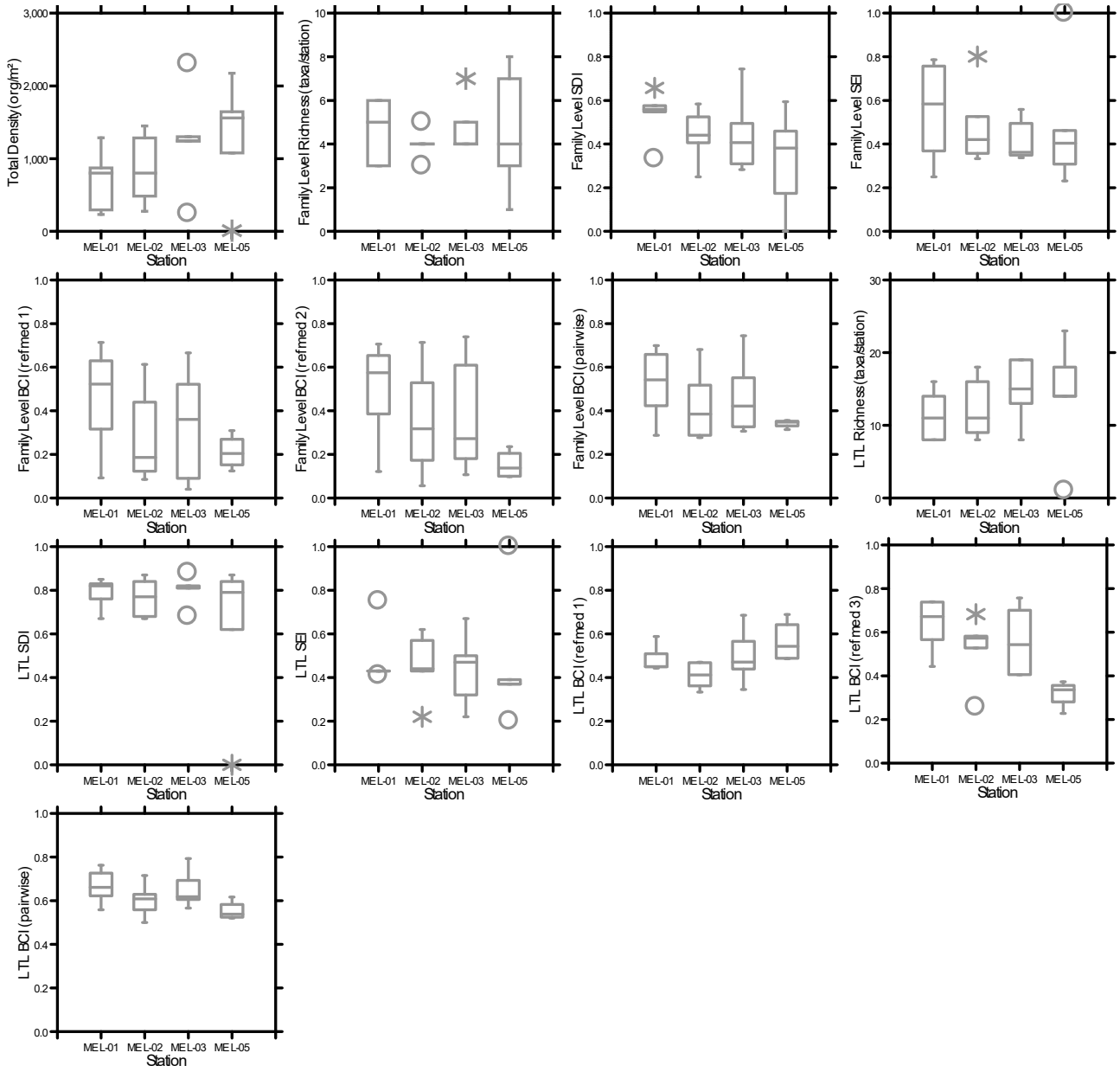


Figure 9C-5: Box and Whisker plots for Benthic Invertebrate Endpoints in Meliadine Lake, August 2018

APPENDIX 9D

Supporting Habitat Variables and Benthic Invertebrate Community Data Analysis Results

Table 9D-1: Summary of Habitat Variables for Meliadine Lake - Meliadine Mine Cycle 1 EEM and 2018 AEMP, Fall 2018

Area	Station	Sampling Date	Water Depth	Water Temperature	Dissolved Oxygen	pH	Specific Conductivity	Sediment Total Organic Carbon	Sediment Particle Size			
									Sand	Silt	Clay	Fines (Silt + Clay)
			(m)	(ºC)	(mg/L)		(µS/cm)	(%)	(%)	(%)	(%)	(%)
Near-field Area	MEL-01-01	22-Aug-18	9.0	10.5	11.9	8.6	86.1	4.0	24.9	63.5	11.6	75.1
	MEL-01-06	22-Aug-18	7.2	10.6	12.1	8.6	85.8	3.0	41.8	54.9	3.3	58.2
	MEL-01-07	21-Aug-18	8.0	10.8	11.8	8.6	91.1	5.7	6.3	82.4	11.3	93.7
	MEL-01-08	22-Aug-18	7.5	10.5	12.2	8.6	85.7	4.5	8.4	81.2	10.4	91.6
	MEL-01-09	22-Aug-18	7.2	10.5	12.0	8.6	85.4	5.3	24.2	61.3	14.5	75.8
		Mean	7.8	10.6	12.0	8.6	86.8	4.5	21.1	68.7	10.2	78.9
		Median	7.5	10.5	12.0	8.6	85.8	4.5	24.2	63.5	11.3	75.8
		Minimum	7.2	10.5	11.8	8.6	85.4	3.0	6.3	54.9	3.3	58.2
		Maximum	9.0	10.8	12.2	8.6	91.1	5.7	41.8	82.4	14.5	93.7
		Count	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
		SD	0.8	0.1	0.2	0.0	2.4	1.1	14.4	12.4	4.2	14.4
		SE	0.3	0.1	0.1	0.0	1.1	0.5	6.5	5.6	1.9	6.5
Mid-Field Area	MEL-02-02	31-Aug-18	7.0	9.0	11.7	7.9	78.0	4.6	67.9	23.6	8.6	32.2
	MEL-02-03	18-Aug-18	8.6	11.6	10.2	8.6	76.2	6.2	46.1	44.4	9.5	53.9
	MEL-02-05	18-Aug-18	8.5	11.9	10.3	8.6	76.4	9.0	32.6	50.5	16.9	67.4
	MEL-02-06	31-Aug-18	7.3	9.0	11.6	7.9	77.9	7.4	38.3	48.4	13.4	61.8
	MEL-02-08	15-Aug-18	9.0	11.9	10.1	8.6	76.3	6.2	63.4	29.3	7.3	36.6
		Mean	8.1	10.7	10.8	8.3	77.0	6.7	49.7	39.2	11.1	50.4
		Median	8.5	11.6	10.3	8.6	76.4	6.2	46.1	44.4	9.5	53.9
		Minimum	7.0	9.0	10.1	7.9	76.2	4.6	32.6	23.6	7.3	32.2
		Maximum	9.0	11.9	11.7	8.6	78.0	9.0	67.9	50.5	16.9	67.4
		Count	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
		SD	0.9	1.5	0.8	0.4	0.9	1.6	15.4	12.0	3.9	15.4
		SE	0.4	0.7	0.4	0.2	0.4	0.7	6.9	5.4	1.8	6.9

Table 9D-1: Summary of Habitat Variables for Meliadine Lake - Meliadine Mine Cycle 1 EEM and 2018 AEMP, Fall 2018

Area	Station	Sampling Date	Water Depth	Water Temperature	Dissolved Oxygen	pH	Specific Conductivity	Sediment Total Organic Carbon	Sediment Particle Size			
									Sand	Silt	Clay	Fines (Silt + Clay)
			(m)	(ºC)	(mg/L)		(µS/cm)	(%)	(%)	(%)	(%)	(%)
Reference Area 1	MEL-03-01	20-Aug-18	6.8	10.7	11.9	8.5	71.2	1.9	77.7	20.3	2.1	22.4
	MEL-03-02	26-Aug-18	6.9	8.6	12.0	8.5	72.8	0.3	66.8	31.7	1.5	33.2
	MEL-03-03	20-Aug-18	9.5	10.7	12.0	8.6	71.1	7.7	25.8	67.4	6.9	74.3
	MEL-03-04	26-Aug-18	6.6	8.4	12.1	8.5	72.8	5.4	46.9	48.5	4.6	53.1
	MEL-03-05	26-Aug-18	6.1	8.5	12.2	8.6	72.7	3.0	70.1	26.8	3.1	29.9
		Mean	7.2	9.4	12.0	8.5	72.1	3.7	57.5	38.9	3.6	42.6
		Median	6.8	8.6	12.0	8.5	72.7	3.0	66.8	31.7	3.1	33.2
		Minimum	6.1	8.4	11.9	8.5	71.1	0.3	25.8	20.3	1.5	22.4
		Maximum	9.5	10.7	12.2	8.6	72.8	7.7	77.7	67.4	6.9	74.3
		Count	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
		SD	1.3	1.2	0.1	0.1	0.9	2.9	21.0	19.0	2.2	21.1
		SE	0.6	0.5	0.1	0.0	0.4	1.3	9.4	8.5	1.0	9.4
Reference Area 3	MEL-05-01	01-Sep-18	9.0	9.0	11.7	8.0	75.3	0.8	92.3	7.5	<1	7.7
	MEL-05-02	30-Aug-18	9.3	8.9	11.7	8.0	75.9	7.8	54.0	40.3	5.6	45.9
	MEL-05-03	29-Aug-18	8.5	8.7	12.1	8.6	76.1	7.0	52.4	38.2	9.4	47.6
	MEL-05-04	30-Aug-18	9.5	8.8	11.7	7.9	76.2	7.2	41.5	42.2	16.3	58.5
	MEL-05-05	29-Aug-18	8.5	8.7	12.1	8.6	76.1	6.9	12.9	77.4	9.8	87.2
		Mean	9.0	8.8	11.9	8.2	75.9	5.9	50.6	41.1	10.3	49.4
		Median	9.0	8.8	11.7	8.0	76.1	7.0	52.4	40.3	9.6	47.6
		Minimum	8.5	8.7	11.7	7.9	75.3	0.8	12.9	7.5	5.6	7.7
		Maximum	9.5	9.0	12.1	8.6	76.2	7.8	92.3	77.4	16.3	87.2
		Count	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0
		SD	0.5	0.1	0.2	0.3	0.4	2.9	28.5	24.8	4.4	28.6
		SE	0.2	0.1	0.1	0.2	0.2	1.3	12.8	11.1	2.2	12.8

µS/cm = microSiemens per centimetre; SD= standard deviation; SE = standard error.

Table 9D-2: Benthic Invertebrate Abundance Data (per composite sample) - Meliadine Mine Cycle 1 EEM and 2018 AEMP, Fall 2018

Major Taxonomic Group	Family	Subfamily / Tribe	Genus/Species	MEL-01					MEL-02					MEL-03					MEL-05							
				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	MEL-03-01	MEL-03-02	MEL-03-03	MEL-03-04	MEL-03-05	MEL-05-01	MEL-05-02	MEL-05-03	MEL-05-04-A	MEL-05-04-B	MEL-05-04-C	MEL-05-04-D	MEL-05-04-E	MEL-05-05
Hydrozoa	Hydridae	-	*Hydra* sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turbellaria	-	-	-	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nematoda	-	-	-	1	0	1	0	0	1	0	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0
Oligochaeta	Lumbriculidae	-	*Lumbriculus* sp.	0	0	0	0	0	0	1	0	0	0	3	13	0	0	0	7	2	0	0	0	0	0	0
	Naididae	Tubificinae	Tubificinae with chaetae	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
		Naidinae	*Nais* sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
			Slavina appendiculata	0	0	0	0	0	0	0	0	0	1	3	0	7	0	0	0	0	0	0	0	0	0	0
Bivalvia	Pisidiidae	-	(i/d)	3	5	3	3	3	14	5	4	6	1	6	13	1	3	2	20	4	2	1	2	4	2	2	0
			Pisidium sp.	20	7	21	25	4	27	7	9	13	12	5	27	21	0	14	25	8	7	3	0	1	2	7	0
			Sphaerium sp.	6	3	2	10	0	2	0	4	0	3	1	4	7	0	3	1	2	3	0	1	1	0	4	0
Gastropoda	Valvatidae	-	*Valvata* sp.	7	3	1	17	4	0	0	0	0	0	0	0	7	0	0	4	3	5	3	6	1	2	3	0
Hydracarina	Pionidae	-	(i/d)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	Lebertiidae	-	*Lebertia* sp.	2	0	0	2	0	2	0	0	1	0	0	2	0	0	2	0	6	0	0	0	0	0	0	0
	Oxidae	-	*Oxus* sp.	1	0	1	0	0	1	0	0	0	0	0	4	0	0	0	9	0	0	0	0	0	0	0	0
Notostraca	Triopsidae	-	*Lepidurus* sp.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cladocera	-	-	(i/d)	1	0	1	0	0	1	1	0	0	1	1	1	1	0	0	1	1	1	1	0	0	1	1	0
	Bosminidae	-	-	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Copepoda	-	-	-	1	1	1	1	0	1	0	0	1	1	1	1	1	0	0	1	1	1	1	0	0	1	0	0
Ostracoda	-	-	-	0	0	1	1	0	0	1	0	3	0	0	1	1	1	1	1	0	8	1	0	0	0	1	0
Amphipoda	-	-	(i/d)	0	0	0	0	0	0	1	1	0	1	1	16	0	1	0	1	0	0	0	1	1	0	1	0
	Gammaridae	-	*Gammarus* sp.	0	0	0	0	0	4	6	3	4	3	15	26	0	4	5	31	2	0	0	3	0	3	1	0
Ephemeroptera	Baetidae	-	*Baetis* sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Plecoptera	Nemouridae	-	*Zapada columbiana*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Trichoptera	Brachycentridae	-	*Brachycentrus occidentalis*	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Limnephilidae	-	(i/d)	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
			Limnephilus sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Diptera	Chironomidae	-	(i/d)	0	0	4	0	0	0	18	0	0	4	0	0	1	1	0	0	2	0	0	24	0	0	0	0
		Chironomini	*Chironomus* sp.	1	0	0	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0
			Cladopelma sp.	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
			Dicrotendipes sp.	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0
			Microtendipes sp.	0	1	22	10	5	19	9	2	26	16	35	3	8	5	9	9	8	2	2	4	0	4	2	1
			Pagastiella sp.	8	1	0	0	0	11	1	2	0	2	3	1	1	0	10	43	4	8	1	3	0	10	4	0
			Parachironomus sp.	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Paratendipes sp.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Phaenopsectra sp.	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	1	1	2	0	0	0	0	0	0
			Sergentia sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
			Stictochironomus sp.	16	12	10	15	1	25	1	5	10	5	14	11	0	8	41	6	2	0	1	4	1	1	2	0
		Tanytarsini	(i/d)	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	6	14	68	0	2	0	0	0	0
			Cladotanytarsus sp.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
			Corynocera sp.	11	0	38	0	2	12	7	0	8	78	17	0	127	3	35	47	30	54	6	9	3	31	11	0
			Micropsectra sp.	14	0	31	4	3	15	0	0	7	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
			Paratanytarsus sp.	0	0	0	0	0	3	0	0	0	5	10	1	16	0	1	13	17	13	1	2	0	0	0	0
			Stempellinella sp.	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
			Tanytarsus sp.	0	0	7	0	0	18	0	0	9	9	10	0	29	0	0	4	12	2	1	0	1	0	0	0
		Diamesinae	*Protanypus* sp.	1	1	1	3	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0
		Orthocladiinae	(i/d)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
			Corynoneura sp.	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0
			Heterotrissocladius sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Orthocladius complex	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			Psectrocladius sp.	4	0	1	0	1	2	0	0	0	1	0	1	1	0	7	1	1	2	0	0	1	1	0	0
		Prodiamesinae	*Monodiamesa* sp.	1	0	0	0	0	0	0	0	4	2	0	1	0	0	0	4	0	3	0	0	0	0	0	0
		Tanypodinae	*Ablabesmyia* sp.	0	0	0	0	0	1	0	0	0	2	9	2	1	0	2	4	0	0	0	0	0	0	0	0
		Pentaneurini	*Thienemannimyia* group	0	0	0	0	0	2	0	0	0	1	0	0	0	1	0	1	1	2	0	0	0	0	0	0
		Procladiini	*Procladius* sp.	4	1	5	2	4	6	0	1	3	3	3	10	5	1	10	8	4	7	0	0	0	1	2	0
			TOTAL	**104**	**35**	**153**	**95**	**27**	**171**	**58**	**32**	**101**	**152**	**147**	**155**	**272**	**30**	**145**	**256**	**130**	**192**	**23**	**61**	**16**	**60**	**42**	**1**

i/d = indeterminate or damaged specimen; - = not applicable.

Table 9D-3: Presence/Absence of Benthic Invertebrate Taxa in Meliadine Lake - Meliadine Mine Cycle 1 EEM and 2018 AEMP, Fall 2018

Major Taxonomic Group	Family	Subfamily / Tribe	Genus/Species	Near-field (MEL-01)	Mid-Field (MEL-02)	Reference Area 1 (MEL-03)	Reference Area 3 (MEL-05)
Hydrozoa	Hydridae	-	*Hydra* sp.	X	-	-	-
Turbellaria	-	-	-	X	-	-	-
Oligochaeta	Lumbriculidae	-	*Lumbriculus* sp.	-	X	X	X
	Naididae	Tubificinae	Tubificinae with chaetae	X	-	X	-
		-	*Nais* sp.	-	-	-	X
			Slavina appendiculata	-	X	X	-
Bivalvia	Pisidiidae		*Pisidium* sp.	X	X	X	X
			Sphaerium sp.	X	X	X	X
Gastropoda	Valvatidae	-	*Valvata* sp.	X	-	X	X
Hydracarina	Pionidae	-	(i/d)	-	-	X	-
	Lebertiidae	-	*Lebertia* sp.	X	X	X	X
	Oxidae	-	*Oxus* sp.	X	X	X	X
Notostraca	Triopsidae	-	*Lepidurus* sp.	X	-	-	-
Amphipoda	Gammaridae	-	*Gammarus* sp.	-	X	X	X
Trichoptera	Limnephilidae	-	(i/d)	-	-	X	X
			Limnephilus sp.	-	-	-	X
Chironomidae	Chironomidae	Chironomini	*Chironomus* sp.	X	-	X	-
			Cladopelma sp.	-	X	-	X
			Dicrotendipes sp.	-	-	X	X
			Microtendipes sp.	X	X	X	X
			Pagastiella sp.	X	X	X	X
			Parachironomus sp.	-	X	-	-
			Paratendipes sp.	-	X	-	-
			Phaenopsectra sp.	-	-	X	X
			Sergentia sp.	-	-	X	-
			Stictochironomus sp.	X	X	X	X

Table 9D-3: Presence/Absence of Benthic Invertebrate Taxa in Meliadine Lake - Meliadine Mine Cycle 1 EEM and 2018 AEMP, Fall 2018

Major Taxonomic Group	Family	Subfamily / Tribe	Genus/Species	Near-field (MEL-01)	Mid-Field (MEL-02)	Reference Area 1 (MEL-03)	Reference Area 3 (MEL-05)
Chironomidae	Chironomidae	Tanytarsini	*Cladotanytarsus* sp.	-	X	X	X
			Corynocera sp.	X	X	X	X
			Micropsectra sp.	X	X	X	-
			Paratanytarsus sp.	-	X	X	X
			Stempellinella sp.	-	-	X	-
			Tanytarsus sp.	X	X	X	X
		Diamesinae	*Protanypus* sp.	X	-	X	X
		Orthocladiinae	*Corynoneura* sp.	-	-	X	-
			Heterotrissocladius sp.	X	-	-	-
			Orthocladius complex	X	-	-	X
			Psectrocladius sp.	X	X	X	X
		Prodiamesinae	*Monodiamesa* sp.	X	X	X	X
		Tanypodinae	*Ablabesmyia* sp.	-	X	X	X
		Pentaneurini	*Thienemannimyia* group	-	X	X	X
		Procladiini	*Procladius* sp.	X	X	X	X
			Total Taxa	**22**	**23**	**31**	**27**

- = not applicable.

Table 9D-4: Summary Statistics for Benthic Invertebrate Community Variables in Meliadine Lake - Meliadine Mine Cycle 1 EEM and 2018 AEMP, Fall 2018

Area	Station	Total Density (org/m^2)	Family Level						Lowest Taxonomic Level					
			Richness (taxa/station)	Simpson's Diversity Index	Simpson's Evenness Index	Bray-Curtis Index (Median-Ref1)	Bray-Curtis Index (Median-Ref3)	Bray-Curtis Index (Pairwise)	Richness (taxa/station)	Simpson's Diversity Index	Simpson's Evenness Index	Bray-Curtis Index (Median-Ref1)	Bray-Curtis Index (Median-Ref3)	Bray-Curtis Index (Pairwise)
Near-field Exposure Area	MEL-01-01	871	6	0.55	0.37	0.32	0.39	0.42	16	0.85	0.43	0.45	0.57	0.62
	MEL-01-06	293	3	0.58	0.79	0.63	0.65	0.66	8	0.67	0.43	0.44	0.74	0.73
	MEL-01-07	1,284	6	0.33	0.25	0.09	0.12	0.29	14	0.82	0.43	0.45	0.44	0.56
	MEL-01-08	802	5	0.66	0.58	0.52	0.57	0.54	11	0.76	0.41	0.51	0.67	0.66
	MEL-01-09	233	3	0.56	0.76	0.71	0.71	0.70	8	0.83	0.75	0.59	0.74	0.76
	Mean	697	5	0.53	0.55	0.45	0.49	0.52	11	0.79	0.49	0.49	0.63	0.67
	Median	802	5	0.56	0.58	0.52	0.57	0.54	11	0.82	0.43	0.45	0.67	0.66
	Minimum	233	3	0.33	0.25	0.09	0.12	0.29	8	0.67	0.41	0.44	0.44	0.56
	Maximum	1,284	6	0.66	0.79	0.71	0.71	0.70	16	0.85	0.75	0.59	0.74	0.76
	Count	5	5	5	5	5	5	5	5	5	5	5	5	5
	SD	437	2	0.12	0.24	0.25	0.24	0.17	4	0.07	0.15	0.06	0.13	0.08
	SE	196	1	0.05	0.11	0.11	0.11	0.08	2	0.03	0.07	0.03	0.06	0.04
Mid-field Exposure Area	MEL-02-02	1,448	5	0.44	0.36	0.12	0.17	0.29	18	0.87	0.44	0.47	0.53	0.56
	MEL-02-03	483	4	0.52	0.53	0.44	0.53	0.52	7	0.77	0.62	0.33	0.57	0.63
	MEL-02-05	276	3	0.58	0.80	0.61	0.71	0.68	8	0.67	0.43	0.41	0.68	0.72
	MEL-02-06	802	4	0.41	0.42	0.19	0.32	0.38	11	0.84	0.57	0.36	0.58	0.61
	MEL-02-08	1,284	4	0.25	0.33	0.09	0.06	0.28	15	0.68	0.22	0.47	0.26	0.50
	Mean	859	4	0.44	0.49	0.29	0.36	0.43	12	0.76	0.46	0.41	0.52	0.60
	Median	802	4	0.44	0.42	0.19	0.32	0.38	11	0.77	0.44	0.41	0.57	0.61
	Minimum	276	3	0.25	0.33	0.09	0.06	0.28	7	0.67	0.22	0.33	0.26	0.50
	Maximum	1,448	5	0.58	0.80	0.61	0.71	0.68	18	0.87	0.62	0.47	0.68	0.72
	Count	5	5	5	5	5	5	5	5	5	5	5	5	5
	SD	503	1	0.13	0.19	0.23	0.27	0.17	5	0.09	0.16	0.06	0.16	0.08
	SE	225	0	0.06	0.09	0.10	0.12	0.08	2	0.04	0.07	0.03	0.07	0.04
Reference Area 1	MEL-03-01	1,241	5	0.41	0.34	0.09	0.18	0.33	18	0.88	0.50	0.44	0.54	0.61
	MEL-03-02	1,302	7	0.74	0.56	0.52	0.61	0.55	18	0.81	0.32	0.57	0.70	0.69
	MEL-03-03	2,302	4	0.28	0.35	0.36	0.27	0.42	15	0.73	0.25	0.69	0.41	0.62
	MEL-03-04	241	4	0.49	0.49	0.67	0.74	0.74	7	0.81	0.67	0.47	0.76	0.79
	MEL-03-05	1,241	4	0.31	0.36	0.04	0.11	0.31	13	0.82	0.44	0.35	0.41	0.57
	Mean	1,266	5	0.45	0.42	0.34	0.38	0.47	14	0.81	0.43	0.50	0.56	0.65
	Median	1,241	4	0.41	0.36	0.36	0.27	0.42	15	0.81	0.44	0.47	0.54	0.62
	Minimum	241	4	0.28	0.34	0.04	0.11	0.31	7	0.73	0.25	0.35	0.41	0.57
	Maximum	2,302	7	0.74	0.56	0.67	0.74	0.74	18	0.88	0.67	0.69	0.76	0.79
	Count	5	5	5	5	5	5	5	5	5	5	5	5	5
	SD	729	1	0.19	0.10	0.27	0.28	0.18	5	0.05	0.16	0.13	0.16	0.09
	SE	326	1	0.08	0.04	0.12	0.12	0.08	2	0.02	0.07	0.06	0.07	0.04

Table 9D-4: Summary Statistics for Benthic Invertebrate Community Variables in Meliadine Lake - Meliadine Mine Cycle 1 EEM and 2018 AEMP, Fall 2018

Area	Station	Total Density (org/m^2)	Family Level						Lowest Taxonomic Level					
			Richness (taxa/station)	Simpson's Diversity Index	Simpson's Evenness Index	Bray-Curtis Index (Median-Ref1)	Bray-Curtis Index (Median-Ref3)	Bray-Curtis Index (Pairwise)	Richness (taxa/station)	Simpson's Diversity Index	Simpson's Evenness Index	Bray-Curtis Index (Median-Ref1)	Bray-Curtis Index (Median-Ref3)	Bray-Curtis Index (Pairwise)
Reference Area 3	MEL-05-01	2,172	8	0.59	0.31	0.31	0.24	0.35	22	0.88	0.37	0.60	0.34	0.53
	MEL-05-02	1,078	7	0.38	0.23	0.12	0.17	0.36	18	0.88	0.44	0.49	0.33	0.55
	MEL-05-03	1,560	3	0.17	0.40	0.23	0.10	0.35	14	0.76	0.29	0.69	0.37	0.62
	MEL-05-04	1,647	4	0.46	0.46	0.18	0.10	0.31	13	0.80	0.38	0.49	0.23	0.52
	MEL-05-05	-	-	-	-	-	-	-	-	-	-	-	-	-
Mean		1,614	6	0.40	0.35	0.21	0.15	0.34	17	0.83	0.37	0.57	0.32	0.55
Median		1,603	6	0.42	0.36	0.20	0.14	0.35	16	0.84	0.38	0.54	0.34	0.54
Minimum		1,078	3	0.17	0.23	0.12	0.10	0.31	13	0.76	0.29	0.49	0.23	0.52
Maximum		2,172	8	0.59	0.46	0.31	0.24	0.36	22	0.88	0.44	0.69	0.37	0.62
Count		4	4	4	4	4	4	4	4	4	4	4	4	4
SD		449	2	0.18	0.10	0.08	0.07	0.02	4	0.06	0.06	0.10	0.06	0.04
SE		224	1	0.09	0.05	0.04	0.03	0.01	2	0.03	0.03	0.05	0.03	0.02
Discreet Samples from Reference Area 3	MEL-05-04-A	819	3	0.53	0.71	-	-	-	8	0.81	0.65	-	-	-
	MEL-05-04-B	2,629	4	0.36	0.39	-	-	-	8	0.84	0.71	-	-	-
	MEL-05-04-C	647	4	0.61	0.65	-	-	-	9	0.77	0.55	-	-	-
	MEL-05-04-D	2,457	4	0.28	0.35	-	-	-	9	0.66	0.33	-	-	-
	MEL-05-04-E	1,681	4	0.59	0.61	-	-	-	9	0.78	0.57	-	-	-
Mean		1,647	4	0.48	0.54	-	-	-	9	0.77	0.56	-	-	-
Median		1,681	4	0.53	0.61	-	-	-	9	0.78	0.57	-	-	-
Minimum		647	3	0.28	0.35	-	-	-	8	0.66	0.33	-	-	-
Maximum		2,629	4	0.61	0.71	-	-	-	9	0.84	0.71	-	-	-
Count		5	5	5	5	-	-	-	5	5	5	-	-	-
SD		909	0	0.15	0.16	-	-	-	1	0.07	0.15	-	-	-
SE		407	0	0.07	0.07	-	-	-	0	0.03	0.07	-	-	-

org/m^2 = organisms per metre squared; SD= standard deviation; SE = standard error; - = not applicable.

APPENDIX 10A

Fishing Effort

Table 10A-1: Sampling Effort for the Meliadine Lake Fish Health Program, 2018

Sampling Area	Effort Number	Gear Type	Start				End				Habitat Description	Minimum Depth (m)	Max Depth (m)	Set Date (dd/mm/yy)	Lift Date (dd/mm/yy)	Duration (h)	Number of Traps Set	Effort[a]	Fish Captured				
			Latitude	Longitude	Easting	Northing	Latitude	Longitude	Easting	Northing									THST	NNST	BURB	SLSC	Total
NF	MEL18FHNFMT4200	Minnow Trap	63°01'54.15	92°09'40.42	542439	6989399	63°01'56.60	92°09'40.06	542443	6989475	Large gravel/small cobble	0.3	0.5	07/08/18	08/08/18	17.90	6	107	79	0	0	0	79
NF	MEL18FHNFMT4201	Minnow Trap	63°01'58.80	92°09'51.17	542286	6989541	63°01'58.92	92°09'54.66	542237	6989544	Medium/large cobble and some boulder	0.2	1.0	07/08/18	08/08/18	17.63	6	106	29	0	0	0	29
NF	MEL18FHNFMT4202	Minnow Trap	63°01'52.44	92°10'12.84	541984	6989340	63°01'52.11	92°10'11.93	541997	6989330	Boulder - near shore	0.2	0.5	07/08/18	08/08/18	17.47	6	105	11	0	0	0	11
NF	MEL18FHNFMT4203	Minnow Trap	63°01'50.29	92°09'54.40	542244	6989277	63°01'49.88	92°09'56.55	542214	6989264	Boulder/cobble near camp	0.3	0.9	08/08/18	09/08/18	15.82	6	95	51	0	0	0	51
NF	MEL18FHNFMT4204	Minnow Trap	63°01'42.41	92°09'43.74	542397	6989035	-	-	-	-	Cobble/boulder near camp	0.3	0.7	08/08/18	09/08/18	15.85	6	95	45	0	0	0	45
NF	MEL18FHNFMT4206	Minnow Trap	63°01'42.30	92°09'04.24	542109	6989028	-	-	-	-	Boulder/cobble shoreline	0.3	0.4	12/08/18	13/08/18	15.47	6	93	54	0	0	0	54
NF	MEL18FHNFMT4207	Minnow Trap	63°01'36.19	92°09'09.32	542040	6988838	-	-	-	-	Sand/gravel	0.3	0.4	12/08/18	13/08/18	15.27	6	92	28	0	0	0	28
NF	MEL18FHNFMT4208	Minnow Trap	63°01'41.13	92°09'31.02	541733	6988987	-	-	-	-	Boulder/sand/bit of vegetation	0.3	0.5	13/08/18	14/08/18	25.73	3	77	19	2	0	0	21
NF	MEL18FHNFMT4208	Minnow Trap	63°01'41.13	92°09'31.02	541733	6988987	-	-	-	-	Boulder/sand/bit of vegetation	0.3	0.5	14/08/18	15/08/18	19.60	3	59	24	2	0	0	26
NF	MEL18FHNFMT4209	Minnow Trap	63°01'41.23	92°09'36.00	541663	6988989	-	-	-	-	Boulder	0.2	1.0	15/08/18	16/08/18	20.50	6	123	32	0	0	0	32
NF	MEL18FHNFMT4210	Minnow Trap	63°01'29.38	92°09'48.88	542330	6988631	-	-	-	-	Sand	0.3	0.4	15/08/18	16/08/18	20.28	5	101	43	0	0	0	43
NF	MEL18FHNFMT4211	Minnow Trap	63°01'47.06	92°09'17.33	541923	6989173	-	-	-	-	Cobble/boulder - near water intake for camp	0.3	0.4	15/08/18	16/08/18	20.18	7	141	22	0	0	0	22
NF	MEL18FHNFMT4212	Minnow Trap	63°01'41.50	92°09'05.54	542091	6989003	-	-	-	-	Cobble/gravel with algae near water runoff from camp	0.3	0.5	17/08/18	18/08/18	21.38	6	128	80	0	0	0	80
NF	MEL18FHNFMT4213	Minnow Trap	63°01'36.52	92°09'09.60	542036	6988848	-	-	-	-	Sand/boulder	0.3	0.5	17/08/18	18/08/18	22.22	6	133	51	0	0	0	51
NF	MEL18FHNFMT4214	Minnow Trap	63°01'49.66	92°09'51.43	542286	6989258	-	-	-	-	Boulder/cobble	0.3	0.4	17/08/18	18/08/18	20.95	6	126	107	1	0	0	108
NF	MEL18FHNFMT4215	Minnow Trap	63°01'43.13	92°10'23.63	541836	6989050	-	-	-	-	Cobble/sand	0.3	0.4	18/08/18	19/08/18	21.03	7	147	62	0	0	0	62
NF	MEL18FHNFMT4216	Minnow Trap	63°01'33.66	92°10'02.70	542134	6988761	-	-	-	-	Cobble/boulder	0.3	1.0	18/08/18	19/08/18	20.98	6	126	56	0	0	0	56
NF	MEL18FHNFMT4217	Minnow Trap	63°01'41.25	92°10'06.19	542082	6988995	-	-	-	-	Cobble/sand	0.3	0.5	18/08/18	19/08/18	20.53	6	123	25	0	0	0	25
NF	MEL18FHNFMT4218	Minnow Trap	63°01'41.57	92°10'05.97	542085	6989005	-	-	-	-	Cobble/sand with algae	0.3	0.5	19/08/18	20/08/18	23.75	3	71	81	1	0	0	82
RA1	MEL18FHRA1MT5200	Minnow Trap	63°06'44.79	92°20'34.74	533151	6998287	-	-	-	-	Boulder/cobble along shoreline	0.3	0.4	09/08/18	10/08/18	20.72	6	124	9	0	0	0	9
RA1	MEL18FHRA1MT5200	Minnow Trap	63°06'44.79	92°20'34.74	533151	6998287	-	-	-	-	Boulder/cobble along shoreline	0.3	0.4	10/08/18	11/08/18	26.57	6	159	7	3	0	0	10
RA1	MEL18FHRA1MT5201	Minnow Trap	63°07'14.81	92°20'33.71	533156	6999216	-	-	-	-	Cobble/boulder along shoreline	0.3	0.4	09/08/18	10/08/18	19.92	5	100	18	1	0	0	19
RA1	MEL18FHRA1MT5201	Minnow Trap	63°07'14.81	92°20'33.71	533156	6999216	-	-	-	-	Cobble/boulder along shoreline	0.3	0.4	10/08/18	11/08/18	26.58	5	133	26	2	0	0	28
RA1	MEL18FHRA1MT5202	Minnow Trap	63°07'09.35	92°20'07.57	533524	6999051	-	-	-	-	Boulder/cobble along shoreline	0.3	0.5	09/08/18	10/08/18	19.70	6	118	7	5	0	0	12
RA1	MEL18FHRA1MT5202	Minnow Trap	63°07'09.35	92°20'07.57	533524	6999051	-	-	-	-	Boulder/cobble along shoreline	0.3	0.5	10/08/18	11/08/18	26.63	6	160	10	0	0	0	10
RA1	MEL18FHRA1MT5203	Minnow Trap	63°06'41.69	92°20'27.61	533252	6998192	-	-	-	-	Cobble/boulder along shoreline	0.3	0.5	11/08/18	12/08/18	21.30	6	128	3	0	0	0	3
RA1	MEL18FHRA1MT5204	Minnow Trap	63°06'40.16	92°20'38.70	533097	6998143	-	-	-	-	Boulder/cobble along shoreline	0.3	0.5	11/08/18	12/08/18	21.53	6	129	2	0	0	0	2
RA1	MEL18FHRA1MT5205	Minnow Trap	63°06'50.82	92°20'51.16	532919	6998471	-	-	-	-	Cobble/boulder	0.3	0.4	11/08/18	12/08/18	20.87	6	125	1	0	0	0	1
RA1	MEL18FHRA1MT5206	Minnow Trap	63°06'57.75	92°21'17.27	532551	6998682	-	-	-	-	Boulder/cobble shoreline of esker	0.3	0.5	13/08/18	14/08/18	25.25	6	152	70	2	1	0	73
RA1	MEL18FHRA1MT5207	Minnow Trap	63°06'41.10	92°21'44.11	532180	6998163	-	-	-	-	Boulder/cobble	0.3	0.5	13/08/18	14/08/18	23.85	6	143	9	0	0	0	9
RA1	MEL18FHRA1MT5208	Minnow Trap	63°06'24.39	92°21'35.41	532307	6997647	-	-	-	-	Cobble/boulder	0.3	0.5	13/08/18	14/08/18	24.02	4	96	13	1	0	1	15
RA1	MEL18FHRA1MT5209	Minnow Trap	63°06'33.11	92°19'49.14	533794	6997932	-	-	-	-	Boulder/cobble	0.3	1.0	14/08/18	15/08/18	22.83	6	137	23	1	0	0	24
RA1	MEL18FHRA1MT5210	Minnow Trap	63°06'12.23	92°19'34.07	534012	6997288	-	-	-	-	Boulder/cobble	0.3	0.5	14/08/18	15/08/18	23.00	5	115	3	0	0	0	3
RA1	MEL18FHRA1MT5211	Minnow Trap	63°06'23.32	92°20'01.85	533619	6997627	-	-	-	-	Boulder/cobble	0.3	0.5	14/08/18	15/08/18	23.10	5	116	8	0	0	0	8
RA1	MEL18FHRA1MT5212	Minnow Trap	63°05'43.17	92°19'04.01	534443	6996393	-	-	-	-	Cobble/boulder	0.3	0.5	16/08/18	17/08/18	21.47	7	150	6	0	0	0	6
RA1	MEL18FHRA1MT5213	Minnow Trap	63°05'39.83	92°18'53.89	534586	6996291	-	-	-	-	Boulder/cobble	0.3	1.0	16/08/18	17/08/18	21.17	6	127	12	0	0	0	12
RA1	MEL18FHRA1MT5214	Minnow Trap	63°05'37.51	92°18'43.60	534731	6996221	-	-	-	-	Boulder/cobble	0.4	1.0	16/08/18	17/08/18	21.33	5	107	34	0	0	0	34
RA1	MEL18FHRA1DP5215	Dipnet	63°01'41.50	92°10'05.54	542091	6989003	63°01'49.66	92°09'51.43	542286	6989258	Cobble/boulder	0.1	0.2	17/08/18	17/08/18	1.00	-	3600	3	0	0	0	3
RA1	MEL18FHRA1MT5216	Minnow Trap	63°01'45.20	92°18'12.01	535252	6998036	-	-	-	-	Boulder/sand	0.3	0.5	19/08/18	20/08/18	23.10	5	116	16	0	0	0	16
RA1	MEL18FHRA1MT5217	Minnow Trap	63°06'40.67	92°18'02.01	535293	6998182	-	-	-	-	Silt with vegetation	0.3	1.0	19/08/18	20/08/18	23.33	5	117	20	1	0	0	21
RA1	MEL18FHRA1MT5218	Minnow Trap	63°06'35.66	92°17'54.00	535407	6998028	-	-	-	-	Boulder/cobble	0.3	0.5	19/08/18	20/08/18	23.63	6	142	1	1	0	0	2

Note: Samples were collected during daylight hours.
a) Minnow Trap = trap hours; Dipnet = seconds.
NF = Near-field; RA1 = Reference Area 1; m = metre; d = day; m = month; y = year; h = hour; s = second; THST = Threespine Stickleback; NNST = Ninespine Stickleback; BURB = Burbot; SLSC = Slimy Sculpin; - = not recorded or not applicable.

Table 10A-2: Supporting Environmental Data for the Meliadine Lake Fish Health Program, 2018

Effort Number	Air Temperature (°C)	Cloud Cover (%)	Wind Direction	Wind Speed (km/h)	Precipitation	Water Temperature (°C)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Specific Conductivity (µS/cm)	pH
MEL18FHNFMT4200	9	95	SE	15	0	12.7	9.86	93.0	87	6.18
MEL18FHNFMT4201	9	95	SE	15	0	12.7	9.86	93.0	87	6.18
MEL18FHNFMT4202	9	95	SE	15	0	12.7	9.86	93.0	87	6.18
MEL18FHNFMT4203	12	95	N	10	0	12.5	9.92	93.2	86	6.79
MEL18FHNFMT4204	17	90	N	10	0	12.5	9.92	93.2	86	6.79
MEL18FHNFMT4206	10	70	NE	60	0	12.4	11.39	106.8	93	7.37
MEL18FHNFMT4207	10	70	NE	60	0	12.4	11.39	106.8	93	7.37
MEL18FHNFMT4208	10	0	W	20	0	12.2	10.83	100.9	94	5.93
MEL18FHNFMT4209	10	100	NW	20	0	12.7	10.57	99.6	89	6.22
MEL18FHNFMT4210	10	100	NW	20	0	12.7	10.57	99.6	89	6.22
MEL18FHNFMT4211	10	100	NW	20	0	12.7	10.57	99.6	89	6.22
MEL18FHNFMT4212	14	10	W	25	0	12.6	9.87	93.4	92	6.97
MEL18FHNFMT4213	14	10	W	25	0	12.6	9.87	93.4	92	6.97
MEL18FHNFMT4214	14	10	W	25	0	12.6	9.87	93.4	92	6.97
MEL18FHNFMT4215	12	50	SE	15	0	10.2	10.20	90.8	89	7.05
MEL18FHNFMT4216	12	50	SE	15	0	10.2	10.20	90.8	89	7.05
MEL18FHNFMT4217	12	50	SE	15	0	10.2	10.20	90.8	89	7.05
MEL18FHNFMT4218	8	75	N	55	0	10.9	11.00	99.3	106	6.79
MEL18FHRA1MT5200	15	60	-	0	0	12.60	10.48	98.4	72	7.25
MEL18FHRA1MT5201	15	60	-	0	0	12.60	10.48	98.4	72	7.25
MEL18FHRA1MT5202	15	60	-	0	0	12.60	10.48	98.4	72	7.25
MEL18FHRA1MT5203	10	100	-	35	light	11.50	10.56	97.2	79	7.34
MEL18FHRA1MT5204	10	100	-	35	light	11.50	10.56	97.2	79	7.34
MEL18FHRA1MT5205	10	100	-	35	light	11.50	10.56	97.2	79	7.34
MEL18FHRA1MT5206	10	0	W	20	0	10.80	12.00	108.4	71	7.24
MEL18FHRA1MT5207	10	0	W	20	0	10.80	12.00	108.4	71	7.24
MEL18FHRA1MT5208	10	0	W	20	0	10.80	12.00	108.4	71	7.24
MEL18FHRA1MT5209	10	60	SE	20	0	11.30	11.01	100.5	72	6.09
MEL18FHRA1MT5210	10	60	SE	20	0	11.30	11.01	100.5	72	6.09
MEL18FHRA1MT5211	10	60	SE	20	0	11.30	11.01	100.5	72	6.09
MEL18FHRA1MT5212	10	100	NW	50	0	11.20	10.28	93.6	75	6.47
MEL18FHRA1MT5213	10	100	NW	50	0	11.20	10.28	93.6	75	6.47
MEL18FHRA1MT5214	10	100	NW	50	0	11.20	10.28	93.6	75	6.47
MEL18FHRA1DP5215	12	10	W	25	0	10.40	11.29	101.1	76	6.4
MEL18FHRA1MT5216	8	10	N	60	0	9.00	9.19	85.7	77	6.81
MEL18FHRA1MT5217	8	10	N	60	0	9.00	9.19	85.7	77	6.81
MEL18FHRA1MT5218	8	10	N	60	0	9.00	9.19	85.7	77	6.81

°C = degree Celsius; % = percent; km/h = kilometre per hour; mg/L = milligram per litre; µS/cm = microsiemen per centimetre; N = north; NE = northeast; NW = northwest; S = south; - = not recorded or not applicable.

APPENDIX 10B

Survey Data

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4018	62	1.884	0.79
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4019	45	0.711	0.78
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4020	52	1.111	0.79
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4021	68	3.427	1.09
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4022	36	0.491	1.05
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4023	66	2.490	0.87
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4024	47	1.014	0.98
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4025	47	1.020	0.98
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4026	45	0.758	0.83
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4027	46	1.005	1.03
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4028	63	2.825	1.13
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4029	58	1.922	0.99
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4030	54	0.969	0.62
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4031	54	1.078	0.68
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4032	65	2.475	0.90
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4033	58	1.579	0.81
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4034	50	1.051	0.84
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4035	56	1.455	0.83
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4036	52	1.084	0.77
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4037	50	1.120	0.90
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4038	46	0.972	1.00
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4039	42	0.645	0.87
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4040	61	2.258	0.99
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4041	73	3.477	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4042	46	1.016	1.04
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4043	54	1.379	0.88
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4044	41	0.670	0.97
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4045	55	1.393	0.84
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4046	50	0.970	0.78

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4047	57	1.539	0.83
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4048	65	2.876	1.05
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4049	66	2.593	0.90
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4050	46	0.998	1.03
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4051	52	1.418	1.01
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4052	46	0.891	0.92
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4053	62	2.168	0.91
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4054	67	2.257	0.75
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4055	64	2.592	0.99
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4056	44	0.851	1.00
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4057	54	1.420	0.90
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4058	43	0.705	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4059	63	2.334	0.93
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4060	46	0.813	0.84
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4061	43	0.664	0.84
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4062	65	2.018	0.73
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4063	52	1.266	0.90
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4064	46	0.976	1.00
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4065	51	1.137	0.86
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4066	42	0.710	0.96
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4067	48	0.968	0.88
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4068	65	2.329	0.85
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4069	58	1.701	0.87
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4070	47	0.922	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4071	47	0.842	0.81
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4072	50	1.121	0.90
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4073	60	1.854	0.86
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4074	54	1.699	1.08
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4075	46	0.822	0.84

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4076	61	2.670	1.18
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4077	50	0.937	0.75
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4078	56	1.561	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4079	45	0.920	1.01
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4080	47	0.844	0.81
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4081	63	1.991	0.80
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4082	39	0.587	0.99
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4083	49	0.920	0.78
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4084	56	1.307	0.74
08/08/18	NF	Minnow Trap	ML18FHNFMT4200	ML18UNFTHST4085	45	0.876	0.96
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4086	66	2.363	0.82
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4087	48	0.997	0.90
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4088	63	2.567	1.03
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4089	62	2.628	1.10
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4090	56	1.691	0.96
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4091	63	2.350	0.94
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4092	67	2.691	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4093	45	0.807	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4094	51	1.043	0.79
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4095	55	1.551	0.93
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4096	67	2.823	0.94
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4097	65	2.358	0.86
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4098	43	0.824	1.04
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4099	55	1.661	1.00
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4100	42	0.712	0.96
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4101	47	0.879	0.85
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4102	61	1.960	0.86
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4103	45	0.809	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4104	41	0.644	0.93

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4105	44	0.706	0.83
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4106	52	1.120	0.80
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4107	53	1.216	0.82
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4108	43	0.705	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4109	65	1.973	0.72
08/08/18	NF	Minnow Trap	ML18FHNFMT4201	ML18UNFTHST4110	62	2.418	1.01
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4111	71	3.391	0.95
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4112	73	3.542	0.91
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4113	49	0.892	0.76
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4114	73	3.450	0.89
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4115	71	3.295	0.92
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4116	55	1.256	0.75
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4117	62	2.385	1.00
08/08/18	NF	Minnow Trap	ML18FHNFMT4202	ML18UNFTHST4118	64	2.372	0.90
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4134	63	1.867	0.75
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4135	63	2.685	1.07
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4136	64	2.538	0.97
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4137	59	2.103	1.02
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4138	60	2.332	1.08
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4139	75	4.909	1.16
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4140	60	1.803	0.83
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4141	60	2.776	1.29
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4142	65	2.881	1.05
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4143	65	2.330	0.85
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4144	70	3.262	0.95
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4145	45	1.080	1.19
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4146	66	2.820	0.98
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4147	55	1.417	0.85
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4148	44	0.843	0.99

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4149	64	2.935	1.12
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4150	51	1.305	0.98
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4151	63	2.593	1.04
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4152	52	1.518	1.08
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4153	55	1.558	0.94
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4154	64	2.616	1.00
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4155	56	1.856	1.06
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4156	71	2.760	0.77
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4157	53	1.324	0.89
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4158	72	3.647	0.98
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4159	65	3.123	1.14
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4160	70	2.611	0.76
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4161	61	2.053	0.90
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4162	56	1.499	0.85
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4163	60	1.713	0.79
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4164	50	1.027	0.82
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4165	52	1.025	0.73
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4166	48	1.059	0.96
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4167	51	1.025	0.77
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4168	51	-	-
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4169	51	1.092	0.82
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4170	41	0.631	0.92
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4171	46	0.817	0.84
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4172	45	0.828	0.91
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4173	49	0.977	0.83
09/08/18	NF	Minnow Trap	ML18FHNFMT4203	ML18UNFTHST4174	45	0.769	0.84
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4199	58	1.658	0.85
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4200	46	1.142	1.17
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4201	66	2.819	0.98

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4202	57	1.920	1.04
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4203	38	0.589	1.07
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4204	63	2.095	0.84
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4205	65	3.165	1.15
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4206	62	2.240	0.94
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4207	52	1.326	0.94
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4208	48	0.975	0.88
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4209	55	1.600	0.96
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4210	41	0.613	0.89
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4211	49	1.064	0.90
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4212	39	0.580	0.98
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4213	46	0.846	0.87
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4214	46	0.713	0.73
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4215	43	0.643	0.81
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4216	44	0.654	0.77
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4217	51	1.178	0.89
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4218	43	0.682	0.86
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4219	44	0.835	0.98
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4220	56	1.816	1.03
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4221	44	1.027	1.21
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4222	47	1.269	1.22
13/08/18	NF	Minnow Trap	ML18FHNFMT4207	ML18UNFTHST4223	42	0.813	1.10
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4224	69	2.996	0.91
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4225	48	0.921	0.83
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4226	66	2.879	1.00
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4227	51	1.194	0.90
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4228	69	3.078	0.94
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4229	48	0.856	0.77
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4230	71	3.265	0.91

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4231	52	0.963	0.68
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4232	62	2.393	1.00
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4233	49	0.966	0.82
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4234	73	3.205	0.82
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4235	44	0.752	0.88
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4236	47	0.872	0.84
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4237	69	2.968	0.90
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4238	45	0.740	0.81
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4239	70	2.714	0.79
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4240	47	0.954	0.92
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4241	67	2.961	0.98
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4242	56	1.835	1.04
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4243	44	0.828	0.97
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4244	56	1.419	0.81
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4245	70	2.965	0.86
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4246	41	0.750	1.09
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4247	40	0.720	1.13
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4248	54	1.294	0.82
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4249	43	0.794	1.00
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4250	48	0.813	0.74
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4251	53	1.028	0.69
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4252	44	0.823	0.97
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4253	47	0.845	0.81
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4254	52	0.825	0.59
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4255	55	1.367	0.82
13/08/18	NF	Minnow Trap	ML18FHNFMT4206	ML18UNFTHST4256	44	0.695	0.82
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4271	60	1.819	0.84
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4273	64	2.503	0.95
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4274	60	2.159	1.00

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4275	65	2.470	0.90
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4276	69	3.593	1.09
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4277	51	1.586	1.20
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4282	57	1.668	0.90
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4284	39	0.518	0.87
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4285	38	0.526	0.96
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4286	41	0.591	0.86
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4287	62	2.203	0.92
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4289	63	2.225	0.89
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4290	66	2.445	0.85
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4291	62	2.222	0.93
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4292	62	2.209	0.93
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4293	56	2.216	1.26
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4294	63	2.404	0.96
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4295	51	0.823	0.62
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4296	53	1.061	0.71
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4297	58	1.755	0.90
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4298	61	2.631	1.16
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4299	63	1.993	0.80
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4300	60	1.814	0.84
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4301	63	2.273	0.91
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4302	54	1.299	0.82
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	ML18UNFTHST4303	53	1.282	0.86
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4314	47	0.741	0.71
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4315	45	0.800	0.88
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4316	71	3.083	0.86
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4317	66	2.507	0.87
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4318	50	0.898	0.72
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4319	60	1.834	0.85

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4320	68	-	-
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4321	47	1.023	0.99
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4322	64	1.981	0.76
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4323	48	0.960	0.87
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4324	52	1.496	1.06
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4325	66	2.530	0.88
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4326	47	0.839	0.81
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4327	47	0.918	0.88
16/08/18	NF	Minnow Trap	ML18FHNFMT4210	ML18UNFTHST4328	48	0.915	0.83
18/08/18	NF	Minnow Trap	ML18FHNFMT4212	ML18UNFTHST4329	57	1.626	0.88
18/08/18	NF	Minnow Trap	ML18FHNFMT4212	ML18UNFTHST4330	61	2.080	0.92
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4331	64	2.228	0.85
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4332	70	2.934	0.86
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4333	63	2.685	1.07
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4334	64	2.563	0.98
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4335	65	3.214	1.17
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4336	67	3.039	1.01
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4337	68	2.023	0.64
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4338	65	2.509	0.91
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4339	53	1.223	0.82
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4340	65	2.014	0.73
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4341	52	1.156	0.82
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4342	50	1.090	0.87
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4343	57	1.323	0.71
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4344	70	2.711	0.79
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4345	67	2.476	0.82
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4346	57	1.531	0.83
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4347	69	2.834	0.86
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4348	62	2.318	0.97

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4349	60	2.105	0.97
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4350	71	2.903	0.81
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4351	59	2.209	1.08
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4352	60	1.700	0.79
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4353	62	2.151	0.90
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4354	59	1.344	0.65
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4355	49	0.921	0.78
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4356	51	0.920	0.69
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4357	62	1.908	0.80
18/08/18	NF	Minnow Trap	ML18FHNFMT4214	ML18UNFTHST4358	64	2.087	0.80
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4386	47	0.684	0.68
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4389	64	2.622	1.00
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4390	64	2.085	0.80
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4391	65	2.384	0.87
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4392	66	2.411	0.84
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4393	47	1.032	0.99
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4394	54	1.540	0.98
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4395	62	2.121	0.89
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4396	60	1.781	0.82
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4397	54	1.408	0.89
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4398	64	2.516	0.96
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4399	65	2.780	1.01
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4400	52	1.373	0.98
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4401	66	2.833	0.99
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4402	69	2.782	0.85
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4403	64	2.465	0.94
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4404	59	2.398	1.17
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4405	56	1.932	1.10
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4406	65	2.311	0.84

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4407	60	2.137	0.99
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4408	50	1.036	0.83
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4409	51	1.271	0.96
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4410	69	2.427	0.74
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4411	67	2.609	0.87
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4412	65	2.563	0.93
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4413	57	2.092	1.13
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4414	48	1.088	0.98
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4415	58	1.824	0.93
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4416	63	2.328	0.93
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4417	49	1.256	1.07
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4418	47	1.109	1.07
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4419	60	-	-
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4420	60	1.889	0.87
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4421	59	2.062	1.00
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4422	51	1.039	0.78
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4423	70	3.019	0.88
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4424	66	2.760	0.96
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4425	65	2.086	0.76
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4426	60	2.116	0.98
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4427	50	1.104	0.88
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4428	51	1.161	0.88
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4429	47	0.910	0.88
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4430	62	1.882	0.79
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4431	40	0.667	1.04
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4432	39	0.569	0.96
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4433	41	0.782	1.13
19/08/18	NF	Minnow Trap	ML18FHNFMT4215	ML18UNFTHST4434	50	0.996	0.80
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4440	56	1.700	0.97

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4441	59	2.010	0.98
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4442	57	1.811	0.98
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4443	65	2.760	1.01
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4444	55	1.230	0.74
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4445	64	2.682	1.02
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4446	63	2.530	1.01
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4447	70	3.521	1.03
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4448	63	2.174	0.87
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4449	67	3.073	1.02
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4450	59	2.141	1.04
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4451	55	1.281	0.77
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4452	46	0.934	0.96
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4453	49	0.964	0.82
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4454	67	2.568	0.85
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4455	60	1.950	0.90
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4456	61	1.855	0.82
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4457	46	1.105	1.14
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4458	70	3.401	0.99
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4459	51	1.179	0.89
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4460	52	1.306	0.93
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4461	47	0.921	0.89
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4462	49	1.041	0.88
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4463	41	0.711	1.03
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4464	48	0.977	0.88
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4465	55	1.411	0.85
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4466	63	2.576	1.03
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4467	59	2.356	1.15
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4468	64	2.633	1.00
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4469	59	2.001	0.97

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4470	62	2.791	1.17
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4471	53	1.805	1.21
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4472	56	1.864	1.06
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4473	40	-	-
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4474	42	0.724	0.98
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4475	41	0.820	1.19
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4476	37	0.570	1.13
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4477	38	0.703	1.28
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4478	39	0.605	1.02
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4479	44	0.763	0.90
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4480	49	0.840	0.71
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4481	50	0.958	0.77
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4482	55	1.385	0.83
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4483	60	2.043	0.95
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4484	55	1.402	0.84
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4485	65	1.967	0.72
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4486	54	1.407	0.89
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4487	54	1.133	0.72
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4488	50	1.019	0.82
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4489	59	2.191	1.07
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4490	60	1.928	0.89
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4491	59	1.948	0.95
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4492	44	0.744	0.87
19/08/18	NF	Minnow Trap	ML18FHNFMT4216	ML18UNFTHST4493	45	0.853	0.94
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4494	45	0.880	0.97
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4495	55	1.456	0.88
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4496	47	0.746	0.72
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4497	56	1.573	0.90
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4498	55	1.673	1.01

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4499	66	2.596	0.90
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4500	66	3.029	1.05
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4501	56	1.441	0.82
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4502	48	0.814	0.74
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4503	63	2.044	0.82
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4504	56	1.754	1.00
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4505	65	2.892	1.05
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4506	63	1.976	0.79
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4507	47	0.908	0.87
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4508	45	0.802	0.88
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4509	56	1.706	0.97
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4510	45	0.765	0.84
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4511	56	-	-
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4512	47	0.855	0.82
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4513	66	2.451	0.85
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4514	55	1.230	0.74
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4515	68	2.350	0.75
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4516	46	1.006	1.03
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4517	65	2.066	0.75
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4518	52	1.284	0.91
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4519	68	2.471	0.79
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4520	62	2.001	0.84
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4521	47	0.926	0.89
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4522	58	1.404	0.72
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4523	70	2.864	0.83
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4524	52	1.224	0.87
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4525	60	1.833	0.85
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4526	49	0.924	0.79
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4527	48	0.984	0.89

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4528	48	0.883	0.80
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4529	58	1.655	0.85
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4530	67	2.873	0.96
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4531	45	0.742	0.81
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4532	46	-	-
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4533	68	2.953	0.94
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4534	46	0.940	0.97
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4535	47	0.894	0.86
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4536	63	2.195	0.88
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4537	47	0.785	0.76
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4538	52	1.090	0.78
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4539	58	1.785	0.91
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4540	50	0.914	0.73
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4541	51	1.206	0.91
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4542	50	1.156	0.92
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4543	46	-	-
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4544	46	0.682	0.70
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4545	46	0.733	0.75
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4546	50	0.856	0.68
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4547	64	2.012	0.77
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4548	55	1.254	0.75
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4549	46	0.837	0.86
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4550	45	0.846	0.93
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4551	45	0.726	0.80
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4552	58	1.540	0.79
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4553	38	0.533	0.97
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4554	52	1.170	0.83
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4555	51	1.170	0.88
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4556	50	0.982	0.79

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4557	46	0.823	0.85
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4559	53	1.215	0.82
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4560	46	0.838	0.86
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4569	44	0.706	0.83
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4570	43	0.753	0.95
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4571	42	0.706	0.95
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4572	41	0.698	1.01
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4573	45	0.565	0.62
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	ML18UNFTHST4574	44	0.743	0.87
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5059	68	2.844	0.90
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5060	64	2.473	0.94
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5061	57	1.425	0.77
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5062	69	2.201	0.67
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5063	41	0.526	0.76
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5064	50	0.911	0.73
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5065	50	0.935	0.75
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5066	54	1.053	0.67
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5067	47	0.850	0.82
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5068	65	2.390	0.87
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5069	59	1.621	0.79
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5070	46	0.786	0.81
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5071	45	0.909	1.00
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5072	47	-	-
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5073	51	0.954	0.72
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5074	49	0.861	0.73
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5075	46	1.037	1.07
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	ML18URA1THST5076	54	1.104	0.70
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	ML18URA1THST5079	49	0.958	0.81
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	ML18URA1THST5080	50	1.029	0.82

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	ML18URA1THST5081	47	0.842	0.81
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	ML18URA1THST5082	47	1.076	1.04
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	ML18URA1THST5083	44	0.746	0.88
12/08/18	RA1	Minnow Trap	ML18FHRA1MT5204	ML18URA1THST5091	52	1.424	1.01
12/08/18	RA1	Minnow Trap	ML18FHRA1MT5205	ML18URA1THST5092	43	0.896	1.13
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5093	46	0.888	0.91
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5094	66	2.360	0.82
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5095	44	0.727	0.85
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5096	54	1.201	0.76
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5097	41	0.654	0.95
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5098	38	0.483	0.88
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5099	63	2.305	0.92
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5100	68	3.093	0.98
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5101	48	0.954	0.86
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5103	61	1.948	0.86
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5104	66	2.271	0.79
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5105	51	1.174	0.89
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5106	46	0.784	0.81
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5107	42	0.593	0.80
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5108	59	1.744	0.85
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5109	46	0.864	0.89
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5110	45	0.832	0.91
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5111	46	0.821	0.84
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5112	45	0.742	0.81
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5113	47	1.188	1.14
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5114	45	0.819	0.90
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5115	45	0.851	0.93
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5116	47	0.756	0.73
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5118	62	2.717	1.14

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5119	47	0.962	0.93
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5120	42	0.634	0.86
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5121	52	1.150	0.82
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5122	59	1.897	0.92
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5123	47	0.866	0.83
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5124	57	1.412	0.76
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5125	47	1.016	0.98
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5126	53	1.358	0.91
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5127	41	0.717	1.04
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5128	42	0.734	0.99
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5129	59	1.755	0.85
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5130	57	1.805	0.97
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5131	44	0.824	0.97
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5132	41	0.719	1.04
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5133	51	1.281	0.97
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5134	46	0.865	0.89
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5135	47	1.235	1.19
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5136	47	0.933	0.90
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5137	50	1.164	0.93
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5138	44	0.760	0.89
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5139	47	0.929	0.89
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5140	44	0.726	0.85
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5141	47	1.067	1.03
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5142	42	0.681	0.92
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5143	41	0.625	0.91
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5144	42	0.656	0.89
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5145	44	0.870	1.02
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5146	47	1.053	1.01
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5147	46	0.712	0.73

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5148	42	0.743	1.00
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5149	41	0.571	0.83
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5150	44	0.870	1.02
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5151	50	1.007	0.81
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5152	45	-	-
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5153	44	1.092	1.28
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5154	49	-	-
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5155	42	0.677	0.91
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5156	40	0.674	1.05
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5157	38	0.530	0.97
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5158	42	0.733	0.99
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5159	45	0.831	0.91
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5160	45	0.794	0.87
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5161	33	0.316	0.88
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5162	41	0.660	0.96
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5163	41	0.681	0.99
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	ML18URA1THST5164	46	0.900	0.92
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5166	42	0.705	0.95
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5167	70	3.971	1.16
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5168	42	0.737	0.99
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5169	66	2.416	0.84
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5170	66	-	-
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5171	50	1.013	0.81
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5172	49	1.086	0.92
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5173	65	2.353	0.86
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5207	ML18URA1THST5174	44	0.867	1.02
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5175	45	0.976	1.07
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5176	57	1.585	0.86
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5177	69	2.512	0.76

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5178	67	2.756	0.92
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5179	52	1.092	0.78
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5180	47	0.874	0.84
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5181	47	1.046	1.01
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5182	72	3.166	0.85
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5183	67	2.378	0.79
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5184	71	3.041	0.85
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5185	48	0.972	0.88
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5186	45	0.773	0.85
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	ML18URA1THST5187	41	0.560	0.81
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5201	47	-	-
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5202	64	2.486	0.95
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5203	63	2.287	0.91
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5205	60	2.060	0.95
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5206	50	1.092	0.87
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5207	47	1.069	1.03
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5208	67	2.521	0.84
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5209	49	1.161	0.99
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5210	51	1.188	0.90
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5211	56	1.618	0.92
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5212	54	1.377	0.87
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	ML18URA1THST5213	45	0.806	0.88
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5210	ML18URA1THST5214	52	1.197	0.85
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5210	ML18URA1THST5215	43	0.732	0.92
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5210	ML18URA1THST5216	45	0.738	0.81
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5217	51	1.396	1.05
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5218	48	0.992	0.90
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5219	44	0.792	0.93
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5220	46	0.922	0.95

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5221	46	0.918	0.94
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5222	51	1.035	0.78
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5223	47	0.860	0.83
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5211	ML18URA1THST5224	45	0.844	0.93
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5212	ML18URA1THST5226	47	0.893	0.86
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5212	ML18URA1THST5243	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5212	ML18URA1THST5244	46	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5212	ML18URA1THST5245	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5212	ML18URA1THST5246	45	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5247	57	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5248	52	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5249	57	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5250	74	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5251	71	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5252	58	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5253	53	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5254	45	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	ML18URA1THST5255	51	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5256	66	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5257	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5258	56	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5259	48	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5260	45	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5261	62	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5262	79	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5263	55	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5264	55	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5265	67	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5266	45	-	-

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5267	46	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5268	54	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5269	65	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5270	51	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5271	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5272	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5273	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5274	64	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5275	55	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5276	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5277	47	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5278	48	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5214	ML18URA1THST5279	45	-	-
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5215	ML18URA1THST5280	47	-	-
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5286	49	1.048	0.89
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5287	62	2.197	0.92
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5288	49	1.102	0.94
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5289	49	1.027	0.87
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5290	48	0.912	0.82
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5291	63	2.040	0.82
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5293	49	1.075	0.91
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5294	65	2.494	0.91
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5295	42	0.650	0.88
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5296	53	1.369	0.92
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5297	49	1.071	0.91
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5298	49	1.056	0.90
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5299	55	1.418	0.85
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5300	47	1.126	1.08
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	ML18URA1THST5301	55	1.305	0.78

Table 10B-1: Survey Data for Threespine Stickleback Sampled Using Non-Lethal Methods During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5304	45	1.018	1.12
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5305	51	1.114	0.84
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5306	64	2.608	0.99
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5307	49	1.065	0.91
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5308	47	0.895	0.86
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5309	47	0.922	0.89
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5310	62	1.971	0.83
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5311	59	1.393	0.68
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5312	60	1.983	0.92
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5313	55	1.527	0.92
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5314	44	0.958	1.12
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5315	47	0.897	0.86
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5316	51	1.000	0.75
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5317	45	0.903	0.99
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5318	47	0.968	0.93
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5216	ML18URA1THST5319	47	0.759	0.73

d = day; m = month; y = year; NF = Near-field; RA1 = Reference Area 1; mm = millimetre; g = gram; - = not recorded.

Table 10B-2: Survey Data for Bycatch Captured During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Gear	Effort Number	Species	Fish Identification Number	Total Length (mm)	Body Weight (g)	Condition Factor
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	NNST	ML18UNFNNST4259	59.7	1.471	0.69
14/08/18	NF	Minnow Trap	ML18FHNFMT4208	NNST	ML18UNFNNST4272	59.0	1.044	0.51
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	NNST	ML18UNFNNST4283	52.0	1.077	0.77
15/08/18	NF	Minnow Trap	ML18FHNFMT4208	NNST	ML18UNFNNST4288	60.0	1.220	0.56
20/08/18	NF	Minnow Trap	ML18FHNFMT4218	NNST	ML18UNFNNST4558	56.0	1.080	0.61
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5200	NNST	ML18URA1NNST5084	52.0	0.950	0.68
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5200	NNST	ML18URA1NNST5085	56.0	0.981	0.56
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5200	NNST	ML18URA1NNST5086	52.0	0.864	0.61
10/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	NNST	ML18URA1NNST5038	64.0	1.406	0.54
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	NNST	ML18URA1NNST5077	59	1.198	0.58
11/08/18	RA1	Minnow Trap	ML18FHRA1MT5201	NNST	ML18URA1NNST5078	67	1.497	0.50
10/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	NNST	ML18URA1NNST5033	46.0	0.760	0.78
10/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	NNST	ML18URA1NNST5034	55.0	0.999	0.60
10/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	NNST	ML18URA1NNST5035	63.0	1.294	0.52
10/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	NNST	ML18URA1NNST5036	56.0	0.924	0.53
10/08/18	RA1	Minnow Trap	ML18FHRA1MT5202	NNST	ML18URA1NNST5037	61.0	1.199	0.53
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	NNST	ML18URA1NNST5102	54.0	0.962	0.61
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	NNST	ML18URA1NNST5117	56.0	0.994	0.57
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5206	BURB	ML18URA1BURB5165	128.0	11.407	0.54
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	NNST	ML18URA1NNST5188	56	0.959	0.55
14/08/18	RA1	Minnow Trap	ML18FHRA1MT5208	SLSC	ML18URA1SLSC5189	88.0	6.771	0.99
15/08/18	RA1	Minnow Trap	ML18FHRA1MT5209	NNST	ML18URA1NNST5204	65.0	1.395	0.51
17/08/18	RA1	Minnow Trap	ML18FHRA1MT5213	NNST	ML18URA1NNST5242	54.0	1.049	0.67
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5217	NNST	ML18URA1NNST5292	56.0	1.170	0.67
20/08/18	RA1	Minnow Trap	ML18FHRA1MT5218	NNST	ML18URA1NNST5302	62.0	1.299	0.55

d = day; m = month; y = year; NF = Near-field; RA1 = Reference Area 1; NNST = Ninespine Stickleback; BURB = Burbot; SLSC = Slimy Sculpin; mm = millimetre; g = gram; - = not recorded or not applicable.

Table 10B-3: Survey Data for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Carcass Weight (g)	Parasite Weight[(a)] (g)	Condition Factor	Age[(b)]	Sex	Life Stage	Maturity[(c)]	Liver Weight (g)	Gonad Weight (g)	Fecundity	Mean Egg Weight (mg)	Mean Egg Diameter (µm)
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4000	71.2	3.603	2.420	0.482	1.00	3	F	A	13	0.077	0.242	2750	0.088	608.000
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4001	61.1	2.142	1.521	0.347	0.94	4	F	A	12	0.063	0.036	715	0.050	319.000
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4002	59.4	1.815	1.279	0.292	0.87	-	M	A	25	0.027	0.010	-	-	-
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4003	48.5	0.874	0.720	-	0.77	2	F	A	12	0.023	0.010	-	-	-
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4004	65.1	2.725	1.957	0.412	0.99	-	M	A	23	0.047	0.020	-	-	-
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4005	49.6	1.065	0.744	0.175	0.87	2	M	A	22	0.030	-	-	-	-
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4006	69.6	3.045	2.133	0.444	0.90	4	F	A	13	0.082	0.104	3140	0.033	320.000
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4007	67.1	2.512	1.841	0.343	0.83	-	F	A	12	0.059	0.038	-	-	-
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4008	60.8	2.121	1.484	0.407	0.94	-	M	A	25	0.043	0.016	-	-	-
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4009	52.2	1.410	0.917	0.311	0.99	-	M	A	25	0.028	0.006	-	-	-
08/08/18	NF	ML18FHNFMT4200	ML18UNFTHST4010	53.3	1.275	1.137	-	0.84	3	M	A	25	0.018	0.007	-	-	-
08/08/18	NF	ML18FHNFMT4201	ML18UNFTHST4011	63.0	2.118	1.564	0.331	0.85	-	M	A	22	0.057	0.016	-	-	-
08/08/18	NF	ML18FHNFMT4201	ML18UNFTHST4012	67.3	2.695	1.968	0.309	0.88	-	F	A	13	0.068	0.097	2362	0.041	333.000
08/08/18	NF	ML18FHNFMT4201	ML18UNFTHST4013	66.0	2.798	1.946	0.316	0.97	-	F	A	13	0.122	0.143	2888	0.050	316.000
08/08/18	NF	ML18FHNFMT4201	ML18UNFTHST4014	43.1	0.709	0.462	0.132	0.89	-	M	A	22	0.011	0.007	-	-	-
08/08/18	NF	ML18FHNFMT4202	ML18UNFTHST4015	73.7	3.649	2.611	0.436	0.91	-	F	A	13	0.082	0.102	3845	0.027	339.000
08/08/18	NF	ML18FHNFMT4202	ML18UNFTHST4016	62.4	2.461	1.587	0.370	1.01	-	F	A	13	0.045	0.193	2906	0.066	274.000
08/08/18	NF	ML18FHNFMT4202	ML18UNFTHST4017	52.4[(d)]	1.059	0.846	-	0.74	-	F	A	12	0.047	0.016	-	-	-
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4119	69.6	3.084	2.092	0.361	0.91	4	F	A	16	0.119	0.179	2592	0.069	306.000
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4120	65.6	2.669	2.031	-	0.94	1	F	A	13	0.129	0.155	1502	0.103	438.000
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4121	61.9	1.714	1.391	-	0.72	3	M	A	23	0.069	0.013	-	-	-
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4122	57.0	1.523	1.062	0.203	0.82	-	F	A	12	0.072	0.015	-	-	-
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4123	58.1	1.869	1.429	0.217	0.95	-	M	A	23	0.095	0.005	-	-	-
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4124	60.2	1.859	1.605	-	0.85	4	M	A	25	0.038	0.006	-	-	-
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4125	65.5	2.352	1.714	0.356	0.84	-	M	A	23	0.037	0.014	-	-	-
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4126	60.4	2.050	1.342	0.305	0.93	-	F	A	13	0.052	0.032	2081	0.016	338.000
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4127	57.4	1.489	1.290	-	0.79	5	M	A	23	0.032	0.011	-	-	-
09/08/18	NF	ML18FHNFMT4203	ML18UNFTHST4128	59.2	1.956	1.341	0.358	0.94	-	F	A	13	0.049	0.052	2206	0.024	398.000
09/08/18	NF	ML18FHNFMT4204	ML18UNFTHST4129	40.0	0.518	0.318	0.114	0.81	-	F	J	11	0.012	0.004	-	-	-
09/08/18	NF	ML18FHNFMT4204	ML18UNFTHST4130	62.4	2.656	1.718	0.552	1.09	-	M	A	23	0.063	0.013	-	-	-
09/08/18	NF	ML18FHNFMT4204	ML18UNFTHST4131	53.7	1.411	1.166	-	0.91	2	F	A	16	0.053	0.023	1337	0.017	250.000
09/08/18	NF	ML18FHNFMT4204	ML18UNFTHST4132	68.1	2.853	2.051	0.303	0.90	-	F	A	13	0.071	0.146	1990	0.074	305.000
09/08/18	NF	ML18FHNFMT4204	ML18UNFTHST4133	39.1	0.480	0.394	-	0.80	2	M	J	21	0.018	-	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4175	69.8	3.036	2.153	0.395	0.89	-	F	A	13	0.066	0.102	2724	0.038	298.000
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4176	67.0	2.667	1.867	0.306	0.89	-	F	A	13	0.069	0.091	2785	0.033	309.000
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4177	56.4	1.595	1.402	-	0.89	3	M	A	25	0.025	0.007	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4178	50.4	1.073	0.871	-	0.84	2	F	A	12	0.045	0.012	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4179	44.9	0.667	0.547	-	0.74	2	M	J	21	0.016	0.002	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4180	54.2	1.297	1.087	-	0.81	4	M	A	24	0.036	0.011	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4181	60.5	2.050	1.529	0.265	0.93	-	M	A	23	0.075	0.006	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4182	54.9	1.334	1.087	-	0.81	3	M	A	22	0.052	0.021	-	-	-

Table 10B-3: Survey Data for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Carcass Weight (g)	Parasite Weight[(a)] (g)	Condition Factor	Age[(b)]	Sex	Life Stage	Maturity[(c)]	Liver Weight (g)	Gonad Weight (g)	Fecundity	Mean Egg Weight (mg)	Mean Egg Diameter (µm)
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4183	35.5	0.378	0.298	-	0.85	1	F	J	11	0.013	0.002	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4184	42.6	0.673	0.460	0.141	0.87	-	F	A	12	0.012	0.007	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4185	66.6	2.826	2.037	0.417	0.96	-	M	A	23	0.067	0.019	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4186	46.1	1.056	0.688	0.239	1.08	-	M	A	22	0.024	0.012	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4187	44.3	0.778	0.487	0.180	0.90	2	F	J	11	0.015	0.006	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4188	53.3	1.082	0.879	0.028	0.71	-	F	A	12	0.039	0.018	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4189	65.3	2.707	1.784	0.494	0.97	-	F	A	13	0.066	0.090	3274	0.027	307.000
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4190	62.8	2.299	1.681	0.381	0.93	-	M	A	23	0.035	0.011	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4191	42.0	0.699	0.459	0.157	0.95	-	F	J	11	0.014	0.006	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4192	58.6	1.689	1.458	-	0.84	4	M	A	23	0.056	0.010	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4193	58.4	1.816	1.291	0.255	0.91	-	F	A	13	0.044	0.040	2561	0.016	296.000
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4194	44.0	0.653	0.552	-	0.77	2	M	J	21	0.032	0.001	-	-	-
13/08/18	NF	ML18FHNFMT4207	ML18UNFTHST4195	48.7	1.068	0.838	-	0.93	1	F	A	12	0.049	0.019	-	-	-
13/08/18	NF	ML18FHNFMT4206	ML18UNFTHST4196	55.4	1.718	1.093	0.448	1.01	-	M	A	23	0.022	0.008	-	-	-
13/08/18	NF	ML18FHNFMT4207	ML18UNFTHST4197	41.7	0.688	0.443	0.153	0.95	-	U	J	01	0.015	0.007	-	-	-
13/08/18	NF	ML18FHNFMT4207	ML18UNFTHST4198	61.2	2.542	1.692	0.550	1.11	-	M	A	23	0.054	0.014	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4257	63.7	1.899	1.571	-	0.73	-	M	A	24	0.053	0.014	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4258	58.9	1.626	1.431	-	0.80	3	M	A	23	0.044	0.006	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4260	48.3	0.816	0.681	-	0.73	2	F	A	12	0.027	0.014	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4261	60.0	1.661	1.444	-	0.77	4	M	A	25	0.024	0.006	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4262	60.6	1.835	1.567	-	0.83	3	M	A	22	0.059	0.035	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4263	48.7	0.847	0.695	-	0.73	2	F	A	12	0.027	0.012	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4264	59.1	1.518	1.305	-	0.74	3	M	A	23	0.048	0.012	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4265	35.4	0.361	0.282	-	0.81	2	M	J	21	0.012	-	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4266	48.7	1.003	0.733	0.193	0.87	-	M	A	27	0.022	0.009	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4267	47.6	0.978	0.655	0.200	0.91	-	F	A	12	0.020	0.009	-	-	-
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4268	69.3	2.996	2.139	0.339	0.90	-	F	A	13	0.081	0.143	3013	0.048	321.000
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4269	67.7	2.438	1.852	0.182	0.79	-	F	A	13	0.063	0.1026[(f)]	3427	0.030	344.000
14/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4270	61.7	1.987	1.310	0.428	0.84	-	F	A	12	0.036	0.030	-	-	-
15/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4278	61.0	1.749	1.478	-	0.77	4	M	A	24	0.034	0.012	-	-	-
15/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4279	43.9	0.732	-	-	0.87	2	M	J	21	0.023	0.001	-	-	-
15/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4280	45.4	0.750	0.620	-	0.80	2	F	A	12	0.025	0.007	-	-	-
15/08/18	NF	ML18FHNFMT4208	ML18UNFTHST4281	49.1	0.991[(e)]	0.730	0.131	0.84	2	F	A	12	0.027	0.010	-	-	-
16/08/18	NF	ML18FHNFMT4209	ML18UNFTHST4304	51.8	1.020	0.845	-	0.73	1	F	A	12	0.030	0.015	1338	0.011	255.000
16/08/18	NF	ML18FHNFMT4209	ML18UNFTHST4305	65.1	2.234	1.998	-	0.81	4	M	A	23	0.066	0.018	-	-	-
16/08/18	NF	ML18FHNFMT4211	ML18UNFTHST4306	56.8	1.768	1.371	0.275	0.97	-	M	A	23	0.026	0.010	-	-	-
16/08/18	NF	ML18FHNFMT4211	ML18UNFTHST4307	49.2	0.886	0.756	-	0.74	3	F	A	12	0.029	0.013	-	-	-
16/08/18	NF	ML18FHNFMT4211	ML18UNFTHST4308	60.8	1.730	1.510	-	0.77	4	M	A	25	0.025	0.013	-	-	-
16/08/18	NF	ML18FHNFMT4210	ML18UNFTHST4309	44.1	0.803	0.532	0.195	0.93	2	F	J	11	0.016	0.006	-	-	-
16/08/18	NF	ML18FHNFMT4210	ML18UNFTHST4310	36.0	0.486	0.275	0.155	1.04	2	M	J	21	0.009	-	-	-	-
16/08/18	NF	ML18FHNFMT4210	ML18UNFTHST4311	43.2	0.754	0.463	0.212	0.93	-	F	A	12	0.017	0.007	-	-	-

Table 10B-3: Survey Data for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Carcass Weight (g)	Parasite Weight[(a)] (g)	Condition Factor	Age[(b)]	Sex	Life Stage	Maturity[(c)]	Liver Weight (g)	Gonad Weight (g)	Fecundity	Mean Egg Weight (mg)	Mean Egg Diameter (µm)
16/08/18	NF	ML18FHNFMT4210	ML18UNFTHST4312	39.9	0.474	0.305	0.124	0.75	2	U	J	01	0.006	-	-	-	-
16/08/18	NF	ML18FHNFMT4210	ML18UNFTHST4313	39.5	0.588	0.360	0.162	0.95	-	F	J	11	0.011	-	-	-	-
18/08/18	NF	ML18FHNFMT4214	ML18UNFTHST4359	40.0	0.413	0.334	-	0.65	2	F	J	11	0.013	0.002	-	-	-
18/08/18	NF	ML18FHNFMT4214	ML18UNFTHST4360	42.5	0.637	0.406	0.170	0.83	-	F	J	11	0.011	0.006	-	-	-
18/08/18	NF	ML18FHNFMT4214	ML18UNFTHST4361	42.5	0.746	0.454	0.177	0.97	-	F	A	12	0.017	0.006	-	-	-
18/08/18	NF	ML18FHNFMT4214	ML18UNFTHST4362	40.0	0.427	0.361	-	0.67	2	F	J	11	0.014	-	-	-	-
18/08/18	NF	ML18FHNFMT4214	ML18UNFTHST4363	51.9	1.156	0.941	-	0.83	2	F	A	12	0.046	-	-	-	265.000
18/08/18	NF	ML18FHNFMT4214	ML18UNFTHST4364	40.9	0.659	0.425	0.125	0.97	-	F	J	11	0.019	0.006	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4365	36.5	0.459	0.368	-	0.95	1	M	J	21	0.012	-	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4366	39.8	0.429	0.367	-	0.68	1	F	J	11	0.014	0.001	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4367	36.5	0.521	0.310	0.143	1.07	-	U	J	01	0.008	0.003	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4368	38.3	0.375	0.306	-	0.67	1	F	J	11	0.013	0.004	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4369	38.6	0.430	0.347	-	0.75	1	F	J	11	0.014	0.004	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4370	41.9	0.606	0.385	0.146	0.82	-	U	J	01	0.014	0.006	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4371	38.8	0.612	0.358	0.175	1.05	2	F	J	11	0.010	0.006	-	-	-
18/08/18	NF	ML18FHNFMT4212	ML18UNFTHST4372	42.1	0.658	0.460	0.131	0.88	2	M	J	21	0.020	0.001	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4373	39.9	0.437	0.344	0.005	0.69	-	F	J	11	0.015	0.004	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4374	38.0	0.403	0.352	-	0.74	1	U	J	01	0.013	-	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4375	41.7	0.626	0.410	0.141	0.87	-	F	J	11	0.010	0.005	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4376	42.8	0.692	0.447	0.189	0.89	-	M	J	21	0.014	0.005	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4377	42.8	0.660	0.428	0.156	0.84	-	U	J	01	0.012	0.005	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4378	43.0	0.679	0.440	0.157	0.86	-	F	J	11	0.019	-	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4379	39.2	0.625	0.345	0.200	1.04	2	F	J	11	0.009	0.005	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4380	40.6	0.626	0.412	-	0.94	2	F	J	11	0.015	0.006	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4381	43.9	0.789	0.531	0.134	0.94	2	M	J	21	0.020	-	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4382	45.0	0.738	0.557	0.129	0.81	2	M	A	22	0.014	-	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4383	42.9	0.741	0.519	0.124	0.94	2	M	J	21	0.016	0.001	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4384	43.6	0.801	0.505	0.245	0.97	-	F	J	11	0.015	0.006	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4385	45.5	0.687	0.582	-	0.73	2	M	J	21	0.016	0.003	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4387	46.8	0.918	0.626	0.161	0.89	2	F	A	12	0.026	0.010	-	-	-
19/08/18	NF	ML18FHNFMT4215	ML18UNFTHST4388	46.6	0.882	0.645	0.129	0.87	-	M	A	22	0.025	0.007	-	-	-
19/08/18	NF	ML18FHNFMT4217	ML18UNFTHST4435	59.3	1.907	1.611	-	0.91	3	M	A	23	0.064	0.016	-	-	-
19/08/18	NF	ML18FHNFMT4217	ML18UNFTHST4436	56.0	1.546	1.346	-	0.88	4	M	A	23	0.069	0.022	-	-	-
19/08/18	NF	ML18FHNFMT4217	ML18UNFTHST4437	58.6	1.768	1.506	-	0.88	4	M	A	23	0.060	0.021	-	-	-
19/08/18	NF	ML18FHNFMT4216	ML18UNFTHST4438	49.9	0.903	0.742	-	0.73	2	F	A	12	0.036	0.013	709	0.018	216.000
19/08/18	NF	ML18FHNFMT4216	ML18UNFTHST4439	46.7	0.824	0.684	0.020	0.81	-	F	A	12	0.018	0.013	-	-	-
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4561	39.1	0.430	0.352	-	0.72	2	F	J	11	0.011	0.004	-	-	-
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4562	42.2	0.653	0.497	0.095	0.87	2	M	J	21	0.022	0.001	-	-	-
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4563	42.5	0.722	0.461	0.171	0.94	-	U	J	01	0.015	0.009	-	-	-
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4564	39.5	0.558	0.377	0.136	0.91	-	U	J	01	0.015	0.004	-	-	-
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4565	41.0	0.616	0.403	0.138	0.89	-	U	J	01	0.013	0.007	-	-	-

Table 10B-3: Survey Data for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Carcass Weight (g)	Parasite Weight[(a)] (g)	Condition Factor	Age[(b)]	Sex	Life Stage	Maturity[(c)]	Liver Weight (g)	Gonad Weight (g)	Fecundity	Mean Egg Weight (mg)	Mean Egg Diameter (µm)
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4566	41.7	0.686	0.438	0.152	0.94	-	U	J	01	0.016	0.008	-	-	-
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4567	39.9	0.601	0.392	0.143	0.95	2	M	J	21	0.010	-	-	-	-
20/08/18	NF	ML18FHNFMT4218	ML18UNFTHST4568	38.1	0.464	0.308	0.130	0.84	1	M	J	21	0.009	0.001	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5000	67.3	2.380	1.755	0.031	0.78	-	F	A	13	0.067	0.114	1706	0.067	325.000
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5001	65.8	2.180	1.866	-	0.77	3	M	A	24	0.054	0.012	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5002	38.2	0.604	0.318	0.209	1.08	2	M	J	21	0.010	0.001	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5003	55.5	1.248	0.826	0.250	0.73	-	M	A	27	0.042	0.002	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5004	42.4	0.807	0.425	0.223	1.06	1	M	J	21	0.016	0.001	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5005	44.4	0.956	0.530	0.329	1.10	-	U	J	01	-	-	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5006	43.0	0.725	0.466	0.141	0.91	1	U	J	01	0.013	-	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5007	47.4	0.954	0.529	0.308	0.89	2	M	J	21	0.018	0.001	-	-	-
10/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5008	58.1	1.558	1.296	-	0.80	1	M	A	25	0.031	0.012	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5009	74.1	3.259	2.111	0.633	0.80	2	F	A	13	0.071	0.156	1785	0.088	533.000
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5010	59.3	1.837	1.286	0.264	0.88	4	F	A	12	0.055	0.033	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5011	63.1	1.891	1.489	0.249	0.75	4	M	A	23	0.048	0.011	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5012	64.2	2.419	1.863	0.272	0.91	4	M	A	23	0.066	0.016	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5013	51.2	1.075	0.879	-	0.80	2	F	A	12	0.038	0.018	1772	0.010	247.000
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5014	62.1	1.877	1.560	-	0.78	1	M	A	24	0.059	0.012	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5015	43.9	0.697	0.529	0.023	0.82	-	M	A	22	0.023	0.008	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5016	55.7	1.633	1.096	0.368	0.94	-	M	A	23	0.030	0.015	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5017	64.9	2.325	1.763	-	0.85	4	F	A	16	0.108	0.137	1759	0.078	468.000
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5018	55.6	1.525	0.959	0.329	0.89	-	F	A	12	0.033	0.022	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5019	60.1	2.281	1.683	0.276	1.05	4	M	A	23	0.047	0.008	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5020	45.6	0.793	0.513	0.192	0.84	-	F	A	16	0.026	0.007	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5021	58.2	1.671	1.040	0.415	0.85	-	F	A	12	0.025	0.020	1277	0.016	217.000
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5022	45.3	0.706	0.584	-	0.76	2	M	A	22	0.017	0.010	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5023	49.0	0.863	0.700	-	0.73	2	F	A	12	0.023	0.013	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5024	55.1	1.460	0.947	0.329	0.87	4	M	A	23	0.025	0.007	-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5025	39.9	0.583	0.292	0.186	0.92	-	M	J	21	0.006		-	-	-
10/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5026	48.3	0.841	0.679	-	0.75	3	M	A	22	0.029	0.027	-	-	-
10/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5027	50.9	0.979	0.780	-	0.74	2	F	A	12	0.042	0.021	1001	0.021	197.000
10/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5028	44.9	1.025	0.630	0.253	1.13	2	M	A	22	0.014	0.009	-	-	-
10/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5029	48.4	1.136	0.730	0.229	1.00	-	M	A	27	0.025	0.006	-	-	-
10/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5030	62.4	2.596	1.710	0.398	1.07	4	M	A	24	0.069	0.029	-	-	-
10/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5031	73.0	4.222	2.383	0.902	1.09	-	F	A	14	0.106	0.404	1477	0.274	888.000
10/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5032	58.6	1.890	1.209	0.436	0.94	2	F	A	12	0.044	0.052	1070	0.048	337.000
11/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5039	68.3	3.207	1.894	0.373	1.01	-	F	A	14	0.073	0.616	1592	0.387	918.000
11/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5040	60.3	1.799	1.203	0.361	0.82	4	F	A	12	0.037	0.030	-	-	-
11/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5041	63.1	2.223	1.657	0.266	0.88	-	M	A	25	0.062	0.012	-	-	-
11/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5042	65.0	2.408	1.537	0.551	0.88	3	F	A	12	0.053	0.037	-	-	-
11/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5043	39.5	0.568	0.360	0.124	0.93	2	U	J	01	0.015	-	-	-	-

Table 10B-3: Survey Data for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Carcass Weight (g)	Parasite Weight[(a)] (g)	Condition Factor	Age[(b)]	Sex	Life Stage	Maturity[(c)]	Liver Weight (g)	Gonad Weight (g)	Fecundity	Mean Egg Weight (mg)	Mean Egg Diameter (µm)
11/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5044	43.7	0.670	0.457	0.109	0.80	2	F	A	12	0.018	0.006	-	-	-
11/08/18	RA1	ML18FHRA1MT5200	ML18URA1THST5045	50.6	1.186	0.810	0.149	0.92	2	F	A	12	0.035	0.011	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5046	51.5	1.211	1.001	-	0.89	2	M	A	22	0.046	0.026	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5047	43.7	0.768	0.510	-	0.92	2	F	J	11	0.020	0.006	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5048	61.2	2.194	1.640	-	0.96	-	M	A	25	0.055	0.013	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5049	41.3	0.730	0.456	0.147	1.03	-	F	J	11	0.017	0.006	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5050	55.2	1.355	1.138	-	0.80	2	F	A	12	0.053	0.018	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5051	51.8	1.097	0.916	-	0.79	2	F	A	12	0.038	0.011	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5052	61.7	2.102	1.486	0.301	0.89	4	F	A	12	0.058	0.043	-	-	-
11/08/18	RA1	ML18FHRA1MT5201	ML18URA1THST5053	56.0	1.327	1.124	-	0.76	3	M	A	25	0.039	0.021	-	-	-
11/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5054	62.8	1.882	1.317	0.303	0.76	4	F	A	12	0.056	0.031	-	-	-
11/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5055	54.2	1.572	1.001	0.356	0.99	-	M	A	27	0.031	0.004	-	-	-
11/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5056	49.6	0.773	0.648	-	0.63	2	F	A	12	0.027	0.012	431	0.027	173.000
11/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5057	61.4	2.096	1.454	0.395	0.91	3	M	A	23	0.039	0.007	-	-	-
11/08/18	RA1	ML18FHRA1MT5202	ML18URA1THST5058	54.9	1.311	0.985	0.209	0.79	-	M	A	23	0.039	0.005	-	-	-
12/08/18	RA1	ML18FHRA1MT5204	ML18URA1THST5087	60.2	1.508	1.277	-	0.69	4	M	A	23	0.019	0.005	-	-	-
12/08/18	RA1	ML18FHRA1MT5203	ML18URA1THST5088	58.5	1.554	1.058	0.298	0.78	-	F	A	12	0.034	0.027	-	-	-
12/08/18	RA1	ML18FHRA1MT5203	ML18URA1THST5089	62.6	2.587	1.915	0.347	1.05	3	M	A	25	0.064	0.013	-	-	-
12/08/18	RA1	ML18FHRA1MT5203	ML18URA1THST5090	66.4	2.808	1.890	0.502	0.96	-	F	A	13	0.072	0.119	1378	0.086	397.000
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5190	39.9	0.491	0.306	0.101	0.77	-	M	A	22	0.009	-	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5191	42.2	0.642	0.427	0.117	0.85	2	M	J	21	0.019	0.001	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5192	54.5	1.166	0.997	-	0.72	2	M	A	23	0.041	0.023	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5193	52.7	1.071	0.877	-	0.73	3	F	A	13	0.041	0.024	683	0.034	255.000
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5194	48.3	0.802	0.682	-	0.71	2	M	A	22	0.023	0.008	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5195	52.1	1.014	0.834	-	0.72	2	M	A	22	0.029	0.018	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5196	62.6	1.829	1.444	0.038	0.74	-	F	A	13	0.066	0.063	900	0.070	468.000
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5197	45.4	0.795	0.655	0.014	0.85	-	M	A	22	0.022	0.008	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5198	49.1	0.992	0.724	0.153	0.84	2	M	A	23	0.028	0.004	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5199	61.4	1.775	1.496	-	0.77	3	M	A	23	0.038	0.008	-	-	-
15/08/18	RA1	ML18FHRA1MT5209	ML18URA1THST5200	52.4	1.092	0.924	-	0.76	-	M	A	22	0.031	0.023	-	-	-
17/08/18	RA1	ML18FHRA1MT5212	ML18URA1THST5225	41.1[(d)]	0.670	0.451	0.114	0.96	2	M	J	21	0.014	-	-	-	-
17/08/18	RA1	ML18FHRA1MT5213	ML18URA1THST5227	61.0	1.943	1.634	-	0.86	4	M	A	23	0.053	0.014	-	-	-
17/08/18	RA1	ML18FHRA1MT5213	ML18URA1THST5228	42.7	0.609	0.415	0.132	0.78	1	F	J	11	0.018	0.007	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5229	36.6	0.496	0.293	0.127	1.02	2	U	J	01	0.007	-	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5230	41.8	0.651	0.414	0.186	0.89	2	M	J	21	0.015	-	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5231	36.9	0.544	0.335	0.123	1.09	2	F	J	11	0.016	0.005	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5232	40.3	0.559	0.339	0.142	0.86	2	F	J	11	0.009	0.004	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5233	41.2	0.613	0.408	0.122	0.88	2	F	J	11	0.011	0.005	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5234	41.6	0.631	0.397	0.164	0.88	2	U	J	01	0.010	-	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5235	43.9	0.796	0.472	0.192	0.94	-	M	A	22	0.014	0.007	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5236	43.0	0.738	0.479	0.160	0.93	-	M	J	21	0.024	-	-	-	-

Table 10B-3: Survey Data for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Date (dd/mm/yy)	Sampling Area	Effort Number	Fish Identification Number	Total Length (mm)	Body Weight (g)	Carcass Weight (g)	Parasite Weight[(a)] (g)	Condition Factor	Age[(b)]	Sex	Life Stage	Maturity[(c)]	Liver Weight (g)	Gonad Weight (g)	Fecundity	Mean Egg Weight (mg)	Mean Egg Diameter (µm)
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5237	44.9	0.798	0.509	0.186	0.88	-	F	A	12	0.025	0.006	-	-	-
17/08/18	RA1	ML18FHRA1MT5214	ML18URA1THST5238	44.9	0.735	0.513	0.153	0.81	2	M	J	21	0.017	0.001	-	-	-
17/08/18	RA1	ML18FHRA1MT5213	ML18URA1THST5239	47.9	0.780	0.662	-	0.71	2	F	A	12	0.017	0.011	-	-	-
17/08/18	RA1	ML18FHRA1DN5215	ML18URA1THST5240	40.8	0.646	0.400	0.153	0.95	2	M	J	21	0.012	-	-	-	-
17/08/18	RA1	ML18FHRA1DN5215	ML18URA1THST5241	41.4	0.580	0.360	0.146	0.82	-	F	J	11	0.013	0.005	-	-	-
20/08/18	RA1	ML18FHRA1MT5217	ML18URA1THST5281	43.1	0.433	0.395	-	0.54	2	F	A	12	0.006	0.003	-	-	-
20/08/18	RA1	ML18FHRA1MT5217	ML18URA1THST5282	39.8	0.459	0.349	0.068	0.73	1	F	J	11	0.011	0.004	-	-	-
20/08/18	RA1	ML18FHRA1MT5217	ML18URA1THST5283	45.7	0.787	0.514	0.171	0.83	2	M	J	21	0.015	-	-	-	-
20/08/18	RA1	ML18FHRA1MT5217	ML18URA1THST5284	37.3	0.460	0.344	0.055	0.89	-	F	J	11	0.007	0.004	-	-	-
20/08/18	RA1	ML18FHRA1MT5217	ML18URA1THST5285	44.7	0.621	0.548	-	0.70	1	F	A	12	0.017	0.009	-	-	-
20/08/18	RA1	ML18FHRA1MT5218	ML18URA1THST5303	42.8	0.674	0.436	0.162	0.86	-	U	J	01	0.010	0.006	-	-	-

a) Suspected to be Schistocephalus solidus.
b) Derived using otoliths.
c) Refer to Table 2 for maturity codes designations.
d) Calculated value: regression completed for standard and total length, equation y=0.893x -0.392 (r^2= 0.990).
e) Calculated value: regression completed for carcass and total weight, equation y=0.7035x + 0.033 (r^2=0.951).
f) Calculated value: regression completed using histology plus fecundity subsample weights and total gonad weight, equation y=0.9792x - 0.0009 (r^2=0.999).
d = day; m = month; y = year; NF = Near-field; RA1 = Reference Area 1; mm = millimetre; g = gram; F = female; M = male; U = unknown; A = adult; J = juvenile; mg = milligram; µm = micrometre; - = not recorded or not applicable.

Table 10B-4: Statistical Outliers Excluded from Statistical Analysis for the Meliadine Lake Fish Health Program, 2018

Sex	Parasites	Parameter	Dependent	Covariate	Statistical Test	Fish Identification Number	Studentized Residual
Female	Included	Relative gonad size	Gonad weight	Body weight	$ANCOVA_{log}$	ML18URA1THST5039	4.0
Female	Included	Relative liver size	Liver weight	Body length	ANCOVAlog	ML18URA1THST5281	-4.6
Male	Included	Relative body weight	Body weight	Total weight	$ANCOVA_{log}$	ML18URA1THST5028	3.3[(a)]
Female	Excluded	Weight-at-age	Body weight	Age	ANCOVA	ML18UNFTHST4120	5.5
Female	Excluded	Weight-at-age	Body weight	Age	ANCOVA	ML18URA1THST5017	3.6[(a)]
Female	Excluded	Relative liver weight	Liver weight	Total length	$ANCOVA_{log}$	ML18URA1THST5281	-2.9[(a)]
Population	Included	Relative body weight	Body weight	Total length	$ANCOVA_{rank}$	ML18URA1THST5153	4.2

Note: Outlier threshold defined as a studentized residual greater than |4.0|.

a) Value removed due to high leverage.

ANOVA = analysis of variance; ANCOVA = analysis of covariance; log = logarithm base 10; rank = rank transformed data; - = not applicable.

Table 10B-5: Abnormality Assessment for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Fish Identification Number	External Assessment										Internal Assessment					
	Body Deformity	Eyes	Skin	Thymus	Opercula	Gills[a]	Pseudo-branchs	Fins[b]	Vent	Parasites	Liver[c]	Spleen[d]	Gall Bladder	Mesentaric Fat[e]	Parasites[f]	Kidney[g]
ML18UNFTHST4000	N	N	0	0	0	N	N	0	0	0	A	B	0	0	2	M
ML18UNFTHST4001	N	N	0	0	0	N	N	1	0	0	C	B	0	1	2	N
ML18UNFTHST4002	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	G
ML18UNFTHST4003	N	N	0	0	0	P	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4004	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4005	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	M
ML18UNFTHST4006	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	M
ML18UNFTHST4007	N	N	0	0	0	N	N	0	0	0	C	B	0	2	2	N
ML18UNFTHST4008	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4009	N	N	0	0	0	P	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4010	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4011	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4012	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4013	N	N	0	0	0	N	N	1	0	0	C	B	0	1	2	N
ML18UNFTHST4014	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4015	N	N	0	0	0	P	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4016	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4017	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18UNFTHST4119	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18UNFTHST4120	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4121	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	S
ML18UNFTHST4122	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4123	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	-
ML18UNFTHST4124	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4125	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18UNFTHST4126	N	N	0	0	0	P	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4127	N	N	0	0	0	M	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4128	N	N	0	0	0	M	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4129	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4130	N	N	0	0	0	M	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4131	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18UNFTHST4132	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4133	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4175	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18UNFTHST4176	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N

Table 10B-5: Abnormality Assessment for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Fish Identification Number	External Assessment										Internal Assessment					
	Body Deformity	Eyes	Skin	Thymus	Opercula	Gills[a]	Pseudo-branchs	Fins[b]	Vent	Parasites	Liver[c]	Spleen[d]	Gall Bladder	Mesentaric Fat[e]	Parasites[f]	Kidney[g]
ML18UNFTHST4177	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4178	N	N	0	0	0	N	N	0	0	0	C	B	0	3	0	N
ML18UNFTHST4179	N	N	0	0	0	C	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4180	N	N	0	0	0	C	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4181	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4182	N	N	0	0	0	N	N	0	0	0	C	B	0	3	0	N
ML18UNFTHST4183	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4184	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4185	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4186	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4187	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18UNFTHST4188	N	N	0	0	0	C	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4189	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18UNFTHST4190	N	N	0	0	0	N	N	0	0	0	A	B	0	3	2	N
ML18UNFTHST4191	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18UNFTHST4192	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18UNFTHST4193	N	N	0	0	0	C	N	0	0	0	A	B	0	2	2	N
ML18UNFTHST4194	N	N	0	0	0	C	N	0	0	0	C	B	0	3	0	N
ML18UNFTHST4195	N	N	0	0	0	C	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4196	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18UNFTHST4197	N	N	0	0	0	P	N	0	0	0	C	B	0	2	2	N
ML18UNFTHST4198	N	N	0	0	0	N	N	0	0	0	C	B	0	3	2	N
ML18UNFTHST4257	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4258	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4260	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4261	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4262	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4263	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4264	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4265	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4266	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4267	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4268	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4269	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4270	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N

Table 10B-5: Abnormality Assessment for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Fish Identification Number	External Assessment										Internal Assessment					
	Body Deformity	Eyes	Skin	Thymus	Opercula	Gills[a]	Pseudo-branchs	Fins[b]	Vent	Parasites	Liver[c]	Spleen[d]	Gall Bladder	Mesentaric Fat[e]	Parasites[f]	Kidney[g]
ML18UNFTHST4278	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4279	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4280	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4281	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4304	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18UNFTHST4305	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4306	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4307	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4308	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4309	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4310	N	N	0	0	0	N	N	0	0	0	A	B	0	0	3	N
ML18UNFTHST4311	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4312	N	N	0	0	0	N	N	0	0	0	A	B	0	2	2	N
ML18UNFTHST4313	N	N	0	0	0	N	N	0	0	0	A	B	0	2	2	N
ML18UNFTHST4359	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4360	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18UNFTHST4361	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18UNFTHST4362	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4363	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18UNFTHST4364	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4365	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4366	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4367	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18UNFTHST4368	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4369	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4370	N	N	0	0	0	N	N	0	0	0	A	B	0	0	2	N
ML18UNFTHST4371	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4372	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4373	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18UNFTHST4374	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18UNFTHST4375	N	N	0	0	0	N	N	0	0	0	A	B	0	0	2	N
ML18UNFTHST4376	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4377	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18UNFTHST4378	N	N	0	0	0	N	N	0	0	0	C	B	0	2	2	N
ML18UNFTHST4379	N	N	0	0	0	N	N	0	0	0	C	B	0	1	3	N

Table 10B-5: Abnormality Assessment for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Fish Identification Number	External Assessment										Internal Assessment					
	Body Deformity	Eyes	Skin	Thymus	Opercula	Gills[a]	Pseudo-branchs	Fins[b]	Vent	Parasites	Liver[c]	Spleen[d]	Gall Bladder	Mesentaric Fat[e]	Parasites[f]	Kidney[g]
ML18UNFTHST4380	N	N	0	0	0	N	N	0	0	0	A	B	0	1	0	N
ML18UNFTHST4381	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4382	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4383	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4384	N	N	0	0	0	N	N	0	0	0	C	B	0	1	3	N
ML18UNFTHST4385	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4387	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4388	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4435	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4436	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4437	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4438	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18UNFTHST4439	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4561	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18UNFTHST4562	N	N	0	0	0	N	N	0	0	0	C	B	0	2	2	N
ML18UNFTHST4563	N	N	0	0	0	N	N	0	0	0	C	B	0	2	2	N
ML18UNFTHST4564	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4565	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4566	N	N	0	0	0	N	N	0	0	0	C	B	0	2	2	N
ML18UNFTHST4567	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18UNFTHST4568	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5000	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18URA1THST5001	N	N	0	0	0	N	N	0	0	0	A	B	0	0	0	N
ML18URA1THST5002	N	N	0	0	0	N	N	0	0	0	C	B	0	0	3	N
ML18URA1THST5003	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5004	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5005	N	N	0	0	0	N	N	0	0	0	C	B	0	1	3	M
ML18URA1THST5006	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5007	N	N	0	0	0	N	N	0	0	0	C	B	0	0	3	N
ML18URA1THST5008	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18URA1THST5009	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5010	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5011	N	N	0	0	0	M	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5012	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5013	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N

Table 10B-5: Abnormality Assessment for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Fish Identification Number	External Assessment										Internal Assessment					
	Body Deformity	Eyes	Skin	Thymus	Opercula	Gills[a]	Pseudo-branchs	Fins[b]	Vent	Parasites	Liver[c]	Spleen[d]	Gall Bladder	Mesentaric Fat[e]	Parasites[f]	Kidney[g]
ML18URA1THST5014	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18URA1THST5015	N	N	0	0	0	N	N	0	0	0	C	B	0	2	2	N
ML18URA1THST5016	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5017	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5018	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5019	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5020	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5021	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5022	N	N	0	0	0	P	N	0	0	0	C	B	0	0	0	N
ML18URA1THST5023	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5024	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5025	N	N	0	0	0	N	N	0	0	0	C	B	0	1	3	N
ML18URA1THST5026	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5027	N	N	0	0	0	F	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5028	N	N	0	0	0	F	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5029	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5030	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5031	N	N	0	0	0	F	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5032	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5039	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5040	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18URA1THST5041	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	M
ML18URA1THST5042	N	N	0	0	0	F	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5043	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18URA1THST5044	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5045	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5046	N	N	0	0	0	N	N	0	0	0	A	B	0	1	0	N
ML18URA1THST5047	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18URA1THST5048	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5049	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18URA1THST5050	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5051	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5052	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18URA1THST5053	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18URA1THST5054	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N

Table 10B-5: Abnormality Assessment for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Fish Identification Number	External Assessment										Internal Assessment					
	Body Deformity	Eyes	Skin	Thymus	Opercula	Gills[a]	Pseudo-branchs	Fins[b]	Vent	Parasites	Liver[c]	Spleen[d]	Gall Bladder	Mesentaric Fat[e]	Parasites[f]	Kidney[g]
ML18URA1THST5055	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5056	N	N	0	0	0	P	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5057	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5058	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5087	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18URA1THST5088	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5089	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5090	N	N	0	0	0	C	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5190	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5191	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5192	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5193	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5194	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5195	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5196	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5197	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5198	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5199	N	N	0	0	0	N	N	0	0	0	A	B	0	1	0	N
ML18URA1THST5200	N	N	0	0	0	N	N	0	0	0	C	B	0	2	0	N
ML18URA1THST5225	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5227	N	N	0	0	0	N	N	0	0	0	C	B	0	1	0	N
ML18URA1THST5228	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5229	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5230	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5231	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5232	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5233	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5234	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5235	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5236	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5237	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18URA1THST5238	N	N	0	0	0	N	N	0	0	0	C	B	0	2	2	N
ML18URA1THST5239	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18URA1THST5240	N	N	0	0	0	N	N	0	0	0	C	B	0	0	2	N
ML18URA1THST5241	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N

Table 10B-5: Abnormality Assessment for Threespine Stickleback Lethally Sampled During the Meliadine Lake Fish Health Program, 2018

Fish Identification Number	External Assessment										Internal Assessment					
	Body Deformity	Eyes	Skin	Thymus	Opercula	Gills[a]	Pseudo-branchs	Fins[b]	Vent	Parasites	Liver[c]	Spleen[d]	Gall Bladder	Mesentaric Fat[e]	Parasites[f]	Kidney[g]
ML18URA1THST5281	N	N	0	0	0	N	N	0	0	0	C	B	0	0	0	N
ML18URA1THST5282	N	N	0	0	0	N	N	0	0	0	C	B	0	1	2	N
ML18URA1THST5283	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N
ML18URA1THST5284	N	N	0	0	0	N	N	0	0	0	A	B	0	0	2	N
ML18URA1THST5285	N	N	0	0	0	N	N	0	0	0	C	B	0	3	0	N
ML18URA1THST5303	N	N	0	0	0	N	N	0	0	0	A	B	0	1	2	N

a) F = frayed, erosion of tips of gill lamellae resulting in "ragged" gills; C = clubbed, swelling of the tips of the gill lamellae; M = marginate, gills with light/discoloured margin along tips of lamellae; P = pale
b) 1 = minor erosion.
c) A = normal; C = "fatty" liver.
d) B = normal.
e) 0 = none; 1 = <50%; 2 = 50%; 3 = >50%.
f) 1 = few observed parasites; 2 = moderate parasite infestation; 3 = numerous parasites.
g) B = normal; S = swollen; M = mottled, gray discolouration; G = granular appearance and texture
% = percent; N or 0 = normal, no deformities or aberrations observed.

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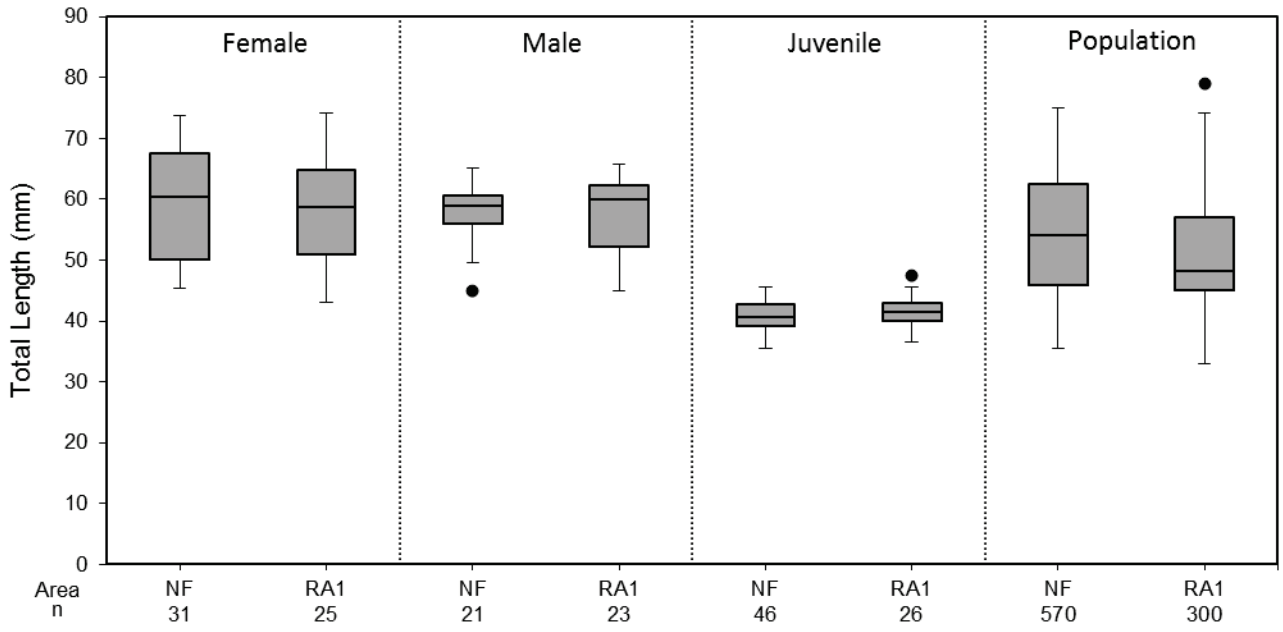
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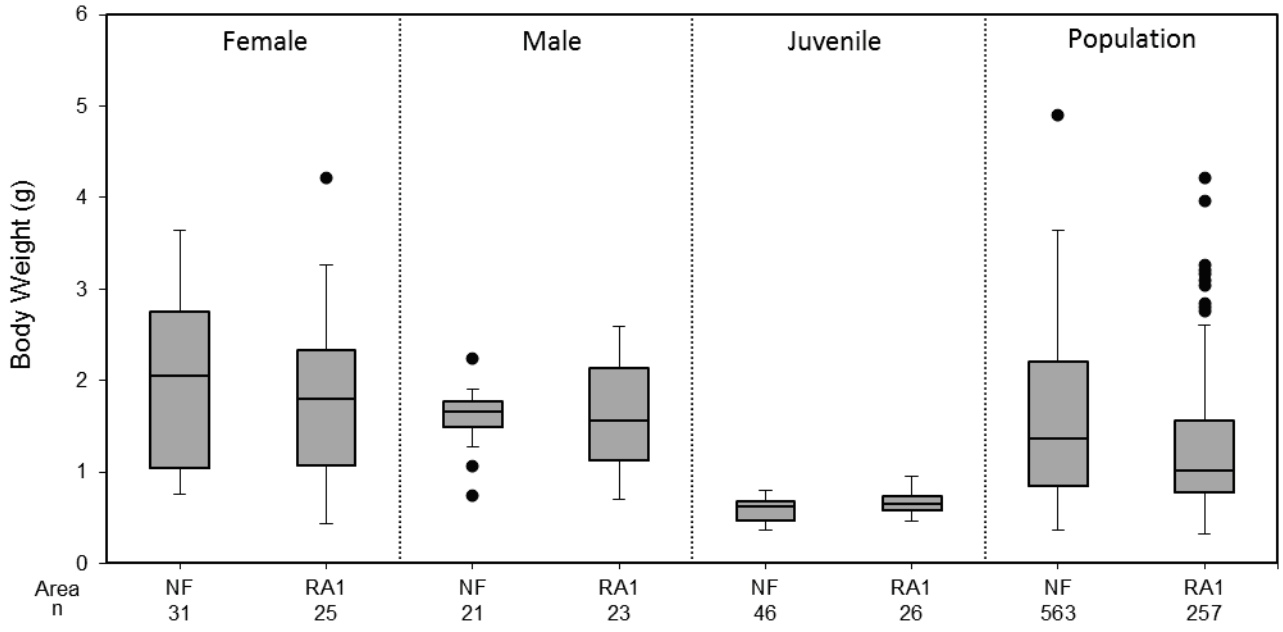
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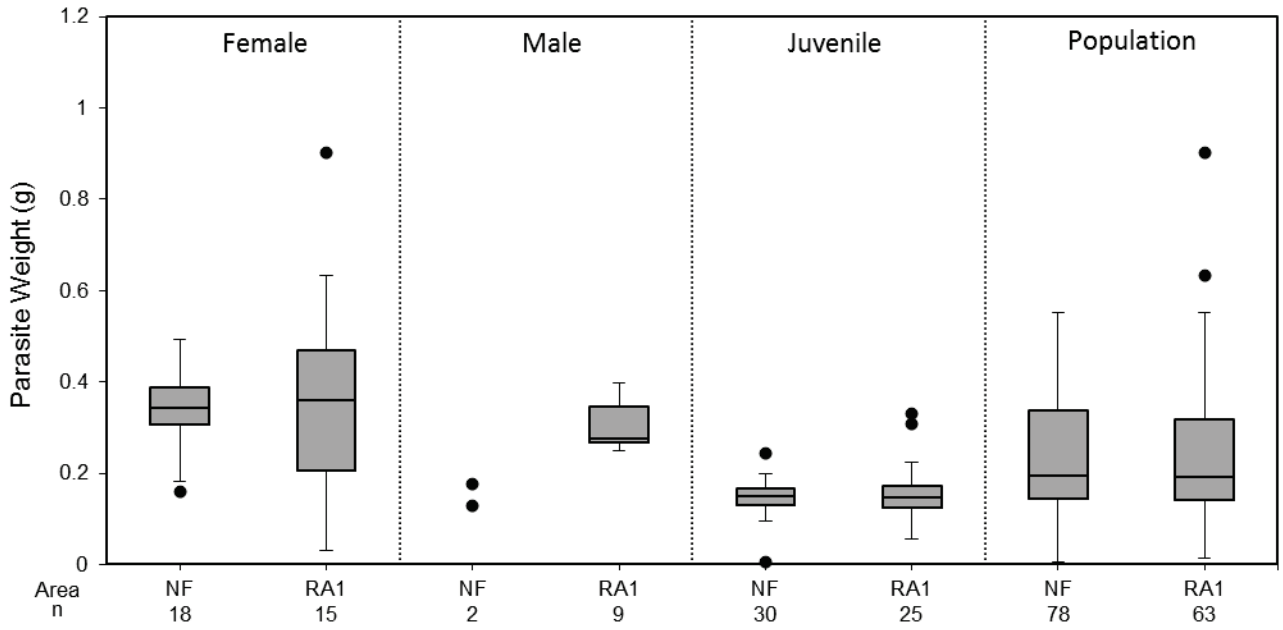
NF = Near-field; RA1 = Reference Area 1; mm= millimetre; n = sample size.

Figure 10C-1: Total Length of Threespine Stickleback Captured During the Lethal and Population Surveys at Meliadine Lake, 2018



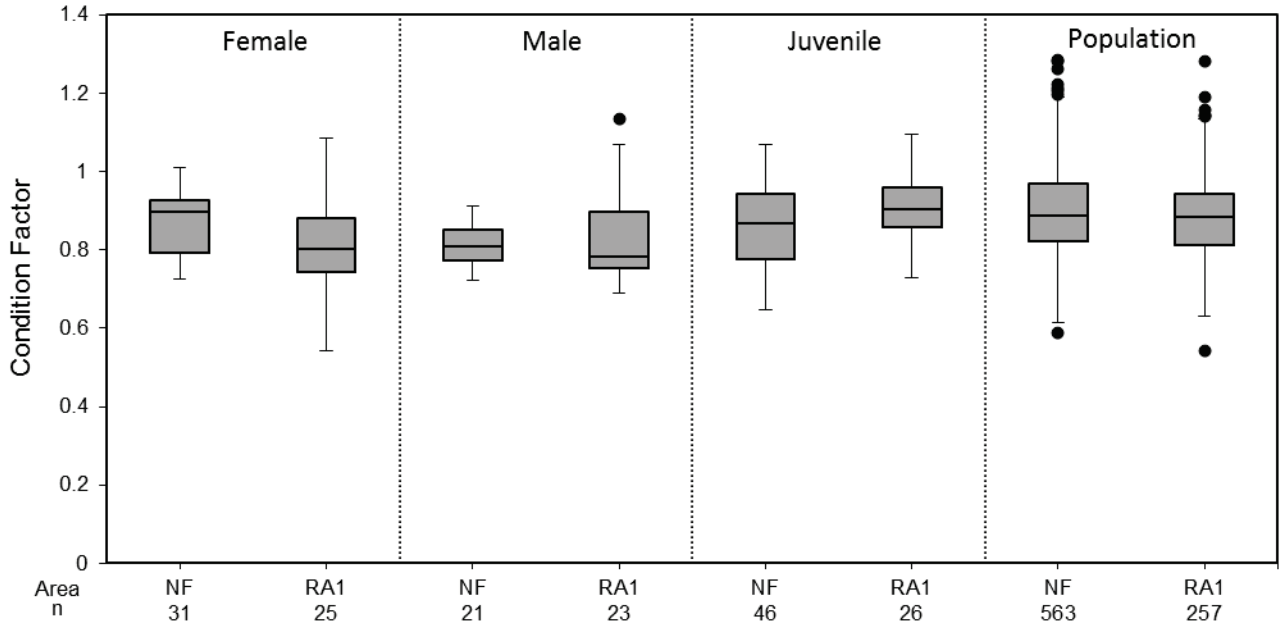
NF = Near-field; RA1 = Reference Area 1; g = gram; n = sample size.

Figure 10C-2: Body Weight of Threespine Stickleback Captured During the Lethal and Population Surveys at Meliadine Lake, 2018



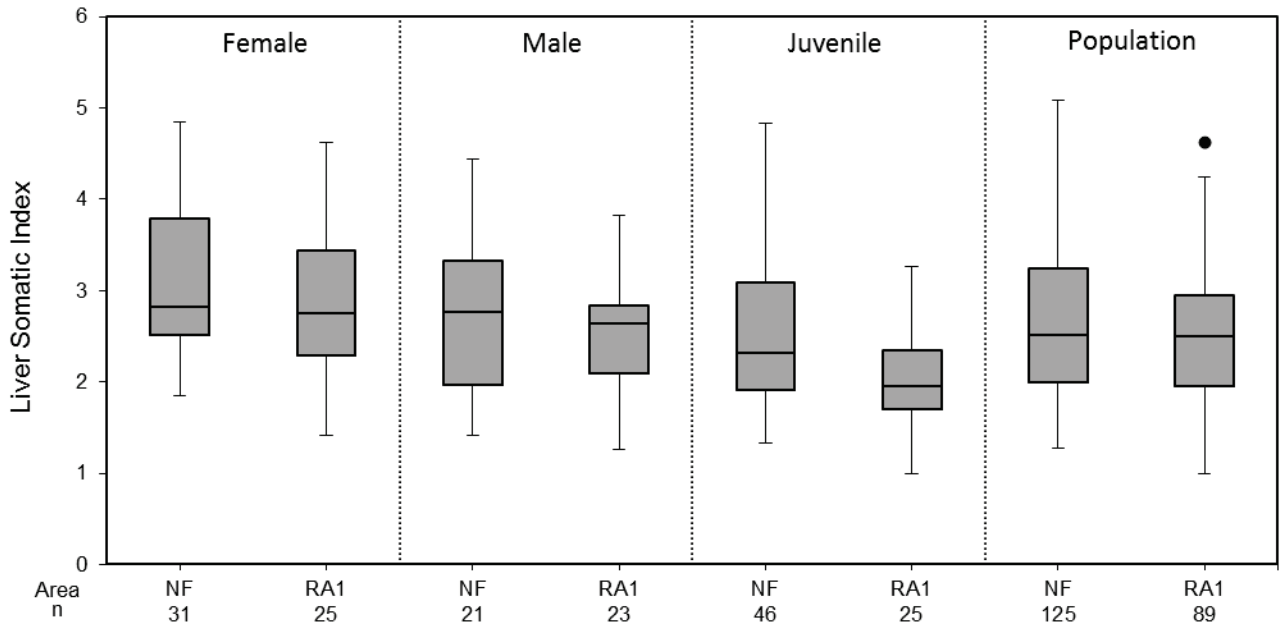
NF = Near-field; RA1 = Reference Area 1; g = gram; n = sample size.

Figure 10C-3: Parasite Weight of Threespine Stickleback Captured During the Lethal and Population Surveys at Meliadine Lake, 2018



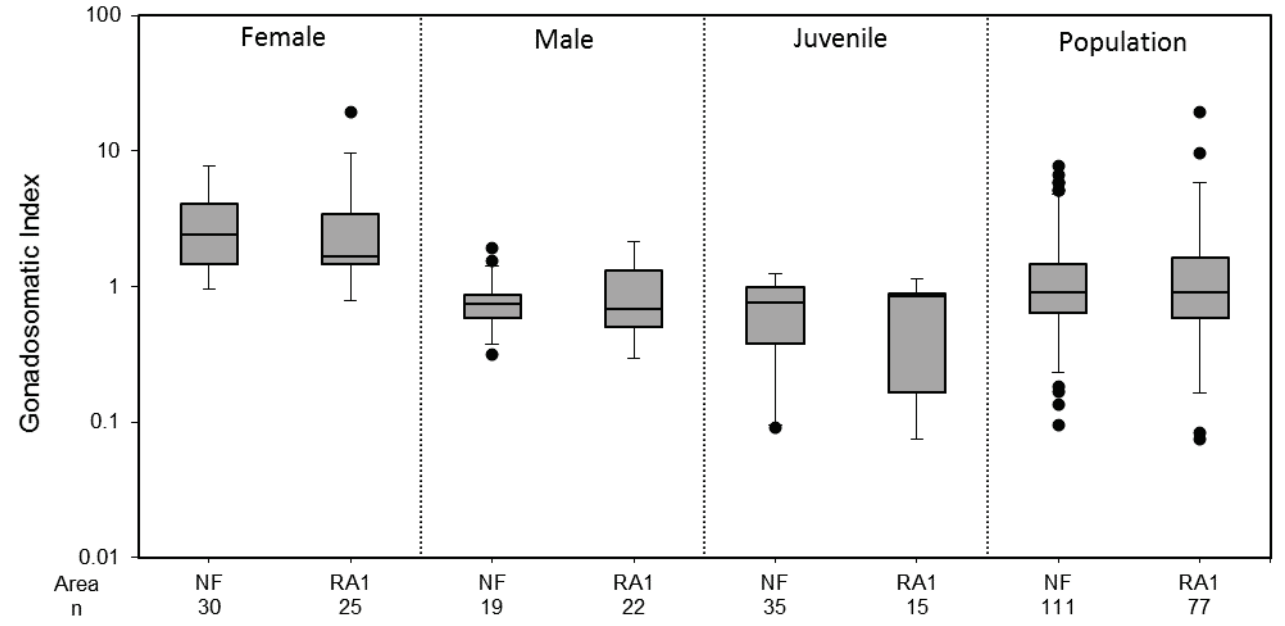
NF = Near-field; RA1 = Reference Area 1; n = sample size.

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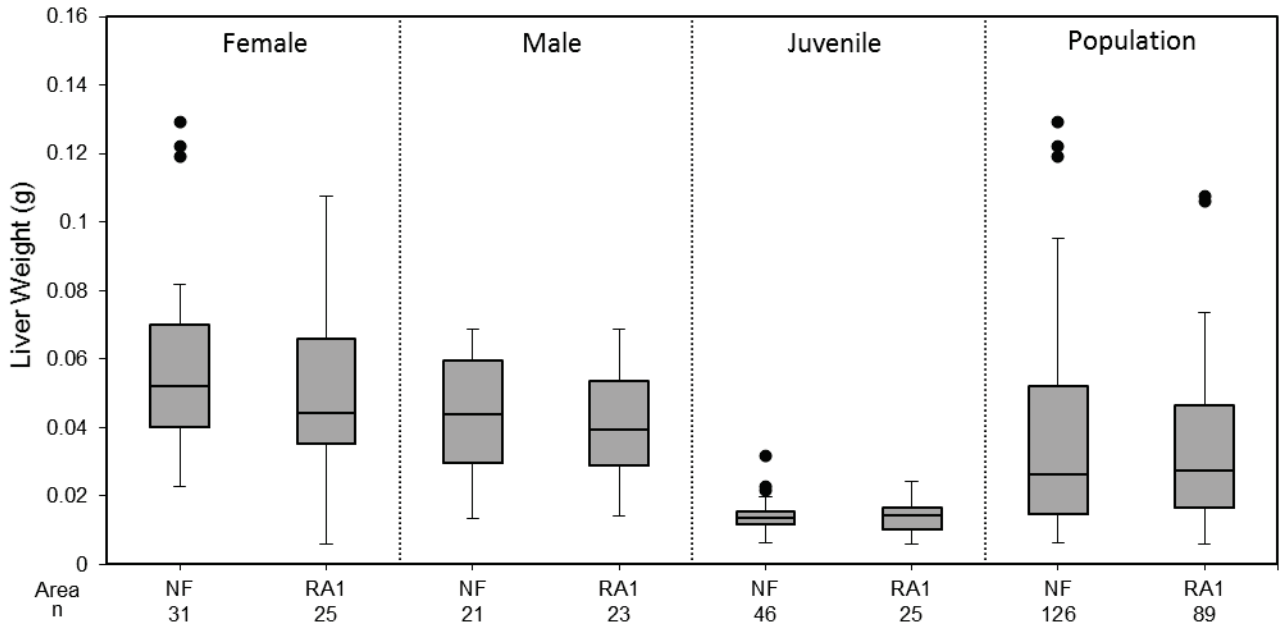
NF = Near-field; RA1 = Reference Area 1; n = sample size.

Figure 10C-5: Liver Somatic Index of Threespine Stickleback Captured During the Lethal and Population Surveys at Meliadine Lake, 2018



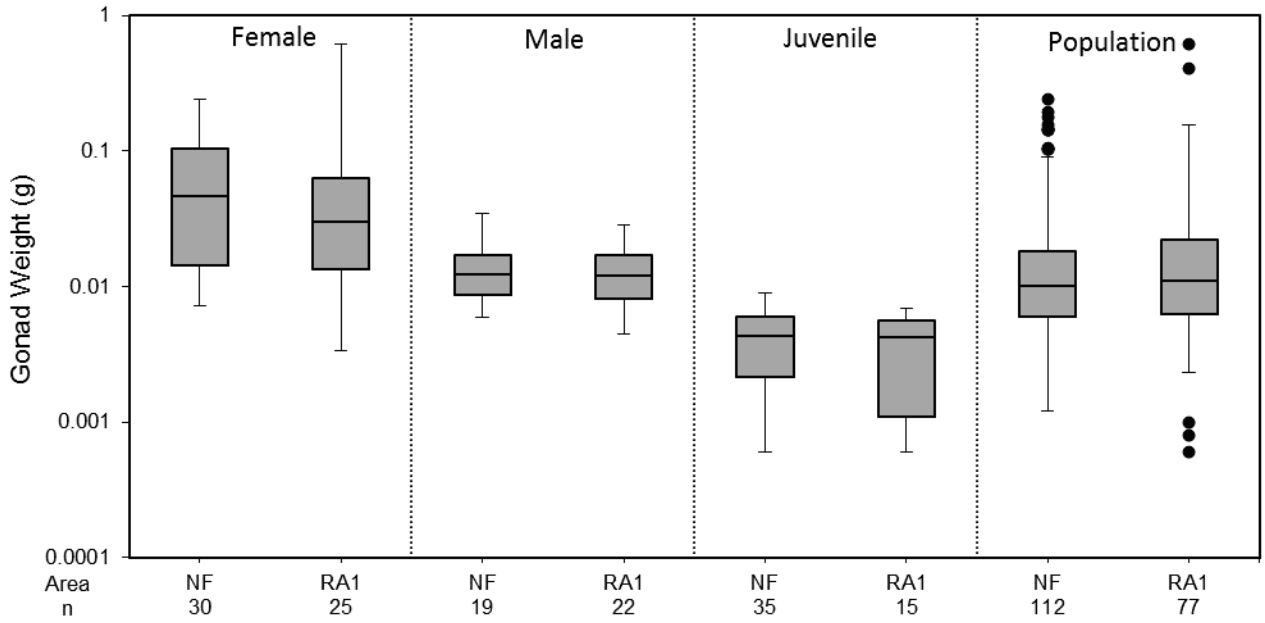
NF = Near-field; RA1 = Reference Area 1; n = sample size.

Figure 10C-6: Gonadosomatic Index (log10) of Threespine Stickleback Captured During the Lethal and Population Surveys at Meliadine Lake, 2018



NF = Near-field; RA1 = Reference Area 1; g = gram; n = sample size.

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NF = Near-field; RA1 = Reference Area 1; g = gram; n = sample size.

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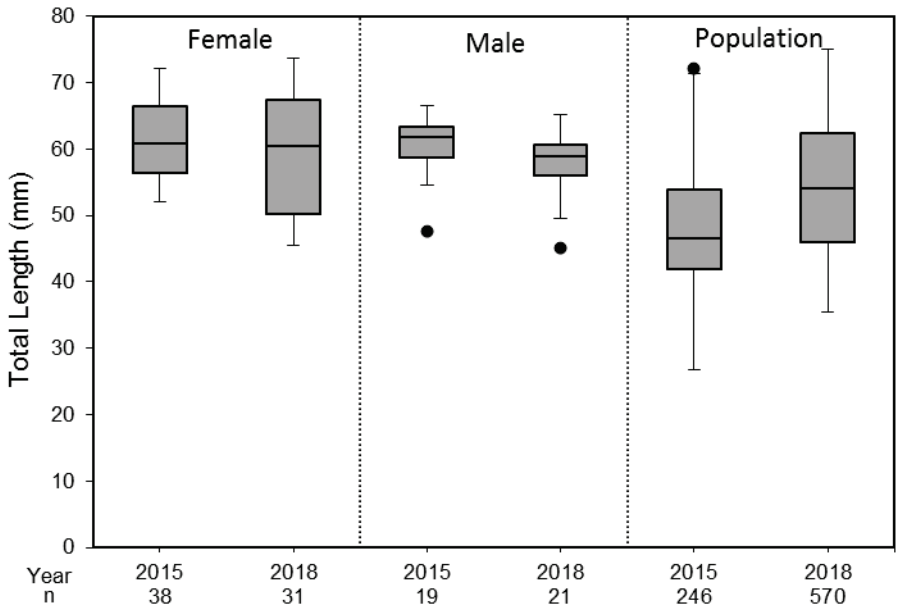
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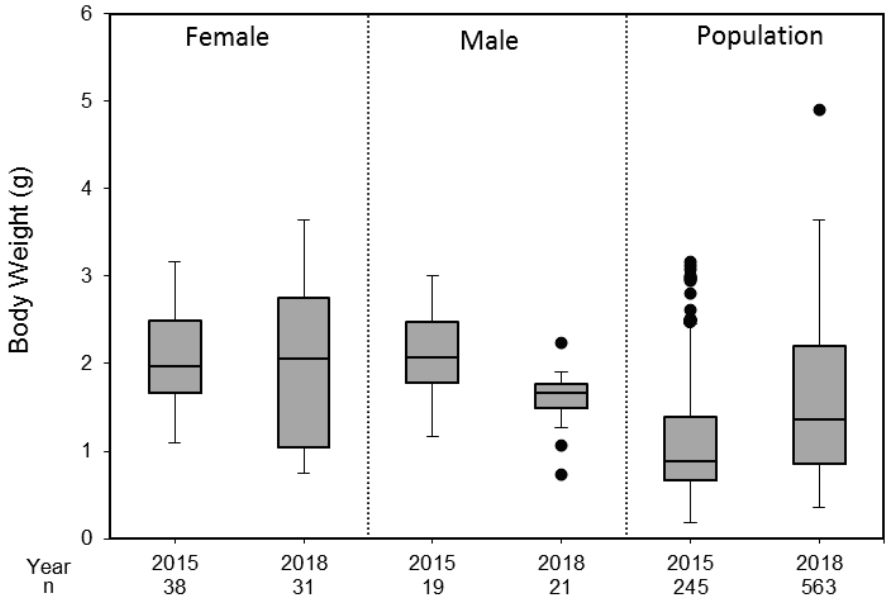
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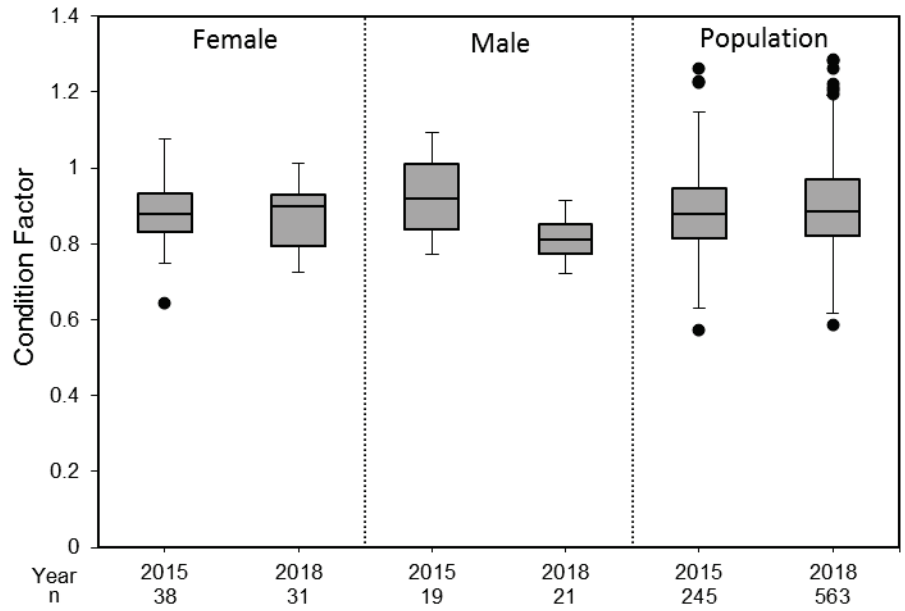
mm= millimetre; n = sample size.

Figure 10D-1: Total Length of Threespine Stickleback Captured During the Lethal and Population Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



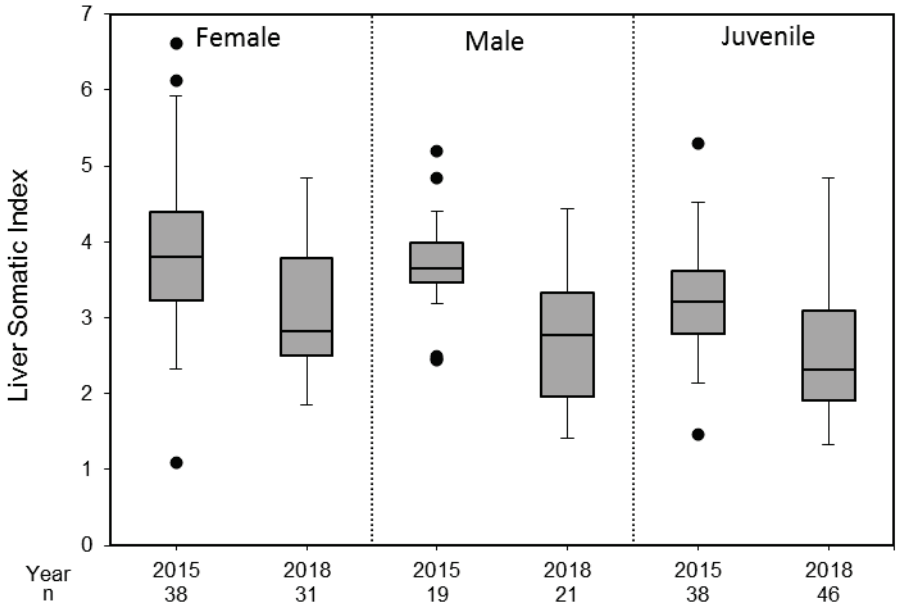
g = gram; n = sample size.

Figure 10D-2: Body Weight of Threespine Stickleback Captured During the Lethal and Population Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



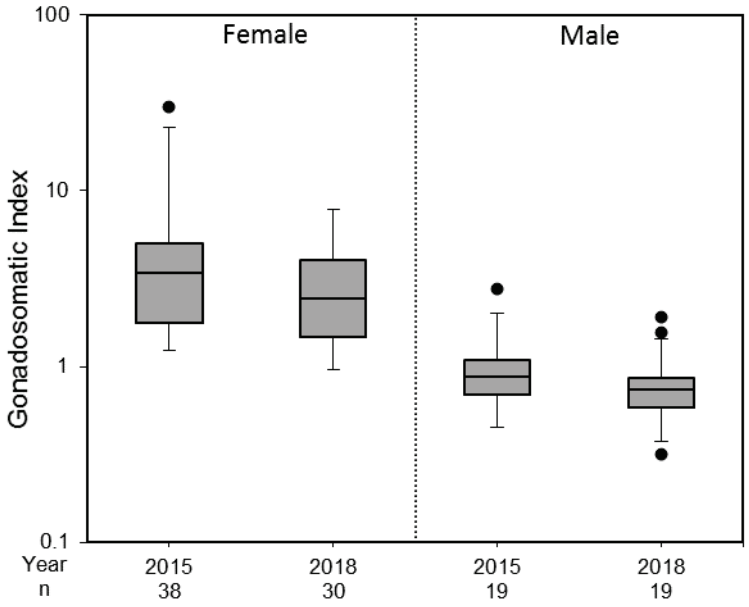
n = sample size.

Figure 10D-3: Condition Factor of Threespine Stickleback Captured During the Lethal and Population Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



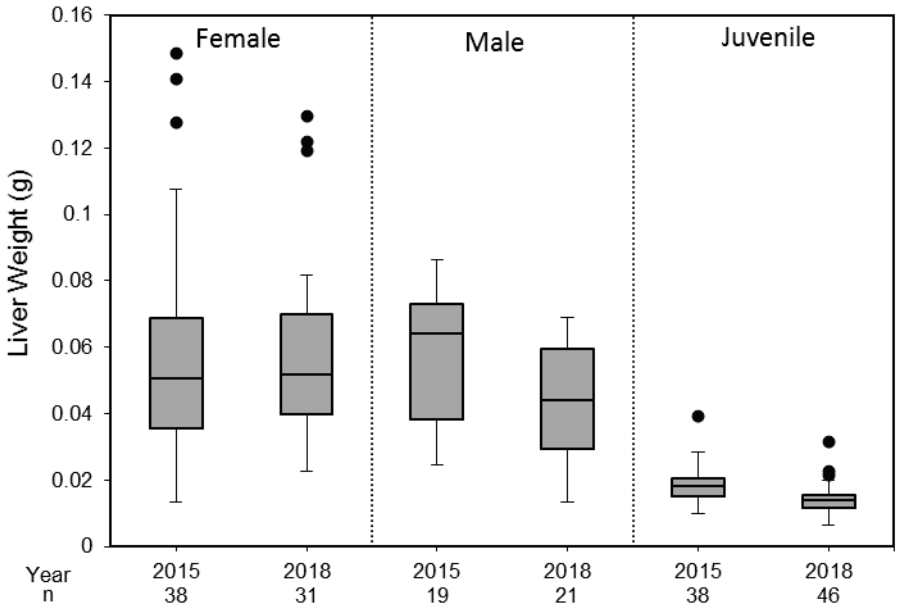
n = sample size.

Figure 10D-4: Liver Somatic Index of Threespine Stickleback Captured During the Lethal Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



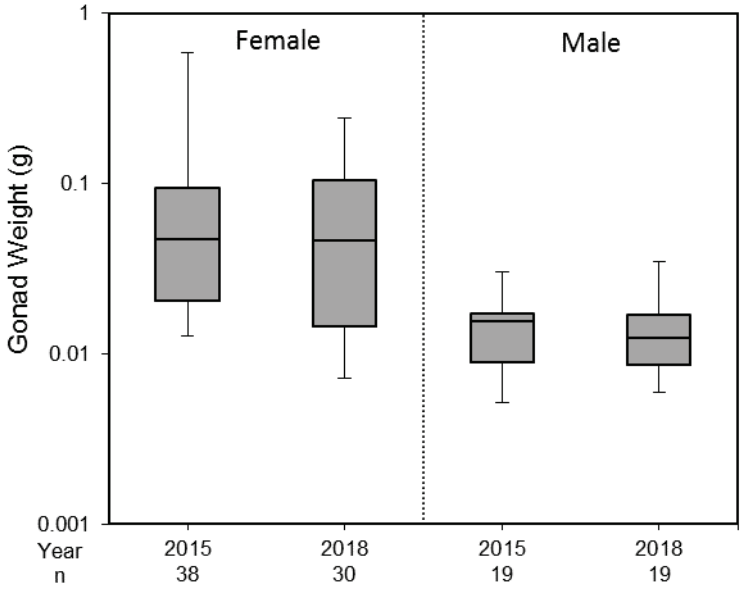
n = sample size.

Figure 10D-5: Gonadosomatic Index (log10) of Threespine Stickleback Captured During the Lethal Population Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



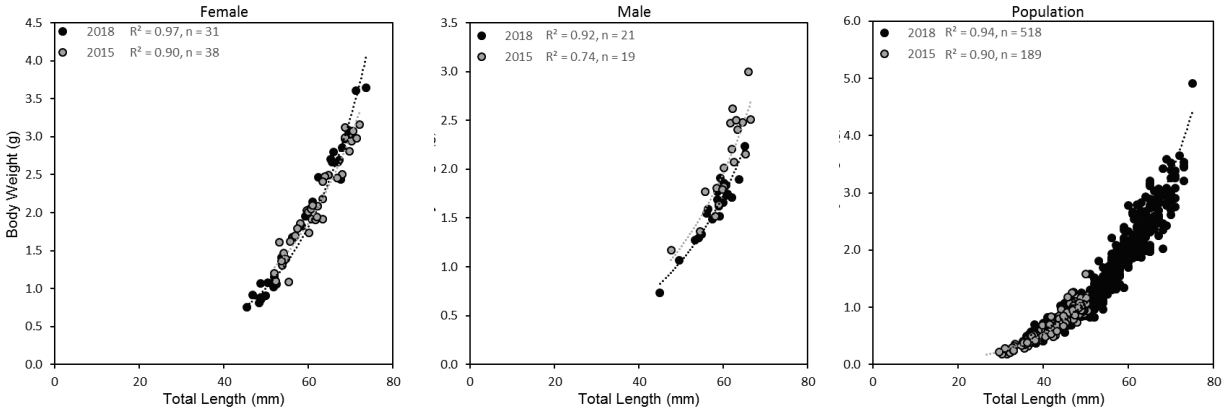
g = gram; n = sample size.

Figure 10D-6: Liver Weight of Threespine Stickleback Captured During the Lethal Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



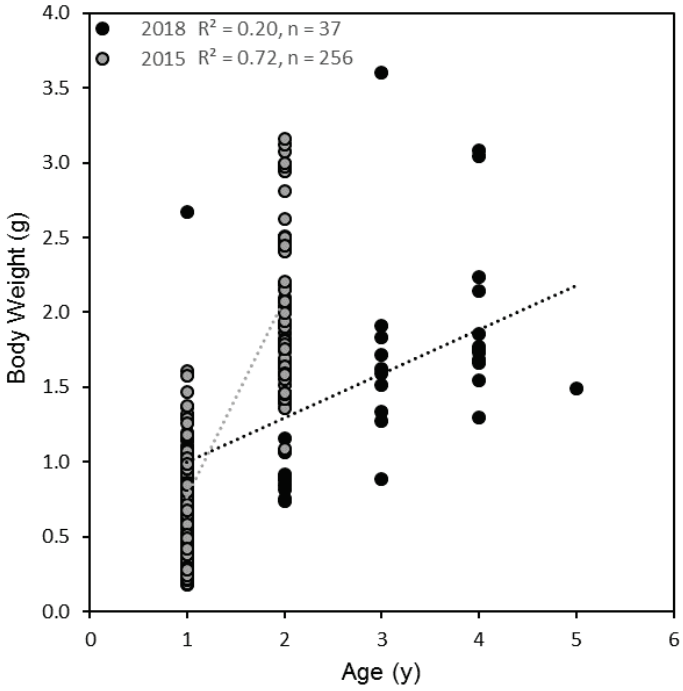
g = gram; n = sample size.

Figure 10D-7: Gonad Weight (log10) of Threespine Stickleback Captured During the Lethal Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



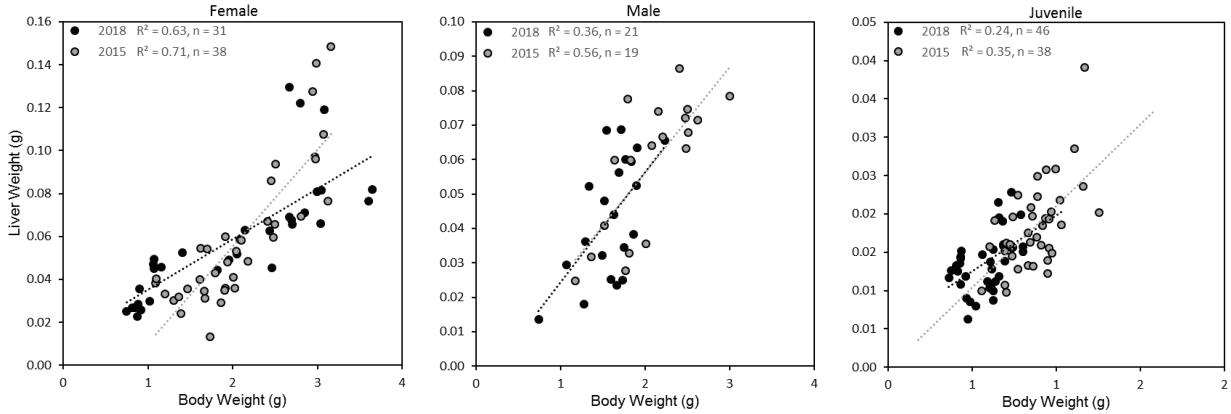
NF = Near-field Area; RA1 = Reference Area 1; g = gram; mm = millimetre; R^2 = coefficient of determination; n = sample size; rank = rank transformed data.

Figure 10D-8: Body Weight in Relation to Total Length for Threespine Stickleback Captured During the Lethal and Population Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



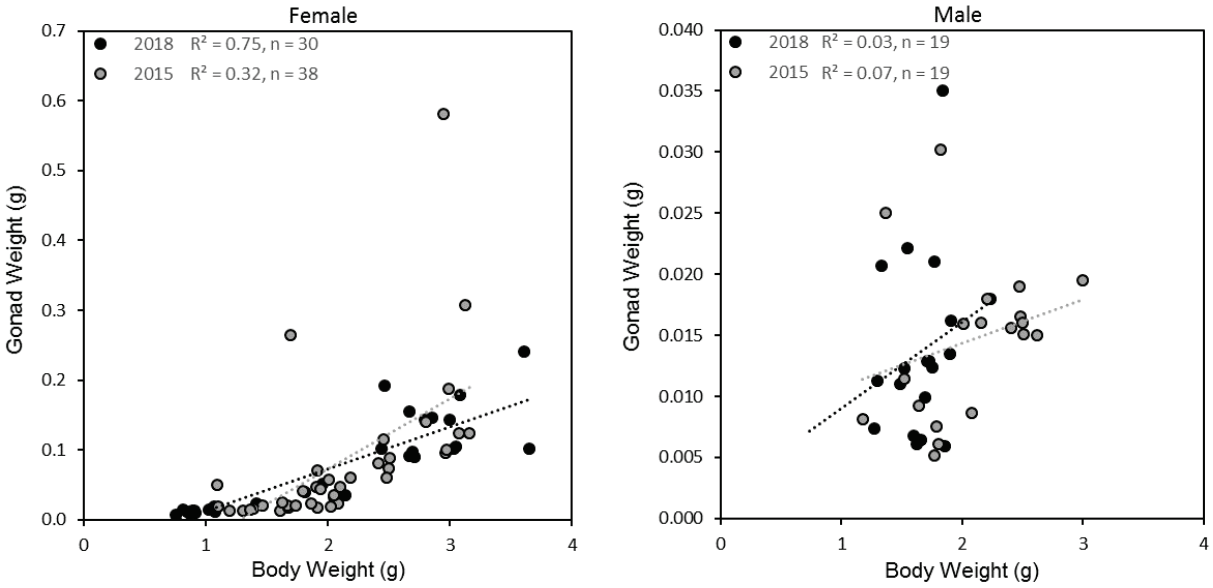
Note: Age calculations were based on otolith analysis in 2018, whereas in 2015 age was calculated using length-frequency distributions.
g = gram; y = year; R^2 = coefficient of determination; n = sample size.

Figure 10D-9: Body Weight in Relation to Age for Lethally Sampled Threespine Stickleback Captured During the Lethal and Population Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



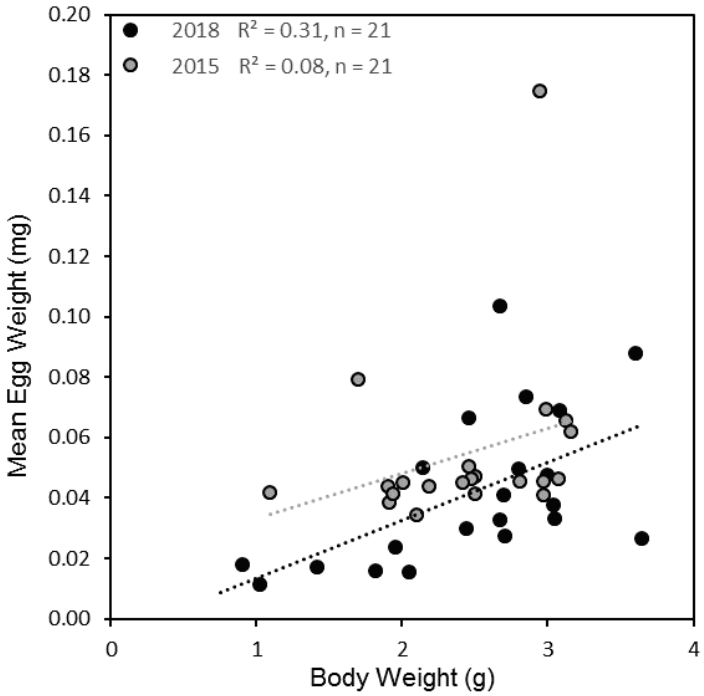
g = gram; R^2 = coefficient of determination; n = sample size.

Figure 10D-10: Liver Weight in Relation to Body Weight for Threespine Stickleback Captured During the Lethal Surveys at the Near-field Area of Meliadine Lake, 2015 and 2018



g = gram; R^2 = coefficient of determination; n = sample size.

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g = gram; mg = milligram; R^2 = coefficient of determination; n = sample size.

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APPENDIX 11A

Plankton QA/QC

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11A1.0 INTRODUCTION

Quality assurance and quality control (QA/QC) procedures are applied during all aspects of a monitoring program, and are used to determine data integrity. Quality assurance (QA) procedures include training of personnel, data management, and other technical practices designed to confirm that high quality data are consistently generated. Quality control (QC) procedures include steps to measure and evaluate data quality, as well as the corrective actions that are applied when data quality objectives are not achieved.

The QA/QC procedures implemented during the 2018 plankton monitoring programs under the Aquatic Effects Monitoring Program (AEMP) for the Meliadine Gold Mine Project (Project) are described in the following sections. QA/QC procedures and results for the 2015, 2016, and 2017 plankton monitoring programs are reported by Golder (Golder 2018). An evaluation of the QC data and implications for the interpretation of the AEMP study results is also included.

11A2.0 QUALITY ASSURANCE

Similar to water quality (Appendix 6A) and sediment quality (Appendix 7A), the QA procedures implemented for the 2018 plankton monitoring program can be classified into three categories of data management. These include field operations, laboratory analyses, and office operations.

11A2.1 Field Operations

Quality assurance procedures for field operations involve field crew training, pre-field meetings, and the use of standardized methods and explicit instructions for collecting and handling field data. Field staff for the Project were trained to be proficient in standardized field sampling procedures, data recording, and equipment operation. Golder Associates Ltd. (Golder) developed specific work instructions (SWI) for the field component of Project, based on standardized technical procedures that are consistent with widely accepted field protocols described in relevant scientific literature (e.g., Environment Canada 1993). Field work was completed according to the SWI, which included the exact locations of sampling sites and detailed step by step instructions for field tasks, including:

- equipment maintenance
- sample collection, handling, preservation, labelling, storage, and shipping
- record keeping and sample tracking

The SWI also included contact information for members of the project team and the analytical laboratory, as well as references to applicable technical procedures. Field data were recorded on standardized field data sheets or in a bound field notebook. Chain of custody forms were used to track samples sent to the analytical laboratory, and receipt of the samples at the laboratory was confirmed. The crew lead was responsible for tracking samples to confirm that all required samples were collected, chain of custody and analytical request forms were complete and correct, and that labelling and documentation procedures were followed. Field crews checked in with component managers, as needed, and submitted daily reports to provide updates on completed tasks.

Pre-field meetings were held with the field crew and project/component manager prior to the start of each field program to discuss the purpose of the field program, the role of each crew member, specific details of the SWI, equipment needs, field logistics, and contingency plans.

11A2.2 Laboratory Analyses

Water samples collected in 2018 for depth integrated nutrient (DIN) and chlorophyll *a* analyses were submitted to a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory; therefore, confidence in the reliability of the analytical results received from the laboratory is considered high. To receive accreditation, a laboratory must pass an evaluation of its internal procedures, analytical methods, and QC processes.

A designated member of the project team was responsible for liaising with the analytical laboratories.

11A2.3 Office Operations

Quality assurance procedures implemented for office-based tasks included the following:

- having trained personnel complete data management, analysis, and reporting tasks
- using standardized data storage, manipulation, and summary tools, as required
- establishing a data management system to support consistency, QC, and data retrieval
- senior review of data deliverables at appropriate milestones

11A3.0 QUALITY CONTROL

QC steps implemented during the 2018 plankton monitoring program activities can be classified into the same three categories used describe QA procedures: field operations, laboratory analyses, and office operations.

11A3.1 Field Operations

Quality control procedures implemented during field operations included the collection of QC samples that were used to check the precision of field sampling methods and laboratory analyses. QC samples collected in support of the plankton monitoring programs included:

- **Duplicate DIN samples:** Duplicate samples consisted of paired, depth integrated water samples collected at the same time and location, using the same methods. Duplicate samples were collected at randomly selected stations in Meliadine Lake, and represented approximately 10% of the total number of DIN samples submitted for analysis. All QC samples were submitted “blind” to the analytical laboratory and analyzed for the same set of parameters as the other DIN samples.
- **Triplicate chlorophyll *a* samples:** Triplicate samples were collected at all stations in Meliadine Lake and were kept cool and dark until filtered and frozen prior to sample shipment.
- **Duplicate phytoplankton samples:** These samples were collected at randomly selected stations in Meliadine Lake.

11A3.2 Laboratory Analyses

To support analysis of the DIN samples, the analytical laboratory prepared in-house QC samples and analyzed them along with the field collected samples. The objective was to confirm the quality and reliability of the analytical results. QC analyses and sample types included duplicate analyses, spiked samples, and method blanks.

Plankton R Us performed an internal QC of the phytoplankton taxonomy by performing replicate counts on 10% of the samples. Replicate phytoplankton samples were chosen at random and processed at different times from the original analysis to reduce bias. The laboratory QC results were reviewed to confirm the quality of the data and to evaluate whether the laboratory identified any questionable results for specific parameters.

11A3.3 Office Operations

QC operations implemented in the office focussed on confirming and maintaining the quality of in situ measurement data and analytical results, as well as verifying the accuracy of data summaries (i.e., summary statistics and plots). Field data entered into the Project database were compared against the field data sheets and field notebook to confirm their accuracy. Unaltered data files from the laboratory were saved to the Project directory and were used as a reference to confirm the accuracy of the data entered into the Project database. Laboratory data were also screened for quality. Backup files were created before each major data analysis operation and calculations were reviewed to confirm the accuracy of the results.

11A3.4 Laboratory Data Screening

A series of standard data screening steps were completed upon receipt of water chemistry results from the analytical laboratory to identify potential issues with the DIN dataset, including:

- verification that all requested parameters and samples were analyzed
- verification that the appropriate detection limits (DLs) were used and data were reported in the appropriate units
- data logic checks (e.g., comparisons of dissolved and total nitrogen and phosphorus concentrations)
- identification of outliers
- review of duplicate sample results for unacceptable variation
- review of laboratory QC results (i.e., sample temperature and integrity of containers upon receipt, holding times, laboratory blanks and recoveries from spiked samples, internal duplicates, review of laboratory qualifiers and notes)
- review of the final dataset for completeness, and confirmation that sources of unexpected values and trends have been identified

Prompt completion of the screening steps allowed for potential re analysis of samples by the laboratory to verify questionable data or to generate data for missing parameters. If samples were re analyzed by the laboratory and the data were still considered questionable, qualifiers for consideration during data summary and analysis steps were added to the dataset, or the data were excluded from further analyses.

11A3.5 Quality Control Data Evaluation

11A3.5.1 Depth-integrated Nutrients

Differences between concentrations measured in duplicate DIN samples were evaluated based on the relative percent difference (RPD), where:

$$RPD = \frac{|C1 - C2|}{\frac{(C1 + C2)}{2}} * 100$$

where C1 is the concentrations in the sample and C2 is the concentration in the second or duplicate sample.

The RPD was only calculated if both of the paired concentrations in the duplicate samples were greater than five times the DL. The RPD for a given parameter was flagged if it was greater than 20%.

11A3.5.2 Chlorophyll *a*

Chlorophyll *a* data were checked thoroughly for errors or omissions. RPDs were not calculated for chlorophyll *a,* as samples were collected in triplicate at all sampling stations as part of the study design. Anomalous results were clarified with the analytical laboratory and data believed to be recorded in error was flagged and omitted from statistical analyses.

11A3.5.3 Phytoplankton

The inherent variability associated with phytoplankton samples prevents the establishment of a QC threshold value. For the purposes of the plankton QC, the proportion of each major group was calculated and the occurrence of dominant species used to assess consistency between the field samples and duplicate samples analyzed. In addition, the RPD was used to assess the overall similarity between the field and duplicate samples. Due to high variability in species occurrence, the comparisons were made at the major group level for both abundance and biomass, rather than the species level. Differences in total abundance and biomass were also evaluated. RPDs greater than 50% were flagged and follow-up assessments of the data were performed. Plots of the relative abundance results for the field and duplicate samples were made so that duplicate results could be evaluated on a case by case basis.

11A3.6 Quality Control Results

A summary of the quality control samples collected during the plankton monitoring program is provided in Table 11A-1. Detailed QC results for DIN and phytoplankton are presented in Section 11A4.0 (Table 11A-2 to Table 11A-6). The results from each type of sample are provided in the sections below.

Table 11A-1: Summary of Quality Control Samples Collected in 2018

Type of Sample	Summer 2018
Duplicates – Depth Integrated Nutrients	MEL-01-09 MEL-03-01
Duplicates – Phytoplankton	MEL-02-02 MEL-04-05 MEL-05-01

11A3.6.1 Depth Integrated Nutrients

To maintain sample integrity, DIN samples for laboratory analyses were submitted as soon as possible after collection. However, holding time exceedances are a common issue for water samples collected from remote areas because transport of samples to the laboratory is subject to the availability of scheduled charter flights. Holding times may also be exceeded if the laboratory is unable to initiate testing promptly following sample receipt. Analytical holding times were met for most parameters, with the exception of nitrate, nitrite, and orthophosphate.

Two duplicate DIN samples were collected in support of the 2018 plankton program (Table 11A-1). RPDs could not be calculated for the majority of DIN parameters due to concentrations being less than five times the detection limit (Table 11A-2). RPDs exceeded 20% for total Kjeldahl nitrogen, total nitrogen and total phosphorus in the duplicate samples collected at MEL-01-09. RPDs were all below 20% in the duplicate samples collected at MEL-03-01.

A single equipment blank sample was also collected and submitted for analysis of all DIN parameters. Concentrations of all DIN parameters were below detection limits in the equipment blank sample.

Dissolved concentrations measured in the DIN samples, including duplicates, were compared to their corresponding total concentrations. The majority of dissolved parameter concentrations in the dataset met quality criteria (i.e., for paired total and dissolved concentrations that were more than five times the DL, the dissolved concentration was no more than 20% higher than the total concentration). Concentrations of dissolved Kjeldahl nitrogen were more than 20% higher than concentrations of total Kjeldahl nitrogen in 8 of the 26 DIN samples collected; however, statistical analysis of total Kjeldahl nitrogen was not undertaken in the plankton targeted study. Therefore, these results would not have impacted the analysis of nutrient variability in Meliadine Lake.

11A3.6.2 Chlorophyll *a*

No errors or omissions were found in chlorophyll *a* data reported in 2018.

11A3.6.3 Phytoplankton

A total of three duplicate phytoplankton samples were collected from Meliadine Lake in 2018 (Table 11A-3 and Table 11A-4). For phytoplankton, RPD values were below 50% when calculated on total biomass (Table 11A-3). However, at the major group level, all three duplicate samples for phytoplankton biomass had RPDs greater than 50% for one or more taxonomic group. Affected groups included cyanobacteria, cryptophytes and dinoflagellates. Similarly, for phytoplankton abundance, based on total abundance, RPDs were less than 50%, but at the major group level, 2 out of 3 duplicates had RPDs greater than 50% for one or more taxonomic group (Table 11A-4). Affected groups included chlorophytes, cryptophytes, and dinoflagellates. In general, where high RPDs were observed, the biomass or abundance of the taxa tended to be low in both samples in comparison with the total biomass or abundance of the sample. A visual examination of relative abundance and relative biomass plots for paired duplicate samples indicates that the general composition of the samples appears to be similar between duplicates (Figure 11A-1 and Figure 11A-2). In addition, the dominant taxon (i.e., the taxon contributing the most biomass or abundance to the sample) was consistent between duplicates.

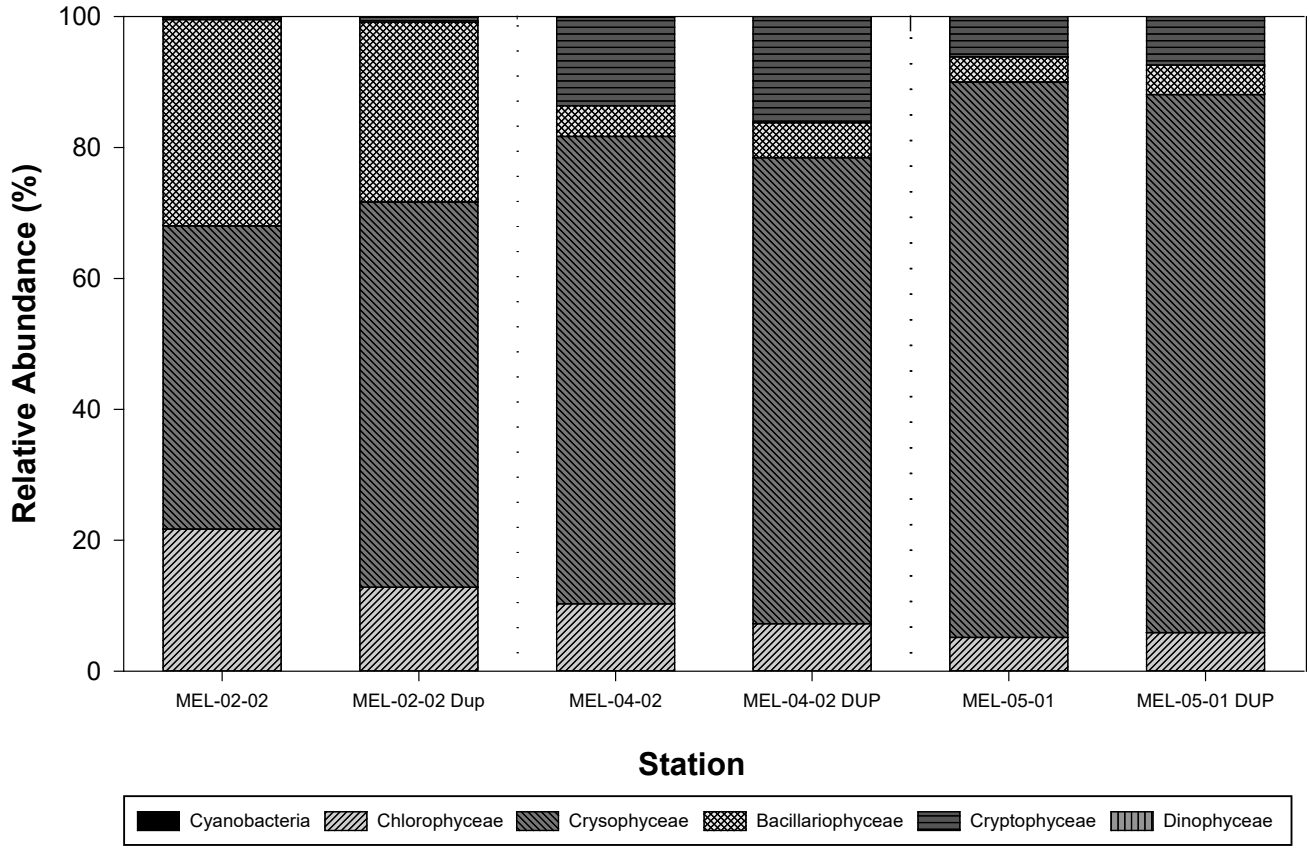


Figure 11A-1: Relative Abundance of Major Phytoplankton Taxonomic Groups in Duplicate Samples, Meliadine Lake, 2018

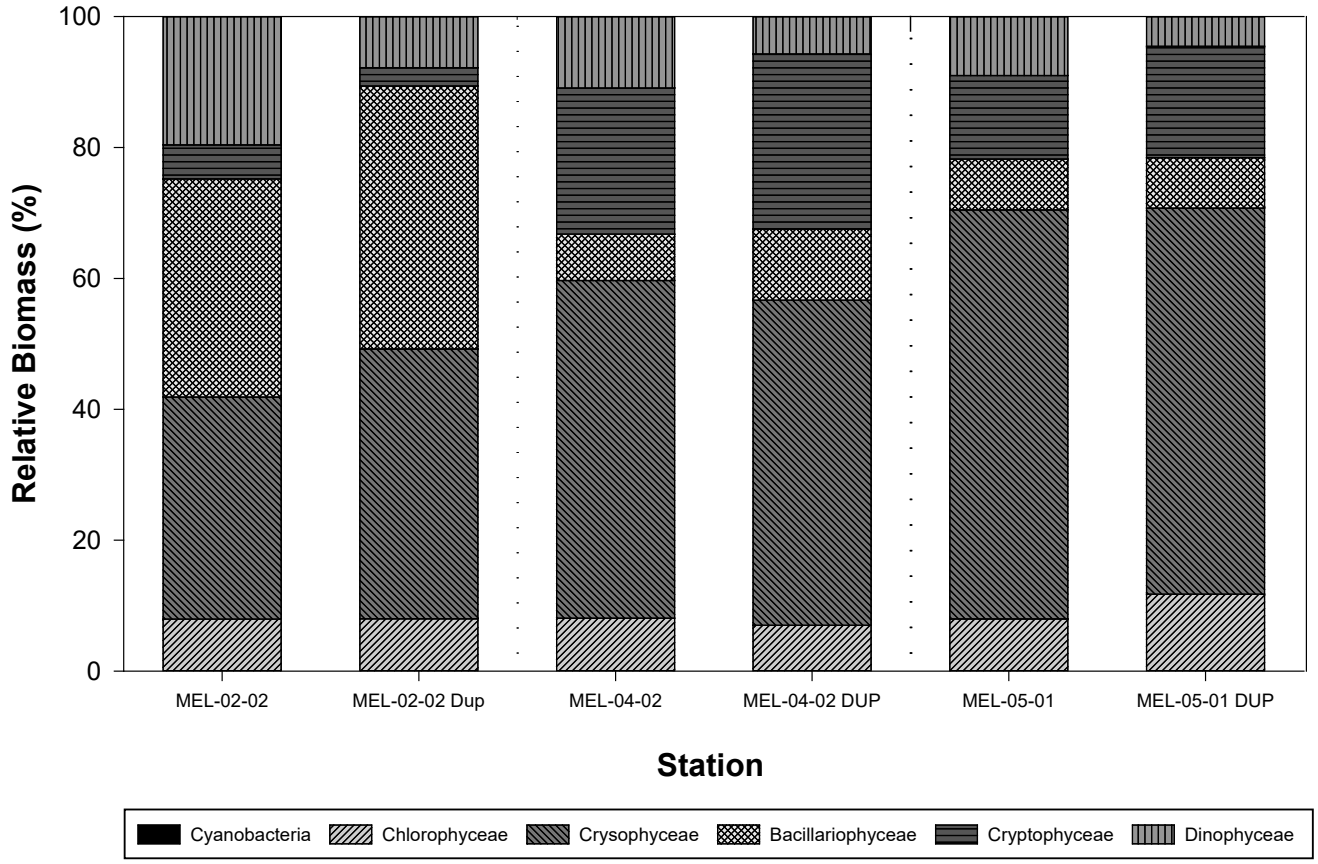


Figure 11A-2: Relative Biomass of Major Phytoplankton Taxonomic Groups in Duplicate Samples, Meliadine Lake, 2018

11A3.7 Data Quality Summary

Key QC findings for the 2018 plankton monitoring programs are as follows:

- A total of 12% of paired concentrations in duplicate DIN samples had a RPD greater than 20%. Each of the three RPD exceedances came from duplicate samples collected at MEL-01-09 in August 2018, where RPDs for concentrations of total Kjeldahl nitrogen, total nitrogen and total phosphorus exceeded 20%. All RPDs for the other set of DIN duplicate samples collected at MEL-02-01 in 2018 were below 20%.
- Concentrations of dissolved parameters were generally lower than corresponding total concentrations for the DIN samples. Dissolved concentrations were higher than total concentrations for 4.4% of comparisons.
- RPDs for total phosphorus concentrations in 2018 were below 20% in all samples.
- The dominant taxon was consistent between duplicate samples for phytoplankton biomass and abundance.
- RPDs for total phytoplankton biomass and abundance were below 50% for all duplicates.
- RPDs above 50% were observed in the majority of duplicates for major phytoplankton taxonomic groups; however, graphical presentation of the relative abundance of major phytoplankton groups showed that variation between duplicates was actually low, and that the proportions of major groups were similar between duplicates.

Differences between original and QC samples were deemed minor, and within the range of variability expected in plankton data. Based on this assessment, the plankton monitoring data are considered adequate to meet the needs of the AEMP for the Mine.

11A4.0 DETAILED RESULTS TABLES

Table 11A-2: Depth integrated Nutrient Water Quality Duplicate Results, 2018

Station	Units	DL	RPD Alert Limit	MEL-03-01		RPD (%)[a]	MEL-01-09		RPD (%)[a]
Sample Name				Sample	Duplicate		Sample	Duplicate	
Sample Collection Date				20-Aug-18			22-Aug-18		
Parameter									
Reactive silica, as SiO_2	mg/L	0.010	>20%	0.356	0.356	0	0.231	0.229	1
Dissolved Kjeldahl nitrogen	mg/L	0.050	>20%	0.206	0.158	nc	0.181	0.185	nc
Dissolved nitrogen	mg/L	0.050	>20%	0.206	0.158	nc	0.181	0.185	nc
Dissolved phosphorus	mg/L	0.0010	>20%	0.0024	0.0019	nc	0.0021	0.0018	nc
Nitrate	mg/L	0.0050	>20%	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc
Nitrite	mg/L	0.0010	>20%	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
Orthophosphate	mg/L	0.0010	>20%	0.0012	<0.0010	nc	<0.0010	<0.0010	nc
Total ammonia	mg/L	0.0050	>20%	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc
Total Kjeldahl nitrogen	mg/L	0.050	>20%	0.234	0.336	**36**	0.103	0.203	nc
Total nitrogen	mg/L	0.050	>20%	0.234	0.336	**36**	0.103	0.203	nc
Total phosphorus	mg/L	0.0010	>20%	0.0052	0.003	**54**	0.0038	0.0022	nc

Note: RPDs greater than 20% are shown in **bold**; duplicate concentrations failed the QC check.
a) The RPD was only calculated if both of the paired concentrations were above five times the DL.
DL = detection limit; RPD = relative percent difference; % = percent; SiO_2 = silicon dioxide;
mg/L = milligrams per litre; >= greater than; nc = not calculated; <= less than.

Table 11A-3: Quality Control Comparison of Phytoplankton Biomass Results in Duplicate Samples from Meliadine Lake, 2018

Station	Units	RPD Alert Limit	MEL-02-02		RPD (%)	MEL-04-05		RPD (%)	MEL-05-01		RPD (%)
Sample Name			Sample	Sample		Sample	Sample		Sample	Sample	
Sampling Season			Summer			Summer			Summer		
Sample Collection Date			31-Aug-18			2-Sep-18			1-Sep-18		
Biomass by Taxonomic Group											
Cyanophytes	mg/m^3	>50%	0.00	0.00	nc	0.00	0.00	nc	0.00	0.00	nc
Chlorophytes	mg/m^3	>50%	8.35	7.69	8	20.70	15.14	31	16.69	23.97	36
Chrysophytes	mg/m^3	>50%	35.77	39.69	10	132.29	107.64	21	130.86	120.49	8
Diatoms	mg/m^3	>50%	35.09	38.65	10	18.20	23.51	25	16.26	15.76	3
Cryptophytes	mg/m^3	>50%	5.47	2.70	**68**	57.23	57.94	1	26.68	34.72	26
Dinoflagellates	mg/m^3	>50%	20.64	7.50	**93**	27.95	12.37	**77**	18.85	9.27	**68**
Total	mg/m^3	>50%	105.32	96.23	9	256.37	216.59	17	209.34	204.21	2

Note: RPDs greater than 50% are shown in **bold**; duplicate concentrations failed the QC check.
The dominant taxon (i.e., the taxon contributing the most biomass to the sample) is highlighted in grey for each sample and duplicate.
RPD = relative percent difference; % = percent; mg/m^3 = milligrams per cubic metre; >= greater than; nc = not calculated if one sample had a biomass of zero; QC = quality control.

Table 11A-4: Quality Control Comparison of Phytoplankton Abundance Results in Duplicate Samples from Meliadine Lake, 2018

Station	Units	RPD Alert Limit	MEL-02-02		RPD (%)	MEL-04-05		RPD (%)	MEL-05-01		RPD (%)
Sample Name			Sample	Sample		Sample	Sample		Sample	Sample	
Sampling Season			Summer			Summer			Summer		
Sample Collection Date			31-Aug-18			2-Sep-18			1-Sep-18		
Biomass by Taxonomic Group											
Cyanophytes	cells/L	>50%	-	-	nc	-	-	nc	-	-	nc
Chlorophytes	cells/L	>50%	252,240	137,696	59	296,144	174,816	52	145,280	167,632	14
Chrysophytes	cells/L	>50%	538,800	632,392	16	2,054,824	1,717,176	18	2,400,056	2,349,168	2
Diatoms	cells/L	>50%	366,032	295,008	21	135,312	128,528	5	108,376	129,128	17
Cryptophytes	cells/L	>50%	3,200	8,184	88	390,336	390,536	0	174,016	211,736	20
Dinoflagellates	cells/L	>50%	2,600	1,400	60	2,600	1,400	60	1,200	800	40
Total	**cells/L**	**>50%**	**1,162,872**	**1,074,680**	**8**	**2,879,216**	**2,412,456**	**18**	**2,828,928**	**2,858,464**	**1**

Note: RPDs greater than 50% are shown in **bold**; duplicate concentrations failed the QC check.
The dominant or most abundant taxon is highlighted in grey for each sample and duplicate.
RPD = relative percent difference; % = percent; cells/L = cells per litre; >= greater than; nc = not calculated if one sample had an abundance of zero; QC = quality control.

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APPENDIX 11B

Depth Integrated Nutrients and Chlorophyll *a*

Table 11B-1: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2015

Parameter	Unit	MEL-01						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.23	0.29	0.31	0.38	0.067	0.030
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.024	0.088	0.037	0.016
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.024	0.088	0.037	0.016
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0039	0.0093	0.0030	0.001
Total Kjeldahl nitrogen	mg-N/L	5	<0.05	0.078	0.078	0.13	0.053	0.024
Dissolved Kjeldahl nitrogen	mg-N/L	5	<0.05	<0.05	0.057	0.11	0.044	0.019
Total nitrogen (calculated)	mg-N/L	5	0.048	0.13	0.10	0.17	0.060	0.027
Total nitrogen	mg-N/L	5	<0.05	0.13	0.096	0.17	0.066	0.030
Dissolved nitrogen	mg-N/L	5	<0.05	0.088	0.074	0.13	0.047	0.021
Total phosphorus	mg-P/L	5	0.0039	0.0041	0.0051	0.0091	0.0023	0.001
Dissolved phosphorus	mg-P/L	5	<0.001	0.0014	0.0014	0.0021	0.00058	0.000
Orthophosphate	mg-P/L	5	<0.001	0.0012	0.0010	0.0014	0.00046	0.000
Parameter	**Unit**	**MEL-02**						
		Count	**Minimum**	**Median**	**Mean**	**Maximum**	**Standard Deviation**	**Standard Error**
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.22	0.27	0.27	0.30	0.030	0.013
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0058	0.019	0.0074	0.003
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0058	0.019	0.0074	0.003
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	<0.05	<0.05	0.073	0.19	0.073	0.033
Dissolved Kjeldahl nitrogen	mg-N/L	5	<0.05	<0.05	0.051	0.11	0.039	0.017
Total nitrogen (calculated)	mg-N/L	5	<0.05	<0.05	0.076	0.19	0.075	0.034
Total nitrogen	mg-N/L	5	<0.05	<0.05	0.076	0.19	0.075	0.034
Dissolved nitrogen	mg-N/L	5	<0.05	<0.05	0.051	0.11	0.039	0.017
Total phosphorus	mg-P/L	5	0.0014	0.0045	0.0039	0.0056	0.0017	0.001
Dissolved phosphorus	mg-P/L	5	<0.001	0.0011	0.0019	0.0050	0.0019	0.001
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00064	0.0012	0.00031	0.000

Notes: < = parameter below detection limit; mg/L=milligrams per litre;

Values below detection limits were converted to half-detects for the calculation of summary statistics.

Table 11B-2: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2016

Parameter	Unit	MEL-01						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.38	0.39	0.39	0.40	0.0045	0.002
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0034	0.0072	0.0021	0.001
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0035	0.0072	0.0021	0.001
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.050	0.058	0.079	0.14	0.037	0.016
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.11	0.14	0.13	0.15	0.016	0.007
Total nitrogen (calculated)	mg-N/L	5	0.050	0.064	0.081	0.14	0.036	0.016
Total nitrogen	mg-N/L	5	0.050	0.064	0.081	0.14	0.036	0.016
Dissolved nitrogen	mg-N/L	5	0.11	0.14	0.13	0.16	0.019	0.008
Total phosphorus	mg-P/L	5	0.0050	0.0055	0.0059	0.0071	0.00092	0.000
Dissolved phosphorus	mg-P/L	5	0.0019	0.0021	0.0021	0.0023	0.00016	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00072	0.0011	0.00030	0.000
Parameter	**Unit**	**MEL-02**						
		Count	**Minimum**	**Median**	**Mean**	**Maximum**	**Standard Deviation**	**Standard Error**
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.25	0.26	0.26	0.27	0.0075	0.003
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0055	0.018	0.0068	0.003
Total Kjeldahl nitrogen	mg-N/L	5	0.092	0.11	0.11	0.13	0.018	0.008
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.14	0.17	0.17	0.20	0.023	0.010
Total nitrogen (calculated)	mg-N/L	5	0.092	0.11	0.11	0.13	0.018	0.008
Total nitrogen	mg-N/L	5	0.092	0.11	0.11	0.13	0.018	0.008
Dissolved nitrogen	mg-N/L	5	0.14	0.17	0.17	0.20	0.023	0.010
Total phosphorus	mg-P/L	5	0.0040	0.0067	0.0072	0.013	0.0033	0.001
Dissolved phosphorus	mg-P/L	5	0.0015	0.0016	0.0018	0.0024	0.00037	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00090	0.0015	0.00055	0.000

Table 11B-2: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2016

Parameter	Unit	MEL-03						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.18	0.19	0.19	0.19	0.0049	0.002
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0040	0.010	0.0034	0.002
Total Kjeldahl nitrogen	mg-N/L	5	0.055	0.098	0.12	0.22	0.065	0.029
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.14	0.14	0.16	0.19	0.022	0.010
Total nitrogen (calculated)	mg-N/L	5	0.055	0.098	0.12	0.22	0.065	0.029
Total nitrogen	mg-N/L	5	0.055	0.098	0.12	0.22	0.065	0.029
Dissolved nitrogen	mg-N/L	5	0.14	0.14	0.16	0.19	0.022	0.010
Total phosphorus	mg-P/L	5	0.0034	0.0046	0.0044	0.0051	0.00063	0.000
Dissolved phosphorus	mg-P/L	5	0.0013	0.0016	0.0017	0.0024	0.00042	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000

Parameter	Unit	MEL-04						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.19	0.19	0.20	0.23	0.020	0.009
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.068	0.11	0.10	0.15	0.030	0.014
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.078	0.11	0.11	0.19	0.045	0.020
Total nitrogen (calculated)	mg-N/L	5	0.068	0.11	0.10	0.15	0.030	0.014
Total nitrogen	mg-N/L	5	0.068	0.11	0.10	0.15	0.030	0.014
Dissolved nitrogen	mg-N/L	5	0.078	0.11	0.11	0.19	0.045	0.020
Total phosphorus	mg-P/L	5	0.0041	0.0043	0.0046	0.0058	0.00068	0.000
Dissolved phosphorus	mg-P/L	5	0.0019	0.0024	0.0025	0.0032	0.00051	0.000
Orthophosphate	mg-P/L	5	<0.001	0.0014	0.0015	0.0028	0.0011	0.000

Table 11B-2: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2016

Parameter	Unit	MEL-05						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.20	0.20	0.20	0.21	0.0050	0.002
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.061	0.086	0.10	0.16	0.042	0.019
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.076	0.10	0.099	0.11	0.013	0.006
Total nitrogen (calculated)	mg-N/L	5	0.061	0.086	0.10	0.16	0.042	0.019
Total nitrogen	mg-N/L	5	0.061	0.086	0.10	0.16	0.042	0.019
Dissolved nitrogen	mg-N/L	5	0.076	0.10	0.099	0.11	0.013	0.006
Total phosphorus	mg-P/L	5	0.0035	0.0044	0.0045	0.0058	0.00087	0.000
Dissolved phosphorus	mg-P/L	5	0.0023	0.0029	0.0031	0.0048	0.00099	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00080	0.0014	0.00042	0.000

Notes: < = parameter below detection limit; mg/L=milligrams per litre;

Values below detection limits were converted to half-detects for the calculation of summary statistics.

Table 11B-3: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2017

Parameter	Unit	MEL-01						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.54	0.55	0.55	0.57	0.012	0.005
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00064	0.0012	0.00031	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.18	0.21	0.22	0.26	0.028	0.013
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.16	0.19	0.19	0.20	0.016	0.007
Total nitrogen (calculated)	mg-N/L	5	0.18	0.21	0.22	0.26	0.028	0.013
Total nitrogen	mg-N/L	5	0.18	0.21	0.22	0.26	0.028	0.013
Dissolved nitrogen	mg-N/L	5	0.16	0.19	0.19	0.20	0.016	0.007
Total phosphorus	mg-P/L	5	0.0052	0.0058	0.0060	0.0068	0.00072	0.000
Dissolved phosphorus	mg-P/L	5	0.0020	0.0028	0.0027	0.0035	0.00058	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00072	0.0016	0.00049	0.000
Parameter	**Unit**	**MEL-02**						
		Count	**Minimum**	**Median**	**Mean**	**Maximum**	**Standard Deviation**	**Standard Error**
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.34	0.35	0.35	0.35	0.0041	0.002
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.13	0.15	0.16	0.19	0.022	0.010
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.14	0.16	0.16	0.17	0.011	0.005
Total nitrogen (calculated)	mg-N/L	5	0.13	0.15	0.16	0.19	0.022	0.010
Total nitrogen	mg-N/L	5	0.13	0.15	0.16	0.19	0.022	0.010
Dissolved nitrogen	mg-N/L	5	0.14	0.16	0.16	0.17	0.011	0.005
Total phosphorus	mg-P/L	5	0.0035	0.0040	0.0044	0.0055	0.00088	0.000
Dissolved phosphorus	mg-P/L	5	0.0017	0.0023	0.0024	0.0035	0.00070	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000

Table 11B-3: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2017

Parameter	Unit	MEL-03						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.24	0.25	0.25	0.25	0.0025	0.001
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.11	0.13	0.12	0.13	0.0093	0.004
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.10	0.14	0.13	0.14	0.018	0.008
Total nitrogen (calculated)	mg-N/L	5	0.11	0.13	0.12	0.13	0.0093	0.004
Total nitrogen	mg-N/L	5	0.11	0.13	0.12	0.13	0.0093	0.004
Dissolved nitrogen	mg-N/L	5	0.10	0.14	0.13	0.14	0.018	0.008
Total phosphorus	mg-P/L	5	0.0030	0.0037	0.0038	0.0053	0.00090	0.000
Dissolved phosphorus	mg-P/L	5	0.0012	0.0017	0.0020	0.0028	0.00067	0.000
Orthophosphate	mg-P/L	5	<0.001	0.0010	0.00086	0.0012	0.00034	0.000
Parameter	**Unit**	**MEL-04**						
		Count	**Minimum**	**Median**	**Mean**	**Maximum**	**Standard Deviation**	**Standard Error**
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.25	0.26	0.26	0.26	0.0042	0.002
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.12	0.15	0.14	0.17	0.023	0.010
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.13	0.14	0.14	0.17	0.015	0.007
Total nitrogen (calculated)	mg-N/L	5	0.12	0.15	0.14	0.17	0.023	0.010
Total nitrogen	mg-N/L	5	0.12	0.15	0.14	0.17	0.023	0.010
Dissolved nitrogen	mg-N/L	5	0.13	0.14	0.14	0.17	0.015	0.007
Total phosphorus	mg-P/L	5	0.0037	0.0057	0.0071	0.015	0.0042	0.002
Dissolved phosphorus	mg-P/L	5	0.0016	0.0017	0.0018	0.0024	0.00034	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000

Table 11B-3: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2017

Parameter	Unit	MEL-05						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.26	0.27	0.27	0.27	0.0058	0.003
Nutrients								
Nitrate	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Nitrite	mg-N/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000
Nitrate + nitrite	mg-N/L	5	<0.0051	<0.0051	0.0026	<0.0051	0	0.000
Total ammonia	mg-N/L	5	<0.005	<0.005	0.0025	<0.005	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.15	0.16	0.16	0.18	0.013	0.006
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.15	0.16	0.16	0.19	0.017	0.008
Total nitrogen (calculated)	mg-N/L	5	0.15	0.16	0.16	0.18	0.013	0.006
Total nitrogen	mg-N/L	5	0.15	0.16	0.16	0.18	0.013	0.006
Dissolved nitrogen	mg-N/L	5	0.15	0.16	0.16	0.19	0.017	0.008
Total phosphorus	mg-P/L	5	0.0032	0.0037	0.0036	0.0040	0.00032	0.000
Dissolved phosphorus	mg-P/L	5	0.0014	0.0022	0.0024	0.0040	0.00097	0.000
Orthophosphate	mg-P/L	5	<0.001	<0.001	0.00050	<0.001	0	0.000

Notes: < = parameter below detection limit; mg/L=milligrams per litre;

Values below detection limits were converted to half-detects for the calculation of summary statistics.

Table 11B-4: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2018

Parameter	Unit	MEL-01						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.35	0.36	0.36	0.37	0.006	0.003
Nutrients								
Nitrate	mg-N/L	5	0.012	0.012	0.012	0.012	0	0.000
Nitrite	mg-N/L	5	0.0011	0.0011	0.0011	0.0011	0	0.000
Nitrate + nitrite	mg-N/L	5	0.0131	0.0131	0.0131	0.0131	0	0.000
Total ammonia	mg-N/L	5	< 0.0050	< 0.0050	0.0025	< 0.0050	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.20	0.25	0.24	0.27	0.029	0.013
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.18	0.22	0.23	0.28	0.037	0.016
Total nitrogen	mg-N/L	5	0.20	0.25	0.25	0.28	0.032	0.014
Dissolved nitrogen	mg-N/L	5	0.19	0.22	0.23	0.28	0.033	0.015
Total phosphorus	mg-P/L	5	0.0042	0.0050	0.0049	0.0052	0.00041	0.000
Dissolved phosphorus	mg-P/L	5	0.0020	0.0024	0.0029	0.0049	0.00115	0.001
Orthophosphate	mg-P/L	5	0.001	0.001	0.00115	0.0012	0.00007	0.000
Parameter	**Unit**	**MEL-02**						
		Count	**Minimum**	**Median**	**Mean**	**Maximum**	**Standard Deviation**	**Standard Error**
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.28	0.32	0.31	0.33	0.0225	0.010
Nutrients								
Nitrate	mg-N/L	5	< 0.0050	< 0.0050	0.0025	< 0.0050	0	0.000
Nitrite	mg-N/L	5	< 0.0010	< 0.0010	0.00050	< 0.0010	0	0.000
Nitrate + nitrite	mg-N/L	5	< 0.0051	< 0.0051	0.0025	< 0.0051	0	0.000
Total ammonia	mg-N/L	5	0.0065	0.0077	0.0077	0.0089	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.12	0.15	0.17	0.23	0.047	0.021
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.15	0.22	0.21	0.28	0.052	0.023
Total nitrogen	mg-N/L	5	0.12	0.15	0.17	0.23	0.047	0.021
Dissolved nitrogen	mg-N/L	5	0.15	0.22	0.21	0.28	0.052	0.023
Total phosphorus	mg-P/L	5	0.0047	0.0052	0.0073	0.0113	0.00332	0.001
Dissolved phosphorus	mg-P/L	5	0.0016	0.0023	0.0039	0.0108	0.00388	0.002
Orthophosphate	mg-P/L	5	0.001	0.002	0.00150	0.002	0	0.000

Table 11B-4: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2018

Parameter	Unit	MEL-03						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.23	0.23	0.23	0.23	0.0019	0.001
Nutrients								
Nitrate	mg-N/L	5	0.014	0.014	0.014	0.014	0	0.000
Nitrite	mg-N/L	5	< 0.0010	< 0.0010	0.00050	< 0.0010	0	0.000
Nitrate + nitrite	mg-N/L	5	0.014	0.014	0.014	0.014	0	0.000
Total ammonia	mg-N/L	5	< 0.0050	< 0.0050	0.0025	< 0.0050	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.10	0.16	0.15	0.18	0.0306	0.014
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.10	0.15	0.15	0.19	0.039	0.018
Total nitrogen	mg-N/L	5	0.10	0.17	0.15	0.18	0.0316	0.014
Dissolved nitrogen	mg-N/L	5	0.10	0.15	0.15	0.19	0.038	0.017
Total phosphorus	mg-P/L	5	0.0026	0.0037	0.0039	0.0064	0.00148	0.001
Dissolved phosphorus	mg-P/L	5	0.0015	0.0016	0.0018	0.0023	0.00037	0.000
Orthophosphate	mg-P/L	5	< 0.0010	< 0.0010	0.00050	< 0.0010	0	0.000
Parameter	**Unit**	**MEL-04**						
		Count	**Minimum**	**Median**	**Mean**	**Maximum**	**Standard Deviation**	**Standard Error**
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.24	0.24	0.24	0.25	0.0080	0.004
Nutrients								
Nitrate	mg-N/L	5	< 0.0050	< 0.0050	0.0025	< 0.0050	0	0.000
Nitrite	mg-N/L	5	< 0.0010	< 0.0010	0.00050	< 0.0010	0	0.000
Nitrate + nitrite	mg-N/L	5	< 0.0051	< 0.0051	0.0025	< 0.0051	0	0.000
Total ammonia	mg-N/L	5	0.027	0.027	0.027	0.027	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.13	0.15	0.16	0.20	0.028	0.014
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.11	0.13	0.13	0.17	0.024	0.012
Total nitrogen	mg-N/L	5	0.13	0.16	0.16	0.20	0.029	0.014
Dissolved nitrogen	mg-N/L	5	0.11	0.14	0.14	0.17	0.024	0.012
Total phosphorus	mg-P/L	5	0.0039	0.0041	0.0040	0.004	0.0002	0.000
Dissolved phosphorus	mg-P/L	5	0.0024	0.0024	0.0023	0.0028	0.00050	0.000
Orthophosphate	mg-P/L	5	< 0.0010	< 0.0010	0.00050	< 0.0010	0	0.000

Table 11B-4: Summary Statistics for Depth-integrated Nutrients from Meliadine Lake, August 2018

Parameter	Unit	MEL-05						
		Count	Minimum	Median	Mean	Maximum	Standard Deviation	Standard Error
Major Ions								
Reactive silica, as SiO2	mg/L	5	0.25	0.26	0.26	0.26	0.0036	0.002
Nutrients								
Nitrate	mg-N/L	5	< 0.0050	< 0.0050	0.0025	< 0.0050	0	0.000
Nitrite	mg-N/L	5	< 0.0010	< 0.0010	0.00050	< 0.0010	0	0.000
Nitrate + nitrite	mg-N/L	5	< 0.0051	< 0.0051	0.0025	< 0.0051	0	0.000
Total ammonia	mg-N/L	5	0.0073	0.008	0.0085	0.010	0	0.000
Total Kjeldahl nitrogen	mg-N/L	5	0.09	0.12	0.12	0.15	0.027	0.012
Dissolved Kjeldahl nitrogen	mg-N/L	5	0.10	0.14	0.14	0.17	0.028	0.013
Total nitrogen	mg-N/L	5	0.09	0.12	0.12	0.15	0.027	0.012
Dissolved nitrogen	mg-N/L	5	0.10	0.14	0.14	0.17	0.028	0.013
Total phosphorus	mg-P/L	5	0.0037	0.0049	0.0056	0.0094	0.00222	0.001
Dissolved phosphorus	mg-P/L	5	0.0021	0.0026	0.0025	0.0029	0.00033	0.000
Orthophosphate	mg-P/L	5	< 0.0010	< 0.0010	0.00050	< 0.0010	0	0.000

Notes: < = parameter below detection limit; mg/L=milligrams per litre;

Values below detection limits were converted to half-detects for the calculation of summary statistics.

Table 11B-5: Summary Statistics for Chlorophyll *a* from Meliadine Lake, 2015-2018

Year	Station	Season	Descriptive Statistic	Chlorophyll *a* (µg/L)
2015	MEL-01	August	Minimum	0.70
			Maximum	0.97
			Median	0.87
			Mean	0.86
			Standard Deviation	0.08
			Standard Error	0.02
	MEL-02	August	Minimum	0.32
			Maximum	0.57
			Median	0.41
			Mean	0.45
			Standard Deviation	0.10
			Standard Error	0.02
2016	MEL-01	August	Minimum	1.33
			Maximum	2.27
			Median	1.90
			Mean	1.88
			Standard Deviation	0.26
			Standard Error	0.07
	MEL-02	August	Minimum	0.34
			Maximum	1.37
			Median	1.21
			Mean	1.15
			Standard Deviation	0.26
			Standard Error	0.07
	MEL-03	August	Minimum	0.46
			Maximum	0.97
			Median	0.74
			Mean	0.73
			Standard Deviation	0.12
			Standard Error	0.03
	MEL-04	August	Minimum	0.78
			Maximum	1.09
			Median	0.92
			Mean	0.93
			Standard Deviation	0.09
			Standard Error	0.02
	MEL-05	August	Minimum	0.87
			Maximum	1.40
			Median	1.08
			Mean	1.10
			Standard Deviation	0.15
			Standard Error	0.04

Table 11B-5: Summary Statistics for Chlorophyll *a* from Meliadine Lake, 2015-2018

Year	Station	Season	Descriptive Statistic	Chlorophyll *a* (µg/L)
2017	MEL-01	August	Minimum	1.27
			Maximum	1.70
			Median	1.47
			Mean	1.48
			Standard Deviation	0.12
			Standard Error	0.03
	MEL-02	August	Minimum	0.46
			Maximum	0.72
			Median	0.62
			Mean	0.61
			Standard Deviation	0.07
			Standard Error	0.02
	MEL-03	August	Minimum	0.43
			Maximum	0.69
			Median	0.58
			Mean	0.57
			Standard Deviation	0.07
			Standard Error	0.02
	MEL-04	August	Minimum	0.51
			Maximum	0.71
			Median	0.63
			Mean	0.61
			Standard Deviation	0.07
			Standard Error	0.02
	MEL-05	August	Minimum	0.49
			Maximum	0.68
			Median	0.58
			Mean	0.58
			Standard Deviation	0.04
			Standard Error	0.01
2018	MEL-01	August	Minimum	1.83
			Maximum	2.04
			Median	1.90
			Mean	1.91
			Standard Deviation	0.08
			Standard Error	0.03
	MEL-02	August	Minimum	0.75
			Maximum	1.02
			Median	0.87
			Mean	0.88
			Standard Deviation	0.11
			Standard Error	0.05

Table 11B-5: Summary Statistics for Chlorophyll *a* from Meliadine Lake, 2015-2018

Year	Station	Season	Descriptive Statistic	Chlorophyll *a* (µg/L)
2018	MEL-03	August	Minimum	0.52
			Maximum	0.70
			Median	0.59
			Mean	0.61
			Standard Deviation	0.07
			Standard Error	0.03
	MEL-04	August	Minimum	0.56
			Maximum	0.63
			Median	0.57
			Mean	0.58
			Standard Deviation	0.04
			Standard Error	0.02
	MEL-05	August	Minimum	0.48
			Maximum	0.62
			Median	0.61
			Mean	0.58
			Standard Deviation	0.06
			Standard Error	0.03

Notes: mg/L=micrograms per litre.

Table 11B-6: Raw Depth Integrated Nutrients Data, 2015-2018

Location		MEL-01-01	MEL-01-01	MEL-01-01	MEL-01-01	MEL-01-02	MEL-01-02	MEL-01-02
Sample Name		MEL-01-01-N	MEL-01-01-N	MEL-01-01-N	MEL-01-01N	MEL-01-02-N	MEL-01-02-N	MEL-01-02-N
Sample Date		2015-08-14	2016-08-11	2017-08-09	2018-08-22	2015-08-14	2016-08-11	2017-08-09
Sample Depth		4 m	4 m	4 m	4 m	4 m	4 m	4 m
SAMPLE_TYPE_CODE		N	N	N	N	N	N	N
TASK_CODE		DIN	DIN	DIN	DIN	DIN	DIN	DIN
Parameter	**Unit**							
Major Ions								
Reactive silica, as SiO_2	mg/L	0.231	0.395	0.568	0.353	0.294	0.392	0.55
Nutrients								
Nitrate	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Nitrite	mg-N/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nitrate + Nitrite	mg-N/L	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
Total Ammonia	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total Kjeldahl Nitrogen	mg-N/L	0.129	0.058	0.212	0.268	0.133	0.094	0.258
Dissolved Kjeldahl Nitrogen	mg-N/L	< 0.050	0.135	0.192	0.223	0.103	0.135	0.202
Total Nitrogen	mg-N/L	0.129	0.058	0.212	0.268	0.133	0.094	0.258
Dissolved Nitrogen	mg-N/L	< 0.050	0.135	0.192	0.223	0.103	0.135	0.202
Total Phosphorus	mg-P/L	0.0043	0.0071	0.0058	0.005	0.0041	0.0055	0.0067
Dissolved Phosphorus	mg-P/L	0.0016	0.0022	0.0028	0.0024	0.0013	0.002	0.0023
Orthophosphate	mg-P/L	0.0014	0.0011	< 0.0010	< 0.0010	< 0.0010	0.001	< 0.0010

Table 11B-6: Raw Depth Integrated Nutrients Data, 2015-2018

Location		MEL-01-03	MEL-01-03	MEL-01-03	MEL-01-04	MEL-01-04	MEL-01-04	MEL-01-05	MEL-01-05	MEL-01-05	MEL-01-06	MEL-01-07	MEL-01-08	MEL-01-09
Sample Name		MEL-01-03-N	MEL-01-03-N	MEL-01-03-N	MEL-01-04-N	MEL-01-04-N	MEL-01-04-N	MEL-01-05-N	MEL-01-05-N	MEL-01-05-N	MEL-01-06N	MEL-01-07N	MEL-01-08N	MEL-01-09N
Sample Date		2015-08-14	2016-08-11	2017-08-09	2015-08-14	2016-08-11	2017-08-09	2015-08-15	2016-08-11	2017-08-09	2018-08-22	2018-08-21	2018-08-22	2018-08-22
Sample Depth		4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m
SAMPLE_TYPE_CODE		N	N	N	N	N	N	N	N	N	N	N	N	N
TASK_CODE		DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN
Parameter	**Unit**													
Major Ions														
Reactive silica, as SiO_2	mg/L	0.259	0.389	0.56	0.37	0.388	0.537	0.382	0.383	0.552	0.353	0.367	0.356	0.356
Nutrients														
Nitrate	mg-N/L	0.0876	< 0.0050	< 0.0050	0.0226	< 0.0050	< 0.0050	< 0.0050	0.0072	< 0.0050	< 0.0050	0.0121	< 0.0050	< 0.0050
Nitrite	mg-N/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0010
Nitrate + Nitrite	mg-N/L	0.0876	< 0.0051	< 0.0051	0.0226	< 0.0051	< 0.0051	< 0.0051	0.0072	< 0.0051	< 0.0051	0.0131	< 0.0051	< 0.0051
Total Ammonia	mg-N/L	< 0.0050	< 0.0050	< 0.0050	0.0093	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total Kjeldahl Nitrogen	mg-N/L	0.078	0.05	0.23	< 0.050	0.137	0.205	< 0.050	0.057	0.182	0.199	0.269	0.248	0.234
Dissolved Kjeldahl Nitrogen	mg-N/L	< 0.050	0.108	0.176	0.106	0.122	0.198	< 0.050	0.151	0.164	0.241	0.179	0.276	0.206
Total Nitrogen	mg-N/L	0.166	0.05	0.23	< 0.050	0.137	0.207	< 0.050	0.064	0.182	0.199	0.282	0.248	0.234
Dissolved Nitrogen	mg-N/L	0.088	0.108	0.176	0.129	0.122	0.199	< 0.050	0.158	0.164	0.241	0.192	0.276	0.206
Total Phosphorus	mg-P/L	0.004	0.0067	0.0052	0.0039	0.0053	0.0068	0.0091	0.005	0.0055	0.0052	0.005	0.0042	0.0052
Dissolved Phosphorus	mg-P/L	0.0014	0.0019	0.002	< 0.0010	0.0021	0.0035	0.0021	0.0023	0.0029	0.002	0.0028	0.0049	0.0024
Orthophosphate	mg-P/L	0.0014	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0016	0.0012	< 0.0010	< 0.0010	< 0.0010	0.0011	< 0.0010	0.0012

Table 11B-6: Raw Depth Integrated Nutrients Data, 2015-2018

Location		MEL-02-01	MEL-02-01	MEL-02-01	MEL-02-02	MEL-02-02	MEL-02-02	MEL-02-02	MEL-02-03	MEL-02-03	MEL-02-03	MEL-02-03	MEL-02-04	MEL-02-04	MEL-02-04
Sample Name		MEL-02-01-N	MEL-02-01-N	MEL-02-01-N	MEL-02-02-N	MEL-02-02-N	MEL-02-02N	MEL-02-02N	MEL-02-03-N	MEL-02-03-N	MEL-02-03N	MEL-02-03N	MEL-02-04N	MEL-02-04-N	MEL-02-04N
Sample Date		2015-08-16	2016-08-11	2017-08-11	2015-08-16	2016-08-11	2017-08-11	2018-08-31	2015-08-16	2016-08-11	2017-08-11	2018-08-18	2015-08-17	2016-08-11	2017-08-11
Sample Depth		4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m
SAMPLE_TYPE_CODE		N	N	N	N	N	N	N	N	N	N	N	N	N	N
TASK_CODE		DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN
Parameter	**Unit**														
Major Ions															
Reactive silica, as SiO_2	mg/L	0.288	0.257	0.343	0.264	0.249	0.35	0.28	0.301	0.254	0.348	0.318	0.268	0.269	0.346
Nutrients															
Nitrate	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.019	< 0.0050	< 0.0050
Nitrite	mg-N/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nitrate + Nitrite	mg-N/L	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	0.019	< 0.0051	< 0.0051
Total Ammonia	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0065	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0176	< 0.0050
Total Kjeldahl Nitrogen	mg-N/L	< 0.050	0.105	0.185	< 0.050	0.092	0.172	0.118	< 0.050	0.127	0.153	0.198	0.096	0.131	0.138
Dissolved Kjeldahl Nitrogen	mg-N/L	0.069	0.197	0.142	0.111	0.158	0.163	0.173	< 0.050	0.167	0.151	0.227	< 0.050	0.136	0.158
Total Nitrogen	mg-N/L	< 0.050	0.105	0.185	< 0.050	0.092	0.172	0.118	< 0.050	0.127	0.153	0.198	0.115	0.131	0.138
Dissolved Nitrogen	mg-N/L	0.069	0.197	0.142	0.111	0.158	0.163	0.173	< 0.050	0.167	0.151	0.227	< 0.050	0.136	0.158
Total Phosphorus	mg-P/L	0.005	0.0125	0.0052	0.0031	0.0052	0.004	0.0113	0.0045	0.0078	0.0035	0.0105	0.0014	0.004	0.0055
Dissolved Phosphorus	mg-P/L	< 0.0010	0.0019	0.0023	< 0.0010	0.0024	0.0017	0.0108	0.0011	0.0016	0.002	0.0022	0.005	0.0016	0.0035
Orthophosphate	mg-P/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0018	0.0012	0.0015	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010

Table 11B-6: Raw Depth Integrated Nutrients Data, 2015-2018

Location		MEL-02-05	MEL-02-05	MEL-02-05	MEL-02-05	MEL-02-06	MEL-02-08	MEL-03-01	MEL-03-01	MEL-03-01	MEL-03-02	MEL-03-02	MEL-03-02	MEL-03-03	MEL-03-03	MEL-03-03
Sample Name		MEL-02-05N	MEL-02-05-N	MEL-02-05N	MEL-02-05N	MEL-02-06N	MEL-02-08N	MEL-03-01-N	MEL-03-01-N	MEL-03-01N	MEL-03-02-N	MEL-03-02-N	MEL-03-02 N	MEL-03-03-N	MEL-03-03-N	MEL-03-03
Sample Date		2015-08-17	2016-08-11	2017-08-11	2018-08-18	2018-08-31	2018-08-15	2016-08-12	2017-08-13	2018-08-20	2016-08-12	2017-08-13	2018-08-26	2016-08-12	2017-08-13	2018-08-20
Sample Depth		4 m	4 m	4 m	4 m	4 m	4 m	4 m	4m	4m	4 m	4m	4m	4 m	4m	4m
SAMPLE_TYPE_CODE		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
TASK_CODE		DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN
Parameter	**Unit**															
Major Ions																
Reactive silica, as SiO_2	mg/L	0.223	0.261	0.354	0.316	0.283	0.33	0.181	0.244	0.231	0.188	0.244	0.23	0.179	0.245	0.233
Nutrients																
Nitrate	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Nitrite	mg-N/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nitrate + Nitrite	mg-N/L	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
Total Ammonia	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0089	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0102	< 0.0050	< 0.0050
Total Kjeldahl Nitrogen	mg-N/L	0.192	0.097	0.134	0.149	0.137	0.232	0.075	0.128	0.103	0.219	0.127	0.174	0.137	0.108	0.143
Dissolved Kjeldahl Nitrogen	mg-N/L	< 0.050	0.179	0.171	0.149	0.215	0.284	0.142	0.136	0.181	0.194	0.143	0.15	0.16	0.113	0.095
Total Nitrogen	mg-N/L	0.192	0.097	0.134	0.149	0.137	0.232	0.075	0.128	0.103	0.219	0.127	0.174	0.137	0.108	0.143
Dissolved Nitrogen	mg-N/L	< 0.050	0.179	0.171	0.149	0.215	0.284	0.142	0.136	0.181	0.194	0.143	0.15	0.16	0.113	0.095
Total Phosphorus	mg-P/L	0.0056	0.0067	0.0039	0.0047	0.0047	0.0052	0.0051	0.003	0.0038	0.0046	0.0032	0.0026	0.0046	0.0038	0.0064
Dissolved Phosphorus	mg-P/L	0.0025	0.0015	0.0027	0.0023	0.0025	0.0016	0.0017	0.0028	0.0021	0.0015	0.0012	0.0016	0.0024	0.0016	0.0023
Orthophosphate	mg-P/L	< 0.0010	0.0015	< 0.0010	0.0012	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0011	< 0.0010

Table 11B-6: Raw Depth Integrated Nutrients Data, 2015-2018

Location		MEL-03-04	MEL-03-04	MEL-03-04	MEL-03-05	MEL-03-05	MEL-03-05	MEL-04-01	MEL-04-01	MEL-04-01	MEL-04-02	MEL-04-02	MEL-04-02	MEL-04-03	MEL-04-03	MEL-04-03
Sample Name		MEL-03-04-N	MEL-03-04-N	MEL-03-04 N	MEL-03-05-N	MEL-03-05-N	MEL-03-05 N	MEL-04-01-N	MEL-04-01-N	MEL-04-01N	MEL-04-02-N	MEL-04-02-N	MEL-04-02N	MEL-04-03-N	MEL-04-03-N	MEL-04-03N
Sample Date		2016-08-12	2017-08-13	2018-08-26	2016-08-12	2017-08-13	2018-08-26	2016-08-14	2017-08-15	2018-09-02	2016-08-14	2017-08-15	2018-09-02	2016-08-14	2017-08-15	2018-09-02
Sample Depth		4 m	4m	4m	4 m	4m	4m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m	4 m
SAMPLE_TYPE_CODE		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
TASK_CODE		DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN
Parameter	**Unit**															
Major Ions																
Reactive silica, as SiO_2	mg/L	0.186	0.25	0.229	0.191	0.246	0.228	0.232	0.261	0.249	0.186	0.256	0.245	0.19	0.264	0.243
Nutrients																
Nitrate	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0135	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Nitrite	mg-N/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nitrate + Nitrite	mg-N/L	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	0.0135	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
Total Ammonia	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0272
Total Kjeldahl Nitrogen	mg-N/L	0.055	0.131	0.18	0.098	0.119	0.155	0.146	0.12	< 0.050	0.112	0.153	0.13	0.107	0.118	0.196
Dissolved Kjeldahl Nitrogen	mg-N/L	0.142	0.138	0.194	0.143	0.102	0.133	0.191	0.126	< 0.050	0.078	0.138	0.166	0.106	0.147	0.11
Total Nitrogen	mg-N/L	0.055	0.131	0.18	0.098	0.119	0.168	0.146	0.12	< 0.050	0.112	0.153	0.13	0.107	0.118	0.196
Dissolved Nitrogen	mg-N/L	0.142	0.138	0.194	0.143	0.102	0.147	0.191	0.126	< 0.050	0.078	0.138	0.166	0.106	0.147	0.11
Total Phosphorus	mg-P/L	0.0034	0.0053	0.003	0.0043	0.0037	0.0037	0.0058	0.0055	0.0039	0.0043	0.0037	0.0041	0.0043	0.0145	0.0041
Dissolved Phosphorus	mg-P/L	0.0013	0.0017	0.0015	0.0016	0.0025	0.0015	0.0019	0.0024	0.0028	0.0029	0.0019	0.0024	0.0023	0.0016	0.0024
Orthophosphate	mg-P/L	< 0.0010	0.0012	< 0.0010	< 0.0010	0.001	< 0.0010	0.0014	< 0.0010	< 0.0010	0.0028	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010

Table 11B-6: Raw Depth Integrated Nutrients Data, 2015-2018

Location		MEL-04-04	MEL-04-04	MEL-04-05	MEL-04-05	MEL-04-05	MEL-05-01	MEL-05-01	MEL-05-01	MEL-05-02	MEL-05-02	MEL-05-02	MEL-05-03	MEL-05-03	MEL-05-03
Sample Name		MEL-04-04-N	MEL-04-04-N	MEL-04-05-N	MEL-04-05-N	MEL-04-05N	MEL-05-01-N	MEL-05-01N	MEL-05-01N	MEL-05-02-N	MEL-05-02N	MEL-05-02N	MEL-05-03-N	MEL-05-03N	MEL-05-03N
Sample Date		2016-08-14	2017-08-15	2016-08-14	2017-08-15	2018-09-02	2016-08-16	2017-08-12	2018-09-01	2016-08-16	2017-08-12	2018-08-30	2016-08-16	2017-08-12	2018-08-29
Sample Depth		4 m	4 m	4 m	4 m	4 m	4 m	4m	4 m	4 m	4m	4m	4 m	4m	4m
SAMPLE_TYPE_CODE		N	N	N	N	N	N	N	N	N	N	N	N	N	N
TASK_CODE		DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN	DIN
Parameter	**Unit**														
Major Ions															
Reactive silica, as SiO_2	mg/L	0.189	0.262	0.186	0.254	0.244	0.207	0.27	0.253	0.2	0.272	0.259	0.199	0.26	0.262
Nutrients															
Nitrate	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Nitrite	mg-N/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nitrate + Nitrite	mg-N/L	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
Total Ammonia	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.008	< 0.0050	< 0.0050	0.0102
Total Kjeldahl Nitrogen	mg-N/L	0.08	0.155	0.068	0.169	0.146	0.135	0.168	0.085	0.086	0.152	0.152	0.061	0.157	0.106
Dissolved Kjeldahl Nitrogen	mg-N/L	0.105	0.168	0.084	0.141	0.126	0.111	0.149	0.174	0.102	0.19	0.142	0.076	0.17	0.097
Total Nitrogen	mg-N/L	0.08	0.155	0.068	0.169	0.146	0.135	0.168	0.085	0.086	0.152	0.152	0.061	0.157	0.106
Dissolved Nitrogen	mg-N/L	0.105	0.168	0.084	0.141	0.126	0.111	0.149	0.174	0.102	0.19	0.142	0.076	0.17	0.097
Total Phosphorus	mg-P/L	0.0046	0.0057	0.0041	0.006	0.0042	0.0049	0.0034	0.0045	0.0035	0.0037	0.0094	0.0044	0.004	0.0049
Dissolved Phosphorus	mg-P/L	0.0024	0.0016	0.0032	0.0017	0.0026	0.0048	0.004	0.0021	0.0025	0.0022	0.0022	0.0029	0.002	0.0026
Orthophosphate	mg-P/L	0.0025	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0014	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0010

Table 11B-6: Raw Depth Integrated Nutrients Data, 2015-2018

Location		MEL-05-04	MEL-05-04	MEL-05-04	MEL-05-05	MEL-05-05	MEL-05-05
Sample Name		MEL-05-04-N	MEL-05-04N	MEL-05-04N	MEL-05-05-N	MEL-05-05N	MEL-05-05N
Sample Date		2016-08-16	2017-08-12	2018-08-30	2016-08-16	2017-08-12	2018-08-29
Sample Depth		4 m	4m	4m	4 m	4m	4m
SAMPLE_TYPE_CODE		N	N	N	N	N	N
TASK_CODE		DIN	DIN	DIN	DIN	DIN	DIN
Parameter	**Unit**						
Major Ions							
Reactive silica, as SiO_2	mg/L	0.196	0.259	0.257	0.207	0.265	0.261
Nutrients							
Nitrate	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Nitrite	mg-N/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Nitrate + Nitrite	mg-N/L	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
Total Ammonia	mg-N/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.0073
Total Kjeldahl Nitrogen	mg-N/L	0.158	0.178	0.122	0.073	0.147	0.144
Dissolved Kjeldahl Nitrogen	mg-N/L	0.102	0.163	0.152	0.103	0.15	0.134
Total Nitrogen	mg-N/L	0.158	0.178	0.122	0.073	0.147	0.144
Dissolved Nitrogen	mg-N/L	0.102	0.163	0.152	0.103	0.15	0.134
Total Phosphorus	mg-P/L	0.0058	0.0032	0.0037	0.0041	0.0038	0.0055
Dissolved Phosphorus	mg-P/L	0.0023	0.0014	0.0026	0.0032	0.0025	0.0029
Orthophosphate	mg-P/L	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2015	A8-01	August	Rep 1	2.019
			Rep 2	1.874
			Rep 3	1.98
	A8-02	August	Rep 1	1.722
			Rep 2	1.502
			Rep 3	1.937
	A8-03	August	Rep 1	2.267
			Rep 2	2.287
			Rep 3	2.437
	B7-01	August	Rep 1	1.436
			Rep 2	1.238
			Rep 3	1.59
	MEL-01-01	August	Rep 1	0.737
			Rep 2	0.866
			Rep 3	0.702
	MEL-01-02	August	Rep 1	0.954
			Rep 2	0.862
			Rep 3	0.84
	MEL-01-03	August	Rep 1	0.889
			Rep 2	0.751
			Rep 3	<MDL
	MEL-01-04	August	Rep 1	0.877
			Rep 2	0.899
			Rep 3	0.973
	MEL-01-05	August	Rep 1	0.927
			Rep 2	0.861
			Rep 3	0.883
	MEL-02-01	August	Rep 1	0.392
			Rep 2	0.412
			Rep 3	0.32
	MEL-02-02	August	Rep 1	0.349
			Rep 2	0.349
			Rep 3	0.381
	MEL-02-03	August	Rep 1	0.533
			Rep 2	0.327
			Rep 3	0.547
	MEL-02-04	August	Rep 1	0.42
			Rep 2	0.573
			Rep 3	0.409
	MEL-02-05	August	Rep 1	0.544
			Rep 2	0.569
			Rep 3	0.551

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2016	A8-01	August	Rep 1	1.857
			Rep 2	1.923
			Rep 3	2.101
	A8-02	August	Rep 1	2.112
			Rep 2	2.185
			Rep 3	2.302
	A8-04	August	Rep 1	2.2
			Rep 2	1.961
			Rep 3	2.072
	B7-01	August	Rep 1	2.984
			Rep 2	2.762
			Rep 3	2.731
	B7-02	August	Rep 1	3.236
			Rep 2	2.987
			Rep 3	3.408
	B7-03	August	Rep 1	3.039
			Rep 2	3.388
			Rep 3	3.373
	D7-01	August	Rep 1	3.804
			Rep 2	3.474
			Rep 3	3.542
	D7-02	August	Rep 1	3.866
			Rep 2	3.906
			Rep 3	3.433
	D7-03	August	Rep 1	4.197
			Rep 2	4.209
			Rep 3	3.723
	MEL-01-01	August	Rep 1	2.269
			Rep 2	1.653
			Rep 3	1.912
	MEL-01-02	August	Rep 1	2.044
			Rep 2	2.063
			Rep 3	2.134
	MEL-01-03	August	Rep 1	1.65
			Rep 2	1.895
			Rep 3	2.259
	MEL-01-04	August	Rep 1	1.851
			Rep 2	1.781
			Rep 3	1.809
	MEL-01-05	August	Rep 1	1.334
			Rep 2	1.932
			Rep 3	1.597
	MEL-02-01	August	Rep 1	1.263
			Rep 2	0.337
			Rep 3	1.086

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2016	MEL-02-02	August	Rep 1	0.91
			Rep 2	1.208
			Rep 3	1
	MEL-02-03	August	Rep 1	1.197
			Rep 2	1.372
			Rep 3	1.206
	MEL-02-04	August	Rep 1	1.271
			Rep 2	1.325
			Rep 3	1.184
	MEL-02-05	August	Rep 1	1.322
			Rep 2	1.249
			Rep 3	1.289
	MEL-03-01	August	Rep 1	0.763
			Rep 2	0.693
			Rep 3	0.748
	MEL-03-02	August	Rep 1	0.46
			Rep 2	0.659
			Rep 3	0.744
	MEL-03-03	August	Rep 1	0.65
			Rep 2	0.757
			Rep 3	0.708
	MEL-03-04	August	Rep 1	0.701
			Rep 2	0.822
			Rep 3	0.574
	MEL-03-05	August	Rep 1	0.824
			Rep 2	0.879
			Rep 3	0.965
	Mel-04-01	August	Rep 1	0.78
			Rep 2	0.826
			Rep 3	0.818
	Mel-04-02	August	Rep 1	0.866
			Rep 2	0.901
			Rep 3	0.863
	Mel-04-03	August	Rep 1	0.891
			Rep 2	0.965
			Rep 3	0.946
	Mel-04-04	August	Rep 1	1.083
			Rep 2	1
			Rep 3	0.943
	Mel-04-05	August	Rep 1	1.092
			Rep 2	1.008
			Rep 3	0.915
	Mel-05-01	August	Rep 1	1.401
			Rep 2	1.206
			Rep 3	1.178

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2016	Mel-05-02	August	Rep 1	1.235
			Rep 2	1.296
			Rep 3	1.112
	Mel-05-03	August	Rep 1	1.02
			Rep 2	1.079
			Rep 3	1.048
	Mel-05-04	August	Rep 1	1.044
			Rep 2	0.9
			Rep 3	0.974
	Mel-05-05	August	Rep 1	1.134
			Rep 2	0.984
			Rep 3	0.868
2017	A8-01	August	Rep 1	0.92
			Rep 2	0.92
			Rep 3	0.95
	A8-02	August	Rep 1	3.11
			Rep 2	0.96
			Rep 3	0.89
	A8-03	August	Rep 1	1.46
			Rep 2	1.44
			Rep 3	0.32
	B7-01	August	Rep 1	1.03
			Rep 2	1.18
			Rep 3	1.16
	B7-02	August	Rep 1	1.15
			Rep 2	1.27
			Rep 3	1.38
	B7-03	August	Rep 1	1.4
			Rep 2	1.56
			Rep 3	1.47
	D7-01	August	Rep 1	2.47
			Rep 2	2.32
			Rep 3	1.94
	D7-02	August	Rep 1	2.16
			Rep 2	2.29
			Rep 3	2.18
	D7-03	August	Rep 1	2.26
			Rep 2	2.25
			Rep 3	2.39
	MEL-01-01	August	Rep 1	1.44
			Rep 2	1.7
			Rep 3	1.56
	MEL-01-02	August	Rep 1	1.47
			Rep 2	1.42
			Rep 3	1.52

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2017	MEL-01-03	August	Rep 1	1.34
			Rep 2	1.27
			Rep 3	1.39
	MEL-01-04	August	Rep 1	1.55
			Rep 2	1.67
			Rep 3	1.59
	MEL-01-05	August	Rep 1	1.45
			Rep 2	1.4
			Rep 3	1.48
	MEL-02-01	August	Rep 1	0.66
			Rep 2	0.66
			Rep 3	0.65
	MEL-02-02	August	Rep 1	0.59
			Rep 2	0.65
			Rep 3	0.58
	MEL-02-03	August	Rep 1	0.6
			Rep 2	0.52
			Rep 3	0.51
	MEL-02-04	August	Rep 1	0.59
			Rep 2	0.63
			Rep 3	0.62
	MEL-02-05	August	Rep 1	0.72
			Rep 2	0.64
			Rep 3	0.46
	MEL-03-01	August	Rep 1	0.6
			Rep 2	0.64
			Rep 3	0.64
	MEL-03-02	August	Rep 1	0.62
			Rep 2	0.69
			Rep 3	0.61
	MEL-03-03	August	Rep 1	0.43
			Rep 2	0.51
			Rep 3	0.53
	MEL-03-04	August	Rep 1	0.51
			Rep 2	0.57
			Rep 3	0.57
	MEL-03-05	August	Rep 1	0.58
			Rep 2	0.51
			Rep 3	0.58
	Mel-04-01	August	Rep 1	0.52
			Rep 2	0.66
			Rep 3	0.49
	Mel-04-02	August	Rep 1	0.52
			Rep 2	0.54
			Rep 3	0.54

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2017	Mel-04-03	August	Rep 1	0.71
			Rep 2	0.63
			Rep 3	0.71
	Mel-04-04	August	Rep 1	0.66
			Rep 2	0.61
			Rep 3	0.62
	Mel-04-05	August	Rep 1	0.67
			Rep 2	0.64
			Rep 3	0.68
	Mel-05-01	August	Rep 1	0.62
			Rep 2	0.63
			Rep 3	0.6
	Mel-05-02	August	Rep 1	0.58
			Rep 2	0.49
			Rep 3	0.6
	Mel-05-03	August	Rep 1	0.68
			Rep 2	0.6
			Rep 3	0.59
	Mel-05-04	August	Rep 1	0.56
			Rep 2	0.54
			Rep 3	0.55
	Mel-05-05	August	Rep 1	0.56
			Rep 2	0.55
			Rep 3	0.56
2018	A8-01	August	Rep 1	1.22
			Rep 2	1.14
			Rep 3	1.25
	A8-02	August	Rep 1	1.06
			Rep 2	1.01
			Rep 3	1
	A8-03	August	Rep 1	1.09
			Rep 2	1.35
			Rep 3	1.26
	B7-01	August	Rep 1	1.32
			Rep 2	1.59
			Rep 3	1
	B7-02	August	Rep 1	1.87
			Rep 2	1.94
			Rep 3	1.84
	B7-03	August	Rep 1	1.62
			Rep 2	1.58
			Rep 3	2.26
	MEL-01-01	August	Rep 1	2.05
			Rep 2	1.86
			Rep 3	1.73

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2018	MEL-01-06	August	Rep 1	1.82
			Rep 2	1.81
			Rep 3	1.87
	MEL-01-07	August	Rep 1	1.97
			Rep 2	1.95
			Rep 3	1.85
	MEL-01-08	August	Rep 1	2.09
			Rep 2	1.99
			Rep 3	2.03
	MEL-01-09	August	Rep 1	1.94
			Rep 2	1.95
			Rep 3	1.81
	MEL-02-02	August	Rep 1	0.7
			Rep 2	0.76
			Rep 3	0.78
	MEL-02-03	August	Rep 1	0.92
			Rep 2	1.05
			Rep 3	1.1
	MEL-02-05	August	Rep 1	0.8
			Rep 2	0.84
			Rep 3	0.82
	MEL-02-06	August	Rep 1	0.72
			Rep 2	0.71
			Rep 3	1.17
	MEL-02-08	August	Rep 1	0.9
			Rep 2	0.96
			Rep 3	0.99
	MEL-03-01	August	Rep 1	0.74
			Rep 2	0.69
			Rep 3	0.65
	MEL-03-02	August	Rep 1	0.55
			Rep 2	0.58
			Rep 3	0.59
	MEL-03-03	August	Rep 1	0.69
			Rep 2	0.69
			Rep 3	0.67
	MEL-03-04	August	Rep 1	0.61
			Rep 2	0.56
			Rep 3	0.6
	MEL-03-05	August	Rep 1	0.53
			Rep 2	0.48
			Rep 3	0.57
	Mel-04-01	August	Rep 1	0.64
			Rep 2	0.62
			Rep 3	0.64

Table 11B-7: Raw Chlorophyll *a* Data, 2015-2018

Year	Station	Sampling Period	Replicate	Chlorophyll *a* (µg/L)
2018	Mel-04-02	August	Rep 1	0.56
			Rep 2	0.55
			Rep 3	0.55
	Mel-04-03	August	Rep 1	0.55
			Rep 2	0.62
	Mel-04-05	August	Rep 1	0.56
			Rep 2	0.58
			Rep 3	0.56
	Mel-05-01	August	Rep 1	0.63
			Rep 2	0.62
			Rep 3	0.62
	Mel-05-02	August	Rep 1	0.57
			Rep 2	0.55
			Rep 3	0.61
	Mel-05-03	August	Rep 1	0.5
			Rep 2	0.47
			Rep 3	0.48
	Mel-05-04	August	Rep 1	0.63
			Rep 2	0.61
			Rep 3	0.6
	Mel-05-05	August	Rep 1	0.62
			Rep 2	0.6
			Rep 3	0.64

Notes: mg/L=micrograms per litre

APPENDIX 11C

Trophic Status

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Table 11C-1: Summary of Total Phosphorus, Secchi Depth, and Chlorophyll *a* Sampling Results in Meliadine Lake, 2015 to 2018

Year	Station	Total Phosphorus (mg/L)			Secchi Depth (m)			Chlorophyll *a* (µg/L)		
		Mean	SE	Count	Mean	SE	Count	Mean	SE	Count
2015	MEL-01	0.0051	0.001	5	6	0.2	5	0.8	0.06	15
	MEL-02	0.0039	0.0008	5	6.4	0.4	5	0.45	0.02	15
2016	MEL-01	0.0059	0.0004	5	7	0	5	1.88	0.07	15
	MEL-02	0.0072	0.0015	5	7	0	5	1.15	0.07	15
	MEL-03	0.0044	0.0003	5	7.2	0.2	5	0.73	0.03	15
	MEL-04	0.0046	0.0003	5	7.2	0.2	5	0.93	0.02	15
	MEL-05	0.0045	0.0004	5	7.4	0.2	5	1.1	0.04	15
2017	MEL-01	0.006	0.0003	5	7.6	0.5	5	1.48	0.03	15
	MEL-02	0.0044	0.0004	5	8.5	0.3	5	0.61	0.02	15
	MEL-03	0.0038	0.0004	5	7.9	0.4	5	0.57	0.02	15
	MEL-04	0.0071	0.0019	5	8.6	0.4	5	0.61	0.02	15
	MEL-05	0.0036	0.0001	5	8.9	0.5	5	0.58	0.01	15
2018	MEL-01	0.0049	0.0002	5	6.4	0.2	5	1.91	0.03	15
	MEL-02	0.0073	0.0015	5	6.5	0.2	5	0.88	0.05	15
	MEL-03	0.0039	0.0007	5	6.6	0.3	5	0.61	0.03	15
	MEL-04	0.0041	0.0001	5	6.9	0.2	5	0.58	0.02	15
	MEL-05	0.0056	0.001	5	7	0.1	5	0.58	0.03	15

Table 11C-2: Summary of Trophic Status Index in Meliadine Lake, 2015 to 2018

Parameter	2015	2016	2017	2018
Near-field Exposure Area (MEL-01)				
TSI (TP)	26.7 ± 2.3	29.7 ± 1.0	29.9 ± 0.8	27.1 ± 0.6
TSI (TChl)	26.2 ± 2.9	36.7 ± 0.4	34.4 ± 0.2	37 ± 0.2
TSI (Secchi)	33.9 ± 0.4	31.9 ± 0.0	30.9 ± 0.9	33.3 ± 0.4
Trophic Status Classification	Oligotrophic[(a)]	Oligotrophic[(a)]	Oligotrophic[(a)]	Oligotrophic[(a)]
Mid-field Exposure Area (MEL-02)				
TSI (TP)	22.3 ± 3.6	31.6 ± 2.8	25.4 ± 1.3	31.6 ± 2.9
TSI (TChl)	22.4 ± 0.5	31.5 ± 0.9	25.6 ± 0.3	29.3 ± 0.5
TSI (Secchi)	32.8 ± 0.5	30.8 ± 0.5	29.2 ± 0.5	32.1 ± 0.5
Trophic Status Classification	Oligotrophic[(a)]	Oligotrophic[(a)]	Oligotrophic[(a)]	Oligotrophic[(a)]
Meliadine Lake Reference Area 1 (MEL-03)				
TSI (TP)	-	25.4 ± 1.0	23.1 ± 1.4	23.1 ± 2.2
TSI (TChl)	-	27.4 ± 0.5	25.1 ± 0.3	25.7 ± 0.5
TSI (Secchi)	-	30.2 ± 0.6	30.2 ± 0.8	33.3 ± 0.3
Trophic Status Classification		Oligotrophic[(a)]	Oligotrophic[(a)]	Oligotrophic[(a)]
Meliadine Lake Reference Area 2 (MEL-04)				
TSI (TP)	-	26.1 ± 0.9	30.8 ± 3.2	24.7 ± 0.3
TSI (TChl)	-	29.8 ± 0.3	25.7 ± 0.3	25.4 ± 0.3
TSI (Secchi)	-	38.6 ± 1.0	29.0 ± 0.7	30.6 ± 0.4
Trophic Status Classification		Oligotrophic[(a)]	Oligotrophic[(a)]	Oligotrophic[(a)]
Meliadine Lake Reference Area 3 (MEL-05)				
TSI (TP)	-	25.8 ± 1.2	22.7 ± 0.6	28.2 ± 2.3
TSI (TChl)	-	31.4 ± 0.3	25.2 ± 0.2	25.3 ± 0.5
TSI (Secchi)	-	28.9 ± 0.2	28.5 ± 0.8	30.6 ± 0.4
Trophic Status Classification		Oligotrophic[(a)]	Oligotrophic[(a)]	Oligotrophic[(a)]

a) Trophic status classification based on Carlson (1977).

TSI mean values plus/minus standard error presented. TSI=Trophic status index; TP = total phosphorus; TChl = total chlorophyll a; Secchi = Secchi Depth; "− " indicates sample not collected.

APPENDIX 11D

Phytoplankton Community Results

Table 11D-1: Descriptive Statistics for Phytoplankton Variables, Meliadine Lake, 2015-2018

Year	Site	Abundance (cells/L)						Biomass (mg/m^3)						Richness					
		min	max	med	mean	se	sd	min	max	med	mean	se	sd	min	max	med	mean	se	sd
2015	MEL-01	2,144,496	3,223,312	2,784,272	2,689,406	188,936	422,473	290	364	350	336	13	29	39	46	41	42	1	2.97
	MEL-02	1,603,880	2,275,392	1,936,376	1,962,499	135,748	303,541	178	262	208	220	16	35	41	43	41	41	0	0.89
2016	MEL-01	2,572,236	3,422,032	2,885,648	2,909,414	154,628	345,759	315	446	328	351	24	54	37	41	39	39	1	1.48
	MEL-02	1,989,032	2,415,088	2,200,368	2,184,686	79,091	176,853	192	304	243	252	20	44	38	43	39	40	1	2.00
	MEL-03	1,859,688	2,284,960	2,084,392	2,087,709	80,645	180,328	208	249	236	231	8	17	33	40	37	37	1	2.49
	MEL-04	944,070	2,048,272	1,847,120	1,630,267	203,485	455,007	42	204	181	156	29	65	23	40	37	35	3	6.76
	MEL-05	1,604,464	2,917,584	1,815,000	2,026,913	231,151	516,869	186	352	192	227	32	71	30	39	37	36	2	3.56
2017	MEL-01	2,430,520	3,013,992	2,560,384	2,637,110	104,786	234,310	259	349	337	316	17	39	38	43	39	40	1	2.00
	MEL-02	1,834,152	2,275,176	2,132,480	2,106,584	73,702	164,802	181	292	209	222	19	42	39	42	40	40	1	1.30
	MEL-03	1,682,288	2,350,416	1,863,072	1,942,189	112,311	251,136	181	248	202	206	11	25	37	41	39	39	1	1.58
	MEL-04	1,864,872	2,301,896	2,086,976	2,093,600	77,358	172,977	173	233	202	201	10	22	34	39	36	36	1	1.87
	MEL-05	1,829,352	2,704,016	2,104,544	2,176,504	169,119	378,161	197	255	204	216	11	25	33	45	42	41	2	4.76
2018	MEL-01	2,994,000	3,758,240	3,649,128	3,503,229	137,000	306,341	297	367	339	339	12	27	39	47	42	42	1	3.11
	MEL-02	1,162,872	3,048,496	1,997,048	2,101,478	366,873	820,352	105	329	209	207	39	88	25	44	35	34	3	6.88
	MEL-03	2,568,736	3,767,864	2,878,032	3,054,288	212,971	476,218	252	306	268	276	11	26	35	41	40	39	1	2.51
	MEL-04	2,383,936	2,879,216	2,531,992	2,581,784	107,187	214,374	227	256	239	241	7	15	34	38	36	36	1	1.63
	MEL-05	1,480,752	2,828,928	1,545,792	1,803,459	257,821	576,505	132	209	155	160	14	30	25	34	28	29	2	3.36

Table 11D-2: Relative Abundance of Major Phytoplankton Groups, Meliadine Lake, 2015-2018

Year	Site	Relative Abundance (%)						Relative Biomass (%)					
		Cyanophyte	Chlorophyte	Chrysophyte	Diatoms	Cryptophytes	Dinoflagellates	Cyanophyte	Chlorophyte	Chrysophyte	Diatoms	Cryptophytes	Dinoflagellates
2015	MEL-01	0.24	0.87	85.26	11.46	2.04	0.14	0.08	0.82	74.02	7.51	3.52	13.95
	MEL-01	0.43	8.59	77.85	9.68	3.21	0.24	0.16	6.96	62.61	10.00	5.23	14.95
	MEL-02	0.02	10.00	72.02	7.79	9.87	0.30	0.24	8.12	57.38	9.31	14.97	9.99
2016	MEL-01	0.81	8.86	80.70	4.10	5.17	0.36	0.80	6.07	69.32	4.19	7.45	12.17
	MEL-02	0.20	9.09	76.61	3.83	9.74	0.53	0.10	5.38	54.97	12.65	14.41	12.47
	MEL-03	0.14	9.48	78.15	3.41	8.52	0.30	0.06	5.08	71.31	4.47	11.20	7.88
	MEL-04	0.62	14.18	70.37	4.34	10.26	0.23	0.27	5.96	66.19	7.52	15.46	4.60
	MEL-05	0.64	8.29	73.15	3.05	14.63	0.24	0.28	4.91	58.93	6.48	21.00	8.39
2017	MEL-01	0.02	8.19	78.21	3.74	9.24	0.60	0.11	6.10	59.62	5.24	12.03	16.89
	MEL-02	0.28	14.20	70.29	4.14	10.58	0.51	1.01	11.52	55.15	6.90	16.14	9.27
	MEL-03	0.00	6.66	80.54	2.77	9.58	0.45	0.10	3.98	66.07	3.56	13.72	12.37
	MEL-04	1.65	7.70	74.78	2.73	13.01	0.13	5.80	3.97	60.19	4.39	20.79	4.86
	MEL-05	0.00	8.15	75.57	3.75	12.28	0.25	0.02	4.33	64.35	5.12	19.48	6.71
2018	MEL-01	0.18	17.13	66.15	10.87	5.55	0.12	0.63	8.12	46.66	18.48	14.77	11.35
	MEL-02	0.39	16.36	61.72	16.03	5.26	0.23	0.19	9.47	44.40	20.19	11.41	14.34
	MEL-03	0.21	6.16	81.31	4.08	8.12	0.11	0.11	6.58	61.82	6.53	15.05	9.90
	MEL-04	0.01	8.45	73.60	4.94	12.94	0.06	0.54	9.45	52.79	8.35	20.83	8.05
	MEL-05	0.21	9.88	71.69	11.58	6.59	0.05	0.44	10.24	52.59	16.28	12.61	7.84

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101	1	19-Jul-15	Chlamydomonas spp.	28736	0.81
MEL - 0101	1	19-Jul-15	Chlamydomonas spp.	200	0.61
MEL - 0101	1	19-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0101	1	19-Jul-15	Small chrysophyceae	208336	3.92
MEL - 0101	1	19-Jul-15	Large chrysophyceae	14368	2.58
MEL - 0101	1	19-Jul-15	Chrysochromulina parva Lackey	919552	60.14
MEL - 0101	1	19-Jul-15	Chrysococcus sp.	675296	41.60
MEL - 0101	1	19-Jul-15	Chrysostephanospaera globulifera Scherffel	21552	8.50
MEL - 0101	1	19-Jul-15	Kephyrion sp.	21552	0.22
MEL - 0101	1	19-Jul-15	Spiniferomonas sirrata**********	21552	1.98
MEL - 0101	1	19-Jul-15	Dinobryon borgei Lemmermann	14368	0.75
MEL - 0101	1	19-Jul-15	Dinobryon bavaricum Imhof	100576	22.75
MEL - 0101	1	19-Jul-15	Dinobryon bavaricum Imhof	5200	11.05
MEL - 0101	1	19-Jul-15	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0101	1	19-Jul-15	Dinobryon sertularia Ehrenberg	2000	6.78
MEL - 0101	1	19-Jul-15	Dinobryon sociale Ehrenberg	129312	29.25
MEL - 0101	1	19-Jul-15	Dinobryon sociale Ehrenberg	3000	3.68
MEL - 0101	1	19-Jul-15	Chrysolkos skuja (Nauwerck) Willen	43104	1.27
MEL - 0101	1	19-Jul-15	Uroglena volvox Ehrenberg	1810368	204.75
MEL - 0101	1	19-Jul-15	Uroglena volvox Ehrenberg	1200	13.56
MEL - 0101	1	19-Jul-15	Bitrichia chodatii (Reverdin) Chodat	50288	2.57
MEL - 0101	1	19-Jul-15	Chrysochromulina laurentiana Kling	136496	52.10
MEL - 0101	1	19-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	122128	4.18
MEL - 0101	1	19-Jul-15	Pteridomonas sp.	7184	1.71
MEL - 0101	1	19-Jul-15	Cyclotella stelligera Cleve and Grunow	1000	1.69
MEL - 0101	1	19-Jul-15	Rhizosolenia eriense H.L. Smith	330464	25.71
MEL - 0101	1	19-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	1600	1.24
MEL - 0101	1	19-Jul-15	Tabellaria flocculsa (Roth) Kutzing	1600	1.96
MEL - 0101	1	19-Jul-15	Synedra acus Kutzing	30000	2.80
MEL - 0101	1	19-Jul-15	Asterionella formosa Hassall	4400	0.44
MEL - 0101	1	19-Jul-15	Cyclotella michiganiana Skvortzow	86208	2.11
MEL - 0101	1	19-Jul-15	Rhodomonas minuta Skuja	57472	8.67

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101	1	19-Jul-15	Cryptomonas erosa Ehrenberg	5800	7.08
MEL - 0101	1	19-Jul-15	Cryptomonas reflexa (Marsson) Skuja	1400	1.03
MEL - 0101	1	19-Jul-15	Cryptomonas rostratiformis Skuja	1200	2.71
MEL - 0101	1	19-Jul-15	Katablepharis ovalis Skuja	35920	1.45
MEL - 0101	1	19-Jul-15	Gymnodinium helveticum Penard	1600	41.47
MEL - 0101	1	19-Jul-15	Gymnodinium sp.	2200	34.32
MEL - 0101	1	19-Jul-15	Peridinium willei Huitfeldt-Kaas	200	5.13
MEL - 0101	1	19-Jul-15	Peridinium pusillum (Penard) Lemmermann	1800	3.86
MEL - 0101	1	19-Jul-15	Peridinium aciculiferum Lemmermann	1200	10.86
MEL - 0101	1	14-Aug-15	Pyramidomonas tetrarhynchus Schmarda	400	0.20
MEL - 0101	1	14-Aug-15	Chlamydomonas spp.	7184	0.17
MEL - 0101	1	14-Aug-15	Oocystis lacustris Chodat	21552	0.57
MEL - 0101	1	14-Aug-15	Monoraphidium minutum (Nag.) Komarkova-Legnerova	14368	0.99
MEL - 0101	1	14-Aug-15	Crucigenia quadrata Morr.	28736	0.04
MEL - 0101	1	14-Aug-15	Elakatothrix gelatinosa Willen	50288	0.87
MEL - 0101	1	14-Aug-15	Micrasterias sp.	200	0.37
MEL - 0101	1	14-Aug-15	Staurodesmus extensus (Andersson) Teiling	200	0.12
MEL - 0101	1	14-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0101	1	14-Aug-15	Mougeotia sp.	21552	4.88
MEL - 0101	1	14-Aug-15	Botryococcus braunii Kutzing	800	0.42
MEL - 0101	1	14-Aug-15	Monomastix minuta Skuja	7184	0.14
MEL - 0101	1	14-Aug-15	Small chrysophyceae	380752	5.37
MEL - 0101	1	14-Aug-15	Large chrysophyceae	7184	6.50
MEL - 0101	1	14-Aug-15	Chrysochromulina parva Lackey	100576	6.58
MEL - 0101	1	14-Aug-15	Chrysococcus sp.	423856	21.62
MEL - 0101	1	14-Aug-15	Kephyrion sp.	93392	1.20
MEL - 0101	1	14-Aug-15	Dinobryon bavaricum Imhof	136496	30.88
MEL - 0101	1	14-Aug-15	Dinobryon bavaricum Imhof	600	1.19
MEL - 0101	1	14-Aug-15	Dinobryon sertularia Ehrenberg	28736	7.17
MEL - 0101	1	14-Aug-15	Dinobryon sertularia Ehrenberg	200	0.68
MEL - 0101	1	14-Aug-15	Dinobryon sociale Ehrenberg	136496	30.88
MEL - 0101	1	14-Aug-15	Dinobryon sociale Ehrenberg	600	0.74

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101	1	14-Aug-15	Chrysolkos skuja (Nauwerck) Willen	50288	1.72
MEL - 0101	1	14-Aug-15	Uroglena volvox Ehrenberg	280176	31.69
MEL - 0101	1	14-Aug-15	Chrysochromulina laurentiana Kling	71840	28.35
MEL - 0101	1	14-Aug-15	Stichogloea spp.	43104	2.17
MEL - 0101	1	14-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	129312	3.88
MEL - 0101	1	14-Aug-15	Pteridomonas sp.	7184	1.71
MEL - 0101	1	14-Aug-15	Cyclotella stelligera Cleve and Grunow	4200	7.97
MEL - 0101	1	14-Aug-15	Cyclotella ocellata Pant.	7184	0.51
MEL - 0101	1	14-Aug-15	Rhizosolenia eriense H.L. Smith	100576	6.40
MEL - 0101	1	14-Aug-15	Synedra acus Kutzing	6200	0.59
MEL - 0101	1	14-Aug-15	Asterionella formosa Hassall	2600	0.26
MEL - 0101	1	14-Aug-15	Cyclotella michiganiana Skvortzow	150864	2.88
MEL - 0101	1	14-Aug-15	Rhodomonas minuta Skuja	57472	8.67
MEL - 0101	1	14-Aug-15	Cryptomonas erosa Ehrenberg	2000	2.37
MEL - 0101	1	14-Aug-15	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0101	1	14-Aug-15	Cryptomonas reflexa (Marsson) Skuja	600	0.40
MEL - 0101	1	14-Aug-15	Cryptomonas rostratiformis Skuja	600	1.23
MEL - 0101	1	14-Aug-15	Katablepharis ovalis Skuja	7184	0.35
MEL - 0101	1	14-Aug-15	Gymnodinium helveticum Penard	400	9.42
MEL - 0101	1	14-Aug-15	Gymnodinium sp.	2400	45.16
MEL - 0101	1	14-Aug-15	Peridinium pusillum (Penard) Lemmermann	2200	3.61
MEL - 0101	1	14-Aug-15	Peridinium aciculiferum Lemmermann	800	7.24
MEL - 0101	1	19-Sep-15	Chlamydomonas spp.	14368	0.38
MEL - 0101	1	19-Sep-15	Oocystis lacustris Chodat	158048	3.62
MEL - 0101	1	19-Sep-15	Dictyosphaerium simplex Sukja	14368	0.07
MEL - 0101	1	19-Sep-15	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL - 0101	1	19-Sep-15	Elakatothrix gelatinosa Willen	71840	1.91
MEL - 0101	1	19-Sep-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0101	1	19-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0101	1	19-Sep-15	Botryococcus braunii Kutzing	400	0.36
MEL - 0101	1	19-Sep-15	Monomastix minuta Skuja	7184	0.11
MEL - 0101	1	19-Sep-15	Small chrysophyceae	502880	4.63

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101	1	19-Sep-15	Large chrysophyceae	28736	4.94
MEL - 0101	1	19-Sep-15	Chrysochromulina parva Lackey	122128	7.52
MEL - 0101	1	19-Sep-15	Chrysococcus sp.	574720	33.28
MEL - 0101	1	19-Sep-15	Chrysostephanospaera globulifera Scherffel	7184	1.65
MEL - 0101	1	19-Sep-15	Kephyrion boreale Skuja	14368	1.32
MEL - 0101	1	19-Sep-15	Kephyrion sp.	136496	2.57
MEL - 0101	1	19-Sep-15	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0101	1	19-Sep-15	Dinobryon bavaricum Imhof	14368	3.25
MEL - 0101	1	19-Sep-15	Dinobryon bavaricum Imhof	2200	4.38
MEL - 0101	1	19-Sep-15	Dinobryon sertularia Ehrenberg	200	1.02
MEL - 0101	1	19-Sep-15	Dinobryon sociale Ehrenberg	21552	4.71
MEL - 0101	1	19-Sep-15	Dinobryon sociale Ehrenberg	800	0.98
MEL - 0101	1	19-Sep-15	Uroglena volvox Ehrenberg	107760	12.19
MEL - 0101	1	19-Sep-15	Chrysochromulina laurentiana Kling	100576	38.39
MEL - 0101	1	19-Sep-15	Stichogloea spp.	14368	0.76
MEL - 0101	1	19-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	237072	10.53
MEL - 0101	1	19-Sep-15	Cyclotella stelligera Cleve and Grunow	3200	5.82
MEL - 0101	1	19-Sep-15	Cyclotella pseudostelligera	7184	3.55
MEL - 0101	1	19-Sep-15	Cyclotella ocellata Pant.	7184	0.48
MEL - 0101	1	19-Sep-15	Rhizosolenia eriense H.L. Smith	7184	0.61
MEL - 0101	1	19-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	4800	4.03
MEL - 0101	1	19-Sep-15	Tabellaria flocculsa (Roth) Kutzing	200	0.23
MEL - 0101	1	19-Sep-15	Synedra acus Kutzing	6200	0.59
MEL - 0101	1	19-Sep-15	Asterionella formosa Hassall	175800	17.67
MEL - 0101	1	19-Sep-15	Cyclotella michiganiana Skvortzow	86208	1.65
MEL - 0101	1	19-Sep-15	Rhopalodia gibba (Ehrenberg) O. Muller	200	6.67
MEL - 0101	1	19-Sep-15	Rhodomonas minuta Skuja	251440	36.96
MEL - 0101	1	19-Sep-15	Cryptomonas erosa Ehrenberg	2400	2.80
MEL - 0101	1	19-Sep-15	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0101	1	19-Sep-15	Cryptomonas reflexa (Marsson) Skuja	1200	0.88
MEL - 0101	1	19-Sep-15	Cryptomonas rostratiformis Skuja	200	0.40
MEL - 0101	1	19-Sep-15	Katablepharis ovalis Skuja	50288	2.30

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101	1	19-Sep-15	Gymnodinium helveticum Penard	400	8.67
MEL - 0101	1	19-Sep-15	Peridinium pusillum (Penard) Lemmermann	2000	3.28
MEL - 0101	1	19-Sep-15	Peridinium aciculiferum Lemmermann	1200	10.86
MEL - 0101	2	19-Sep-15	Snowella sp	400	0.21
MEL - 0101	2	19-Sep-15	Carteria spp.	7184	1.08
MEL - 0101	2	19-Sep-15	Chlamydomonas spp.	7184	0.19
MEL - 0101	2	19-Sep-15	Sphaerocystis schroeteri Chodat	35920	1.20
MEL - 0101	2	19-Sep-15	Pediastrum tetras (Ehrenberg) Ralfs	28736	0.32
MEL - 0101	2	19-Sep-15	Oocystis lacustris Chodat	35920	0.93
MEL - 0101	2	19-Sep-15	Elakatothrix gelatinosa Willen	50288	1.34
MEL - 0101	2	19-Sep-15	Staurodesmus extensus (Andersson) Teiling	400	0.21
MEL - 0101	2	19-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	64656	2.44
MEL - 0101	2	19-Sep-15	Mougeotia sp.	7184	1.63
MEL - 0101	2	19-Sep-15	Mougeotia sp.	1200	1.40
MEL - 0101	2	19-Sep-15	Scenedesmus ecornis	28736	0.45
MEL - 0101	2	19-Sep-15	Small chrysophyceae	395120	3.64
MEL - 0101	2	19-Sep-15	Large chrysophyceae	93392	16.06
MEL - 0101	2	19-Sep-15	Chrysochromulina parva Lackey	323280	19.91
MEL - 0101	2	19-Sep-15	Chrysococcus sp.	272992	15.81
MEL - 0101	2	19-Sep-15	Kephyrion boreale Skuja	14368	1.79
MEL - 0101	2	19-Sep-15	Kephyrion sp.	57472	1.08
MEL - 0101	2	19-Sep-15	Spiniferomonas sirrata**********	7184	0.63
MEL - 0101	2	19-Sep-15	Mallomonas crassisquama (Asmund) Fott	1000	1.05
MEL - 0101	2	19-Sep-15	Dinobryon borgei Lemmermann	7184	0.44
MEL - 0101	2	19-Sep-15	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0101	2	19-Sep-15	Dinobryon bavaricum Imhof	1800	3.58
MEL - 0101	2	19-Sep-15	Dinobryon sociale Ehrenberg	43104	9.67
MEL - 0101	2	19-Sep-15	Dinobryon sociale Ehrenberg	400	0.49
MEL - 0101	2	19-Sep-15	Uroglena volvox Ehrenberg	201152	22.75
MEL - 0101	2	19-Sep-15	Chrysosphaerella longispina Lauterborn	200	3.52
MEL - 0101	2	19-Sep-15	Chrysochromulina laurentiana Kling	28736	10.97
MEL - 0101	2	19-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	466960	20.73

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101	2	19-Sep-15	Cyclotella stelligera Cleve and Grunow	3400	6.18
MEL - 0101	2	19-Sep-15	Cyclotella ocellata Pant.	28736	1.93
MEL - 0101	2	19-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	600	0.50
MEL - 0101	2	19-Sep-15	Tabellaria flocculsa (Roth) Kutzing	200	0.25
MEL - 0101	2	19-Sep-15	Fragilaria crotonensis Kitton	400	0.14
MEL - 0101	2	19-Sep-15	Synedra acus Kutzing	7200	0.69
MEL - 0101	2	19-Sep-15	Asterionella formosa Hassall	14400	1.45
MEL - 0101	2	19-Sep-15	Cyclotella michiganiana Skvortzow	50288	0.96
MEL - 0101	2	19-Sep-15	Rhodomonas minuta Skuja	186784	27.46
MEL - 0101	2	19-Sep-15	Cryptomonas erosa Ehrenberg	3800	4.39
MEL - 0101	2	19-Sep-15	Cryptomonas reflexa (Marsson) Skuja	400	0.29
MEL - 0101	2	19-Sep-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0101	2	19-Sep-15	Katablepharis ovalis Skuja	7184	0.33
MEL - 0101	2	19-Sep-15	Gymnodinium helveticum Penard	200	4.81
MEL - 0101	2	19-Sep-15	Gymnodinium sp.	400	3.72
MEL - 0101	2	19-Sep-15	Peridinium willei Huitfeldt-Kaas	200	5.30
MEL - 0101	2	19-Sep-15	Peridinium pusillum (Penard) Lemmermann	2000	3.28
MEL - 0101	2	19-Sep-15	Peridinium aciculiferum Lemmermann	2000	18.10
MEL - 0102	1	19-Jul-15	Chroococcus limneticus Lemmermann	28736	1.11
MEL - 0102	1	19-Jul-15	Chlamydomonas spp.	7184	0.20
MEL - 0102	1	19-Jul-15	Elakatothrix gelatinosa Willen	14368	0.35
MEL - 0102	1	19-Jul-15	Euastrum spp.	200	0.37
MEL - 0102	1	19-Jul-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0102	1	19-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0102	1	19-Jul-15	Mougeotia sp.	7184	1.63
MEL - 0102	1	19-Jul-15	Small chrysophyceae	330464	6.21
MEL - 0102	1	19-Jul-15	Large chrysophyceae	21552	3.87
MEL - 0102	1	19-Jul-15	Chrysochromulina parva Lackey	826160	54.03
MEL - 0102	1	19-Jul-15	Chrysococcus sp.	581904	38.06
MEL - 0102	1	19-Jul-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0102	1	19-Jul-15	Kephyrion sp.	114944	1.62
MEL - 0102	1	19-Jul-15	Spiniferomonas sirrata**********	14368	2.16

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	1	19-Jul-15	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0102	1	19-Jul-15	Dinobryon borgei Lemmermann	35920	1.86
MEL - 0102	1	19-Jul-15	Dinobryon bavaricum Imhof	143680	32.50
MEL - 0102	1	19-Jul-15	Dinobryon bavaricum Imhof	5400	13.69
MEL - 0102	1	19-Jul-15	Dinobryon sertularia Ehrenberg	50288	11.38
MEL - 0102	1	19-Jul-15	Dinobryon sertularia Ehrenberg	3200	10.85
MEL - 0102	1	19-Jul-15	Dinobryon sociale Ehrenberg	158048	35.75
MEL - 0102	1	19-Jul-15	Dinobryon sociale Ehrenberg	2200	2.70
MEL - 0102	1	19-Jul-15	Epiphyxis sp.	21552	1.73
MEL - 0102	1	19-Jul-15	Chrysolkos skuja (Nauwerck) Willen	93392	3.01
MEL - 0102	1	19-Jul-15	Uroglena volvox Ehrenberg	2090544	236.44
MEL - 0102	1	19-Jul-15	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL - 0102	1	19-Jul-15	Chrysochromulina laurentiana Kling	71840	27.42
MEL - 0102	1	19-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.98
MEL - 0102	1	19-Jul-15	Cyclotella pseudostelligera	600	1.09
MEL - 0102	1	19-Jul-15	Cyclotella ocellata Pant.	14368	1.05
MEL - 0102	1	19-Jul-15	Rhizosolenia eriense H.L. Smith	481328	37.45
MEL - 0102	1	19-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	1400	1.04
MEL - 0102	1	19-Jul-15	Fragilaria crotonensis Kitton	4000	1.44
MEL - 0102	1	19-Jul-15	Synedra acus Kutzing	40200	3.92
MEL - 0102	1	19-Jul-15	Asterionella formosa Hassall	1400	0.12
MEL - 0102	1	19-Jul-15	Cyclotella michiganiana Skvortzow	100576	2.46
MEL - 0102	1	19-Jul-15	Rhodomonas minuta Skuja	50288	7.58
MEL - 0102	1	19-Jul-15	Cryptomonas erosa Ehrenberg	8000	9.73
MEL - 0102	1	19-Jul-15	Cryptomonas reflexa (Marsson) Skuja	3000	2.20
MEL - 0102	1	19-Jul-15	Cryptomonas rostratiformis Skuja	600	1.27
MEL - 0102	1	19-Jul-15	Katablepharis ovalis Skuja	35920	1.45
MEL - 0102	1	19-Jul-15	Gymnodinium helveticum Penard	1400	21.84
MEL - 0102	1	19-Jul-15	Gymnodinium helveticum Penard	1600	37.70
MEL - 0102	1	19-Jul-15	Peridinium willei Huitfeldt-Kaas	600	13.47
MEL - 0102	1	19-Jul-15	Peridinium pusillum (Penard) Lemmermann	600	1.00
MEL - 0102	1	19-Jul-15	Peridinium aciculiferum Lemmermann	2400	21.71

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	2	19-Jul-15	Chlamydomonas spp.	14368	0.41
MEL - 0102	2	19-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0102	2	19-Jul-15	Mougeotia sp.	14368	3.25
MEL - 0102	2	19-Jul-15	Small chrysophyceae	294544	5.54
MEL - 0102	2	19-Jul-15	Large chrysophyceae	86208	15.48
MEL - 0102	2	19-Jul-15	Chrysochromulina parva Lackey	603456	39.47
MEL - 0102	2	19-Jul-15	Chrysococcus sp.	301728	19.73
MEL - 0102	2	19-Jul-15	Chrysostephanospaera globulifera Scherffel	35920	12.82
MEL - 0102	2	19-Jul-15	Kephyrion sp.	100576	1.73
MEL - 0102	2	19-Jul-15	Spiniferomonas sirrata**********	7184	0.81
MEL - 0102	2	19-Jul-15	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0102	2	19-Jul-15	Dinobryon borgei Lemmermann	7184	0.44
MEL - 0102	2	19-Jul-15	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0102	2	19-Jul-15	Dinobryon bavaricum Imhof	93392	21.13
MEL - 0102	2	19-Jul-15	Dinobryon bavaricum Imhof	5600	11.15
MEL - 0102	2	19-Jul-15	Dinobryon sertularia Ehrenberg	86208	19.50
MEL - 0102	2	19-Jul-15	Dinobryon sertularia Ehrenberg	2800	9.49
MEL - 0102	2	19-Jul-15	Dinobryon sociale Ehrenberg	107760	24.38
MEL - 0102	2	19-Jul-15	Dinobryon sociale Ehrenberg	2200	2.70
MEL - 0102	2	19-Jul-15	Chrysolkos skuja (Nauwerck) Willen	71840	2.26
MEL - 0102	2	19-Jul-15	Uroglena volvox Ehrenberg	2011520	227.50
MEL - 0102	2	19-Jul-15	Uroglena volvox Ehrenberg	200	4.72
MEL - 0102	2	19-Jul-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.37
MEL - 0102	2	19-Jul-15	Chrysochromulina laurentiana Kling	100576	39.69
MEL - 0102	2	19-Jul-15	Stichogloea spp.	43104	2.17
MEL - 0102	2	19-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	107760	3.30
MEL - 0102	2	19-Jul-15	Cyclotella stelligera Cleve and Grunow	1000	1.82
MEL - 0102	2	19-Jul-15	Cyclotella ocellata Pant.	28736	3.00
MEL - 0102	2	19-Jul-15	Rhizosolenia eriense H.L. Smith	431040	33.53
MEL - 0102	2	19-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	1400	1.06
MEL - 0102	2	19-Jul-15	Fragilaria crotonensis Kitton	16400	5.63
MEL - 0102	2	19-Jul-15	Synedra acus Kutzing	10800	1.09

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	2	19-Jul-15	Asterionella formosa Hassall	4200	0.44
MEL - 0102	2	19-Jul-15	Cyclotella michiganiana Skvortzow	100576	2.32
MEL - 0102	2	19-Jul-15	Rhodomonas minuta Skuja	43104	6.18
MEL - 0102	2	19-Jul-15	Cryptomonas erosa Ehrenberg	4800	5.79
MEL - 0102	2	19-Jul-15	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL - 0102	2	19-Jul-15	Cryptomonas rostratiformis Skuja	600	1.27
MEL - 0102	2	19-Jul-15	Katablepharis ovalis Skuja	14368	0.66
MEL - 0102	2	19-Jul-15	Gymnodinium helveticum Penard	600	14.14
MEL - 0102	2	19-Jul-15	Gymnodinium sp.	1800	25.45
MEL - 0102	2	19-Jul-15	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL - 0102	2	19-Jul-15	Peridinium pusillum (Penard) Lemmermann	1800	3.79
MEL - 0102	2	19-Jul-15	Peridinium aciculiferum Lemmermann	1600	14.48
MEL - 0102	1	14-Aug-15	Aphanothece sp.	28736	1.61
MEL - 0102	1	14-Aug-15	Oocystis lacustris Chodat	28736	0.81
MEL - 0102	1	14-Aug-15	Dictyosphaerium simplex Sukja	14368	0.07
MEL - 0102	1	14-Aug-15	Crucigenia quadrata Morr.	28736	0.04
MEL - 0102	1	14-Aug-15	Quadrigula closterioides (Bohl.) Printz	86208	2.46
MEL - 0102	1	14-Aug-15	Elakatothrix gelatinosa Willen	14368	0.20
MEL - 0102	1	14-Aug-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0102	1	14-Aug-15	Staurodesmus paradoxum Meyen	200	1.01
MEL - 0102	1	14-Aug-15	Staurodesmus bullardii G.M. Smith	200	0.46
MEL - 0102	1	14-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0102	1	14-Aug-15	Mougeotia sp.	107760	24.38
MEL - 0102	1	14-Aug-15	Mougeotia sp.	200	0.31
MEL - 0102	1	14-Aug-15	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL - 0102	1	14-Aug-15	Ankistrodesmus spiralis Lemmermann	28736	1.54
MEL - 0102	1	14-Aug-15	Monomastix minuta Skuja	7184	0.13
MEL - 0102	1	14-Aug-15	Euglena acus Ehrenberg	200	1.69
MEL - 0102	1	14-Aug-15	Small chrysophyceae	510064	9.59
MEL - 0102	1	14-Aug-15	Large chrysophyceae	28736	5.16
MEL - 0102	1	14-Aug-15	Chrysochromulina parva Lackey	366384	23.96
MEL - 0102	1	14-Aug-15	Chrysococcus sp.	402304	26.31

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	1	14-Aug-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0102	1	14-Aug-15	Kephyrion sp.	86208	1.22
MEL - 0102	1	14-Aug-15	Spiniferomonas sirrata**********	14368	2.16
MEL - 0102	1	14-Aug-15	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0102	1	14-Aug-15	Dinobryon borgei Lemmermann	7184	0.37
MEL - 0102	1	14-Aug-15	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0102	1	14-Aug-15	Dinobryon bavaricum Imhof	43104	9.75
MEL - 0102	1	14-Aug-15	Dinobryon bavaricum Imhof	3400	6.77
MEL - 0102	1	14-Aug-15	Dinobryon sociale Ehrenberg	193968	43.88
MEL - 0102	1	14-Aug-15	Dinobryon sociale Ehrenberg	800	0.98
MEL - 0102	1	14-Aug-15	Chrysolkos skuja (Nauwerck) Willen	28736	0.93
MEL - 0102	1	14-Aug-15	Uroglena volvox Ehrenberg	589088	66.63
MEL - 0102	1	14-Aug-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0102	1	14-Aug-15	Chrysochromulina laurentiana Kling	93392	35.65
MEL - 0102	1	14-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.74
MEL - 0102	1	14-Aug-15	Pteridomonas sp.	7184	1.59
MEL - 0102	1	14-Aug-15	Cyclotella stelligera Cleve and Grunow	2800	4.60
MEL - 0102	1	14-Aug-15	Cyclotella ocellata Pant.	14368	0.97
MEL - 0102	1	14-Aug-15	Rhizosolenia eriense H.L. Smith	136496	10.62
MEL - 0102	1	14-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	1400	1.07
MEL - 0102	1	14-Aug-15	Fragilaria crotonensis Kitton	3000	1.11
MEL - 0102	1	14-Aug-15	Synedra acus Kutzing	10800	1.03
MEL - 0102	1	14-Aug-15	Asterionella formosa Hassall	4000	0.39
MEL - 0102	1	14-Aug-15	Cyclotella michiganiana Skvortzow	172416	4.22
MEL - 0102	1	14-Aug-15	Rhopalodia gibba (Ehrenberg) O. Muller	200	6.97
MEL - 0102	1	14-Aug-15	Rhodomonas minuta Skuja	64656	9.75
MEL - 0102	1	14-Aug-15	Cryptomonas erosa Ehrenberg	4600	5.41
MEL - 0102	1	14-Aug-15	Cryptomonas reflexa (Marsson) Skuja	1600	1.17
MEL - 0102	1	14-Aug-15	Cryptomonas rostratiformis Skuja	1200	2.63
MEL - 0102	1	14-Aug-15	Katablepharis ovalis Skuja	14368	0.66
MEL - 0102	1	14-Aug-15	Gymnodinium sp.	2400	22.09
MEL - 0102	1	14-Aug-15	Peridinium pusillum (Penard) Lemmermann	3200	5.32

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	1	19-Sep-15	Nostoc sp.	200	0.47
MEL - 0102	1	19-Sep-15	Chlamydomonas spp.	14368	0.37
MEL - 0102	1	19-Sep-15	Sphaerocystis schroeteri Chodat	114944	3.57
MEL - 0102	1	19-Sep-15	Oocystis lacustris Chodat	7184	0.20
MEL - 0102	1	19-Sep-15	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.32
MEL - 0102	1	19-Sep-15	Elakatothrix gelatinosa Willen	14368	0.23
MEL - 0102	1	19-Sep-15	Staurodesmus extensus (Andersson) Teiling	800	0.33
MEL - 0102	1	19-Sep-15	Staurodesmus bullardii G.M. Smith	400	1.10
MEL - 0102	1	19-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0102	1	19-Sep-15	Botryococcus braunii Kutzing	1000	1.44
MEL - 0102	1	19-Sep-15	Euglena acus Ehrenberg	200	1.87
MEL - 0102	1	19-Sep-15	Small chrysophyceae	481328	8.28
MEL - 0102	1	19-Sep-15	Large chrysophyceae	14368	2.58
MEL - 0102	1	19-Sep-15	Chrysochromulina parva Lackey	431040	28.19
MEL - 0102	1	19-Sep-15	Chrysococcus sp.	531616	34.77
MEL - 0102	1	19-Sep-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0102	1	19-Sep-15	Kephyrion sp.	143680	2.47
MEL - 0102	1	19-Sep-15	Spiniferomonas sirrata**********	14368	1.71
MEL - 0102	1	19-Sep-15	Dinobryon borgei Lemmermann	7184	0.37
MEL - 0102	1	19-Sep-15	Dinobryon mucronutom Nygaard	21552	2.82
MEL - 0102	1	19-Sep-15	Dinobryon bavaricum Imhof	86208	19.50
MEL - 0102	1	19-Sep-15	Dinobryon bavaricum Imhof	3200	6.37
MEL - 0102	1	19-Sep-15	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0102	1	19-Sep-15	Dinobryon sociale Ehrenberg	14368	3.25
MEL - 0102	1	19-Sep-15	Dinobryon sociale Ehrenberg	400	0.49
MEL - 0102	1	19-Sep-15	Chrysolkos skuja (Nauwerck) Willen	14368	0.49
MEL - 0102	1	19-Sep-15	Uroglena volvox Ehrenberg	43104	4.88
MEL - 0102	1	19-Sep-15	Chrysochromulina laurentiana Kling	79024	31.18
MEL - 0102	1	19-Sep-15	Stichogloea spp.	28736	1.45
MEL - 0102	1	19-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	136496	4.67
MEL - 0102	1	19-Sep-15	Cyclotella stelligera Cleve and Grunow	3800	5.97
MEL - 0102	1	19-Sep-15	Cyclotella ocellata Pant.	14368	1.24

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	1	19-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	9000	6.53
MEL - 0102	1	19-Sep-15	Fragilaria crotonensis Kitton	2600	0.96
MEL - 0102	1	19-Sep-15	Synedra acus Kutzing	2200	0.21
MEL - 0102	1	19-Sep-15	Asterionella formosa Hassall	148600	14.47
MEL - 0102	1	19-Sep-15	Cyclotella michiganiana Skvortzow	100576	2.46
MEL - 0102	1	19-Sep-15	Rhopalodia gibba (Ehrenberg) O. Muller	200	11.15
MEL - 0102	1	19-Sep-15	Rhodomonas minuta Skuja	172416	26.00
MEL - 0102	1	19-Sep-15	Cryptomonas erosa Ehrenberg	5800	7.06
MEL - 0102	1	19-Sep-15	Cryptomonas reflexa (Marsson) Skuja	800	0.56
MEL - 0102	1	19-Sep-15	Cryptomonas rostratiformis Skuja	800	1.62
MEL - 0102	1	19-Sep-15	Katablepharis ovalis Skuja	14368	0.66
MEL - 0102	1	19-Sep-15	Gymnodinium sp.	800	12.48
MEL - 0102	1	19-Sep-15	Peridinium willei Huitfeldt-Kaas	600	13.47
MEL - 0102	1	19-Sep-15	Peridinium pusillum (Penard) Lemmermann	400	0.67
MEL - 0102	1	19-Sep-15	Peridinium aciculiferum Lemmermann	1400	12.67
MEL - 0103	1	19-Jul-15	Chroococcus limneticus Lemmermann	28736	1.11
MEL - 0103	1	19-Jul-15	Snowella sp	200	0.20
MEL - 0103	1	19-Jul-15	Pyramidomonas tetrarhynchus Schmarda	200	0.15
MEL - 0103	1	19-Jul-15	Oocystis lacustris Chodat	35920	1.02
MEL - 0103	1	19-Jul-15	Staurodesmus paradoxum Meyen	200	1.21
MEL - 0103	1	19-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0103	1	19-Jul-15	Mougeotia sp.	7184	1.68
MEL - 0103	1	19-Jul-15	Mougeotia sp.	3200	12.82
MEL - 0103	1	19-Jul-15	Monomastix minuta Skuja	7184	0.28
MEL - 0103	1	19-Jul-15	Small chrysophyceae	201152	3.14
MEL - 0103	1	19-Jul-15	Large chrysophyceae	21552	3.87
MEL - 0103	1	19-Jul-15	Chrysochromulina parva Lackey	898000	58.73
MEL - 0103	1	19-Jul-15	Chrysococcus sp.	704032	46.04
MEL - 0103	1	19-Jul-15	Kephyrion boreale Skuja	21552	2.56
MEL - 0103	1	19-Jul-15	Kephyrion sp.	93392	1.46
MEL - 0103	1	19-Jul-15	Spiniferomonas sirrata**********	28736	4.32
MEL - 0103	1	19-Jul-15	Mallomonas crassisquama (Asmund) Fott	200	0.21

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103	1	19-Jul-15	Dinobryon borgei Lemmermann	57472	3.55
MEL - 0103	1	19-Jul-15	Dinobryon bavaricum Imhof	150864	34.13
MEL - 0103	1	19-Jul-15	Dinobryon bavaricum Imhof	3000	5.97
MEL - 0103	1	19-Jul-15	Dinobryon sertularia Ehrenberg	57472	13.00
MEL - 0103	1	19-Jul-15	Dinobryon sertularia Ehrenberg	3400	11.53
MEL - 0103	1	19-Jul-15	Dinobryon sociale Ehrenberg	93392	21.13
MEL - 0103	1	19-Jul-15	Dinobryon sociale Ehrenberg	2600	3.19
MEL - 0103	1	19-Jul-15	Chrysolkos skuja (Nauwerck) Willen	50288	1.72
MEL - 0103	1	19-Jul-15	Uroglena volvox Ehrenberg	2033072	229.94
MEL - 0103	1	19-Jul-15	Chrysosphaerella longispina Lauterborn	35920	18.81
MEL - 0103	1	19-Jul-15	Bitrichia chodatii (Reverdin) Chodat	21552	1.08
MEL - 0103	1	19-Jul-15	Chrysochromulina laurentiana Kling	93392	38.08
MEL - 0103	1	19-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.85
MEL - 0103	1	19-Jul-15	Cyclotella stelligera Cleve and Grunow	600	0.94
MEL - 0103	1	19-Jul-15	Rhizosolenia eriense H.L. Smith	589088	45.83
MEL - 0103	1	19-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	4600	3.55
MEL - 0103	1	19-Jul-15	Tabellaria flocculsa (Roth) Kutzing	800	1.19
MEL - 0103	1	19-Jul-15	Fragilaria crotonensis Kitton	11200	4.03
MEL - 0103	1	19-Jul-15	Synedra acus Kutzing	15000	1.46
MEL - 0103	1	19-Jul-15	Asterionella formosa Hassall	2000	0.20
MEL - 0103	1	19-Jul-15	Cyclotella michiganiana Skvortzow	79024	1.94
MEL - 0103	1	19-Jul-15	Cyclotella bodanica Eulenst.	200	1.17
MEL - 0103	1	19-Jul-15	Rhodomonas minuta Skuja	64656	9.18
MEL - 0103	1	19-Jul-15	Cryptomonas erosa Ehrenberg	4600	5.60
MEL - 0103	1	19-Jul-15	Cryptomonas reflexa (Marsson) Skuja	1400	0.98
MEL - 0103	1	19-Jul-15	Cryptomonas rostratiformis Skuja	400	0.85
MEL - 0103	1	19-Jul-15	Katablepharis ovalis Skuja	21552	0.99
MEL - 0103	1	19-Jul-15	Gymnodinium helveticum Penard	800	18.85
MEL - 0103	1	19-Jul-15	Gymnodinium sp.	1400	21.84
MEL - 0103	1	19-Jul-15	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL - 0103	1	19-Jul-15	Peridinium pusillum (Penard) Lemmermann	1400	3.00
MEL - 0103	1	19-Jul-15	Peridinium aciculiferum Lemmermann	1600	14.96

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103	1R	19-Jul-15	Chroococcus limneticus Lemmermann	28736	1.11
MEL - 0103	1R	19-Jul-15	Pyramidomonas tetrarhynchus Schmarda	200	0.13
MEL - 0103	1R	19-Jul-15	Oocystis lacustris Chodat	28736	0.81
MEL - 0103	1R	19-Jul-15	Elakatothrix gelatinosa Willen	14368	0.20
MEL - 0103	1R	19-Jul-15	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0103	1R	19-Jul-15	Staurodesmus paradoxum Meyen	600	3.63
MEL - 0103	1R	19-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0103	1R	19-Jul-15	Mougeotia sp.	14368	3.25
MEL - 0103	1R	19-Jul-15	Mougeotia sp.	2000	8.01
MEL - 0103	1R	19-Jul-15	Monomastix minuta Skuja	21552	0.84
MEL - 0103	1R	19-Jul-15	Small chrysophyceae	258624	4.03
MEL - 0103	1R	19-Jul-15	Large chrysophyceae	50288	9.03
MEL - 0103	1R	19-Jul-15	Chrysochromulina parva Lackey	854896	55.91
MEL - 0103	1R	19-Jul-15	Chrysococcus sp.	747136	48.86
MEL - 0103	1R	19-Jul-15	Chrysostephanospaera globulifera Scherffel	7184	2.15
MEL - 0103	1R	19-Jul-15	Kephyrion boreale Skuja	14368	1.71
MEL - 0103	1R	19-Jul-15	Kephyrion sp.	100576	1.57
MEL - 0103	1R	19-Jul-15	Spiniferomonas sirrata**********	50288	7.57
MEL - 0103	1R	19-Jul-15	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0103	1R	19-Jul-15	Dinobryon borgei Lemmermann	28736	1.78
MEL - 0103	1R	19-Jul-15	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0103	1R	19-Jul-15	Dinobryon bavaricum Imhof	186784	42.25
MEL - 0103	1R	19-Jul-15	Dinobryon bavaricum Imhof	2400	4.78
MEL - 0103	1R	19-Jul-15	Dinobryon sertularia Ehrenberg	71840	16.25
MEL - 0103	1R	19-Jul-15	Dinobryon sertularia Ehrenberg	4200	14.24
MEL - 0103	1R	19-Jul-15	Dinobryon sociale Ehrenberg	114944	26.00
MEL - 0103	1R	19-Jul-15	Dinobryon sociale Ehrenberg	3800	4.66
MEL - 0103	1R	19-Jul-15	Chrysolkos skuja (Nauwerck) Willen	35920	1.23
MEL - 0103	1R	19-Jul-15	Uroglena volvox Ehrenberg	1982784	224.25
MEL - 0103	1R	19-Jul-15	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL - 0103	1R	19-Jul-15	Chrysochromulina laurentiana Kling	86208	35.15
MEL - 0103	1R	19-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.21

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103	1R	19-Jul-15	Cyclotella stelligera Cleve and Grunow	400	0.63
MEL - 0103	1R	19-Jul-15	Cyclotella ocellata Pant.	7184	0.78
MEL - 0103	1R	19-Jul-15	Rhizosolenia eriense H.L. Smith	653744	50.86
MEL - 0103	1R	19-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	3000	2.32
MEL - 0103	1R	19-Jul-15	Fragilaria crotonensis Kitton	8600	3.10
MEL - 0103	1R	19-Jul-15	Synedra acus Kutzing	14000	1.36
MEL - 0103	1R	19-Jul-15	Asterionella formosa Hassall	3200	0.32
MEL - 0103	1R	19-Jul-15	Cyclotella michiganiana Skvortzow	100576	2.46
MEL - 0103	1R	19-Jul-15	Cyclotella bodanica Eulenst.	200	1.17
MEL - 0103	1R	19-Jul-15	Rhodomonas minuta Skuja	71840	10.20
MEL - 0103	1R	19-Jul-15	Cryptomonas erosa Ehrenberg	5200	6.33
MEL - 0103	1R	19-Jul-15	Cryptomonas reflexa (Marsson) Skuja	1000	0.70
MEL - 0103	1R	19-Jul-15	Cryptomonas rostratiformis Skuja	800	1.70
MEL - 0103	1R	19-Jul-15	Katablepharis ovalis Skuja	14368	0.66
MEL - 0103	1R	19-Jul-15	Gymnodinium helveticum Penard	1200	28.27
MEL - 0103	1R	19-Jul-15	Gymnodinium sp.	1400	21.84
MEL - 0103	1R	19-Jul-15	Peridinium willei Huitfeldt-Kaas	400	8.98
MEL - 0103	1R	19-Jul-15	Peridinium pusillum (Penard) Lemmermann	1000	2.14
MEL - 0103	1R	19-Jul-15	Peridinium aciculiferum Lemmermann	1800	16.83
MEL - 0103	1	14-Aug-15	Chroococcus limneticus Lemmermann	28736	1.11
MEL - 0103	1	14-Aug-15	Pyramidomonas tetrarhynchus Schmarda	400	0.21
MEL - 0103	1	14-Aug-15	Sphaerocystis schroeteri Chodat	28736	0.54
MEL - 0103	1	14-Aug-15	Oocystis lacustris Chodat	50288	2.53
MEL - 0103	1	14-Aug-15	Dictyosphaerium simplex Sukja	28736	0.14
MEL - 0103	1	14-Aug-15	Elakatothrix gelatinosa Willen	35920	0.56
MEL - 0103	1	14-Aug-15	Cosmarium sp.	200	0.20
MEL - 0103	1	14-Aug-15	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0103	1	14-Aug-15	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.41
MEL - 0103	1	14-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0103	1	14-Aug-15	Mougeotia sp.	57472	11.56
MEL - 0103	1	14-Aug-15	Small chrysophyceae	474144	6.69
MEL - 0103	1	14-Aug-15	Large chrysophyceae	21552	3.87

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103	1	14-Aug-15	Chrysochromulina parva Lackey	265808	17.38
MEL - 0103	1	14-Aug-15	Chrysococcus sp.	366384	23.96
MEL - 0103	1	14-Aug-15	Kephyrion boreale Skuja	28736	3.09
MEL - 0103	1	14-Aug-15	Kephyrion sp.	35920	0.51
MEL - 0103	1	14-Aug-15	Spiniferomonas sirrata**********	14368	2.16
MEL - 0103	1	14-Aug-15	Mallomonas crassisquama (Asmund) Fott	1600	1.73
MEL - 0103	1	14-Aug-15	Dinobryon borgei Lemmermann	28736	1.54
MEL - 0103	1	14-Aug-15	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0103	1	14-Aug-15	Dinobryon bavaricum Imhof	136496	30.88
MEL - 0103	1	14-Aug-15	Dinobryon bavaricum Imhof	2400	4.78
MEL - 0103	1	14-Aug-15	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0103	1	14-Aug-15	Dinobryon sertularia Ehrenberg	600	2.03
MEL - 0103	1	14-Aug-15	Dinobryon sociale Ehrenberg	86208	19.50
MEL - 0103	1	14-Aug-15	Dinobryon sociale Ehrenberg	400	0.49
MEL - 0103	1	14-Aug-15	Chrysolkos skuja (Nauwerck) Willen	28736	0.85
MEL - 0103	1	14-Aug-15	Uroglena volvox Ehrenberg	459776	52.00
MEL - 0103	1	14-Aug-15	Chrysosphaerella longispina Lauterborn	200	4.61
MEL - 0103	1	14-Aug-15	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL - 0103	1	14-Aug-15	Chrysochromulina laurentiana Kling	50288	19.19
MEL - 0103	1	14-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.69
MEL - 0103	1	14-Aug-15	Pteridomonas sp.	7184	1.33
MEL - 0103	1	14-Aug-15	Cyclotella stelligera Cleve and Grunow	3400	5.34
MEL - 0103	1	14-Aug-15	Cyclotella ocellata Pant.	14368	1.24
MEL - 0103	1	14-Aug-15	Rhizosolenia eriense H.L. Smith	150864	10.67
MEL - 0103	1	14-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	3800	2.97
MEL - 0103	1	14-Aug-15	Fragilaria crotonensis Kitton	3400	1.22
MEL - 0103	1	14-Aug-15	Synedra acus Kutzing	3600	0.35
MEL - 0103	1	14-Aug-15	Asterionella formosa Hassall	1600	0.16
MEL - 0103	1	14-Aug-15	Cyclotella michiganiana Skvortzow	129312	3.17
MEL - 0103	1	14-Aug-15	Cyclotella bodanica Eulenst.	7184	53.51
MEL - 0103	1	14-Aug-15	Rhodomonas minuta Skuja	100576	14.28
MEL - 0103	1	14-Aug-15	Cryptomonas erosa Ehrenberg	2000	2.43

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103	1	14-Aug-15	Cryptomonas reflexa (Marsson) Skuja	1600	1.09
MEL - 0103	1	14-Aug-15	Cryptomonas rostratiformis Skuja	400	0.82
MEL - 0103	1	14-Aug-15	Katablepharis ovalis Skuja	21552	0.99
MEL - 0103	1	14-Aug-15	Gymnodinium sp.	1800	28.08
MEL - 0103	1	14-Aug-15	Peridinium pusillum (Penard) Lemmermann	4400	9.44
MEL - 0103	1	14-Aug-15	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0104	1	19-Jul-15	Snowella sp	200	0.22
MEL - 0104	1	19-Jul-15	Sphaerocystis schroeteri Chodat	7184	0.10
MEL - 0104	1	19-Jul-15	Oocystis lacustris Chodat	7184	0.20
MEL - 0104	1	19-Jul-15	Elakatothrix gelatinosa Willen	35920	0.74
MEL - 0104	1	19-Jul-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0104	1	19-Jul-15	Mougeotia sp.	7184	1.53
MEL - 0104	1	19-Jul-15	Botryococcus braunii Kutzing	200	0.43
MEL - 0104	1	19-Jul-15	Small chrysophyceae	186784	2.63
MEL - 0104	1	19-Jul-15	Large chrysophyceae	43104	7.74
MEL - 0104	1	19-Jul-15	Chrysochromulina parva Lackey	625008	40.88
MEL - 0104	1	19-Jul-15	Chrysococcus sp.	136496	6.96
MEL - 0104	1	19-Jul-15	Kephyrion sp.	114944	1.98
MEL - 0104	1	19-Jul-15	Spiniferomonas sirrata**********	35920	3.30
MEL - 0104	1	19-Jul-15	Mallomonas crassisquama (Asmund) Fott	800	0.85
MEL - 0104	1	19-Jul-15	Dinobryon borgei Lemmermann	7184	0.37
MEL - 0104	1	19-Jul-15	Dinobryon bavaricum Imhof	193968	43.88
MEL - 0104	1	19-Jul-15	Dinobryon bavaricum Imhof	4600	15.59
MEL - 0104	1	19-Jul-15	Dinobryon sertularia Ehrenberg	43104	9.75
MEL - 0104	1	19-Jul-15	Dinobryon sertularia Ehrenberg	1200	4.07
MEL - 0104	1	19-Jul-15	Dinobryon sociale Ehrenberg	43104	9.75
MEL - 0104	1	19-Jul-15	Dinobryon sociale Ehrenberg	3000	5.97
MEL - 0104	1	19-Jul-15	Chrysolkos skuja (Nauwerck) Willen	79024	2.37
MEL - 0104	1	19-Jul-15	Ochromonas sp.	14368	1.88
MEL - 0104	1	19-Jul-15	Uroglena volvox Ehrenberg	2119280	239.69
MEL - 0104	1	19-Jul-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.39
MEL - 0104	1	19-Jul-15	Chrysochromulina laurentiana Kling	107760	41.13

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104	1	19-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	28736	1.49
MEL - 0104	1	19-Jul-15	Cyclotella stelligera Cleve and Grunow	1200	1.97
MEL - 0104	1	19-Jul-15	Cyclotella pseudostelligera	7184	3.87
MEL - 0104	1	19-Jul-15	Cyclotella ocellata Pant.	21552	1.86
MEL - 0104	1	19-Jul-15	Rhizosolenia eriense H.L. Smith	416672	32.42
MEL - 0104	1	19-Jul-15	Fragilaria crotonensis Kitton	22800	8.21
MEL - 0104	1	19-Jul-15	Synedra acus Kutzing	6200	0.59
MEL - 0104	1	19-Jul-15	Asterionella formosa Hassall	3800	0.38
MEL - 0104	1	19-Jul-15	Cyclotella michiganiana Skvortzow	100576	2.46
MEL - 0104	1	19-Jul-15	Rhodomonas minuta Skuja	93392	13.38
MEL - 0104	1	19-Jul-15	Cryptomonas erosa Ehrenberg	10200	12.61
MEL - 0104	1	19-Jul-15	Cryptomonas reflexa (Marsson) Skuja	1200	1.06
MEL - 0104	1	19-Jul-15	Cryptomonas rostratiformis Skuja	1200	2.63
MEL - 0104	1	19-Jul-15	Katablepharis ovalis Skuja	21552	0.87
MEL - 0104	1	19-Jul-15	Gymnodinium helveticum Penard	1200	28.27
MEL - 0104	1	19-Jul-15	Gymnodinium sp.	2000	37.63
MEL - 0104	1	19-Jul-15	Peridinium pusillum (Penard) Lemmermann	1400	3.17
MEL - 0104	1	19-Jul-15	Peridinium aciculiferum Lemmermann	4000	36.19
MEL - 0104	1	14-Aug-15	Chlamydomonas spp.	14368	0.34
MEL - 0104	1	14-Aug-15	Oocystis lacustris Chodat	57472	2.89
MEL - 0104	1	14-Aug-15	Crucigenia quadrata Morr.	28736	0.14
MEL - 0104	1	14-Aug-15	Elakatothrix gelatinosa Willen	28736	0.54
MEL - 0104	1	14-Aug-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0104	1	14-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0104	1	14-Aug-15	Mougeotia sp.	129312	28.28
MEL - 0104	1	14-Aug-15	Botryococcus braunii Kutzing	400	0.86
MEL - 0104	1	14-Aug-15	Small chrysophyceae	495696	6.99
MEL - 0104	1	14-Aug-15	Large chrysophyceae	28736	5.16
MEL - 0104	1	14-Aug-15	Chrysochromulina parva Lackey	172416	11.28
MEL - 0104	1	14-Aug-15	Chrysococcus sp.	251440	16.44
MEL - 0104	1	14-Aug-15	Chrysostephanospaera globulifera Scherffel	7184	2.00
MEL - 0104	1	14-Aug-15	Kephyrion boreale Skuja	14368	1.54

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104	1	14-Aug-15	Kephyrion sp.	43104	0.61
MEL - 0104	1	14-Aug-15	Spiniferomonas sirrata**********	7184	0.85
MEL - 0104	1	14-Aug-15	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0104	1	14-Aug-15	Synura sphagnicola Korschikow	200	3.93
MEL - 0104	1	14-Aug-15	Dinobryon borgei Lemmermann	7184	0.40
MEL - 0104	1	14-Aug-15	Dinobryon bavaricum Imhof	129312	29.25
MEL - 0104	1	14-Aug-15	Dinobryon bavaricum Imhof	1000	3.39
MEL - 0104	1	14-Aug-15	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0104	1	14-Aug-15	Dinobryon sociale Ehrenberg	107760	24.38
MEL - 0104	1	14-Aug-15	Dinobryon sociale Ehrenberg	600	1.19
MEL - 0104	1	14-Aug-15	Chrysolkos skuja (Nauwerck) Willen	21552	0.69
MEL - 0104	1	14-Aug-15	Ochromonas sp.	7184	0.55
MEL - 0104	1	14-Aug-15	Uroglena volvox Ehrenberg	898000	101.56
MEL - 0104	1	14-Aug-15	Uroglena volvox Ehrenberg	200	11.26
MEL - 0104	1	14-Aug-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.37
MEL - 0104	1	14-Aug-15	Chrysochromulina laurentiana Kling	21552	8.50
MEL - 0104	1	14-Aug-15	Stichogloea spp.	35920	1.81
MEL - 0104	1	14-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.72
MEL - 0104	1	14-Aug-15	Cyclotella stelligera Cleve and Grunow	2800	5.31
MEL - 0104	1	14-Aug-15	Cyclotella ocellata Pant.	7184	0.48
MEL - 0104	1	14-Aug-15	Rhizosolenia eriense H.L. Smith	79024	6.15
MEL - 0104	1	14-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	8400	6.25
MEL - 0104	1	14-Aug-15	Fragilaria crotonensis Kitton	6400	2.20
MEL - 0104	1	14-Aug-15	Synedra acus Kutzing	2800	0.28
MEL - 0104	1	14-Aug-15	Asterionella formosa Hassall	4600	0.46
MEL - 0104	1	14-Aug-15	Cyclotella michiganiana Skvortzow	64656	1.49
MEL - 0104	1	14-Aug-15	Rhodomonas minuta Skuja	57472	8.67
MEL - 0104	1	14-Aug-15	Cryptomonas erosa Ehrenberg	5400	6.54
MEL - 0104	1	14-Aug-15	Cryptomonas reflexa (Marsson) Skuja	600	0.41
MEL - 0104	1	14-Aug-15	Cryptomonas rostratiformis Skuja	800	1.81
MEL - 0104	1	14-Aug-15	Katablepharis ovalis Skuja	21552	1.01
MEL - 0104	1	14-Aug-15	Gymnodinium helveticum Penard	200	4.71

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104	1	14-Aug-15	Gymnodinium sp.	1400	21.84
MEL - 0104	1	14-Aug-15	Peridinium pusillum (Penard) Lemmermann	3400	7.42
MEL - 0104	1	19-Sep-15	Sphaerocystis schroeteri Chodat	14368	0.18
MEL - 0104	1	19-Sep-15	Oocystis lacustris Chodat	21552	1.08
MEL - 0104	1	19-Sep-15	Monoraphidium contortum (Thur.) Komarkova-Legnerova	7184	0.13
MEL - 0104	1	19-Sep-15	Crucigenia quadrata Morr.	28736	0.14
MEL - 0104	1	19-Sep-15	Elakatothrix gelatinosa Willen	35920	0.62
MEL - 0104	1	19-Sep-15	Staurodesmus extensus (Andersson) Teiling	400	0.17
MEL - 0104	1	19-Sep-15	Staurodesmus paradoxum Meyen	200	1.67
MEL - 0104	1	19-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0104	1	19-Sep-15	Mougeotia sp.	14368	3.25
MEL - 0104	1	19-Sep-15	Mougeotia sp.	600	1.63
MEL - 0104	1	19-Sep-15	Botryococcus braunii Kutzing	2200	3.16
MEL - 0104	1	19-Sep-15	Small chrysophyceae	359200	5.60
MEL - 0104	1	19-Sep-15	Large chrysophyceae	28736	5.16
MEL - 0104	1	19-Sep-15	Chrysochromulina parva Lackey	272992	17.85
MEL - 0104	1	19-Sep-15	Chrysococcus sp.	287360	17.70
MEL - 0104	1	19-Sep-15	Kephyrion boreale Skuja	7184	0.77
MEL - 0104	1	19-Sep-15	Kephyrion sp.	114944	1.62
MEL - 0104	1	19-Sep-15	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0104	1	19-Sep-15	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0104	1	19-Sep-15	Dinobryon bavaricum Imhof	2400	8.14
MEL - 0104	1	19-Sep-15	Dinobryon sociale Ehrenberg	43104	9.75
MEL - 0104	1	19-Sep-15	Chrysolkos skuja (Nauwerck) Willen	14368	0.46
MEL - 0104	1	19-Sep-15	Uroglena volvox Ehrenberg	581904	65.81
MEL - 0104	1	19-Sep-15	Chrysochromulina laurentiana Kling	14368	5.86
MEL - 0104	1	19-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	761504	39.52
MEL - 0104	1	19-Sep-15	Pteridomonas sp.	7184	1.43
MEL - 0104	1	19-Sep-15	Cyclotella stelligera Cleve and Grunow	3000	4.71
MEL - 0104	1	19-Sep-15	Cyclotella ocellata Pant.	21552	1.58
MEL - 0104	1	19-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	9400	6.64
MEL - 0104	1	19-Sep-15	Tabellaria flocculsa (Roth) Kutzing	600	0.74

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104	1	19-Sep-15	Fragilaria crotonensis Kitton	3200	1.15
MEL - 0104	1	19-Sep-15	Synedra acus Kutzing	400	0.04
MEL - 0104	1	19-Sep-15	Asterionella formosa Hassall	162000	15.78
MEL - 0104	1	19-Sep-15	Cyclotella michiganiana Skvortzow	107760	2.64
MEL - 0104	1	19-Sep-15	Rhodomonas minuta Skuja	150864	22.75
MEL - 0104	1	19-Sep-15	Cryptomonas erosa Ehrenberg	2800	3.27
MEL - 0104	1	19-Sep-15	Cryptomonas reflexa (Marsson) Skuja	2200	1.54
MEL - 0104	1	19-Sep-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0104	1	19-Sep-15	Katablepharis ovalis Skuja	28736	1.35
MEL - 0104	1	19-Sep-15	Gymnodinium helveticum Penard	400	9.42
MEL - 0104	1	19-Sep-15	Gymnodinium sp.	1200	18.72
MEL - 0104	1	19-Sep-15	Peridinium pusillum (Penard) Lemmermann	1400	3.00
MEL - 0104	1	19-Sep-15	Peridinium aciculiferum Lemmermann	1400	12.67
MEL - 0105	1	18-Jul-15	Chlamydomonas spp.	14368	0.41
MEL - 0105	1	18-Jul-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0105	1	18-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0105	1	18-Jul-15	Euglena acus Ehrenberg	400	2.74
MEL - 0105	1	18-Jul-15	Small chrysophyceae	380752	3.92
MEL - 0105	1	18-Jul-15	Large chrysophyceae	71840	12.90
MEL - 0105	1	18-Jul-15	Chrysochromulina parva Lackey	337648	22.08
MEL - 0105	1	18-Jul-15	Chrysococcus sp.	308912	20.20
MEL - 0105	1	18-Jul-15	Kephyrion boreale Skuja	14368	1.88
MEL - 0105	1	18-Jul-15	Kephyrion sp.	57472	0.59
MEL - 0105	1	18-Jul-15	Spiniferomonas sirrata**********	7184	0.85
MEL - 0105	1	18-Jul-15	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0105	1	18-Jul-15	Dinobryon borgei Lemmermann	35920	2.07
MEL - 0105	1	18-Jul-15	Dinobryon bavaricum Imhof	79024	17.88
MEL - 0105	1	18-Jul-15	Dinobryon bavaricum Imhof	3600	12.20
MEL - 0105	1	18-Jul-15	Dinobryon sertularia Ehrenberg	57472	13.00
MEL - 0105	1	18-Jul-15	Dinobryon sertularia Ehrenberg	1200	4.07
MEL - 0105	1	18-Jul-15	Dinobryon sociale Ehrenberg	86208	19.50
MEL - 0105	1	18-Jul-15	Dinobryon sociale Ehrenberg	3800	4.66

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	1	18-Jul-15	Epiphyxis sp.	14368	1.11
MEL - 0105	1	18-Jul-15	Chrysolkos skuja (Nauwerck) Willen	43104	1.29
MEL - 0105	1	18-Jul-15	Uroglena volvox Ehrenberg	1853472	209.63
MEL - 0105	1	18-Jul-15	Bitrichia chodatii (Reverdin) Chodat	14368	0.71
MEL - 0105	1	18-Jul-15	Chrysochromulina laurentiana Kling	150864	59.53
MEL - 0105	1	18-Jul-15	Stichogloea spp.	28736	1.45
MEL - 0105	1	18-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.34
MEL - 0105	1	18-Jul-15	Cyclotella stelligera Cleve and Grunow	600	0.99
MEL - 0105	1	18-Jul-15	Cyclotella ocellata Pant.	14368	1.05
MEL - 0105	1	18-Jul-15	Rhizosolenia eriense H.L. Smith	287360	22.36
MEL - 0105	1	18-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	1600	1.15
MEL - 0105	1	18-Jul-15	Tabellaria flocculsa (Roth) Kutzing	800	0.94
MEL - 0105	1	18-Jul-15	Fragilaria crotonensis Kitton	23800	8.77
MEL - 0105	1	18-Jul-15	Synedra acus Kutzing	14000	1.36
MEL - 0105	1	18-Jul-15	Asterionella formosa Hassall	2800	0.28
MEL - 0105	1	18-Jul-15	Cyclotella michiganiana Skvortzow	86208	2.11
MEL - 0105	1	18-Jul-15	Rhodomonas minuta Skuja	35920	5.15
MEL - 0105	1	18-Jul-15	Cryptomonas erosa Ehrenberg	5400	6.68
MEL - 0105	1	18-Jul-15	Cryptomonas reflexa (Marsson) Skuja	2800	2.05
MEL - 0105	1	18-Jul-15	Cryptomonas rostratiformis Skuja	1600	3.39
MEL - 0105	1	18-Jul-15	Katablepharis ovalis Skuja	35920	1.65
MEL - 0105	1	18-Jul-15	Gymnodinium helveticum Penard	1200	28.27
MEL - 0105	1	18-Jul-15	Gymnodinium sp.	1800	28.08
MEL - 0105	1	18-Jul-15	Peridinium willei Huitfeldt-Kaas	200	5.43
MEL - 0105	1	18-Jul-15	Peridinium pusillum (Penard) Lemmermann	2400	5.15
MEL - 0105	1	18-Jul-15	Peridinium aciculiferum Lemmermann	1200	10.86
MEL - 0105	1	15-Aug-15	Pyramidomonas tetrarhynchus Schmarda	200	0.11
MEL - 0105	1	15-Aug-15	Chlamydomonas spp.	7184	0.17
MEL - 0105	1	15-Aug-15	Oocystis lacustris Chodat	21552	0.61
MEL - 0105	1	15-Aug-15	Elakatothrix gelatinosa Willen	28736	0.45
MEL - 0105	1	15-Aug-15	Cosmarium sp.	200	2.12
MEL - 0105	1	15-Aug-15	Euastrum spp.	200	0.37

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	1	15-Aug-15	Staurodesmus extensus (Andersson) Teiling	800	0.31
MEL - 0105	1	15-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0105	1	15-Aug-15	Mougeotia sp.	86208	19.50
MEL - 0105	1	15-Aug-15	Botryococcus braunii Kutzing	600	1.06
MEL - 0105	1	15-Aug-15	Small chrysophyceae	452592	5.79
MEL - 0105	1	15-Aug-15	Large chrysophyceae	28736	5.16
MEL - 0105	1	15-Aug-15	Chrysochromulina parva Lackey	93392	6.11
MEL - 0105	1	15-Aug-15	Chrysococcus sp.	143680	9.40
MEL - 0105	1	15-Aug-15	Chrysostephanospaera globulifera Scherffel	7184	2.07
MEL - 0105	1	15-Aug-15	Kephyrion boreale Skuja	14368	1.63
MEL - 0105	1	15-Aug-15	Kephyrion sp.	64656	1.11
MEL - 0105	1	15-Aug-15	Spiniferomonas sirrata**********	7184	0.53
MEL - 0105	1	15-Aug-15	Mallomonas crassisquama (Asmund) Fott	200	0.22
MEL - 0105	1	15-Aug-15	Dinobryon borgei Lemmermann	7184	0.56
MEL - 0105	1	15-Aug-15	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0105	1	15-Aug-15	Dinobryon bavaricum Imhof	150864	34.13
MEL - 0105	1	15-Aug-15	Dinobryon bavaricum Imhof	1400	2.79
MEL - 0105	1	15-Aug-15	Dinobryon sociale Ehrenberg	79024	17.88
MEL - 0105	1	15-Aug-15	Dinobryon sociale Ehrenberg	400	2.03
MEL - 0105	1	15-Aug-15	Chrysolkos skuja (Nauwerck) Willen	28736	0.90
MEL - 0105	1	15-Aug-15	Uroglena volvox Ehrenberg	488512	55.25
MEL - 0105	1	15-Aug-15	Bitrichia chodatii (Reverdin) Chodat	14368	0.67
MEL - 0105	1	15-Aug-15	Chrysochromulina laurentiana Kling	86208	35.15
MEL - 0105	1	15-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.38
MEL - 0105	1	15-Aug-15	Cyclotella stelligera Cleve and Grunow	3400	5.58
MEL - 0105	1	15-Aug-15	Cyclotella ocellata Pant.	21552	1.52
MEL - 0105	1	15-Aug-15	Rhizosolenia eriense H.L. Smith	64656	4.11
MEL - 0105	1	15-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	2400	2.06
MEL - 0105	1	15-Aug-15	Fragilaria crotonensis Kitton	4400	1.59
MEL - 0105	1	15-Aug-15	Synedra acus Kutzing	600	0.06
MEL - 0105	1	15-Aug-15	Asterionella formosa Hassall	1200	0.12
MEL - 0105	1	15-Aug-15	Cyclotella michiganiana Skvortzow	93392	2.29

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	1	15-Aug-15	Rhodomonas minuta Skuja	43104	6.28
MEL - 0105	1	15-Aug-15	Cryptomonas erosa Ehrenberg	5200	6.43
MEL - 0105	1	15-Aug-15	Cryptomonas reflexa (Marsson) Skuja	1000	0.71
MEL - 0105	1	15-Aug-15	Cryptomonas rostratiformis Skuja	1000	2.26
MEL - 0105	1	15-Aug-15	Katablepharis ovalis Skuja	14368	0.66
MEL - 0105	1	15-Aug-15	Gymnodinium helveticum Penard	400	9.42
MEL - 0105	1	15-Aug-15	Gymnodinium sp.	3800	53.72
MEL - 0105	1	15-Aug-15	Peridinium pusillum (Penard) Lemmermann	3600	7.72
MEL - 0105	1	15-Aug-15	Peridinium aciculiferum Lemmermann	1400	12.67
MEL - 0105	2	15-Aug-15	Snowella sp	200	0.15
MEL - 0105	2	15-Aug-15	Nostoc sp.	200	0.70
MEL - 0105	2	15-Aug-15	Pyramidomonas tetrarhynchus Schmarda	200	0.10
MEL - 0105	2	15-Aug-15	Chlamydomonas spp.	14368	0.37
MEL - 0105	2	15-Aug-15	Sphaerocystis schroeteri Chodat	86208	1.10
MEL - 0105	2	15-Aug-15	Oocystis lacustris Chodat	43104	2.17
MEL - 0105	2	15-Aug-15	Quadrigula closterioides (Bohl.) Printz	114944	2.46
MEL - 0105	2	15-Aug-15	Elakatothrix gelatinosa Willen	86208	1.35
MEL - 0105	2	15-Aug-15	Cosmarium sp.	800	1.12
MEL - 0105	2	15-Aug-15	Staurodesmus extensus (Andersson) Teiling	800	0.46
MEL - 0105	2	15-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0105	2	15-Aug-15	Mougeotia sp.	79024	17.88
MEL - 0105	2	15-Aug-15	Euglena acus Ehrenberg	200	0.92
MEL - 0105	2	15-Aug-15	Small chrysophyceae	596272	8.41
MEL - 0105	2	15-Aug-15	Large chrysophyceae	28736	10.97
MEL - 0105	2	15-Aug-15	Chrysochromulina parva Lackey	193968	12.69
MEL - 0105	2	15-Aug-15	Chrysococcus sp.	179600	11.75
MEL - 0105	2	15-Aug-15	Kephyrion boreale Skuja	7184	0.66
MEL - 0105	2	15-Aug-15	Kephyrion sp.	100576	1.89
MEL - 0105	2	15-Aug-15	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL - 0105	2	15-Aug-15	Dinobryon borgei Lemmermann	21552	1.64
MEL - 0105	2	15-Aug-15	Dinobryon mucronutom Nygaard	35920	4.70
MEL - 0105	2	15-Aug-15	Dinobryon bavaricum Imhof	114944	26.00

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	2	15-Aug-15	Dinobryon bavaricum Imhof	1400	2.79
MEL - 0105	2	15-Aug-15	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0105	2	15-Aug-15	Dinobryon sociale Ehrenberg	122128	27.63
MEL - 0105	2	15-Aug-15	Dinobryon sociale Ehrenberg	600	2.03
MEL - 0105	2	15-Aug-15	Epiphyxis sp.	7184	0.58
MEL - 0105	2	15-Aug-15	Chrysolkos skuja (Nauwerck) Willen	14368	0.46
MEL - 0105	2	15-Aug-15	Uroglena volvox Ehrenberg	754320	85.31
MEL - 0105	2	15-Aug-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.35
MEL - 0105	2	15-Aug-15	Chrysochromulina laurentiana Kling	50288	19.84
MEL - 0105	2	15-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.49
MEL - 0105	2	15-Aug-15	Pteridomonas sp.	21552	4.78
MEL - 0105	2	15-Aug-15	Cyclotella stelligera Cleve and Grunow	3200	5.03
MEL - 0105	2	15-Aug-15	Cyclotella ocellata Pant.	7184	0.51
MEL - 0105	2	15-Aug-15	Rhizosolenia eriense H.L. Smith	93392	6.60
MEL - 0105	2	15-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	5600	4.06
MEL - 0105	2	15-Aug-15	Fragilaria crotonensis Kitton	4600	1.66
MEL - 0105	2	15-Aug-15	Synedra acus Kutzing	1600	0.15
MEL - 0105	2	15-Aug-15	Asterionella formosa Hassall	2200	0.23
MEL - 0105	2	15-Aug-15	Cyclotella michiganiana Skvortzow	150864	3.70
MEL - 0105	2	15-Aug-15	Rhodomonas minuta Skuja	64656	9.75
MEL - 0105	2	15-Aug-15	Cryptomonas erosa Ehrenberg	3200	3.72
MEL - 0105	2	15-Aug-15	Cryptomonas reflexa (Marsson) Skuja	600	0.40
MEL - 0105	2	15-Aug-15	Cryptomonas rostratiformis Skuja	400	0.85
MEL - 0105	2	15-Aug-15	Katablepharis ovalis Skuja	28736	1.19
MEL - 0105	2	15-Aug-15	Gymnodinium sp.	2200	26.39
MEL - 0105	2	15-Aug-15	Peridinium pusillum (Penard) Lemmermann	3200	6.86
MEL - 0105	1R	15-Aug-15	Chlamydomonas spp.	7184	0.17
MEL - 0105	1R	15-Aug-15	Oocystis lacustris Chodat	28736	0.81
MEL - 0105	1R	15-Aug-15	Elakatothrix gelatinosa Willen	14368	0.23
MEL - 0105	1R	15-Aug-15	Cosmarium sp.	200	2.12
MEL - 0105	1R	15-Aug-15	Euastrum spp.	200	0.37
MEL - 0105	1R	15-Aug-15	Staurodesmus extensus (Andersson) Teiling	200	0.08

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	1R	15-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0105	1R	15-Aug-15	Mougeotia sp.	100576	22.75
MEL - 0105	1R	15-Aug-15	Botryococcus braunii Kutzing	400	0.71
MEL - 0105	1R	15-Aug-15	Euglena acus Ehrenberg	400	2.44
MEL - 0105	1R	15-Aug-15	Small chrysophyceae	330464	4.23
MEL - 0105	1R	15-Aug-15	Large chrysophyceae	28736	5.16
MEL - 0105	1R	15-Aug-15	Chrysochromulina parva Lackey	114944	7.52
MEL - 0105	1R	15-Aug-15	Chrysococcus sp.	165232	10.81
MEL - 0105	1R	15-Aug-15	Kephyrion boreale Skuja	7184	0.81
MEL - 0105	1R	15-Aug-15	Kephyrion sp.	57472	0.99
MEL - 0105	1R	15-Aug-15	Spiniferomonas sirrata**********	7184	0.53
MEL - 0105	1R	15-Aug-15	Dinobryon borgei Lemmermann	28736	2.24
MEL - 0105	1R	15-Aug-15	Dinobryon mucronutom Nygaard	21552	2.82
MEL - 0105	1R	15-Aug-15	Dinobryon bavaricum Imhof	107760	24.38
MEL - 0105	1R	15-Aug-15	Dinobryon bavaricum Imhof	800	1.59
MEL - 0105	1R	15-Aug-15	Dinobryon sertularia Ehrenberg	200	0.68
MEL - 0105	1R	15-Aug-15	Dinobryon sociale Ehrenberg	50288	11.38
MEL - 0105	1R	15-Aug-15	Dinobryon sociale Ehrenberg	800	4.07
MEL - 0105	1R	15-Aug-15	Chrysolkos skuja (Nauwerck) Willen	14368	0.42
MEL - 0105	1R	15-Aug-15	Uroglena volvox Ehrenberg	438224	49.56
MEL - 0105	1R	15-Aug-15	Bitrichia chodatii (Reverdin) Chodat	28736	1.35
MEL - 0105	1R	15-Aug-15	Chrysochromulina laurentiana Kling	107760	43.93
MEL - 0105	1R	15-Aug-15	Bicoeca lacustris Clark	7184	0.50
MEL - 0105	1R	15-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	64656	2.06
MEL - 0105	1R	15-Aug-15	Cyclotella stelligera Cleve and Grunow	4200	6.90
MEL - 0105	1R	15-Aug-15	Cyclotella ocellata Pant.	14368	1.01
MEL - 0105	1R	15-Aug-15	Rhizosolenia eriense H.L. Smith	43104	2.74
MEL - 0105	1R	15-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	3800	3.26
MEL - 0105	1R	15-Aug-15	Fragilaria crotonensis Kitton	2000	0.72
MEL - 0105	1R	15-Aug-15	Synedra acus Kutzing	1000	0.10
MEL - 0105	1R	15-Aug-15	Asterionella formosa Hassall	800	0.08
MEL - 0105	1R	15-Aug-15	Cyclotella michiganiana Skvortzow	143680	3.52

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	1R	15-Aug-15	Rhodomonas minuta Skuja	43104	6.28
MEL - 0105	1R	15-Aug-15	Cryptomonas erosa Ehrenberg	7800	9.64
MEL - 0105	1R	15-Aug-15	Cryptomonas reflexa (Marsson) Skuja	600	0.42
MEL - 0105	1R	15-Aug-15	Cryptomonas rostratiformis Skuja	800	1.81
MEL - 0105	1R	15-Aug-15	Katablepharis ovalis Skuja	7184	0.33
MEL - 0105	1R	15-Aug-15	Gymnodinium helveticum Penard	800	18.85
MEL - 0105	1R	15-Aug-15	Gymnodinium sp.	3000	42.41
MEL - 0105	1R	15-Aug-15	Peridinium pusillum (Penard) Lemmermann	3000	6.43
MEL - 0105	1R	15-Aug-15	Peridinium aciculiferum Lemmermann	2000	18.10
MEL - 0105	1	19-Sep-15	Snowella sp	400	0.21
MEL - 0105	1	19-Sep-15	Chlamydomonas spp.	7184	0.17
MEL - 0105	1	19-Sep-15	Pediastrum duplex Meyen	3200	0.33
MEL - 0105	1	19-Sep-15	Oocystis lacustris Chodat	50288	2.53
MEL - 0105	1	19-Sep-15	Elakatothrix gelatinosa Willen	14368	0.25
MEL - 0105	1	19-Sep-15	Closterium kuetzingii Brebisson	200	2.92
MEL - 0105	1	19-Sep-15	Cosmarium sp.	200	0.28
MEL - 0105	1	19-Sep-15	Staurodesmus extensus (Andersson) Teiling	400	0.17
MEL - 0105	1	19-Sep-15	Staurodesmus paradoxum Meyen	200	0.57
MEL - 0105	1	19-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL - 0105	1	19-Sep-15	Small chrysophyceae	352016	4.96
MEL - 0105	1	19-Sep-15	Large chrysophyceae	71840	27.42
MEL - 0105	1	19-Sep-15	Chrysochromulina parva Lackey	366384	23.96
MEL - 0105	1	19-Sep-15	Chrysococcus sp.	258624	13.19
MEL - 0105	1	19-Sep-15	Kephyrion boreale Skuja	43104	4.63
MEL - 0105	1	19-Sep-15	Kephyrion sp.	150864	2.35
MEL - 0105	1	19-Sep-15	Spiniferomonas sirrata**********	14368	1.63
MEL - 0105	1	19-Sep-15	Dinobryon bavaricum Imhof	35920	8.13
MEL - 0105	1	19-Sep-15	Dinobryon bavaricum Imhof	2000	6.78
MEL - 0105	1	19-Sep-15	Dinobryon sociale Ehrenberg	600	0.74
MEL - 0105	1	19-Sep-15	Uroglena volvox Ehrenberg	344832	39.00
MEL - 0105	1	19-Sep-15	Chrysochromulina laurentiana Kling	86208	35.15
MEL - 0105	1	19-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	510064	26.47

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	1	19-Sep-15	Cyclotella stelligera Cleve and Grunow	1200	1.97
MEL - 0105	1	19-Sep-15	Rhizosolenia eriense H.L. Smith	43104	3.35
MEL - 0105	1	19-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	4400	3.40
MEL - 0105	1	19-Sep-15	Fragilaria crotonensis Kitton	3800	1.43
MEL - 0105	1	19-Sep-15	Asterionella formosa Hassall	119200	12.36
MEL - 0105	1	19-Sep-15	Cyclotella michiganiana Skvortzow	129312	2.99
MEL - 0105	1	19-Sep-15	Rhopalodia gibba (Ehrenberg) O. Muller	200	10.19
MEL - 0105	1	19-Sep-15	Rhodomonas minuta Skuja	244256	36.83
MEL - 0105	1	19-Sep-15	Cryptomonas erosa Ehrenberg	5000	5.93
MEL - 0105	1	19-Sep-15	Cryptomonas reflexa (Marsson) Skuja	1200	0.84
MEL - 0105	1	19-Sep-15	Cryptomonas rostratiformis Skuja	200	0.47
MEL - 0105	1	19-Sep-15	Katablepharis ovalis Skuja	21552	1.04
MEL - 0105	1	19-Sep-15	Gymnodinium sp.	7184	2.31
MEL - 0105	1	19-Sep-15	Gymnodinium sp.	1800	30.88
MEL - 0105	1	19-Sep-15	Peridinium willei Huitfeldt-Kaas	400	9.77
MEL - 0105	1	19-Sep-15	Peridinium pusillum (Penard) Lemmermann	1600	3.63
MEL - 0105	1	19-Sep-15	Peridinium aciculiferum Lemmermann	1400	12.67
MEL - 0201	1	21-Jul-15	Snowella sp	400	0.28
MEL - 0201	1	21-Jul-15	Chlamydomonas spp.	7184	0.15
MEL - 0201	1	21-Jul-15	Elakatothrix gelatinosa Willen	21552	0.37
MEL - 0201	1	21-Jul-15	Cosmarium sp.	200	0.55
MEL - 0201	1	21-Jul-15	Staurodesmus bullardii G.M. Smith	200	0.57
MEL - 0201	1	21-Jul-15	Mougeotia sp.	28736	6.50
MEL - 0201	1	21-Jul-15	Botryococcus braunii Kutzing	400	0.36
MEL - 0201	1	21-Jul-15	Small chrysophyceae	208336	2.94
MEL - 0201	1	21-Jul-15	Large chrysophyceae	107760	19.35
MEL - 0201	1	21-Jul-15	Chrysochromulina parva Lackey	387936	25.37
MEL - 0201	1	21-Jul-15	Chrysococcus sp.	409488	22.28
MEL - 0201	1	21-Jul-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0201	1	21-Jul-15	Kephyrion sp.	64656	1.01
MEL - 0201	1	21-Jul-15	Spiniferomonas sirrata**********	14368	1.54
MEL - 0201	1	21-Jul-15	Mallomonas crassisquama (Asmund) Fott	1400	1.47

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201	1	21-Jul-15	Synura sphagnicola Korschikow	400	6.20
MEL - 0201	1	21-Jul-15	Dinobryon borgei Lemmermann	50288	3.83
MEL - 0201	1	21-Jul-15	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0201	1	21-Jul-15	Dinobryon bavaricum Imhof	150864	34.13
MEL - 0201	1	21-Jul-15	Dinobryon bavaricum Imhof	5400	18.31
MEL - 0201	1	21-Jul-15	Dinobryon sertularia Ehrenberg	71840	16.25
MEL - 0201	1	21-Jul-15	Dinobryon sertularia Ehrenberg	2400	6.06
MEL - 0201	1	21-Jul-15	Dinobryon sociale Ehrenberg	114944	26.00
MEL - 0201	1	21-Jul-15	Dinobryon sociale Ehrenberg	3600	7.17
MEL - 0201	1	21-Jul-15	Chrysolkos skuja (Nauwerck) Willen	71840	2.16
MEL - 0201	1	21-Jul-15	Uroglena volvox Ehrenberg	1767264	199.88
MEL - 0201	1	21-Jul-15	Chrysosphaerella longispina Lauterborn	14368	7.52
MEL - 0201	1	21-Jul-15	Chrysochromulina laurentiana Kling	50288	21.18
MEL - 0201	1	21-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.74
MEL - 0201	1	21-Jul-15	Cyclotella stelligera Cleve and Grunow	800	1.52
MEL - 0201	1	21-Jul-15	Cyclotella ocellata Pant.	14368	0.97
MEL - 0201	1	21-Jul-15	Rhizosolenia eriense H.L. Smith	466960	36.33
MEL - 0201	1	21-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.31
MEL - 0201	1	21-Jul-15	Fragilaria crotonensis Kitton	15800	5.69
MEL - 0201	1	21-Jul-15	Synedra acus Kutzing	11400	1.09
MEL - 0201	1	21-Jul-15	Asterionella formosa Hassall	4200	0.42
MEL - 0201	1	21-Jul-15	Cyclotella michiganiana Skvortzow	43104	1.06
MEL - 0201	1	21-Jul-15	Rhopalodia gibba (Ehrenberg) O. Muller	200	8.44
MEL - 0201	1	21-Jul-15	Rhodomonas minuta Skuja	35920	5.37
MEL - 0201	1	21-Jul-15	Cryptomonas erosa Ehrenberg	6400	7.82
MEL - 0201	1	21-Jul-15	Cryptomonas ovata Ehrenberg	400	1.81
MEL - 0201	1	21-Jul-15	Cryptomonas reflexa (Marsson) Skuja	2200	1.61
MEL - 0201	1	21-Jul-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0201	1	21-Jul-15	Katablepharis ovalis Skuja	14368	0.69
MEL - 0201	1	21-Jul-15	Gymnodinium helveticum Penard	800	19.23
MEL - 0201	1	21-Jul-15	Gymnodinium sp.	7184	2.65
MEL - 0201	1	21-Jul-15	Gymnodinium sp.	1800	33.87

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201	1	21-Jul-15	Peridinium willei Huitfeldt-Kaas	200	4.89
MEL - 0201	1	21-Jul-15	Peridinium pusillum (Penard) Lemmermann	600	1.29
MEL - 0201	1	21-Jul-15	Peridinium aciculiferum Lemmermann	1600	14.48
MEL - 0201	1	16-Aug-15	Sphaerocystis schroeteri Chodat	7184	0.09
MEL - 0201	1	16-Aug-15	Pediastrum tetras (Ehrenberg) Ralfs	2800	0.25
MEL - 0201	1	16-Aug-15	Oocystis lacustris Chodat	21552	1.08
MEL - 0201	1	16-Aug-15	Elakatothrix gelatinosa Willen	21552	0.34
MEL - 0201	1	16-Aug-15	Cosmarium sp.	200	0.28
MEL - 0201	1	16-Aug-15	Euastrum spp.	800	1.49
MEL - 0201	1	16-Aug-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0201	1	16-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0201	1	16-Aug-15	Mougeotia sp.	64656	13.89
MEL - 0201	1	16-Aug-15	Botryococcus braunii Kutzing	400	0.71
MEL - 0201	1	16-Aug-15	Monomastix minuta Skuja	14368	0.29
MEL - 0201	1	16-Aug-15	Small chrysophyceae	316096	4.46
MEL - 0201	1	16-Aug-15	Large chrysophyceae	28736	8.30
MEL - 0201	1	16-Aug-15	Chrysochromulina parva Lackey	35920	1.95
MEL - 0201	1	16-Aug-15	Chrysococcus sp.	172416	11.28
MEL - 0201	1	16-Aug-15	Kephyrion sp.	107760	1.68
MEL - 0201	1	16-Aug-15	Spiniferomonas sirrata**********	14368	1.54
MEL - 0201	1	16-Aug-15	Dinobryon borgei Lemmermann	7184	0.45
MEL - 0201	1	16-Aug-15	Dinobryon bavaricum Imhof	43104	9.75
MEL - 0201	1	16-Aug-15	Dinobryon bavaricum Imhof	200	0.40
MEL - 0201	1	16-Aug-15	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0201	1	16-Aug-15	Dinobryon sociale Ehrenberg	35920	8.13
MEL - 0201	1	16-Aug-15	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0201	1	16-Aug-15	Chrysolkos skuja (Nauwerck) Willen	14368	0.42
MEL - 0201	1	16-Aug-15	Uroglena volvox Ehrenberg	323280	36.56
MEL - 0201	1	16-Aug-15	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL - 0201	1	16-Aug-15	Chrysochromulina laurentiana Kling	57472	22.68
MEL - 0201	1	16-Aug-15	Stichogloea spp.	28736	1.45
MEL - 0201	1	16-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.36

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201	1	16-Aug-15	Cyclotella stelligera Cleve and Grunow	3600	6.55
MEL - 0201	1	16-Aug-15	Cyclotella ocellata Pant.	21552	1.45
MEL - 0201	1	16-Aug-15	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL - 0201	1	16-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	3200	2.47
MEL - 0201	1	16-Aug-15	Tabellaria flocculsa (Roth) Kutzing	800	1.34
MEL - 0201	1	16-Aug-15	Fragilaria crotonensis Kitton	1600	0.51
MEL - 0201	1	16-Aug-15	Synedra acus Kutzing	200	0.02
MEL - 0201	1	16-Aug-15	Asterionella formosa Hassall	1600	0.16
MEL - 0201	1	16-Aug-15	Cyclotella michiganiana Skvortzow	79024	1.51
MEL - 0201	1	16-Aug-15	Rhodomonas minuta Skuja	71840	10.83
MEL - 0201	1	16-Aug-15	Cryptomonas erosa Ehrenberg	4000	4.75
MEL - 0201	1	16-Aug-15	Cryptomonas reflexa (Marsson) Skuja	800	0.53
MEL - 0201	1	16-Aug-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0201	1	16-Aug-15	Gymnodinium sp.	7184	2.31
MEL - 0201	1	16-Aug-15	Gymnodinium sp.	1600	24.96
MEL - 0201	1	16-Aug-15	Peridinium willei Huitfeldt-Kaas	200	4.53
MEL - 0201	1	16-Aug-15	Peridinium pusillum (Penard) Lemmermann	800	1.28
MEL - 0201	1	10-Sep-15	Planktothrix	200	3.18
MEL - 0201	1	10-Sep-15	Sphaerocystis schroeteri Chodat	28736	0.96
MEL - 0201	1	10-Sep-15	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL - 0201	1	10-Sep-15	Cosmarium sp.	600	0.84
MEL - 0201	1	10-Sep-15	Euastrum spp.	400	0.74
MEL - 0201	1	10-Sep-15	Staurodesmus extensus (Andersson) Teiling	200	0.10
MEL - 0201	1	10-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0201	1	10-Sep-15	Mougeotia sp.	107760	23.02
MEL - 0201	1	10-Sep-15	Botryococcus braunii Kutzing	400	0.36
MEL - 0201	1	10-Sep-15	Euglena acus Ehrenberg	200	1.29
MEL - 0201	1	10-Sep-15	Small chrysophyceae	438224	6.84
MEL - 0201	1	10-Sep-15	Large chrysophyceae	50288	9.03
MEL - 0201	1	10-Sep-15	Chrysochromulina parva Lackey	215520	14.10
MEL - 0201	1	10-Sep-15	Chrysococcus sp.	265808	17.38
MEL - 0201	1	10-Sep-15	Kephyrion sp.	107760	1.85

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201	1	10-Sep-15	Kephyrion sp.	7184	0.85
MEL - 0201	1	10-Sep-15	Spiniferomonas sirrata**********	14368	1.54
MEL - 0201	1	10-Sep-15	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0201	1	10-Sep-15	Dinobryon borgei Lemmermann	7184	0.37
MEL - 0201	1	10-Sep-15	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0201	1	10-Sep-15	Dinobryon bavaricum Imhof	14368	3.25
MEL - 0201	1	10-Sep-15	Dinobryon bavaricum Imhof	1400	4.75
MEL - 0201	1	10-Sep-15	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0201	1	10-Sep-15	Dinobryon sertularia Ehrenberg	200	0.68
MEL - 0201	1	10-Sep-15	Dinobryon sociale Ehrenberg	7184	1.63
MEL - 0201	1	10-Sep-15	Dinobryon sociale Ehrenberg	400	0.49
MEL - 0201	1	10-Sep-15	Chrysolkos skuja (Nauwerck) Willen	7184	0.22
MEL - 0201	1	10-Sep-15	Uroglena volvox Ehrenberg	538800	60.94
MEL - 0201	1	10-Sep-15	Chrysochromulina laurentiana Kling	50288	20.50
MEL - 0201	1	10-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.81
MEL - 0201	1	10-Sep-15	Pteridomonas sp.	7184	1.71
MEL - 0201	1	10-Sep-15	Cyclotella stelligera Cleve and Grunow	5200	10.29
MEL - 0201	1	10-Sep-15	Cyclotella ocellata Pant.	43104	2.90
MEL - 0201	1	10-Sep-15	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL - 0201	1	10-Sep-15	Fragilaria crotonensis Kitton	800	0.28
MEL - 0201	1	10-Sep-15	Synedra acus Kutzing	400	0.04
MEL - 0201	1	10-Sep-15	Asterionella formosa Hassall	11000	1.11
MEL - 0201	1	10-Sep-15	Cyclotella michiganiana Skvortzow	64656	1.40
MEL - 0201	1	10-Sep-15	Rhodomonas minuta Skuja	179600	27.53
MEL - 0201	1	10-Sep-15	Cryptomonas erosa Ehrenberg	2800	3.32
MEL - 0201	1	10-Sep-15	Cryptomonas reflexa (Marsson) Skuja	800	0.56
MEL - 0201	1	10-Sep-15	Cryptomonas rostratiformis Skuja	200	0.38
MEL - 0201	1	10-Sep-15	Katablepharis ovalis Skuja	7184	0.34
MEL - 0201	1	10-Sep-15	Gymnodinium helveticum Penard	600	14.14
MEL - 0201	1	10-Sep-15	Gymnodinium sp.	7184	2.41
MEL - 0201	1	10-Sep-15	Gymnodinium sp.	1200	15.32
MEL - 0201	1	10-Sep-15	Peridinium pusillum (Penard) Lemmermann	800	1.29

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201	1	10-Sep-15	Peridinium aciculiferum Lemmermann	800	7.24
MEL - 0202	1	21-Jul-15	Elakatothrix gelatinosa Willen	14368	0.25
MEL - 0202	1	21-Jul-15	Cosmarium sp.	200	0.61
MEL - 0202	1	21-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0202	1	21-Jul-15	Mougeotia sp.	14368	3.18
MEL - 0202	1	21-Jul-15	Mougeotia sp.	800	0.88
MEL - 0202	1	21-Jul-15	Botryococcus braunii Kutzing	400	0.61
MEL - 0202	1	21-Jul-15	Euglena acus Ehrenberg	200	1.52
MEL - 0202	1	21-Jul-15	Small chrysophyceae	409488	4.22
MEL - 0202	1	21-Jul-15	Large chrysophyceae	107760	19.35
MEL - 0202	1	21-Jul-15	Chrysochromulina parva Lackey	574720	37.59
MEL - 0202	1	21-Jul-15	Chrysococcus sp.	466960	28.76
MEL - 0202	1	21-Jul-15	Chrysostephanospaera globulifera Scherffel	14368	4.78
MEL - 0202	1	21-Jul-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0202	1	21-Jul-15	Kephyrion sp.	93392	1.20
MEL - 0202	1	21-Jul-15	Spiniferomonas sirrata**********	35920	4.27
MEL - 0202	1	21-Jul-15	Mallomonas crassisquama (Asmund) Fott	600	0.62
MEL - 0202	1	21-Jul-15	Synura sphagnicola Korschikow	400	6.81
MEL - 0202	1	21-Jul-15	Dinobryon borgei Lemmermann	71840	3.96
MEL - 0202	1	21-Jul-15	Dinobryon bavaricum Imhof	222704	50.38
MEL - 0202	1	21-Jul-15	Dinobryon bavaricum Imhof	5800	19.66
MEL - 0202	1	21-Jul-15	Dinobryon sertularia Ehrenberg	64656	14.63
MEL - 0202	1	21-Jul-15	Dinobryon sertularia Ehrenberg	3400	11.53
MEL - 0202	1	21-Jul-15	Dinobryon sociale Ehrenberg	201152	45.50
MEL - 0202	1	21-Jul-15	Dinobryon sociale Ehrenberg	3800	4.66
MEL - 0202	1	21-Jul-15	Chrysolkos skuja (Nauwerck) Willen	50288	1.62
MEL - 0202	1	21-Jul-15	Uroglena volvox Ehrenberg	1645136	186.06
MEL - 0202	1	21-Jul-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.38
MEL - 0202	1	21-Jul-15	Chrysochromulina laurentiana Kling	50288	19.84
MEL - 0202	1	21-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.62
MEL - 0202	1	21-Jul-15	Dinobryon attenatum Hill	7184	1.00
MEL - 0202	1	21-Jul-15	Pteridomonas sp.	7184	1.71

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202	1	21-Jul-15	Cyclotella stelligera Cleve and Grunow	1800	2.87
MEL - 0202	1	21-Jul-15	Cyclotella pseudostelligera	7184	3.87
MEL - 0202	1	21-Jul-15	Cyclotella ocellata Pant.	7184	0.48
MEL - 0202	1	21-Jul-15	Rhizosolenia eriense H.L. Smith	459776	35.77
MEL - 0202	1	21-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	2600	2.01
MEL - 0202	1	21-Jul-15	Fragilaria crotonensis Kitton	14600	4.95
MEL - 0202	1	21-Jul-15	Synedra acus Kutzing	5400	0.54
MEL - 0202	1	21-Jul-15	Asterionella formosa Hassall	3000	0.31
MEL - 0202	1	21-Jul-15	Cyclotella michiganiana Skvortzow	193968	5.04
MEL - 0202	1	21-Jul-15	Rhodomonas minuta Skuja	43104	6.50
MEL - 0202	1	21-Jul-15	Cryptomonas erosa Ehrenberg	3800	4.64
MEL - 0202	1	21-Jul-15	Cryptomonas reflexa (Marsson) Skuja	1000	0.73
MEL - 0202	1	21-Jul-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0202	1	21-Jul-15	Katablepharis ovalis Skuja	28736	1.32
MEL - 0202	1	21-Jul-15	Gymnodinium helveticum Penard	600	14.14
MEL - 0202	1	21-Jul-15	Gymnodinium sp.	14368	5.10
MEL - 0202	1	21-Jul-15	Gymnodinium sp.	1400	21.84
MEL - 0202	1	21-Jul-15	Peridinium willei Huitfeldt-Kaas	200	5.30
MEL - 0202	1	21-Jul-15	Peridinium pusillum (Penard) Lemmermann	800	1.72
MEL - 0202	1	21-Jul-15	Peridinium aciculiferum Lemmermann	1800	16.83
MEL - 0202	1R	21-Jul-15	Elakatothrix gelatinosa Willen	14368	0.25
MEL - 0202	1R	21-Jul-15	Cosmarium sp.	200	0.61
MEL - 0202	1R	21-Jul-15	Staurodesmus extensus (Andersson) Teiling	200	0.11
MEL - 0202	1R	21-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0202	1R	21-Jul-15	Mougeotia sp.	21552	4.77
MEL - 0202	1R	21-Jul-15	Mougeotia sp.	1800	1.98
MEL - 0202	1R	21-Jul-15	Botryococcus braunii Kutzing	200	0.31
MEL - 0202	1R	21-Jul-15	Euglena acus Ehrenberg	600	1.73
MEL - 0202	1R	21-Jul-15	Small chrysophyceae	474144	4.88
MEL - 0202	1R	21-Jul-15	Large chrysophyceae	79024	14.19
MEL - 0202	1R	21-Jul-15	Chrysochromulina parva Lackey	438224	28.66
MEL - 0202	1R	21-Jul-15	Chrysococcus sp.	466960	28.76

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202	1R	21-Jul-15	Chrysostephanospaera globulifera Scherffel	14368	4.78
MEL - 0202	1R	21-Jul-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0202	1R	21-Jul-15	Kephyrion sp.	143680	1.84
MEL - 0202	1R	21-Jul-15	Spiniferomonas sirrata**********	21552	2.56
MEL - 0202	1R	21-Jul-15	Mallomonas crassisquama (Asmund) Fott	400	0.41
MEL - 0202	1R	21-Jul-15	Dinobryon borgei Lemmermann	43104	2.38
MEL - 0202	1R	21-Jul-15	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0202	1R	21-Jul-15	Dinobryon bavaricum Imhof	208336	47.13
MEL - 0202	1R	21-Jul-15	Dinobryon bavaricum Imhof	5000	16.95
MEL - 0202	1R	21-Jul-15	Dinobryon sertularia Ehrenberg	35920	8.13
MEL - 0202	1R	21-Jul-15	Dinobryon sertularia Ehrenberg	3000	10.17
MEL - 0202	1R	21-Jul-15	Dinobryon sociale Ehrenberg	150864	34.13
MEL - 0202	1R	21-Jul-15	Dinobryon sociale Ehrenberg	4200	5.15
MEL - 0202	1R	21-Jul-15	Epiphyxis sp.	14368	1.25
MEL - 0202	1R	21-Jul-15	Chrysolkos skuja (Nauwerck) Willen	28736	0.93
MEL - 0202	1R	21-Jul-15	Uroglena volvox Ehrenberg	1731344	195.82
MEL - 0202	1R	21-Jul-15	Bitrichia chodatii (Reverdin) Chodat	21552	1.14
MEL - 0202	1R	21-Jul-15	Chrysochromulina laurentiana Kling	50288	19.84
MEL - 0202	1R	21-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.16
MEL - 0202	1R	21-Jul-15	Dinobryon attenatum Hill	14368	1.99
MEL - 0202	1R	21-Jul-15	Cyclotella stelligera Cleve and Grunow	1200	1.91
MEL - 0202	1R	21-Jul-15	Cyclotella ocellata Pant.	21552	1.45
MEL - 0202	1R	21-Jul-15	Rhizosolenia eriense H.L. Smith	510064	39.68
MEL - 0202	1R	21-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	1800	1.39
MEL - 0202	1R	21-Jul-15	Fragilaria crotonensis Kitton	13400	4.55
MEL - 0202	1R	21-Jul-15	Synedra acus Kutzing	3800	0.36
MEL - 0202	1R	21-Jul-15	Asterionella formosa Hassall	3000	0.31
MEL - 0202	1R	21-Jul-15	Cyclotella michiganiana Skvortzow	222704	5.79
MEL - 0202	1R	21-Jul-15	Rhodomonas minuta Skuja	43104	6.50
MEL - 0202	1R	21-Jul-15	Cryptomonas erosa Ehrenberg	5200	6.35
MEL - 0202	1R	21-Jul-15	Cryptomonas reflexa (Marsson) Skuja	400	0.29
MEL - 0202	1R	21-Jul-15	Cryptomonas rostratiformis Skuja	400	0.85

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202	1R	21-Jul-15	Katablepharis ovalis Skuja	21552	0.99
MEL - 0202	1R	21-Jul-15	Gymnodinium helveticum Penard	600	14.14
MEL - 0202	1R	21-Jul-15	Gymnodinium sp.	7184	2.55
MEL - 0202	1R	21-Jul-15	Gymnodinium sp.	1000	15.60
MEL - 0202	1R	21-Jul-15	Peridinium willei Huitfeldt-Kaas	200	5.30
MEL - 0202	1R	21-Jul-15	Peridinium pusillum (Penard) Lemmermann	1000	2.14
MEL - 0202	1R	21-Jul-15	Peridinium aciculiferum Lemmermann	1000	9.35
MEL - 0202	1	16-Aug-15	Snowella sp	200	0.15
MEL - 0202	1	16-Aug-15	Pediastrum tetras (Ehrenberg) Ralfs	86208	0.41
MEL - 0202	1	16-Aug-15	Oocystis lacustris Chodat	14368	0.72
MEL - 0202	1	16-Aug-15	Elakatothrix gelatinosa Willen	50288	0.79
MEL - 0202	1	16-Aug-15	Cosmarium sp.	400	0.41
MEL - 0202	1	16-Aug-15	Staurodesmus extensus (Andersson) Teiling	2200	1.31
MEL - 0202	1	16-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0202	1	16-Aug-15	Mougeotia sp.	43104	9.75
MEL - 0202	1	16-Aug-15	Botryococcus braunii Kutzing	400	0.71
MEL - 0202	1	16-Aug-15	Monomastix minuta Skuja	21552	0.41
MEL - 0202	1	16-Aug-15	Small chrysophyceae	474144	6.69
MEL - 0202	1	16-Aug-15	Large chrysophyceae	21552	3.87
MEL - 0202	1	16-Aug-15	Chrysochromulina parva Lackey	107760	7.05
MEL - 0202	1	16-Aug-15	Chrysococcus sp.	244256	15.97
MEL - 0202	1	16-Aug-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0202	1	16-Aug-15	Kephyrion sp.	64656	0.91
MEL - 0202	1	16-Aug-15	Spiniferomonas sirrata**********	7184	0.77
MEL - 0202	1	16-Aug-15	Mallomonas crassisquama (Asmund) Fott	600	0.57
MEL - 0202	1	16-Aug-15	Dinobryon borgei Lemmermann	21552	1.64
MEL - 0202	1	16-Aug-15	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0202	1	16-Aug-15	Dinobryon bavaricum Imhof	43104	9.75
MEL - 0202	1	16-Aug-15	Dinobryon bavaricum Imhof	600	3.05
MEL - 0202	1	16-Aug-15	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0202	1	16-Aug-15	Dinobryon sociale Ehrenberg	100576	22.75
MEL - 0202	1	16-Aug-15	Chrysolkos skuja (Nauwerck) Willen	14368	0.43

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202	1	16-Aug-15	Ochromonas sp.	7184	0.52
MEL - 0202	1	16-Aug-15	Uroglena volvox Ehrenberg	438224	49.56
MEL - 0202	1	16-Aug-15	Chrysochromulina laurentiana Kling	64656	24.68
MEL - 0202	1	16-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.22
MEL - 0202	1	16-Aug-15	Cyclotella stelligera Cleve and Grunow	6000	11.87
MEL - 0202	1	16-Aug-15	Cyclotella pseudostelligera	14368	7.74
MEL - 0202	1	16-Aug-15	Cyclotella ocellata Pant.	21552	1.86
MEL - 0202	1	16-Aug-15	Rhizosolenia eriense H.L. Smith	21552	1.68
MEL - 0202	1	16-Aug-15	Fragilaria crotonensis Kitton	400	0.15
MEL - 0202	1	16-Aug-15	Synedra acus Kutzing	600	0.06
MEL - 0202	1	16-Aug-15	Asterionella formosa Hassall	6200	0.62
MEL - 0202	1	16-Aug-15	Cyclotella michiganiana Skvortzow	86208	2.24
MEL - 0202	1	16-Aug-15	Rhodomonas minuta Skuja	222704	31.33
MEL - 0202	1	16-Aug-15	Cryptomonas erosa Ehrenberg	3600	4.20
MEL - 0202	1	16-Aug-15	Cryptomonas reflexa (Marsson) Skuja	1600	1.08
MEL - 0202	1	16-Aug-15	Cryptomonas rostratiformis Skuja	1600	3.19
MEL - 0202	1	16-Aug-15	Katablepharis ovalis Skuja	7184	0.30
MEL - 0202	1	16-Aug-15	Gymnodinium helveticum Penard	400	10.37
MEL - 0202	1	16-Aug-15	Gymnodinium sp.	7184	2.65
MEL - 0202	1	16-Aug-15	Gymnodinium sp.	800	10.32
MEL - 0202	1	16-Aug-15	Peridinium pusillum (Penard) Lemmermann	800	1.54
MEL - 0202	1	16-Aug-15	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0202	1	10-Sep-15	Aphanothece sp.	7184	0.36
MEL - 0202	1	10-Sep-15	Snowella sp	200	0.27
MEL - 0202	1	10-Sep-15	Chlamydomonas spp.	7184	0.17
MEL - 0202	1	10-Sep-15	Sphaerocystis schroeteri Chodat	14368	0.27
MEL - 0202	1	10-Sep-15	Oocystis lacustris Chodat	28736	2.63
MEL - 0202	1	10-Sep-15	Elakatothrix gelatinosa Willen	14368	0.25
MEL - 0202	1	10-Sep-15	Cosmarium sp.	400	0.56
MEL - 0202	1	10-Sep-15	Euastrum spp.	200	0.37
MEL - 0202	1	10-Sep-15	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0202	1	10-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202	1	10-Sep-15	Mougeotia sp.	57472	13.00
MEL - 0202	1	10-Sep-15	Small chrysophyceae	416672	3.83
MEL - 0202	1	10-Sep-15	Large chrysophyceae	28736	5.16
MEL - 0202	1	10-Sep-15	Chrysochromulina parva Lackey	229888	15.03
MEL - 0202	1	10-Sep-15	Chrysococcus sp.	251440	16.44
MEL - 0202	1	10-Sep-15	Kephyrion sp.	179600	2.53
MEL - 0202	1	10-Sep-15	Spiniferomonas sirrata**********	14368	1.25
MEL - 0202	1	10-Sep-15	Mallomonas crassisquama (Asmund) Fott	400	0.43
MEL - 0202	1	10-Sep-15	Dinobryon borgei Lemmermann	14368	0.74
MEL - 0202	1	10-Sep-15	Dinobryon bavaricum Imhof	43104	9.75
MEL - 0202	1	10-Sep-15	Dinobryon bavaricum Imhof	2200	4.38
MEL - 0202	1	10-Sep-15	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0202	1	10-Sep-15	Dinobryon sertularia Ehrenberg	800	2.71
MEL - 0202	1	10-Sep-15	Dinobryon sociale Ehrenberg	14368	3.25
MEL - 0202	1	10-Sep-15	Dinobryon sociale Ehrenberg	600	0.74
MEL - 0202	1	10-Sep-15	Chrysolkos skuja (Nauwerck) Willen	21552	0.65
MEL - 0202	1	10-Sep-15	Uroglena volvox Ehrenberg	380752	43.06
MEL - 0202	1	10-Sep-15	Uroglena volvox Ehrenberg	200	11.26
MEL - 0202	1	10-Sep-15	Chrysochromulina laurentiana Kling	86208	32.91
MEL - 0202	1	10-Sep-15	Stichogloea spp.	14368	0.72
MEL - 0202	1	10-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.25
MEL - 0202	1	10-Sep-15	Pteridomonas sp.	7184	1.33
MEL - 0202	1	10-Sep-15	Cyclotella stelligera Cleve and Grunow	6400	10.05
MEL - 0202	1	10-Sep-15	Cyclotella ocellata Pant.	57472	5.99
MEL - 0202	1	10-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	1600	1.37
MEL - 0202	1	10-Sep-15	Fragilaria crotonensis Kitton	2200	0.73
MEL - 0202	1	10-Sep-15	Synedra acus Kutzing	600	0.06
MEL - 0202	1	10-Sep-15	Asterionella formosa Hassall	8200	0.82
MEL - 0202	1	10-Sep-15	Cyclotella michiganiana Skvortzow	21552	0.53
MEL - 0202	1	10-Sep-15	Rhodomonas minuta Skuja	114944	14.45
MEL - 0202	1	10-Sep-15	Cryptomonas erosa Ehrenberg	3000	3.56
MEL - 0202	1	10-Sep-15	Cryptomonas reflexa (Marsson) Skuja	400	0.28

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202	1	10-Sep-15	Cryptomonas rostratiformis Skuja	200	0.40
MEL - 0202	1	10-Sep-15	Gymnodinium sp.	7184	2.43
MEL - 0202	1	10-Sep-15	Gymnodinium sp.	400	6.24
MEL - 0202	1	10-Sep-15	Peridinium pusillum (Penard) Lemmermann	1000	1.60
MEL - 0202	1	10-Sep-15	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0203	1	21-Jul-15	Snowella sp	200	0.15
MEL - 0203	1	21-Jul-15	Chlamydomonas spp.	7184	0.19
MEL - 0203	1	21-Jul-15	Staurodesmus extensus (Andersson) Teiling	400	0.24
MEL - 0203	1	21-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0203	1	21-Jul-15	Mougeotia sp.	14368	3.27
MEL - 0203	1	21-Jul-15	Botryococcus braunii Kutzing	200	0.14
MEL - 0203	1	21-Jul-15	Bambusina brebissonii Kutzing	1200	6.72
MEL - 0203	1	21-Jul-15	Small chrysophyceae	316096	2.59
MEL - 0203	1	21-Jul-15	Large chrysophyceae	86208	15.48
MEL - 0203	1	21-Jul-15	Chrysochromulina parva Lackey	625008	40.88
MEL - 0203	1	21-Jul-15	Chrysococcus sp.	179600	11.06
MEL - 0203	1	21-Jul-15	Chrysostephanospaera globulifera Scherffel	7184	2.07
MEL - 0203	1	21-Jul-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0203	1	21-Jul-15	Kephyrion sp.	143680	1.84
MEL - 0203	1	21-Jul-15	Spiniferomonas sirrata**********	28736	3.09
MEL - 0203	1	21-Jul-15	Mallomonas crassisquama (Asmund) Fott	1200	1.33
MEL - 0203	1	21-Jul-15	Synura sphagnicola Korschikow	1200	18.75
MEL - 0203	1	21-Jul-15	Dinobryon borgei Lemmermann	35920	2.19
MEL - 0203	1	21-Jul-15	Dinobryon bavaricum Imhof	222704	50.38
MEL - 0203	1	21-Jul-15	Dinobryon sertularia Ehrenberg	93392	21.13
MEL - 0203	1	21-Jul-15	Dinobryon sertularia Ehrenberg	5600	18.98
MEL - 0203	1	21-Jul-15	Dinobryon sertularia Ehrenberg	3800	12.88
MEL - 0203	1	21-Jul-15	Dinobryon sociale Ehrenberg	208336	47.13
MEL - 0203	1	21-Jul-15	Dinobryon sociale Ehrenberg	3800	4.66
MEL - 0203	1	21-Jul-15	Epiphyxis sp.	7184	0.60
MEL - 0203	1	21-Jul-15	Chrysolkos skuja (Nauwerck) Willen	64656	2.08
MEL - 0203	1	21-Jul-15	Uroglena volvox Ehrenberg	1781632	201.50

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203	1	21-Jul-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0203	1	21-Jul-15	Chrysochromulina laurentiana Kling	186784	73.70
MEL - 0203	1	21-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL - 0203	1	21-Jul-15	Cyclotella stelligera Cleve and Grunow	1000	1.57
MEL - 0203	1	21-Jul-15	Cyclotella ocellata Pant.	64656	4.94
MEL - 0203	1	21-Jul-15	Rhizosolenia eriense H.L. Smith	466960	36.33
MEL - 0203	1	21-Jul-15	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.31
MEL - 0203	1	21-Jul-15	Tabellaria flocculsa (Roth) Kutzing	2600	3.34
MEL - 0203	1	21-Jul-15	Fragilaria crotonensis Kitton	4200	1.46
MEL - 0203	1	21-Jul-15	Synedra acus Kutzing	30600	2.92
MEL - 0203	1	21-Jul-15	Asterionella formosa Hassall	1800	0.18
MEL - 0203	1	21-Jul-15	Cyclotella michiganiana Skvortzow	136496	3.55
MEL - 0203	1	21-Jul-15	Rhodomonas minuta Skuja	64656	9.75
MEL - 0203	1	21-Jul-15	Cryptomonas erosa Ehrenberg	6000	7.33
MEL - 0203	1	21-Jul-15	Cryptomonas reflexa (Marsson) Skuja	600	0.44
MEL - 0203	1	21-Jul-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0203	1	21-Jul-15	Katablepharis ovalis Skuja	7184	0.34
MEL - 0203	1	21-Jul-15	Gymnodinium sp.	1800	25.45
MEL - 0203	1	21-Jul-15	Peridinium willei Huitfeldt-Kaas	400	9.77
MEL - 0203	1	21-Jul-15	Peridinium pusillum (Penard) Lemmermann	2200	4.37
MEL - 0203	1	21-Jul-15	Peridinium aciculiferum Lemmermann	1800	16.83
MEL - 0203	1	16-Aug-15	Chlamydomonas spp.	7184	0.19
MEL - 0203	1	16-Aug-15	Sphaerocystis schroeteri Chodat	50288	0.52
MEL - 0203	1	16-Aug-15	Oocystis lacustris Chodat	14368	0.37
MEL - 0203	1	16-Aug-15	Elakatothrix gelatinosa Willen	64656	1.26
MEL - 0203	1	16-Aug-15	Cosmarium sp.	200	0.20
MEL - 0203	1	16-Aug-15	Staurodesmus extensus (Andersson) Teiling	800	0.45
MEL - 0203	1	16-Aug-15	Mougeotia sp.	64656	14.30
MEL - 0203	1	16-Aug-15	Botryococcus braunii Kutzing	200	0.18
MEL - 0203	1	16-Aug-15	Oocystis gigas Archer	200	0.68
MEL - 0203	1	16-Aug-15	Small chrysophyceae	510064	5.25
MEL - 0203	1	16-Aug-15	Large chrysophyceae	43104	7.74

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203	1	16-Aug-15	Chrysochromulina parva Lackey	50288	3.29
MEL - 0203	1	16-Aug-15	Chrysococcus sp.	287360	17.70
MEL - 0203	1	16-Aug-15	Kephyrion boreale Skuja	7184	0.77
MEL - 0203	1	16-Aug-15	Kephyrion sp.	71840	1.01
MEL - 0203	1	16-Aug-15	Spiniferomonas sirrata**********	14368	1.32
MEL - 0203	1	16-Aug-15	Mallomonas crassisquama (Asmund) Fott	1000	1.06
MEL - 0203	1	16-Aug-15	Dinobryon borgei Lemmermann	7184	0.50
MEL - 0203	1	16-Aug-15	Dinobryon bavaricum Imhof	93392	21.13
MEL - 0203	1	16-Aug-15	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0203	1	16-Aug-15	Dinobryon sociale Ehrenberg	93392	21.13
MEL - 0203	1	16-Aug-15	Epiphyxis sp.	14368	1.09
MEL - 0203	1	16-Aug-15	Chrysolkos skuja (Nauwerck) Willen	28736	0.93
MEL - 0203	1	16-Aug-15	Uroglena volvox Ehrenberg	7184	0.36
MEL - 0203	1	16-Aug-15	Uroglena volvox Ehrenberg	294544	33.31
MEL - 0203	1	16-Aug-15	Chrysosphaerella longispina Lauterborn	7184	3.33
MEL - 0203	1	16-Aug-15	Chrysochromulina laurentiana Kling	57472	21.94
MEL - 0203	1	16-Aug-15	Stichogloea spp.	21552	1.08
MEL - 0203	1	16-Aug-15	Pteridomonas sp.	14368	3.42
MEL - 0203	1	16-Aug-15	Cyclotella stelligera Cleve and Grunow	3600	6.55
MEL - 0203	1	16-Aug-15	Cyclotella ocellata Pant.	35920	2.53
MEL - 0203	1	16-Aug-15	Rhizosolenia eriense H.L. Smith	28736	2.24
MEL - 0203	1	16-Aug-15	Tabellaria flocculsa (Roth) Kutzing	1400	1.87
MEL - 0203	1	16-Aug-15	Fragilaria crotonensis Kitton	600	0.22
MEL - 0203	1	16-Aug-15	Synedra acus Kutzing	1400	0.13
MEL - 0203	1	16-Aug-15	Asterionella formosa Hassall	7800	0.76
MEL - 0203	1	16-Aug-15	Cyclotella michiganiana Skvortzow	114944	2.66
MEL - 0203	1	16-Aug-15	Cyclotella bodanica Eulenst.	200	1.44
MEL - 0203	1	16-Aug-15	Rhodomonas minuta Skuja	208336	29.58
MEL - 0203	1	16-Aug-15	Cryptomonas erosa Ehrenberg	9200	10.73
MEL - 0203	1	16-Aug-15	Cryptomonas reflexa (Marsson) Skuja	2600	1.78
MEL - 0203	1	16-Aug-15	Cryptomonas rostratiformis Skuja	200	0.40
MEL - 0203	1	16-Aug-15	Gymnodinium sp.	1200	12.37

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203	1	16-Aug-15	Peridinium pusillum (Penard) Lemmermann	4000	8.42
MEL - 0203	1	16-Aug-15	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0203	1	10-Sep-15	Sphaerocystis schroeteri Chodat	28736	0.41
MEL - 0203	1	10-Sep-15	Oocystis lacustris Chodat	7184	0.36
MEL - 0203	1	10-Sep-15	Quadrigula closterioides (Bohl.) Printz	57472	1.68
MEL - 0203	1	10-Sep-15	Cosmarium sp.	400	0.56
MEL - 0203	1	10-Sep-15	Staurodesmus extensus (Andersson) Teiling	1000	0.59
MEL - 0203	1	10-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0203	1	10-Sep-15	Mougeotia sp.	79024	16.98
MEL - 0203	1	10-Sep-15	Botryococcus braunii Kutzing	400	0.21
MEL - 0203	1	10-Sep-15	Small chrysophyceae	459776	6.48
MEL - 0203	1	10-Sep-15	Large chrysophyceae	21552	3.87
MEL - 0203	1	10-Sep-15	Chrysochromulina parva Lackey	143680	9.40
MEL - 0203	1	10-Sep-15	Chrysococcus sp.	258624	13.19
MEL - 0203	1	10-Sep-15	Kephyrion boreale Skuja	7184	0.77
MEL - 0203	1	10-Sep-15	Kephyrion sp.	107760	1.85
MEL - 0203	1	10-Sep-15	Spiniferomonas sirrata**********	7184	0.66
MEL - 0203	1	10-Sep-15	Dinobryon mucronutom Nygaard	7184	0.88
MEL - 0203	1	10-Sep-15	Dinobryon bavaricum Imhof	50288	11.38
MEL - 0203	1	10-Sep-15	Dinobryon bavaricum Imhof	600	1.19
MEL - 0203	1	10-Sep-15	Dinobryon sociale Ehrenberg	35920	7.72
MEL - 0203	1	10-Sep-15	Dinobryon sociale Ehrenberg	800	1.59
MEL - 0203	1	10-Sep-15	Chrysolkos skuja (Nauwerck) Willen	7184	0.22
MEL - 0203	1	10-Sep-15	Uroglena volvox Ehrenberg	258624	29.25
MEL - 0203	1	10-Sep-15	Chrysochromulina laurentiana Kling	50288	19.19
MEL - 0203	1	10-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.23
MEL - 0203	1	10-Sep-15	Pteridomonas sp.	21552	4.30
MEL - 0203	1	10-Sep-15	Cyclotella stelligera Cleve and Grunow	3600	5.65
MEL - 0203	1	10-Sep-15	Cyclotella ocellata Pant.	35920	2.42
MEL - 0203	1	10-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	1200	0.94
MEL - 0203	1	10-Sep-15	Fragilaria crotonensis Kitton	200	0.07
MEL - 0203	1	10-Sep-15	Synedra acus Kutzing	800	0.08

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203	1	10-Sep-15	Asterionella formosa Hassall	13600	1.42
MEL - 0203	1	10-Sep-15	Cyclotella michiganiana Skvortzow	93392	2.16
MEL - 0203	1	10-Sep-15	Rhodomonas minuta Skuja	107760	16.25
MEL - 0203	1	10-Sep-15	Cryptomonas erosa Ehrenberg	1200	1.35
MEL - 0203	1	10-Sep-15	Cryptomonas reflexa (Marsson) Skuja	600	0.41
MEL - 0203	1	10-Sep-15	Gymnodinium helveticum Penard	200	4.90
MEL - 0203	1	10-Sep-15	Gymnodinium sp.	21552	7.15
MEL - 0203	1	10-Sep-15	Gymnodinium sp.	400	4.90
MEL - 0203	1	10-Sep-15	Peridinium pusillum (Penard) Lemmermann	600	1.22
MEL - 0204	1	21-Jul-15	Oocystis lacustris Chodat	7184	0.36
MEL - 0204	1	21-Jul-15	Staurodesmus extensus (Andersson) Teiling	600	0.36
MEL - 0204	1	21-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0204	1	21-Jul-15	Mougeotia sp.	14368	3.16
MEL - 0204	1	21-Jul-15	Small chrysophyceae	301728	4.25
MEL - 0204	1	21-Jul-15	Large chrysophyceae	114944	26.41
MEL - 0204	1	21-Jul-15	Chrysochromulina parva Lackey	423856	27.72
MEL - 0204	1	21-Jul-15	Chrysococcus sp.	258624	13.19
MEL - 0204	1	21-Jul-15	Kephyrion sp.	57472	0.99
MEL - 0204	1	21-Jul-15	Spiniferomonas sirrata**********	14368	1.79
MEL - 0204	1	21-Jul-15	Mallomonas crassisquama (Asmund) Fott	1000	0.97
MEL - 0204	1	21-Jul-15	Synura sphagnicola Korschikow	14368	8.73
MEL - 0204	1	21-Jul-15	Dinobryon borgei Lemmermann	35920	1.86
MEL - 0204	1	21-Jul-15	Dinobryon bavaricum Imhof	215520	48.75
MEL - 0204	1	21-Jul-15	Dinobryon bavaricum Imhof	4600	9.16
MEL - 0204	1	21-Jul-15	Dinobryon sertularia Ehrenberg	64656	14.63
MEL - 0204	1	21-Jul-15	Dinobryon sertularia Ehrenberg	2000	6.78
MEL - 0204	1	21-Jul-15	Dinobryon sociale Ehrenberg	179600	40.63
MEL - 0204	1	21-Jul-15	Dinobryon sociale Ehrenberg	4400	5.39
MEL - 0204	1	21-Jul-15	Epiphyxis sp.	7184	0.58
MEL - 0204	1	21-Jul-15	Chrysolkos skuja (Nauwerck) Willen	71840	2.03
MEL - 0204	1	21-Jul-15	Uroglena volvox Ehrenberg	1616400	182.81
MEL - 0204	1	21-Jul-15	Chrysosphaerella longispina Lauterborn	400	5.86

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204	1	21-Jul-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0204	1	21-Jul-15	Chrysochromulina laurentiana Kling	93392	35.65
MEL - 0204	1	21-Jul-15	Bicoeca lacustris Clark	7184	0.47
MEL - 0204	1	21-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.60
MEL - 0204	1	21-Jul-15	Cyclotella stelligera Cleve and Grunow	800	1.26
MEL - 0204	1	21-Jul-15	Cyclotella ocellata Pant.	28736	2.48
MEL - 0204	1	21-Jul-15	Rhizosolenia eriense H.L. Smith	265808	20.68
MEL - 0204	1	21-Jul-15	Fragilaria crotonensis Kitton	600	0.20
MEL - 0204	1	21-Jul-15	Synedra acus Kutzing	17200	1.73
MEL - 0204	1	21-Jul-15	Asterionella formosa Hassall	1600	0.16
MEL - 0204	1	21-Jul-15	Cyclotella michiganiana Skvortzow	179600	4.15
MEL - 0204	1	21-Jul-15	Rhodomonas minuta Skuja	107760	15.98
MEL - 0204	1	21-Jul-15	Cryptomonas erosa Ehrenberg	7000	8.41
MEL - 0204	1	21-Jul-15	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0204	1	21-Jul-15	Cryptomonas reflexa (Marsson) Skuja	1200	0.84
MEL - 0204	1	21-Jul-15	Cryptomonas rostratiformis Skuja	1000	2.05
MEL - 0204	1	21-Jul-15	Katablepharis ovalis Skuja	28736	1.35
MEL - 0204	1	21-Jul-15	Gymnodinium sp.	1600	16.49
MEL - 0204	1	21-Jul-15	Peridinium willei Huitfeldt-Kaas	600	14.42
MEL - 0204	1	21-Jul-15	Peridinium pusillum (Penard) Lemmermann	600	0.98
MEL - 0204	1	21-Jul-15	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0204	1	21-Jul-15	Peridinium wisconsiense Eddy	200	6.70
MEL - 0204	1	16-Aug-15	Snowella sp	400	0.40
MEL - 0204	1	16-Aug-15	Chlamydomonas spp.	7184	0.16
MEL - 0204	1	16-Aug-15	Sphaerocystis schroeteri Chodat	35920	0.46
MEL - 0204	1	16-Aug-15	Pediastrum tetras (Ehrenberg) Ralfs	28736	0.32
MEL - 0204	1	16-Aug-15	Oocystis lacustris Chodat	14368	0.38
MEL - 0204	1	16-Aug-15	Elakatothrix gelatinosa Willen	14368	0.27
MEL - 0204	1	16-Aug-15	Euastrum spp.	400	0.74
MEL - 0204	1	16-Aug-15	Staurodesmus extensus (Andersson) Teiling	1200	0.71
MEL - 0204	1	16-Aug-15	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	600	2.45
MEL - 0204	1	16-Aug-15	Staurodesmus paradoxum Meyen	200	1.05

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204	1	16-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	43104	1.63
MEL - 0204	1	16-Aug-15	Mougeotia sp.	21552	4.88
MEL - 0204	1	16-Aug-15	Botryococcus braunii Kutzing	400	0.36
MEL - 0204	1	16-Aug-15	Oocystis gigas Archer	400	1.36
MEL - 0204	1	16-Aug-15	Small chrysophyceae	466960	6.58
MEL - 0204	1	16-Aug-15	Large chrysophyceae	21552	8.23
MEL - 0204	1	16-Aug-15	Chrysochromulina parva Lackey	57472	3.76
MEL - 0204	1	16-Aug-15	Chrysococcus sp.	272992	13.92
MEL - 0204	1	16-Aug-15	Kephyrion boreale Skuja	14368	1.88
MEL - 0204	1	16-Aug-15	Kephyrion sp.	71840	1.01
MEL - 0204	1	16-Aug-15	Mallomonas crassisquama (Asmund) Fott	1600	1.68
MEL - 0204	1	16-Aug-15	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0204	1	16-Aug-15	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0204	1	16-Aug-15	Dinobryon sociale Ehrenberg	43104	9.75
MEL - 0204	1	16-Aug-15	Epiphyxis sp.	7184	0.56
MEL - 0204	1	16-Aug-15	Chrysolkos skuja (Nauwerck) Willen	7184	0.21
MEL - 0204	1	16-Aug-15	Uroglena volvox Ehrenberg	165232	18.69
MEL - 0204	1	16-Aug-15	Chrysochromulina laurentiana Kling	64656	25.51
MEL - 0204	1	16-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.20
MEL - 0204	1	16-Aug-15	Pteridomonas sp.	7184	1.71
MEL - 0204	1	16-Aug-15	Cyclotella stelligera Cleve and Grunow	4800	9.11
MEL - 0204	1	16-Aug-15	Cyclotella ocellata Pant.	28736	2.38
MEL - 0204	1	16-Aug-15	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL - 0204	1	16-Aug-15	Fragilaria crotonensis Kitton	4600	1.66
MEL - 0204	1	16-Aug-15	Synedra acus Kutzing	2000	0.19
MEL - 0204	1	16-Aug-15	Asterionella formosa Hassall	7800	0.82
MEL - 0204	1	16-Aug-15	Cyclotella michiganiana Skvortzow	14368	0.27
MEL - 0204	1	16-Aug-15	Rhodomonas minuta Skuja	244256	28.38
MEL - 0204	1	16-Aug-15	Cryptomonas erosa Ehrenberg	3000	3.56
MEL - 0204	1	16-Aug-15	Cryptomonas reflexa (Marsson) Skuja	2400	1.63
MEL - 0204	1	16-Aug-15	Cryptomonas rostratiformis Skuja	800	1.60
MEL - 0204	1	16-Aug-15	Gymnodinium sp.	800	5.79

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204	1	16-Aug-15	Peridinium pusillum (Penard) Lemmermann	600	1.19
MEL - 0204	1	16-Aug-15	Peridinium aciculiferum Lemmermann	400	3.74
MEL - 0204	1	10-Sep-15	Chlamydomonas spp.	7184	0.16
MEL - 0204	1	10-Sep-15	Sphaerocystis schroeteri Chodat	21552	0.16
MEL - 0204	1	10-Sep-15	Oocystis lacustris Chodat	21552	0.61
MEL - 0204	1	10-Sep-15	Staurodesmus extensus (Andersson) Teiling	600	0.31
MEL - 0204	1	10-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0204	1	10-Sep-15	Mougeotia sp.	79024	16.98
MEL - 0204	1	10-Sep-15	Botryococcus braunii Kutzing	1400	1.27
MEL - 0204	1	10-Sep-15	Small chrysophyceae	395120	3.24
MEL - 0204	1	10-Sep-15	Large chrysophyceae	28736	5.16
MEL - 0204	1	10-Sep-15	Chrysochromulina parva Lackey	179600	11.75
MEL - 0204	1	10-Sep-15	Chrysococcus sp.	208336	13.63
MEL - 0204	1	10-Sep-15	Chrysostephanospaera globulifera Scherffel	7184	3.12
MEL - 0204	1	10-Sep-15	Kephyrion boreale Skuja	21552	2.82
MEL - 0204	1	10-Sep-15	Kephyrion sp.	93392	1.61
MEL - 0204	1	10-Sep-15	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0204	1	10-Sep-15	Dinobryon borgei Lemmermann	7184	0.44
MEL - 0204	1	10-Sep-15	Dinobryon bavaricum Imhof	28736	6.50
MEL - 0204	1	10-Sep-15	Dinobryon bavaricum Imhof	600	0.74
MEL - 0204	1	10-Sep-15	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0204	1	10-Sep-15	Dinobryon sertularia Ehrenberg	200	0.40
MEL - 0204	1	10-Sep-15	Dinobryon sociale Ehrenberg	7184	1.63
MEL - 0204	1	10-Sep-15	Dinobryon sociale Ehrenberg	1400	1.72
MEL - 0204	1	10-Sep-15	Epiphyxis sp.	7184	0.44
MEL - 0204	1	10-Sep-15	Chrysolkos skuja (Nauwerck) Willen	7184	0.20
MEL - 0204	1	10-Sep-15	Uroglena volvox Ehrenberg	380752	43.06
MEL - 0204	1	10-Sep-15	Chrysochromulina laurentiana Kling	86208	32.91
MEL - 0204	1	10-Sep-15	Stichogloea spp.	7184	0.36
MEL - 0204	1	10-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.39
MEL - 0204	1	10-Sep-15	Cyclotella stelligera Cleve and Grunow	6000	12.37
MEL - 0204	1	10-Sep-15	Cyclotella ocellata Pant.	43104	3.16

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204	1	10-Sep-15	Synedra acus Kutzing	2000	0.19
MEL - 0204	1	10-Sep-15	Asterionella formosa Hassall	15200	1.50
MEL - 0204	1	10-Sep-15	Cyclotella michiganiana Skvortzow	93392	2.16
MEL - 0204	1	10-Sep-15	Rhodomonas minuta Skuja	107760	15.30
MEL - 0204	1	10-Sep-15	Cryptomonas erosa Ehrenberg	2200	2.67
MEL - 0204	1	10-Sep-15	Cryptomonas reflexa (Marsson) Skuja	1200	0.82
MEL - 0204	1	10-Sep-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0204	1	10-Sep-15	Gymnodinium sp.	14368	5.56
MEL - 0204	1	10-Sep-15	Gymnodinium sp.	600	5.91
MEL - 0204	1	10-Sep-15	Peridinium pusillum (Penard) Lemmermann	1000	1.99
MEL - 0204	1	10-Sep-15	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0205	1	21-Jul-15	Chlamydomonas spp.	14368	0.15
MEL - 0205	1	21-Jul-15	Oocystis lacustris Chodat	7184	0.20
MEL - 0205	1	21-Jul-15	Elakatothrix gelatinosa Willen	7184	0.16
MEL - 0205	1	21-Jul-15	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0205	1	21-Jul-15	Mougeotia sp.	7184	1.63
MEL - 0205	1	21-Jul-15	Botryococcus braunii Kutzing	200	0.29
MEL - 0205	1	21-Jul-15	Small chrysophyceae	229888	1.66
MEL - 0205	1	21-Jul-15	Large chrysophyceae	79024	14.19
MEL - 0205	1	21-Jul-15	Chrysochromulina parva Lackey	725584	47.45
MEL - 0205	1	21-Jul-15	Chrysococcus sp.	445408	22.72
MEL - 0205	1	21-Jul-15	Kephyrion boreale Skuja	7184	0.85
MEL - 0205	1	21-Jul-15	Kephyrion sp.	114944	1.62
MEL - 0205	1	21-Jul-15	Spiniferomonas sirrata**********	21552	1.88
MEL - 0205	1	21-Jul-15	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL - 0205	1	21-Jul-15	Mallomonas spp.	1000	1.89
MEL - 0205	1	21-Jul-15	Synura sphagnicola Korschikow	600	9.89
MEL - 0205	1	21-Jul-15	Dinobryon borgei Lemmermann	35920	1.84
MEL - 0205	1	21-Jul-15	Dinobryon bavaricum Imhof	251440	56.88
MEL - 0205	1	21-Jul-15	Dinobryon bavaricum Imhof	5000	16.95
MEL - 0205	1	21-Jul-15	Dinobryon sertularia Ehrenberg	71840	16.25
MEL - 0205	1	21-Jul-15	Dinobryon sertularia Ehrenberg	2000	10.17

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205	1	21-Jul-15	Dinobryon sociale Ehrenberg	280176	63.38
MEL - 0205	1	21-Jul-15	Dinobryon sociale Ehrenberg	6400	13.60
MEL - 0205	1	21-Jul-15	Epiphyxis sp.	28736	2.19
MEL - 0205	1	21-Jul-15	Chrysolkos skuja (Nauwerck) Willen	93392	2.59
MEL - 0205	1	21-Jul-15	Uroglena volvox Ehrenberg	1623584	183.63
MEL - 0205	1	21-Jul-15	Bitrichia chodatii (Reverdin) Chodat	21552	1.14
MEL - 0205	1	21-Jul-15	Chrysochromulina laurentiana Kling	100576	38.39
MEL - 0205	1	21-Jul-15	Salpingoeca frequentissima (Zach.) Lemmermann	79024	2.52
MEL - 0205	1	21-Jul-15	Cyclotella stelligera Cleve and Grunow	1200	1.97
MEL - 0205	1	21-Jul-15	Cyclotella ocellata Pant.	7184	0.59
MEL - 0205	1	21-Jul-15	Rhizosolenia eriense H.L. Smith	373568	29.06
MEL - 0205	1	21-Jul-15	Tabellaria flocculsa (Roth) Kutzing	1800	2.40
MEL - 0205	1	21-Jul-15	Fragilaria crotonensis Kitton	800	0.29
MEL - 0205	1	21-Jul-15	Synedra acus Kutzing	28400	2.83
MEL - 0205	1	21-Jul-15	Asterionella formosa Hassall	4400	0.44
MEL - 0205	1	21-Jul-15	Cyclotella michiganiana Skvortzow	100576	1.92
MEL - 0205	1	21-Jul-15	Rhodomonas minuta Skuja	50288	7.58
MEL - 0205	1	21-Jul-15	Cryptomonas erosa Ehrenberg	6800	8.07
MEL - 0205	1	21-Jul-15	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0205	1	21-Jul-15	Cryptomonas reflexa (Marsson) Skuja	1600	1.11
MEL - 0205	1	21-Jul-15	Cryptomonas rostratiformis Skuja	1200	2.87
MEL - 0205	1	21-Jul-15	Katablepharis ovalis Skuja	21552	0.87
MEL - 0205	1	21-Jul-15	Gymnodinium helveticum Penard	200	4.81
MEL - 0205	1	21-Jul-15	Gymnodinium sp.	800	11.31
MEL - 0205	1	21-Jul-15	Peridinium willei Huitfeldt-Kaas	200	5.05
MEL - 0205	1	21-Jul-15	Peridinium pusillum (Penard) Lemmermann	600	1.15
MEL - 0205	1	21-Jul-15	Peridinium aciculiferum Lemmermann	1400	12.67
MEL - 0205	1	17-Aug-15	Snowella sp	1400	1.40
MEL - 0205	1	17-Aug-15	Anabaena solitaria Klebs	200	0.66
MEL - 0205	1	17-Aug-15	Chlamydomonas spp.	7184	0.08
MEL - 0205	1	17-Aug-15	Sphaerocystis schroeteri Chodat	50288	0.78
MEL - 0205	1	17-Aug-15	Oocystis lacustris Chodat	14368	0.41

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205	1	17-Aug-15	Dictyosphaerium simplex Sukja	28736	0.12
MEL - 0205	1	17-Aug-15	Elakatothrix gelatinosa Willen	57472	0.99
MEL - 0205	1	17-Aug-15	Cosmarium sp.	200	0.61
MEL - 0205	1	17-Aug-15	Euastrum spp.	400	0.74
MEL - 0205	1	17-Aug-15	Staurodesmus extensus (Andersson) Teiling	1000	0.56
MEL - 0205	1	17-Aug-15	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.87
MEL - 0205	1	17-Aug-15	Mougeotia sp.	57472	14.16
MEL - 0205	1	17-Aug-15	Botryococcus braunii Kutzing	800	0.42
MEL - 0205	1	17-Aug-15	Spirogyra sp.	3200	1.29
MEL - 0205	1	17-Aug-15	Oocystis gigas Archer	400	0.97
MEL - 0205	1	17-Aug-15	Small chrysophyceae	359200	3.70
MEL - 0205	1	17-Aug-15	Large chrysophyceae	7184	1.29
MEL - 0205	1	17-Aug-15	Chrysochromulina parva Lackey	79024	5.17
MEL - 0205	1	17-Aug-15	Chrysococcus sp.	179600	11.75
MEL - 0205	1	17-Aug-15	Kephyrion boreale Skuja	14368	1.54
MEL - 0205	1	17-Aug-15	Kephyrion sp.	100576	1.89
MEL - 0205	1	17-Aug-15	Spiniferomonas sirrata**********	7184	0.56
MEL - 0205	1	17-Aug-15	Mallomonas crassisquama (Asmund) Fott	1000	1.06
MEL - 0205	1	17-Aug-15	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0205	1	17-Aug-15	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0205	1	17-Aug-15	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0205	1	17-Aug-15	Dinobryon sociale Ehrenberg	122128	27.63
MEL - 0205	1	17-Aug-15	Uroglena volvox Ehrenberg	294544	33.31
MEL - 0205	1	17-Aug-15	Chrysochromulina laurentiana Kling	35920	13.71
MEL - 0205	1	17-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	71840	2.29
MEL - 0205	1	17-Aug-15	Cyclotella stelligera Cleve and Grunow	3200	5.82
MEL - 0205	1	17-Aug-15	Cyclotella pseudostelligera	14368	4.40
MEL - 0205	1	17-Aug-15	Cyclotella ocellata Pant.	57472	5.99
MEL - 0205	1	17-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	7400	7.28
MEL - 0205	1	17-Aug-15	Fragilaria crotonensis Kitton	1200	0.43
MEL - 0205	1	17-Aug-15	Synedra acus Kutzing	1000	0.10
MEL - 0205	1	17-Aug-15	Asterionella formosa Hassall	10800	1.13

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205	1	17-Aug-15	Cyclotella michiganiana Skvortzow	122128	2.65
MEL - 0205	1	17-Aug-15	Rhodomonas minuta Skuja	172416	24.48
MEL - 0205	1	17-Aug-15	Cryptomonas erosa Ehrenberg	2400	2.80
MEL - 0205	1	17-Aug-15	Cryptomonas reflexa (Marsson) Skuja	1600	1.06
MEL - 0205	1	17-Aug-15	Cryptomonas rostratiformis Skuja	800	1.59
MEL - 0205	1	17-Aug-15	Katablepharis ovalis Skuja	7184	0.34
MEL - 0205	1	17-Aug-15	Gymnodinium helveticum Penard	200	4.42
MEL - 0205	1	17-Aug-15	Gymnodinium sp.	400	3.68
MEL - 0205	1	17-Aug-15	Peridinium pusillum (Penard) Lemmermann	1600	3.09
MEL - 0205	1	17-Aug-15	Peridinium aciculiferum Lemmermann	400	3.74
MEL - 0205	1R	17-Aug-15	Snowella sp	800	0.80
MEL - 0205	1R	17-Aug-15	Anabaena solitaria Klebs	400	1.69
MEL - 0205	1R	17-Aug-15	Chlamydomonas spp.	7184	0.08
MEL - 0205	1R	17-Aug-15	Sphaerocystis schroeteri Chodat	28736	0.45
MEL - 0205	1R	17-Aug-15	Dictyosphaerium simplex Sukja	28736	0.12
MEL - 0205	1R	17-Aug-15	Elakatothrix gelatinosa Willen	71840	1.24
MEL - 0205	1R	17-Aug-15	Euastrum spp.	600	1.12
MEL - 0205	1R	17-Aug-15	Staurodesmus extensus (Andersson) Teiling	1200	0.68
MEL - 0205	1R	17-Aug-15	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0205	1R	17-Aug-15	Mougeotia sp.	71840	17.69
MEL - 0205	1R	17-Aug-15	Botryococcus braunii Kutzing	400	0.21
MEL - 0205	1R	17-Aug-15	Spirogyra sp.	5200	2.09
MEL - 0205	1R	17-Aug-15	Oocystis gigas Archer	200	0.48
MEL - 0205	1R	17-Aug-15	Small chrysophyceae	316096	3.26
MEL - 0205	1R	17-Aug-15	Large chrysophyceae	14368	2.58
MEL - 0205	1R	17-Aug-15	Chrysochromulina parva Lackey	136496	8.93
MEL - 0205	1R	17-Aug-15	Chrysococcus sp.	208336	13.63
MEL - 0205	1R	17-Aug-15	Chrysostephanospaera globulifera Scherffel	7184	2.00
MEL - 0205	1R	17-Aug-15	Kephyrion boreale Skuja	14368	1.54
MEL - 0205	1R	17-Aug-15	Kephyrion sp.	129312	2.43
MEL - 0205	1R	17-Aug-15	Mallomonas crassisquama (Asmund) Fott	1200	1.28
MEL - 0205	1R	17-Aug-15	Dinobryon borgei Lemmermann	21552	1.55

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205	1R	17-Aug-15	Dinobryon mucronutom Nygaard	28736	5.42
MEL - 0205	1R	17-Aug-15	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0205	1R	17-Aug-15	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0205	1R	17-Aug-15	Dinobryon sociale Ehrenberg	107760	24.38
MEL - 0205	1R	17-Aug-15	Dinobryon sociale Ehrenberg	400	0.80
MEL - 0205	1R	17-Aug-15	Uroglena volvox Ehrenberg	330464	37.38
MEL - 0205	1R	17-Aug-15	Chrysochromulina laurentiana Kling	21552	8.23
MEL - 0205	1R	17-Aug-15	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.38
MEL - 0205	1R	17-Aug-15	Cyclotella stelligera Cleve and Grunow	2400	4.36
MEL - 0205	1R	17-Aug-15	Cyclotella pseudostelligera	7184	2.20
MEL - 0205	1R	17-Aug-15	Cyclotella ocellata Pant.	43104	4.50
MEL - 0205	1R	17-Aug-15	Tabellaria fenestrata (Lyngbye) Kutzing	8800	8.66
MEL - 0205	1R	17-Aug-15	Tabellaria flocculsa (Roth) Kutzing	800	1.07
MEL - 0205	1R	17-Aug-15	Fragilaria crotonensis Kitton	800	0.29
MEL - 0205	1R	17-Aug-15	Synedra acus Kutzing	800	0.08
MEL - 0205	1R	17-Aug-15	Asterionella formosa Hassall	12200	1.28
MEL - 0205	1R	17-Aug-15	Cyclotella michiganiana Skvortzow	158048	3.43
MEL - 0205	1R	17-Aug-15	Rhodomonas minuta Skuja	129312	18.36
MEL - 0205	1R	17-Aug-15	Cryptomonas erosa Ehrenberg	3400	3.97
MEL - 0205	1R	17-Aug-15	Cryptomonas reflexa (Marsson) Skuja	1200	0.80
MEL - 0205	1R	17-Aug-15	Cryptomonas rostratiformis Skuja	800	1.59
MEL - 0205	1R	17-Aug-15	Katablepharis ovalis Skuja	7184	0.34
MEL - 0205	1R	17-Aug-15	Gymnodinium helveticum Penard	200	4.42
MEL - 0205	1R	17-Aug-15	Gymnodinium sp.	800	7.36
MEL - 0205	1R	17-Aug-15	Peridinium pusillum (Penard) Lemmermann	1400	2.70
MEL - 0205	1R	17-Aug-15	Peridinium aciculiferum Lemmermann	400	3.74
MEL - 0205	1	10-Sep-15	Snowella sp	600	0.66
MEL - 0205	1	10-Sep-15	Chlamydomonas spp.	7184	0.07
MEL - 0205	1	10-Sep-15	Oocystis lacustris Chodat	35920	0.85
MEL - 0205	1	10-Sep-15	Monoraphidium minutum (Nag.) Komarkova-Legnerova	14368	0.99
MEL - 0205	1	10-Sep-15	Quadrigula closterioides (Bohl.) Printz	28736	0.80
MEL - 0205	1	10-Sep-15	Elakatothrix gelatinosa Willen	7184	0.11

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205	1	10-Sep-15	Euastrum spp.	200	0.37
MEL - 0205	1	10-Sep-15	Staurodesmus extensus (Andersson) Teiling	1200	0.57
MEL - 0205	1	10-Sep-15	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0205	1	10-Sep-15	Mougeotia sp.	122128	28.09
MEL - 0205	1	10-Sep-15	Botryococcus braunii Kutzing	1000	1.44
MEL - 0205	1	10-Sep-15	Small chrysophyceae	387936	2.17
MEL - 0205	1	10-Sep-15	Large chrysophyceae	35920	13.71
MEL - 0205	1	10-Sep-15	Chrysochromulina parva Lackey	215520	14.10
MEL - 0205	1	10-Sep-15	Chrysococcus sp.	373568	24.43
MEL - 0205	1	10-Sep-15	Kephyrion sp.	57472	0.74
MEL - 0205	1	10-Sep-15	Spiniferomonas sirrata**********	21552	1.98
MEL - 0205	1	10-Sep-15	Mallomonas crassisquama (Asmund) Fott	400	0.40
MEL - 0205	1	10-Sep-15	Dinobryon mucronutom Nygaard	7184	0.90
MEL - 0205	1	10-Sep-15	Dinobryon bavaricum Imhof	35920	8.13
MEL - 0205	1	10-Sep-15	Dinobryon bavaricum Imhof	1600	3.19
MEL - 0205	1	10-Sep-15	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0205	1	10-Sep-15	Dinobryon sertularia Ehrenberg	600	3.05
MEL - 0205	1	10-Sep-15	Dinobryon sociale Ehrenberg	28736	6.50
MEL - 0205	1	10-Sep-15	Dinobryon sociale Ehrenberg	1400	2.79
MEL - 0205	1	10-Sep-15	Chrysolkos skuja (Nauwerck) Willen	7184	0.17
MEL - 0205	1	10-Sep-15	Uroglena volvox Ehrenberg	316096	35.75
MEL - 0205	1	10-Sep-15	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0205	1	10-Sep-15	Chrysochromulina laurentiana Kling	64656	24.68
MEL - 0205	1	10-Sep-15	Bicoeca lacustris Clark	7184	0.53
MEL - 0205	1	10-Sep-15	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43
MEL - 0205	1	10-Sep-15	Cyclotella stelligera Cleve and Grunow	9600	18.22
MEL - 0205	1	10-Sep-15	Cyclotella pseudostelligera	7184	3.87
MEL - 0205	1	10-Sep-15	Cyclotella ocellata Pant.	28736	3.00
MEL - 0205	1	10-Sep-15	Tabellaria fenestrata (Lyngbye) Kutzing	4000	3.43
MEL - 0205	1	10-Sep-15	Fragilaria crotonensis Kitton	1000	0.35
MEL - 0205	1	10-Sep-15	Synedra acus Kutzing	1200	0.12
MEL - 0205	1	10-Sep-15	Asterionella formosa Hassall	14400	1.51

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205	1	10-Sep-15	Cyclotella michiganiana Skvortzow	64656	1.58
MEL - 0205	1	10-Sep-15	Rhodomonas minuta Skuja	172416	26.00
MEL - 0205	1	10-Sep-15	Cryptomonas erosa Ehrenberg	3200	3.80
MEL - 0205	1	10-Sep-15	Cryptomonas reflexa (Marsson) Skuja	1000	0.70
MEL - 0205	1	10-Sep-15	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0205	1	10-Sep-15	Gymnodinium helveticum Penard	200	5.28
MEL - 0205	1	10-Sep-15	Gymnodinium sp.	1000	10.31
MEL - 0205	1	10-Sep-15	Peridinium pusillum (Penard) Lemmermann	600	1.26
MEL- 0302		01-Sep-17	Large chrysophyceae	57472	10.32
MEL- 0302		01-Sep-17	Chrysochromulina parva Lackey	28736	1.88
MEL- 0302		01-Sep-17	Chrysococcus sp.	366384	21.21
MEL- 0302		01-Sep-17	Kephyrion sp.	21552	0.20
MEL- 0302		01-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0302		01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0302		01-Sep-17	Dinobryon bavaricum Imhof	7184	1.63
MEL- 0302		01-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0302		01-Sep-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0302		01-Sep-17	Dinobryon sertularia Ehrenberg	200	1.02
MEL- 0302		01-Sep-17	Ochromonas sp.	14368	0.88
MEL- 0302		01-Sep-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0302		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	251440	8.10
MEL- 0302		01-Sep-17	Cyclotella stelligera Cleve and Grunow	3200	5.03
MEL- 0302		01-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0302		01-Sep-17	Tabellaria flocculsa (Roth) Kutzing	200	0.27
MEL- 0302		01-Sep-17	Synedra acus Kutzing	200	0.02
MEL- 0302		01-Sep-17	Synedra ulna (Nitzsch) Ehrenberg	200	1.47
MEL- 0302		01-Sep-17	Asterionella formosa Hassall	1800	0.19
MEL- 0302		01-Sep-17	Cyclotella michiganiana Skvortzow	57472	1.41
MEL- 0302		01-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0302		01-Sep-17	Rhodomonas minuta Skuja	14368	1.99
MEL- 0302		01-Sep-17	Cryptomonas erosa Ehrenberg	1000	1.31
MEL- 0302		01-Sep-17	Katablepharis ovalis Skuja	64656	2.34

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0302		01-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0302		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	800	1.99
MEL- 0303		01-Sep-17	Snowella sp	200	0.15
MEL- 0303		01-Sep-17	Oocystis lacustris Chodat	50288	1.52
MEL- 0303		01-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0303		01-Sep-17	Cosmarium sp.	200	0.28
MEL- 0303		01-Sep-17	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL- 0303		01-Sep-17	Staurodesmus paradoxum Meyen	200	1.05
MEL- 0303		01-Sep-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0303		01-Sep-17	Small chrysophyceae	193968	2.73
MEL- 0303		01-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0303		01-Sep-17	Chrysochromulina parva Lackey	64656	4.23
MEL- 0303		01-Sep-17	Chrysococcus sp.	524432	30.36
MEL- 0303		01-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	4.78
MEL- 0303		01-Sep-17	Kephyrion sp.	35920	0.88
MEL- 0303		01-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0303		01-Sep-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0303		01-Sep-17	Dinobryon bavaricum Imhof	57472	13.00
MEL- 0303		01-Sep-17	Dinobryon bavaricum Imhof	400	0.80
MEL- 0303		01-Sep-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0303		01-Sep-17	Dinobryon sertularia Ehrenberg	800	1.00
MEL- 0303		01-Sep-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0303		01-Sep-17	Stichogloea spp.	7184	0.36
MEL- 0303		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	86208	2.78
MEL- 0303		01-Sep-17	Cyclotella stelligera Cleve and Grunow	4200	6.60
MEL- 0303		01-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0303		01-Sep-17	Fragilaria crotonensis Kitton	200	0.06
MEL- 0303		01-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0303		01-Sep-17	Asterionella formosa Hassall	1800	0.19
MEL- 0303		01-Sep-17	Cyclotella michiganiana Skvortzow	35920	0.88
MEL- 0303		01-Sep-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0303		01-Sep-17	Rhodomonas minuta Skuja	43104	5.96

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0303		01-Sep-17	Cryptomonas erosa Ehrenberg	600	0.78
MEL- 0303		01-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0303		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	4400	10.92
MEL- 0304		01-Sep-17	Sphaerocystis schroeteri Chodat	35920	0.56
MEL- 0304		01-Sep-17	Oocystis lacustris Chodat	28736	0.87
MEL- 0304		01-Sep-17	Planctonema lauterbornii Schmidle	28736	6.50
MEL- 0304		01-Sep-17	Cosmarium sp.	200	0.28
MEL- 0304		01-Sep-17	Staurodesmus extensus (Andersson) Teiling	1400	0.54
MEL- 0304		01-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0304		01-Sep-17	Small chrysophyceae	100576	1.42
MEL- 0304		01-Sep-17	Large chrysophyceae	43104	7.74
MEL- 0304		01-Sep-17	Chrysochromulina parva Lackey	28736	1.88
MEL- 0304		01-Sep-17	Chrysococcus sp.	395120	22.88
MEL- 0304		01-Sep-17	Kephyrion sp.	35920	0.88
MEL- 0304		01-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0304		01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0304		01-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0304		01-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0304		01-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0304		01-Sep-17	Dinobryon sertularia Ehrenberg	1600	11.62
MEL- 0304		01-Sep-17	Chrysochromulina laurentiana Kling	100576	39.69
MEL- 0304		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.93
MEL- 0304		01-Sep-17	Pteridomonas sp.	7184	1.38
MEL- 0304		01-Sep-17	Cyclotella stelligera Cleve and Grunow	1600	2.51
MEL- 0304		01-Sep-17	Cyclotella ocellata Pant.	35920	4.49
MEL- 0304		01-Sep-17	Fragilaria crotonensis Kitton	200	0.06
MEL- 0304		01-Sep-17	Synedra acus Kutzing	1400	0.15
MEL- 0304		01-Sep-17	Asterionella formosa Hassall	2200	0.23
MEL- 0304		01-Sep-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0304		01-Sep-17	Cyclotella bodanica Eulenst.	400	3.09
MEL- 0304		01-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0304		01-Sep-17	Cryptomonas erosa Ehrenberg	1000	1.31

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0304		01-Sep-17	Gymnodinium sp.	1600	16.49
MEL- 0304		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	1600	3.97
MEL- 0305		01-Sep-17	Elakatothrix gelatinosa Willen	35920	0.68
MEL- 0305		01-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0305		01-Sep-17	Cosmarium sp.	600	0.84
MEL- 0305		01-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.14
MEL- 0305		01-Sep-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0305		01-Sep-17	Small chrysophyceae	208336	2.94
MEL- 0305		01-Sep-17	Large chrysophyceae	64656	11.61
MEL- 0305		01-Sep-17	Chrysochromulina parva Lackey	35920	2.35
MEL- 0305		01-Sep-17	Chrysococcus sp.	466960	27.04
MEL- 0305		01-Sep-17	Kephyrion boreale Skuja	7184	0.77
MEL- 0305		01-Sep-17	Kephyrion sp.	107760	0.99
MEL- 0305		01-Sep-17	Spiniferomonas sirrata**********	21552	1.98
MEL- 0305		01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0305		01-Sep-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0305		01-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0305		01-Sep-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0305		01-Sep-17	Dinobryon sertularia Ehrenberg	1200	6.10
MEL- 0305		01-Sep-17	Chrysochromulina laurentiana Kling	86208	34.02
MEL- 0305		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL- 0305		01-Sep-17	Cyclotella stelligera Cleve and Grunow	2400	3.77
MEL- 0305		01-Sep-17	Cyclotella ocellata Pant.	50288	6.28
MEL- 0305		01-Sep-17	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL- 0305		01-Sep-17	Tabellaria flocculsa (Roth) Kutzing	600	0.80
MEL- 0305		01-Sep-17	Fragilaria crotonensis Kitton	1400	0.45
MEL- 0305		01-Sep-17	Synedra acus Kutzing	600	0.06
MEL- 0305		01-Sep-17	Asterionella formosa Hassall	2000	0.21
MEL- 0305		01-Sep-17	Cyclotella michiganiana Skvortzow	50288	1.23
MEL- 0305		01-Sep-17	Rhodomonas minuta Skuja	64656	8.94
MEL- 0305		01-Sep-17	Cryptomonas erosa Ehrenberg	800	1.05
MEL- 0305		01-Sep-17	Cryptomonas reflexa (Marsson) Skuja	600	0.41

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305		01-Sep-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0305		01-Sep-17	Gymnodinium sp.	1000	10.31
MEL- 0305		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	2000	4.62
MEL- 0305R	Recount	01-Sep-17	Elakatothrix gelatinosa Willen	28736	0.54
MEL- 0305R	Recount	01-Sep-17	Planctonema lauterbornii Schmidle	28736	6.50
MEL- 0305R	Recount	01-Sep-17	Cosmarium sp.	600	0.84
MEL- 0305R	Recount	01-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0305R	Recount	01-Sep-17	Spondylosium planum (Wolle) W. and G.S. West	43104	1.63
MEL- 0305R	Recount	01-Sep-17	Small chrysophyceae	107760	1.52
MEL- 0305R	Recount	01-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0305R	Recount	01-Sep-17	Chrysochromulina parva Lackey	14368	0.94
MEL- 0305R	Recount	01-Sep-17	Chrysococcus sp.	431040	24.96
MEL- 0305R	Recount	01-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	4.78
MEL- 0305R	Recount	01-Sep-17	Kephyrion boreale Skuja	7184	0.77
MEL- 0305R	Recount	01-Sep-17	Kephyrion sp.	64656	0.59
MEL- 0305R	Recount	01-Sep-17	Spiniferomonas sirrata**********	14368	1.32
MEL- 0305R	Recount	01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0305R	Recount	01-Sep-17	Dinobryon mucronutom Nygaard	7184	0.86
MEL- 0305R	Recount	01-Sep-17	Dinobryon bavaricum Imhof	28736	6.50
MEL- 0305R	Recount	01-Sep-17	Dinobryon bavaricum Imhof	1200	2.39
MEL- 0305R	Recount	01-Sep-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0305R	Recount	01-Sep-17	Dinobryon sertularia Ehrenberg	2000	10.17
MEL- 0305R	Recount	01-Sep-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0305R	Recount	01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	114944	3.70
MEL- 0305R	Recount	01-Sep-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0305R	Recount	01-Sep-17	Cyclotella ocellata Pant.	43104	5.38
MEL- 0305R	Recount	01-Sep-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0305R	Recount	01-Sep-17	Fragilaria crotonensis Kitton	3400	1.08
MEL- 0305R	Recount	01-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0305R	Recount	01-Sep-17	Asterionella formosa Hassall	3400	0.36
MEL- 0305R	Recount	01-Sep-17	Cyclotella michiganiana Skvortzow	79024	1.94
MEL- 0305R	Recount	01-Sep-17	Cyclotella bodanica Eulenst.	400	3.09

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305R	Recount	01-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0305R	Recount	01-Sep-17	Cryptomonas erosa Ehrenberg	400	0.52
MEL- 0305R	Recount	01-Sep-17	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL- 0305R	Recount	01-Sep-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0305R	Recount	01-Sep-17	Gymnodinium sp.	1600	16.49
MEL- 0305R	Recount	01-Sep-17	Peridinium pusillum (Penard) Lemmermann	1600	3.70
MEL- 0101		04-Sep-17	Sphaerocystis schroeteri Chodat	57472	0.53
MEL- 0101		04-Sep-17	Oocystis lacustris Chodat	21552	0.57
MEL- 0101		04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0101		04-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0101		04-Sep-17	Cosmarium sp.	200	0.94
MEL- 0101		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL- 0101		04-Sep-17	Botryococcus braunii Kutzing	800	0.42
MEL- 0101		04-Sep-17	Euglena acus Ehrenberg	200	1.19
MEL- 0101		04-Sep-17	Small chrysophyceae	122128	1.72
MEL- 0101		04-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0101		04-Sep-17	Chrysochromulina parva Lackey	86208	5.64
MEL- 0101		04-Sep-17	Chrysococcus sp.	445408	22.72
MEL- 0101		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0101		04-Sep-17	Kephyrion sp.	7184	0.11
MEL- 0101		04-Sep-17	Dinobryon borgei Lemmermann	28736	1.39
MEL- 0101		04-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0101		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0101		04-Sep-17	Dinobryon sertularia Ehrenberg	50288	11.38
MEL- 0101		04-Sep-17	Dinobryon sertularia Ehrenberg	800	1.59
MEL- 0101		04-Sep-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0101		04-Sep-17	Stichogloea spp.	7184	0.36
MEL- 0101		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	431040	13.88
MEL- 0101		04-Sep-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0101		04-Sep-17	Rhizosolenia eriense H.L. Smith	50288	3.91
MEL- 0101		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	4600	3.73
MEL- 0101		04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	11000	18.06

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101		04-Sep-17	Fragilaria crotonensis Kitton	4200	1.27
MEL- 0101		04-Sep-17	Synedra acus Kutzing	3800	0.38
MEL- 0101		04-Sep-17	Asterionella formosa Hassall	133200	13.81
MEL- 0101		04-Sep-17	Cyclotella michiganiana Skvortzow	28736	0.70
MEL- 0101		04-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0101		04-Sep-17	Rhodomonas minuta Skuja	158048	21.84
MEL- 0101		04-Sep-17	Cryptomonas erosa Ehrenberg	600	0.78
MEL- 0101		04-Sep-17	Katablepharis ovalis Skuja	14368	0.52
MEL- 0101		04-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0101		04-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0101		04-Sep-17	Gymnodinium sp.	200	2.83
MEL- 0101		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	800	2.83
MEL- 0101		04-Sep-17	Peridinium aciculiferum Lemmermann	400	3.62
MEL- 0101	Rep1	04-Sep-17	Carteria spp.	7184	2.65
MEL- 0101	Rep1	04-Sep-17	Chlamydomonas spp.	7184	0.24
MEL- 0101	Rep1	04-Sep-17	Sphaerocystis schroeteri Chodat	50288	0.46
MEL- 0101	Rep1	04-Sep-17	Oocystis lacustris Chodat	50288	1.33
MEL- 0101	Rep1	04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0101	Rep1	04-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0101	Rep1	04-Sep-17	Cosmarium sp.	200	0.28
MEL- 0101	Rep1	04-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL- 0101	Rep1	04-Sep-17	Staurodesmus paradoxum Meyen	400	0.42
MEL- 0101	Rep1	04-Sep-17	Botryococcus braunii Kutzing	1400	0.73
MEL- 0101	Rep1	04-Sep-17	Small chrysophyceae	57472	0.81
MEL- 0101	Rep1	04-Sep-17	Large chrysophyceae	14368	2.58
MEL- 0101	Rep1	04-Sep-17	Chrysochromulina parva Lackey	50288	3.29
MEL- 0101	Rep1	04-Sep-17	Chrysococcus sp.	502880	25.65
MEL- 0101	Rep1	04-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	5.13
MEL- 0101	Rep1	04-Sep-17	Dinobryon borgei Lemmermann	7184	0.35
MEL- 0101	Rep1	04-Sep-17	Dinobryon bavaricum Imhof	43104	9.75
MEL- 0101	Rep1	04-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0101	Rep1	04-Sep-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.88

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101	Rep1	04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0101	Rep1	04-Sep-17	Dinobryon sertularia Ehrenberg	1000	1.99
MEL- 0101	Rep1	04-Sep-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0101	Rep1	04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	229888	7.40
MEL- 0101	Rep1	04-Sep-17	Cyclotella stelligera Cleve and Grunow	2200	3.46
MEL- 0101	Rep1	04-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0101	Rep1	04-Sep-17	Rhizosolenia eriense H.L. Smith	28736	2.24
MEL- 0101	Rep1	04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	9400	7.62
MEL- 0101	Rep1	04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	7200	11.82
MEL- 0101	Rep1	04-Sep-17	Fragilaria crotonensis Kitton	2200	0.66
MEL- 0101	Rep1	04-Sep-17	Synedra acus Kutzing	3400	0.34
MEL- 0101	Rep1	04-Sep-17	Asterionella formosa Hassall	139800	14.50
MEL- 0101	Rep1	04-Sep-17	Cyclotella michiganiana Skvortzow	28736	0.70
MEL- 0101	Rep1	04-Sep-17	Rhodomonas minuta Skuja	43104	5.96
MEL- 0101	Rep1	04-Sep-17	Cryptomonas erosa Ehrenberg	200	0.26
MEL- 0101	Rep1	04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0101	Rep1	04-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0101	Rep1	04-Sep-17	Gymnodinium sp.	200	2.83
MEL- 0101	Rep1	04-Sep-17	Peridinium pusillum (Penard) Lemmermann	1800	6.36
MEL- 0101	Rep1	04-Sep-17	Peridinium aciculiferum Lemmermann	600	5.43
MEL- 0101R	Rep1 Recount	04-Sep-17	Snowella sp	200	0.15
MEL- 0101R	Rep1 Recount	04-Sep-17	Chlamydomonas spp.	35920	1.19
MEL- 0101R	Rep1 Recount	04-Sep-17	Sphaerocystis schroeteri Chodat	28736	0.36
MEL- 0101R	Rep1 Recount	04-Sep-17	Oocystis lacustris Chodat	43104	1.14
MEL- 0101R	Rep1 Recount	04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0101R	Rep1 Recount	04-Sep-17	Planctonema lauterbornii Schmidle	64656	14.63
MEL- 0101R	Rep1 Recount	04-Sep-17	Staurodesmus paradoxum Meyen	200	0.21
MEL- 0101R	Rep1 Recount	04-Sep-17	Botryococcus braunii Kutzing	1800	0.94
MEL- 0101R	Rep1 Recount	04-Sep-17	Small chrysophyceae	28736	0.41
MEL- 0101R	Rep1 Recount	04-Sep-17	Large chrysophyceae	14368	2.58
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysochromulina parva Lackey	28736	1.88
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysococcus sp.	617824	31.51

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysostephanospaera globulifera Scherffel	21552	7.69
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon bavaricum Imhof	35920	8.13
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon bavaricum Imhof	1400	2.79
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon sertularia Ehrenberg	800	1.59
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.22
MEL- 0101R	Rep1 Recount	04-Sep-17	Uroglena volvox Ehrenberg	28736	3.25
MEL- 0101R	Rep1 Recount	04-Sep-17	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysochromulina laurentiana Kling	28736	11.34
MEL- 0101R	Rep1 Recount	04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	186784	6.01
MEL- 0101R	Rep1 Recount	04-Sep-17	Cyclotella stelligera Cleve and Grunow	3000	4.71
MEL- 0101R	Rep1 Recount	04-Sep-17	Cyclotella ocellata Pant.	14368	1.56
MEL- 0101R	Rep1 Recount	04-Sep-17	Rhizosolenia eriense H.L. Smith	43104	3.35
MEL- 0101R	Rep1 Recount	04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	5200	4.21
MEL- 0101R	Rep1 Recount	04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	12200	20.03
MEL- 0101R	Rep1 Recount	04-Sep-17	Fragilaria crotonensis Kitton	1400	0.42
MEL- 0101R	Rep1 Recount	04-Sep-17	Synedra acus Kutzing	2200	0.22
MEL- 0101R	Rep1 Recount	04-Sep-17	Asterionella formosa Hassall	129600	13.02
MEL- 0101R	Rep1 Recount	04-Sep-17	Cyclotella michiganiana Skvortzow	21552	0.53
MEL- 0101R	Rep1 Recount	04-Sep-17	Rhodomonas minuta Skuja	71840	9.93
MEL- 0101R	Rep1 Recount	04-Sep-17	Cryptomonas erosa Ehrenberg	1200	1.57
MEL- 0101R	Rep1 Recount	04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.44
MEL- 0101R	Rep1 Recount	04-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0101R	Rep1 Recount	04-Sep-17	Gymnodinium sp.	400	5.65
MEL- 0101R	Rep1 Recount	04-Sep-17	Peridinium pusillum (Penard) Lemmermann	2000	7.07
MEL- 0101R	Rep1 Recount	04-Sep-17	Peridinium aciculiferum Lemmermann	400	3.62
MEL- 0102		04-Sep-17	Sphaerocystis schroeteri Chodat	100576	0.93
MEL- 0102		04-Sep-17	Oocystis lacustris Chodat	43104	1.14
MEL- 0102		04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0102		04-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0102		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL- 0102		04-Sep-17	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling		

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0102		04-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0102		04-Sep-17	Small chrysophyceae	43104	0.61
MEL- 0102		04-Sep-17	Large chrysophyceae	21552	3.87
MEL- 0102		04-Sep-17	Chrysochromulina parva Lackey	43104	2.82
MEL- 0102		04-Sep-17	Chrysococcus sp.	495696	25.28
MEL- 0102		04-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	4.15
MEL- 0102		04-Sep-17	Kephyrion boreale Skuja	7184	0.77
MEL- 0102		04-Sep-17	Kephyrion sp.	7184	0.11
MEL- 0102		04-Sep-17	Spiniferomonas sirrata**********	21552	1.98
MEL- 0102		04-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0102		04-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0102		04-Sep-17	Dinobryon bavaricum Imhof	400	0.80
MEL- 0102		04-Sep-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	5.75
MEL- 0102		04-Sep-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0102		04-Sep-17	Dinobryon sertularia Ehrenberg	1000	1.99
MEL- 0102		04-Sep-17	Chrysochromulina laurentiana Kling	57472	22.68
MEL- 0102		04-Sep-17	Stichogloea spp.	35920	1.81
MEL- 0102		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	646560	20.82
MEL- 0102		04-Sep-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0102		04-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0102		04-Sep-17	Rhizosolenia eriense H.L. Smith	35920	2.79
MEL- 0102		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	3600	2.92
MEL- 0102		04-Sep-17	Fragilaria crotonensis Kitton	6400	1.98
MEL- 0102		04-Sep-17	Synedra acus Kutzing	7200	0.72
MEL- 0102		04-Sep-17	Asterionella formosa Hassall	130400	13.52
MEL- 0102		04-Sep-17	Cyclotella michiganiana Skvortzow	35920	0.88
MEL- 0102		04-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0102		04-Sep-17	Rhodomonas minuta Skuja	71840	9.93
MEL- 0102		04-Sep-17	Cryptomonas erosa Ehrenberg	1200	1.57
MEL- 0102		04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.41
MEL- 0102		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0102		04-Sep-17	Gymnodinium helveticum Penard	200	4.81

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0102		04-Sep-17	Gymnodinium sp.	200	2.83
MEL- 0102		04-Sep-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0102		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	4200	14.85
MEL- 0102		04-Sep-17	Peridinium aciculiferum Lemmermann	400	3.62
MEL- 0103		04-Sep-17	Snowella sp	200	0.15
MEL- 0103		04-Sep-17	Sphaerocystis schroeteri Chodat	35920	0.33
MEL- 0103		04-Sep-17	Oocystis lacustris Chodat	79024	2.09
MEL- 0103		04-Sep-17	Elakatothrix gelatinosa Willen	14368	0.25
MEL- 0103		04-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0103		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	800	0.29
MEL- 0103		04-Sep-17	Small chrysophyceae	64656	0.91
MEL- 0103		04-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0103		04-Sep-17	Chrysochromulina parva Lackey	14368	0.94
MEL- 0103		04-Sep-17	Chrysococcus sp.	510064	26.01
MEL- 0103		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0103		04-Sep-17	Kephyrion sp.	7184	0.11
MEL- 0103		04-Sep-17	Kephyrion sp.	7184	0.81
MEL- 0103		04-Sep-17	Spiniferomonas sirrata**********	14368	1.32
MEL- 0103		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0103		04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0103		04-Sep-17	Dinobryon sertularia Ehrenberg	600	1.19
MEL- 0103		04-Sep-17	Epiphyxis sp.	43104	3.25
MEL- 0103		04-Sep-17	Chrysochromulina laurentiana Kling	28736	11.34
MEL- 0103		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	538800	17.35
MEL- 0103		04-Sep-17	Cyclotella stelligera Cleve and Grunow	2200	3.46
MEL- 0103		04-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0103		04-Sep-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0103		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	14600	11.83
MEL- 0103		04-Sep-17	Fragilaria crotonensis Kitton	3600	1.12
MEL- 0103		04-Sep-17	Synedra acus Kutzing	7400	0.74
MEL- 0103		04-Sep-17	Asterionella formosa Hassall	133600	13.85
MEL- 0103		04-Sep-17	Cyclotella michiganiana Skvortzow	14368	0.35

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0103		04-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0103		04-Sep-17	Rhodomonas minuta Skuja	79024	10.92
MEL- 0103		04-Sep-17	Cryptomonas erosa Ehrenberg	200	0.26
MEL- 0103		04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.41
MEL- 0103		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0103		04-Sep-17	Gymnodinium helveticum Penard	400	9.42
MEL- 0103		04-Sep-17	Gymnodinium sp.	1000	14.14
MEL- 0103		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	3800	13.43
MEL- 0103		04-Sep-17	Peridinium aciculiferum Lemmermann	200	1.81
MEL- 0104		04-Sep-17	Sphaerocystis schroeteri Chodat	193968	3.03
MEL- 0104		04-Sep-17	Oocystis lacustris Chodat	21552	0.61
MEL- 0104		04-Sep-17	Elakatothrix gelatinosa Willen	7184	0.12
MEL- 0104		04-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0104		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.09
MEL- 0104		04-Sep-17	Staurodesmus paradoxum Meyen	200	0.55
MEL- 0104		04-Sep-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0104		04-Sep-17	Small chrysophyceae	43104	0.61
MEL- 0104		04-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0104		04-Sep-17	Chrysochromulina parva Lackey	93392	6.11
MEL- 0104		04-Sep-17	Chrysococcus sp.	359200	18.32
MEL- 0104		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0104		04-Sep-17	Kephyrion boreale Skuja	14368	1.71
MEL- 0104		04-Sep-17	Kephyrion sp.	28736	0.45
MEL- 0104		04-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0104		04-Sep-17	Dinobryon bavaricum Imhof	35920	8.13
MEL- 0104		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0104		04-Sep-17	Dinobryon sertularia Ehrenberg	57472	13.00
MEL- 0104		04-Sep-17	Dinobryon sertularia Ehrenberg	400	0.80
MEL- 0104		04-Sep-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0104		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	768688	24.75
MEL- 0104		04-Sep-17	Pteridomonas sp.	7184	1.59
MEL- 0104		04-Sep-17	Cyclotella stelligera Cleve and Grunow	800	1.45

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0104		04-Sep-17	Rhizosolenia eriense H.L. Smith	21552	1.68
MEL- 0104		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	5200	4.21
MEL- 0104		04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	3200	4.93
MEL- 0104		04-Sep-17	Fragilaria crotonensis Kitton	3000	0.95
MEL- 0104		04-Sep-17	Synedra acus Kutzing	5400	0.54
MEL- 0104		04-Sep-17	Asterionella formosa Hassall	166400	17.26
MEL- 0104		04-Sep-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0104		04-Sep-17	Rhodomonas minuta Skuja	107760	14.89
MEL- 0104		04-Sep-17	Cryptomonas erosa Ehrenberg	600	0.78
MEL- 0104		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0104		04-Sep-17	Gymnodinium helveticum Penard	600	14.14
MEL- 0104		04-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0104		04-Sep-17	Gymnodinium sp.	400	5.65
MEL- 0104		04-Sep-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0104		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	1600	5.66
MEL- 0104		04-Sep-17	Peridinium aciculiferum Lemmermann	200	1.81
MEL- 0105		04-Sep-17	Chlamydomonas spp.	43104	1.42
MEL- 0105		04-Sep-17	Sphaerocystis schroeteri Chodat	86208	0.79
MEL- 0105		04-Sep-17	Oocystis lacustris Chodat	107760	2.84
MEL- 0105		04-Sep-17	Crucigenia quadrata Morr.	28736	0.14
MEL- 0105		04-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0105		04-Sep-17	Cosmarium sp.	200	0.94
MEL- 0105		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL- 0105		04-Sep-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0105		04-Sep-17	Mougeotia sp.	1200	3.00
MEL- 0105		04-Sep-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0105		04-Sep-17	Small chrysophyceae	57472	0.81
MEL- 0105		04-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0105		04-Sep-17	Chrysochromulina parva Lackey	7184	0.47
MEL- 0105		04-Sep-17	Chrysococcus sp.	258624	13.19
MEL- 0105		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0105		04-Sep-17	Kephyrion sp.	7184	0.11

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0105		04-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0105		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0105		04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0105		04-Sep-17	Dinobryon sertularia Ehrenberg	400	0.80
MEL- 0105		04-Sep-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0105		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	330464	10.64
MEL- 0105		04-Sep-17	Cyclotella ocellata Pant.	7184	0.78
MEL- 0105		04-Sep-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0105		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	8400	6.81
MEL- 0105		04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	2400	3.94
MEL- 0105		04-Sep-17	Fragilaria crotonensis Kitton	4400	1.33
MEL- 0105		04-Sep-17	Synedra acus Kutzing	4000	0.40
MEL- 0105		04-Sep-17	Asterionella formosa Hassall	136000	14.10
MEL- 0105		04-Sep-17	Cyclotella michiganiana Skvortzow	7184	0.18
MEL- 0105		04-Sep-17	Rhodomonas minuta Skuja	35920	4.96
MEL- 0105		04-Sep-17	Cryptomonas erosa Ehrenberg	1400	1.83
MEL- 0105		04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.41
MEL- 0105		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0105		04-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0105		04-Sep-17	Gymnodinium sp.	1600	22.62
MEL- 0105		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	3000	10.61
MEL- 0201		05-Sep-17	Planktolyngbya limnetica	200	0.05
MEL- 0201		05-Sep-17	Chlamydomonas spp.	7184	0.36
MEL- 0201		05-Sep-17	Oocystis lacustris Chodat	50288	1.44
MEL- 0201		05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0201		05-Sep-17	Cosmarium sp.	600	0.84
MEL- 0201		05-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL- 0201		05-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0201		05-Sep-17	Oocystis gigas Archer	400	0.97
MEL- 0201		05-Sep-17	Small chrysophyceae	79024	1.11
MEL- 0201		05-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0201		05-Sep-17	Chrysochromulina parva Lackey	14368	0.94

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0201		05-Sep-17	Chrysococcus sp.	431040	21.98
MEL- 0201		05-Sep-17	Kephyrion sp.	14368	0.25
MEL- 0201		05-Sep-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0201		05-Sep-17	Dinobryon borgei Lemmermann	28736	1.23
MEL- 0201		05-Sep-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0201		05-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0201		05-Sep-17	Dinobryon sertularia Ehrenberg	50288	11.38
MEL- 0201		05-Sep-17	Dinobryon sertularia Ehrenberg	400	0.80
MEL- 0201		05-Sep-17	Epiphyxis sp.	7184	0.54
MEL- 0201		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.60
MEL- 0201		05-Sep-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0201		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.39
MEL- 0201		05-Sep-17	Cyclotella stelligera Cleve and Grunow	6000	9.42
MEL- 0201		05-Sep-17	Cyclotella ocellata Pant.	21552	2.25
MEL- 0201		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.32
MEL- 0201		05-Sep-17	Fragilaria crotonensis Kitton	600	0.19
MEL- 0201		05-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0201		05-Sep-17	Asterionella formosa Hassall	19800	2.09
MEL- 0201		05-Sep-17	Cyclotella michiganiana Skvortzow	79024	1.94
MEL- 0201		05-Sep-17	Cyclotella bodanica Eulenst.	1400	10.80
MEL- 0201		05-Sep-17	Rhodomonas minuta Skuja	50288	6.95
MEL- 0201		05-Sep-17	Cryptomonas erosa Ehrenberg	1400	1.83
MEL- 0201		05-Sep-17	Gymnodinium sp.	600	6.18
MEL- 0201		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	2800	6.71
MEL- 0201		05-Sep-17	Peridinium wisconsiense Eddy	200	4.49
MEL- 0202		05-Sep-17	Oocystis lacustris Chodat	14368	0.38
MEL- 0202		05-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0202		05-Sep-17	Closterium sp.	200	0.30
MEL- 0202		05-Sep-17	Small chrysophyceae	136496	1.92
MEL- 0202		05-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0202		05-Sep-17	Chrysochromulina parva Lackey	35920	2.35
MEL- 0202		05-Sep-17	Chrysococcus sp.	359200	18.32

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0202		05-Sep-17	Kephyrion sp.	28736	0.49
MEL- 0202		05-Sep-17	Mallomonas crassisquama (Asmund) Fott	200	0.20
MEL- 0202		05-Sep-17	Dinobryon bavaricum Imhof	43104	9.75
MEL- 0202		05-Sep-17	Dinobryon bavaricum Imhof	600	2.03
MEL- 0202		05-Sep-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0202		05-Sep-17	Dinobryon sertularia Ehrenberg	1000	5.09
MEL- 0202		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	35920	0.94
MEL- 0202		05-Sep-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0202		05-Sep-17	Chrysochromulina laurentiana Kling	57472	22.68
MEL- 0202		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.69
MEL- 0202		05-Sep-17	Cyclotella stelligera Cleve and Grunow	3800	5.97
MEL- 0202		05-Sep-17	Cyclotella ocellata Pant.	43104	4.50
MEL- 0202		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.32
MEL- 0202		05-Sep-17	Synedra acus Kutzing	400	0.04
MEL- 0202		05-Sep-17	Asterionella formosa Hassall	14200	1.50
MEL- 0202		05-Sep-17	Cyclotella michiganiana Skvortzow	143680	3.12
MEL- 0202		05-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0202		05-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0202		05-Sep-17	Cryptomonas erosa Ehrenberg	800	1.05
MEL- 0202		05-Sep-17	Gymnodinium sp.	400	4.12
MEL- 0202		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	2200	5.27
MEL- 0203		05-Sep-17	Snowella sp	200	0.14
MEL- 0203		05-Sep-17	Sphaerocystis schroeteri Chodat	35920	0.56
MEL- 0203		05-Sep-17	Oocystis lacustris Chodat	21552	0.57
MEL- 0203		05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0203		05-Sep-17	Cosmarium sp.	800	1.12
MEL- 0203		05-Sep-17	Staurodesmus paradoxum Meyen	600	2.45
MEL- 0203		05-Sep-17	Botryococcus braunii Kutzing	800	0.42
MEL- 0203		05-Sep-17	Zygnema sp.	600	1.97
MEL- 0203		05-Sep-17	Small chrysophyceae	64656	0.91
MEL- 0203		05-Sep-17	Large chrysophyceae	21552	3.87
MEL- 0203		05-Sep-17	Chrysochromulina parva Lackey	57472	3.76

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0203		05-Sep-17	Chrysococcus sp.	510064	26.01
MEL- 0203		05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0203		05-Sep-17	Kephyrion sp.	28736	0.49
MEL- 0203		05-Sep-17	Mallomonas caudata Ivanov	400	2.14
MEL- 0203		05-Sep-17	Mallomonas crassisquama (Asmund) Fott	200	0.20
MEL- 0203		05-Sep-17	Dinobryon borgei Lemmermann	21552	0.95
MEL- 0203		05-Sep-17	Dinobryon mucronutom Nygaard	7184	0.86
MEL- 0203		05-Sep-17	Dinobryon bavaricum Imhof	71840	16.25
MEL- 0203		05-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0203		05-Sep-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0203		05-Sep-17	Dinobryon sertularia Ehrenberg	2000	6.78
MEL- 0203		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.39
MEL- 0203		05-Sep-17	Uroglena volvox Ehrenberg	28736	3.25
MEL- 0203		05-Sep-17	Chrysochromulina laurentiana Kling	35920	14.17
MEL- 0203		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.39
MEL- 0203		05-Sep-17	Cyclotella stelligera Cleve and Grunow	6600	10.37
MEL- 0203		05-Sep-17	Cyclotella ocellata Pant.	28736	3.00
MEL- 0203		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.65
MEL- 0203		05-Sep-17	Fragilaria crotonensis Kitton	1400	0.45
MEL- 0203		05-Sep-17	Synedra acus Kutzing	1200	0.12
MEL- 0203		05-Sep-17	Asterionella formosa Hassall	16000	1.69
MEL- 0203		05-Sep-17	Cyclotella michiganiana Skvortzow	79024	1.51
MEL- 0203		05-Sep-17	Cyclotella bodanica Eulenst.	1000	7.72
MEL- 0203		05-Sep-17	Rhodomonas minuta Skuja	50288	6.95
MEL- 0203		05-Sep-17	Cryptomonas erosa Ehrenberg	2000	2.61
MEL- 0203		05-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0203		05-Sep-17	Gymnodinium sp.	14368	5.30
MEL- 0203		05-Sep-17	Gymnodinium sp.	400	4.12
MEL- 0203		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	3400	8.14
MEL- 0204		05-Sep-17	Planktolyngbya limnetica	200	0.02
MEL- 0204		05-Sep-17	Chlamydomonas spp.	7184	0.85
MEL- 0204		05-Sep-17	Sphaerocystis schroeteri Chodat	21552	0.34

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204		05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0204		05-Sep-17	Cosmarium sp.	600	0.84
MEL- 0204		05-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0204		05-Sep-17	Staurodesmus paradoxum Meyen	200	0.37
MEL- 0204		05-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0204		05-Sep-17	Small chrysophyceae	28736	0.41
MEL- 0204		05-Sep-17	Large chrysophyceae	14368	2.58
MEL- 0204		05-Sep-17	Chrysochromulina parva Lackey	7184	0.47
MEL- 0204		05-Sep-17	Chrysococcus sp.	524432	26.75
MEL- 0204		05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0204		05-Sep-17	Kephyrion sp.	21552	0.37
MEL- 0204		05-Sep-17	Dinobryon borgei Lemmermann	7184	0.32
MEL- 0204		05-Sep-17	Dinobryon mucronutom Nygaard	7184	0.86
MEL- 0204		05-Sep-17	Dinobryon bavaricum Imhof	35920	8.13
MEL- 0204		05-Sep-17	Dinobryon bavaricum Imhof	600	1.19
MEL- 0204		05-Sep-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0204		05-Sep-17	Dinobryon sertularia Ehrenberg	1600	3.19
MEL- 0204		05-Sep-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0204		05-Sep-17	Chrysochromulina laurentiana Kling	35920	14.17
MEL- 0204		05-Sep-17	Stichogloea spp.	21552	1.08
MEL- 0204		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.93
MEL- 0204		05-Sep-17	Cyclotella stelligera Cleve and Grunow	4400	6.91
MEL- 0204		05-Sep-17	Cyclotella ocellata Pant.	28736	2.89
MEL- 0204		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	2000	1.62
MEL- 0204		05-Sep-17	Fragilaria crotonensis Kitton	1400	0.45
MEL- 0204		05-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0204		05-Sep-17	Asterionella formosa Hassall	28400	3.00
MEL- 0204		05-Sep-17	Cyclotella michiganiana Skvortzow	107760	2.06
MEL- 0204		05-Sep-17	Cyclotella bodanica Eulenst.	1000	7.72
MEL- 0204		05-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0204		05-Sep-17	Cryptomonas erosa Ehrenberg	1200	1.57
MEL- 0204		05-Sep-17	Katablepharis ovalis Skuja	7184	0.25

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204		05-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0204		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	4400	10.54
MEL- 0204	Rep 2	05-Sep-17	Planktolyngbya limnetica	400	0.06
MEL- 0204	Rep 2	05-Sep-17	Chlamydomonas spp.	7184	0.85
MEL- 0204	Rep 2	05-Sep-17	Sphaerocystis schroeteri Chodat	64656	1.01
MEL- 0204	Rep 2	05-Sep-17	Oocystis lacustris Chodat	7184	0.19
MEL- 0204	Rep 2	05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0204	Rep 2	05-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL- 0204	Rep 2	05-Sep-17	Oocystis gigas Archer	200	0.48
MEL- 0204	Rep 2	05-Sep-17	Small chrysophyceae	86208	1.22
MEL- 0204	Rep 2	05-Sep-17	Large chrysophyceae	43104	7.74
MEL- 0204	Rep 2	05-Sep-17	Chrysochromulina parva Lackey	14368	0.94
MEL- 0204	Rep 2	05-Sep-17	Chrysococcus sp.	416672	21.25
MEL- 0204	Rep 2	05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0204	Rep 2	05-Sep-17	Kephyrion sp.	43104	0.74
MEL- 0204	Rep 2	05-Sep-17	Mallomonas crassisquama (Asmund) Fott	400	0.40
MEL- 0204	Rep 2	05-Sep-17	Dinobryon borgei Lemmermann	21552	0.95
MEL- 0204	Rep 2	05-Sep-17	Dinobryon bavaricum Imhof	50288	11.38
MEL- 0204	Rep 2	05-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0204	Rep 2	05-Sep-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0204	Rep 2	05-Sep-17	Dinobryon sertularia Ehrenberg	600	1.19
MEL- 0204	Rep 2	05-Sep-17	Chrysochromulina laurentiana Kling	21552	8.50
MEL- 0204	Rep 2	05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.16
MEL- 0204	Rep 2	05-Sep-17	Cyclotella stelligera Cleve and Grunow	4200	6.60
MEL- 0204	Rep 2	05-Sep-17	Cyclotella ocellata Pant.	64656	6.50
MEL- 0204	Rep 2	05-Sep-17	Fragilaria crotonensis Kitton	2600	0.83
MEL- 0204	Rep 2	05-Sep-17	Synedra acus Kutzing	1600	0.16
MEL- 0204	Rep 2	05-Sep-17	Asterionella formosa Hassall	16200	1.71
MEL- 0204	Rep 2	05-Sep-17	Cyclotella michiganiana Skvortzow	57472	1.10
MEL- 0204	Rep 2	05-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0204	Rep 2	05-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0204	Rep 2	05-Sep-17	Cryptomonas erosa Ehrenberg	1000	1.31

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204	Rep 2	05-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0204	Rep 2	05-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0204	Rep 2	05-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0204	Rep 2	05-Sep-17	Peridinium pusillum (Penard) Lemmermann	3400	8.14
MEL- 0205		05-Sep-17	Chlamydomonas spp.	14368	2.17
MEL- 0205		05-Sep-17	Sphaerocystis schroeteri Chodat	64656	1.01
MEL- 0205		05-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0205		05-Sep-17	Planctonema lauterbornii Schmidle	43104	9.75
MEL- 0205		05-Sep-17	Closterium kuetzingii Brebisson	200	0.34
MEL- 0205		05-Sep-17	Cosmarium sp.	600	0.84
MEL- 0205		05-Sep-17	Botryococcus braunii Kutzing	800	0.42
MEL- 0205		05-Sep-17	Small chrysophyceae	122128	1.72
MEL- 0205		05-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0205		05-Sep-17	Chrysochromulina parva Lackey	129312	8.46
MEL- 0205		05-Sep-17	Chrysococcus sp.	431040	21.98
MEL- 0205		05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0205		05-Sep-17	Kephyrion sp.	28736	0.49
MEL- 0205		05-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0205		05-Sep-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0205		05-Sep-17	Mallomonas crassisquama (Asmund) Fott	200	0.20
MEL- 0205		05-Sep-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0205		05-Sep-17	Dinobryon bavaricum Imhof	1000	1.99
MEL- 0205		05-Sep-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0205		05-Sep-17	Dinobryon sertularia Ehrenberg	1200	2.39
MEL- 0205		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.19
MEL- 0205		05-Sep-17	Uroglena volvox Ehrenberg	28736	3.25
MEL- 0205		05-Sep-17	Chrysochromulina laurentiana Kling	86208	34.02
MEL- 0205		05-Sep-17	Stichogloea spp.	7184	0.36
MEL- 0205		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	79024	2.54
MEL- 0205		05-Sep-17	Cyclotella stelligera Cleve and Grunow	3800	5.97
MEL- 0205		05-Sep-17	Cyclotella ocellata Pant.	14368	1.50
MEL- 0205		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	6000	4.86

Table 11D-3: Raw Phytoplankton Data, Meliadine Lake 2015

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0205		05-Sep-17	Fragilaria crotonensis Kitton	1000	0.32
MEL- 0205		05-Sep-17	Synedra acus Kutzing	2000	0.20
MEL- 0205		05-Sep-17	Asterionella formosa Hassall	32800	3.47
MEL- 0205		05-Sep-17	Cyclotella michiganiana Skvortzow	64656	1.58
MEL- 0205		05-Sep-17	Cyclotella bodanica Eulenst.	800	6.17
MEL- 0205		05-Sep-17	Rhodomonas minuta Skuja	64656	8.94
MEL- 0205		05-Sep-17	Cryptomonas erosa Ehrenberg	1400	1.83
MEL- 0205		05-Sep-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0205		05-Sep-17	Gymnodinium sp.	400	4.12
MEL- 0205		05-Sep-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0205		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	2800	6.71

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101		21-Jul-16	Sphaerocystis schroeteri Chodat	28736	0.54
MEL - 0101		21-Jul-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.40
MEL - 0101		21-Jul-16	Planctonema lauterbornii Schmidle	21552	2.71
MEL - 0101		21-Jul-16	Cosmarium sp.	200	0.28
MEL - 0101		21-Jul-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0101		21-Jul-16	Mougeotia sp.	600	0.34
MEL - 0101		21-Jul-16	Botryococcus braunii Kutzing	200	0.29
MEL - 0101		21-Jul-16	Small chrysophyceae	459776	5.89
MEL - 0101		21-Jul-16	Large chrysophyceae	107760	22.87
MEL - 0101		21-Jul-16	Chrysochromulina parva Lackey	208336	13.63
MEL - 0101		21-Jul-16	Chrysococcus sp.	581904	38.06
MEL - 0101		21-Jul-16	Chrysostephanospaera globulifera Scherffel	14368	4.00
MEL - 0101		21-Jul-16	Kephyrion sp.	114944	2.16
MEL - 0101		21-Jul-16	Spiniferomonas sirrata**********	14368	1.25
MEL - 0101		21-Jul-16	Dinobryon borgei Lemmermann	107760	5.53
MEL - 0101		21-Jul-16	Dinobryon bavaricum Imhof	200	0.25
MEL - 0101		21-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	6.01
MEL - 0101		21-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.51
MEL - 0101		21-Jul-16	Dinobryon sertularia Ehrenberg	71840	16.25
MEL - 0101		21-Jul-16	Dinobryon sertularia Ehrenberg	1800	3.58
MEL - 0101		21-Jul-16	Dinobryon sociale Ehrenberg	143680	32.50
MEL - 0101		21-Jul-16	Chrysolkos skuja (Nauwerck) Willen	57472	1.02
MEL - 0101		21-Jul-16	Uroglena volvox Ehrenberg	402304	45.50
MEL - 0101		21-Jul-16	Chrysochromulina laurentiana Kling	100576	43.74
MEL - 0101		21-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.25
MEL - 0101		21-Jul-16	Cyclotella stelligera Cleve and Grunow	2800	3.26
MEL - 0101		21-Jul-16	Cyclotella pseudostelligera	28736	9.75
MEL - 0101		21-Jul-16	Rhizosolenia eriense H.L. Smith	617824	48.07
MEL - 0101		21-Jul-16	Tabellaria flocculsa (Roth) Kutzing	2400	2.99
MEL - 0101		21-Jul-16	Synedra acus Kutzing	23800	3.02
MEL - 0101		21-Jul-16	Synedra ulna (Nitzsch) Ehrenberg	200	0.45
MEL - 0101		21-Jul-16	Asterionella formosa Hassall	6200	0.67
MEL - 0101		21-Jul-16	Cyclotella michiganiana Skvortzow	71840	1.76

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101		21-Jul-16	Rhodomonas minuta Skuja	14368	1.20
MEL - 0101		21-Jul-16	Cryptomonas erosa Ehrenberg	3600	5.69
MEL - 0101		21-Jul-16	Cryptomonas ovata Ehrenberg	800	3.62
MEL - 0101		21-Jul-16	Cryptomonas reflexa (Marsson) Skuja	4400	3.38
MEL - 0101		21-Jul-16	Katablepharis ovalis Skuja	14368	0.81
MEL - 0101		21-Jul-16	Gymnodinium sp.	400	3.68
MEL - 0101		21-Jul-16	Peridinium willei Huitfeldt-Kaas	200	7.22
MEL - 0101		21-Jul-16	Peridinium pusillum (Penard) Lemmermann	4600	14.76
MEL - 0101		21-Jul-16	Peridinium aciculiferum Lemmermann	600	5.43
MEL - 0101		11-Aug-16	Snowella sp	200	0.15
MEL - 0101		11-Aug-16	Sphaerocystis schroeteri Chodat	86208	2.89
MEL - 0101		11-Aug-16	Oocystis lacustris Chodat	57472	2.89
MEL - 0101		11-Aug-16	Elakatothrix gelatinosa Willen	7184	0.11
MEL - 0101		11-Aug-16	Planctonema lauterbornii Schmidle	86208	10.84
MEL - 0101		11-Aug-16	Cosmarium sp.	600	3.20
MEL - 0101		11-Aug-16	Euastrum spp.	800	1.49
MEL - 0101		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	800	0.33
MEL - 0101		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0101		11-Aug-16	Botryococcus braunii Kutzing	400	0.57
MEL - 0101		11-Aug-16	Small chrysophyceae	646560	10.09
MEL - 0101		11-Aug-16	Large chrysophyceae	21552	3.87
MEL - 0101		11-Aug-16	Chrysochromulina parva Lackey	129312	8.46
MEL - 0101		11-Aug-16	Chrysococcus sp.	567536	37.12
MEL - 0101		11-Aug-16	Kephyrion boreale Skuja	14368	1.71
MEL - 0101		11-Aug-16	Kephyrion sp.	64656	0.59
MEL - 0101		11-Aug-16	Spiniferomonas sirrata**********	35920	3.30
MEL - 0101		11-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.20
MEL - 0101		11-Aug-16	Synura sphagnicola Korschikow	200	4.73
MEL - 0101		11-Aug-16	Dinobryon borgei Lemmermann	14368	0.58
MEL - 0101		11-Aug-16	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0101		11-Aug-16	Dinobryon bavaricum Imhof	136496	30.88
MEL - 0101		11-Aug-16	Dinobryon bavaricum Imhof	28736	6.50
MEL - 0101		11-Aug-16	Dinobryon bavaricum Imhof	1400	2.79

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101		11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.95
MEL - 0101		11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	800	5.20
MEL - 0101		11-Aug-16	Dinobryon sertularia Ehrenberg	71840	16.25
MEL - 0101		11-Aug-16	Dinobryon sertularia Ehrenberg	400	0.80
MEL - 0101		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	79024	2.37
MEL - 0101		11-Aug-16	Uroglena volvox Ehrenberg	79024	8.94
MEL - 0101		11-Aug-16	Chrysochromulina laurentiana Kling	165232	69.60
MEL - 0101		11-Aug-16	Stichogloea spp.	7184	0.36
MEL - 0101		11-Aug-16	Pteridomonas sp.	43104	10.61
MEL - 0101		11-Aug-16	Cyclotella stelligera Cleve and Grunow	3200	5.82
MEL - 0101		11-Aug-16	Rhizosolenia eriense H.L. Smith	21552	1.83
MEL - 0101		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	5600	4.80
MEL - 0101		11-Aug-16	Synedra acus Kutzing	4000	0.42
MEL - 0101		11-Aug-16	Asterionella formosa Hassall	4000	0.42
MEL - 0101		11-Aug-16	Cyclotella michiganiana Skvortzow	57472	1.25
MEL - 0101		11-Aug-16	Rhodomonas minuta Skuja	107760	14.21
MEL - 0101		11-Aug-16	Cryptomonas erosa Ehrenberg	6400	7.75
MEL - 0101		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	600	0.40
MEL - 0101		11-Aug-16	Cryptomonas rostratiformis Skuja	200	0.38
MEL - 0101		11-Aug-16	Katablepharis ovalis Skuja	35920	1.45
MEL - 0101		11-Aug-16	Gymnodinium sp.	2000	15.03
MEL - 0101		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	3800	9.60
MEL - 0101		10-Sep-16	Sphaerocystis schroeteri Chodat	7184	0.15
MEL - 0101		10-Sep-16	Oocystis lacustris Chodat	43104	2.17
MEL - 0101		10-Sep-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL - 0101		10-Sep-16	Elakatothrix gelatinosa Willen	14368	0.27
MEL - 0101		10-Sep-16	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0101		10-Sep-16	Mougeotia sp.	200	0.63
MEL - 0101		10-Sep-16	Botryococcus braunii Kutzing	800	0.72
MEL - 0101		10-Sep-16	Ankistrodesmus spiralis Lemmermann	7184	0.46
MEL - 0101		10-Sep-16	Trachelomonas volvocina Ehrenberg	200	0.41
MEL - 0101		10-Sep-16	Small chrysophyceae	301728	4.25
MEL - 0101		10-Sep-16	Large chrysophyceae	14368	2.58

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0101		10-Sep-16	Chrysochromulina parva Lackey	373568	24.43
MEL - 0101		10-Sep-16	Chrysococcus sp.	617824	40.41
MEL - 0101		10-Sep-16	Chrysostephanospaera globulifera Scherffel	14368	7.52
MEL - 0101		10-Sep-16	Kephyrion boreale Skuja	14368	1.71
MEL - 0101		10-Sep-16	Kephyrion sp.	28736	0.30
MEL - 0101		10-Sep-16	Spiniferomonas sirrata**********	14368	1.06
MEL - 0101		10-Sep-16	Mallomonas crassisquama (Asmund) Fott	400	0.40
MEL - 0101		10-Sep-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0101		10-Sep-16	Dinobryon bavaricum Imhof	600	1.19
MEL - 0101		10-Sep-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0101		10-Sep-16	Dinobryon sertularia Ehrenberg	400	2.03
MEL - 0101		10-Sep-16	Dinobryon sociale Ehrenberg	71840	16.25
MEL - 0101		10-Sep-16	Epiphyxis sp.	7184	0.55
MEL - 0101		10-Sep-16	Chrysolkos skuja (Nauwerck) Willen	35920	1.08
MEL - 0101		10-Sep-16	Uroglena volvox Ehrenberg	244256	27.63
MEL - 0101		10-Sep-16	Chrysochromulina laurentiana Kling	481328	252.02
MEL - 0101		10-Sep-16	Stichogloea spp.	14368	0.72
MEL - 0101		10-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	107760	2.79
MEL - 0101		10-Sep-16	Cyclotella stelligera Cleve and Grunow	2200	4.06
MEL - 0101		10-Sep-16	Rhizosolenia eriense H.L. Smith	43104	3.66
MEL - 0101		10-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	5400	4.12
MEL - 0101		10-Sep-16	Fragilaria crotonensis Kitton	2800	0.90
MEL - 0101		10-Sep-16	Synedra acus Kutzing	19800	1.78
MEL - 0101		10-Sep-16	Asterionella formosa Hassall	9600	1.01
MEL - 0101		10-Sep-16	Cyclotella michiganiana Skvortzow	28736	0.70
MEL - 0101		10-Sep-16	Rhodomonas minuta Skuja	93392	11.74
MEL - 0101		10-Sep-16	Cryptomonas erosa Ehrenberg	8600	10.38
MEL - 0101		10-Sep-16	Cryptomonas rostratiformis Skuja	400	0.88
MEL - 0101		10-Sep-16	Katablepharis ovalis Skuja	35920	1.85
MEL - 0101		10-Sep-16	Gymnodinium helveticum Penard	1200	28.27
MEL - 0101		10-Sep-16	Gymnodinium sp.	2200	22.67
MEL - 0101		10-Sep-16	Peridinium pusillum (Penard) Lemmermann	3400	7.02
MEL - 0101		10-Sep-16	Peridinium aciculiferum Lemmermann	1600	14.48

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102		21-Jul-16	Chlamydomonas spp.	7184	0.08
MEL - 0102		21-Jul-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	14368	0.81
MEL - 0102		21-Jul-16	Elakatothrix gelatinosa Willen	21552	0.34
MEL - 0102		21-Jul-16	Planctonema lauterbornii Schmidle	129312	16.25
MEL - 0102		21-Jul-16	Cosmarium sp.	200	0.28
MEL - 0102		21-Jul-16	Staurodesmus extensus (Andersson) Teiling	600	0.22
MEL - 0102		21-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0102		21-Jul-16	Small chrysophyceae	445408	5.70
MEL - 0102		21-Jul-16	Large chrysophyceae	79024	14.81
MEL - 0102		21-Jul-16	Chrysochromulina parva Lackey	237072	15.50
MEL - 0102		21-Jul-16	Chrysococcus sp.	1185360	77.52
MEL - 0102		21-Jul-16	Chrysostephanospaera globulifera Scherffel	43104	15.38
MEL - 0102		21-Jul-16	Kephyrion sp.	93392	1.76
MEL - 0102		21-Jul-16	Spiniferomonas sirrata**********	28736	3.09
MEL - 0102		21-Jul-16	Mallomonas crassisquama (Asmund) Fott	200	0.19
MEL - 0102		21-Jul-16	Dinobryon borgei Lemmermann	114944	5.63
MEL - 0102		21-Jul-16	Dinobryon bavaricum Imhof	158048	35.75
MEL - 0102		21-Jul-16	Dinobryon bavaricum Imhof	7200	14.34
MEL - 0102		21-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.01
MEL - 0102		21-Jul-16	Dinobryon sertularia Ehrenberg	143680	32.50
MEL - 0102		21-Jul-16	Dinobryon sertularia Ehrenberg	4200	8.36
MEL - 0102		21-Jul-16	Epiphyxis sp.	21552	1.55
MEL - 0102		21-Jul-16	Chrysolkos skuja (Nauwerck) Willen	71840	1.58
MEL - 0102		21-Jul-16	Uroglena volvox Ehrenberg	941104	106.44
MEL - 0102		21-Jul-16	Chrysochromulina laurentiana Kling	100576	43.74
MEL - 0102		21-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.85
MEL - 0102		21-Jul-16	Dinobryon attenatum Hill	14368	2.44
MEL - 0102		21-Jul-16	Cyclotella stelligera Cleve and Grunow	2600	3.29
MEL - 0102		21-Jul-16	Cyclotella pseudostelligera	14368	4.88
MEL - 0102		21-Jul-16	Rhizosolenia eriense H.L. Smith	696848	54.21
MEL - 0102		21-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	5400	4.53
MEL - 0102		21-Jul-16	Synedra acus Kutzing	21800	2.76
MEL - 0102		21-Jul-16	Asterionella formosa Hassall	7000	0.76

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102		21-Jul-16	Cyclotella michiganiana Skvortzow	100576	2.46
MEL - 0102		21-Jul-16	Rhodomonas minuta Skuja	35920	3.01
MEL - 0102		21-Jul-16	Cryptomonas erosa Ehrenberg	4000	6.35
MEL - 0102		21-Jul-16	Cryptomonas ovata Ehrenberg	400	1.81
MEL - 0102		21-Jul-16	Cryptomonas reflexa (Marsson) Skuja	800	0.59
MEL - 0102		21-Jul-16	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0102		21-Jul-16	Katablepharis ovalis Skuja	57472	3.25
MEL - 0102		21-Jul-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0102		21-Jul-16	Gymnodinium sp.	2400	30.65
MEL - 0102		21-Jul-16	Peridinium pusillum (Penard) Lemmermann	5400	16.77
MEL - 0102		21-Jul-16	Peridinium aciculiferum Lemmermann	400	3.74
MEL - 0102	RECOUNT	21-Jul-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	14368	0.81
MEL - 0102	RECOUNT	21-Jul-16	Elakatothrix gelatinosa Willen	14368	0.23
MEL - 0102	RECOUNT	21-Jul-16	Planctonema lauterbornii Schmidle	107760	13.55
MEL - 0102	RECOUNT	21-Jul-16	Staurodesmus extensus (Andersson) Teiling	800	0.30
MEL - 0102	RECOUNT	21-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0102	RECOUNT	21-Jul-16	Small chrysophyceae	323280	4.14
MEL - 0102	RECOUNT	21-Jul-16	Large chrysophyceae	50288	9.42
MEL - 0102	RECOUNT	21-Jul-16	Chrysochromulina parva Lackey	208336	13.63
MEL - 0102	RECOUNT	21-Jul-16	Chrysococcus sp.	1170992	76.58
MEL - 0102	RECOUNT	21-Jul-16	Chrysostephanospaera globulifera Scherffel	28736	10.25
MEL - 0102	RECOUNT	21-Jul-16	Kephyrion sp.	129312	2.43
MEL - 0102	RECOUNT	21-Jul-16	Spiniferomonas sirrata**********	7184	0.77
MEL - 0102	RECOUNT	21-Jul-16	Mallomonas crassisquama (Asmund) Fott	400	0.39
MEL - 0102	RECOUNT	21-Jul-16	Dinobryon borgei Lemmermann	86208	4.22
MEL - 0102	RECOUNT	21-Jul-16	Dinobryon bavaricum Imhof	129312	29.25
MEL - 0102	RECOUNT	21-Jul-16	Dinobryon bavaricum Imhof	6200	12.34
MEL - 0102	RECOUNT	21-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	800	2.02
MEL - 0102	RECOUNT	21-Jul-16	Dinobryon sertularia Ehrenberg	122128	27.63
MEL - 0102	RECOUNT	21-Jul-16	Dinobryon sertularia Ehrenberg	5200	10.35
MEL - 0102	RECOUNT	21-Jul-16	Epiphyxis sp.	14368	1.03
MEL - 0102	RECOUNT	21-Jul-16	Chrysolkos skuja (Nauwerck) Willen	114944	2.53
MEL - 0102	RECOUNT	21-Jul-16	Uroglena volvox Ehrenberg	1070416	121.06

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	RECOUNT	21-Jul-16	Chrysochromulina laurentiana Kling	100576	43.74
MEL - 0102	RECOUNT	21-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.27
MEL - 0102	RECOUNT	21-Jul-16	Cyclotella stelligera Cleve and Grunow	28736	9.75
MEL - 0102	RECOUNT	21-Jul-16	Cyclotella stelligera Cleve and Grunow	2000	2.53
MEL - 0102	RECOUNT	21-Jul-16	Rhizosolenia eriense H.L. Smith	739952	57.57
MEL - 0102	RECOUNT	21-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	6200	5.20
MEL - 0102	RECOUNT	21-Jul-16	Synedra acus Kutzing	17800	2.26
MEL - 0102	RECOUNT	21-Jul-16	Synedra ulna (Nitzsch) Ehrenberg	800	1.67
MEL - 0102	RECOUNT	21-Jul-16	Asterionella formosa Hassall	6000	0.65
MEL - 0102	RECOUNT	21-Jul-16	Cyclotella michiganiana Skvortzow	71840	1.76
MEL - 0102	RECOUNT	21-Jul-16	Rhodomonas minuta Skuja	64656	0.87
MEL - 0102	RECOUNT	21-Jul-16	Cryptomonas erosa Ehrenberg	5200	8.25
MEL - 0102	RECOUNT	21-Jul-16	Cryptomonas ovata Ehrenberg	400	1.81
MEL - 0102	RECOUNT	21-Jul-16	Cryptomonas reflexa (Marsson) Skuja	600	0.44
MEL - 0102	RECOUNT	21-Jul-16	Katablepharis ovalis Skuja	43104	2.44
MEL - 0102	RECOUNT	21-Jul-16	Gymnodinium sp.	3200	40.86
MEL - 0102	RECOUNT	21-Jul-16	Peridinium pusillum (Penard) Lemmermann	4200	13.04
MEL - 0102	RECOUNT	21-Jul-16	Peridinium aciculiferum Lemmermann	800	7.48
MEL - 0102		11-Aug-16	Anabaena cf heterospora Nygarrd	114944	13.00
MEL - 0102		11-Aug-16	Sphaerocystis schroeteri Chodat	71840	2.41
MEL - 0102		11-Aug-16	Oocystis lacustris Chodat	21552	0.61
MEL - 0102		11-Aug-16	Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	200	1.13
MEL - 0102		11-Aug-16	Crucigenia quadrata Morr.	28736	0.32
MEL - 0102		11-Aug-16	Elakatothrix gelatinosa Willen	14368	0.23
MEL - 0102		11-Aug-16	Planctonema lauterbornii Schmidle	79024	9.93
MEL - 0102		11-Aug-16	Cosmarium sp.	200	0.28
MEL - 0102		11-Aug-16	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.48
MEL - 0102		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0102		11-Aug-16	Botryococcus braunii Kutzing	1000	1.44
MEL - 0102		11-Aug-16	Small chrysophyceae	1070416	11.03
MEL - 0102		11-Aug-16	Large chrysophyceae	43104	8.78
MEL - 0102		11-Aug-16	Chrysochromulina parva Lackey	272992	17.85
MEL - 0102		11-Aug-16	Chrysococcus sp.	373568	19.05

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102		11-Aug-16	Kephyrion boreale Skuja	28736	2.64
MEL - 0102		11-Aug-16	Kephyrion sp.	208336	1.92
MEL - 0102		11-Aug-16	Spiniferomonas sirrata**********	43104	1.29
MEL - 0102		11-Aug-16	Dinobryon borgei Lemmermann	7184	0.32
MEL - 0102		11-Aug-16	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0102		11-Aug-16	Dinobryon bavaricum Imhof	800	1.59
MEL - 0102		11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	1.30
MEL - 0102		11-Aug-16	Dinobryon sertularia Ehrenberg	79024	17.88
MEL - 0102		11-Aug-16	Dinobryon sertularia Ehrenberg	1400	4.75
MEL - 0102		11-Aug-16	Dinobryon sociale Ehrenberg	143680	32.50
MEL - 0102		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	35920	0.99
MEL - 0102		11-Aug-16	Uroglena volvox Ehrenberg	129312	14.63
MEL - 0102		11-Aug-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0102		11-Aug-16	Chrysochromulina laurentiana Kling	208336	87.75
MEL - 0102		11-Aug-16	Stichogloea spp.	35920	1.81
MEL - 0102		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.27
MEL - 0102		11-Aug-16	Pteridomonas sp.	7184	1.71
MEL - 0102		11-Aug-16	Cyclotella stelligera Cleve and Grunow	2400	4.36
MEL - 0102		11-Aug-16	Rhizosolenia eriense H.L. Smith	21552	1.68
MEL - 0102		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	4000	3.43
MEL - 0102		11-Aug-16	Synedra acus Kutzing	3600	0.41
MEL - 0102		11-Aug-16	Asterionella formosa Hassall	800	0.08
MEL - 0102		11-Aug-16	Cyclotella michiganiana Skvortzow	107760	2.64
MEL - 0102		11-Aug-16	Rhodomonas minuta Skuja	150864	18.96
MEL - 0102		11-Aug-16	Cryptomonas erosa Ehrenberg	3800	4.51
MEL - 0102		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1000	0.70
MEL - 0102		11-Aug-16	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0102		11-Aug-16	Katablepharis ovalis Skuja	7184	0.37
MEL - 0102		11-Aug-16	Gymnodinium helveticum Penard	200	4.71
MEL - 0102		11-Aug-16	Gymnodinium sp.	7184	2.72
MEL - 0102		11-Aug-16	Gymnodinium sp.	1600	14.72
MEL - 0102		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	2400	6.39
MEL - 0102		10-Sep-16	Pyramidomonas tetrarhynchus Schmarda	200	0.10

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102		10-Sep-16	Chlamydomonas spp.	14368	0.41
MEL - 0102		10-Sep-16	Sphaerocystis schroeteri Chodat	7184	0.09
MEL - 0102		10-Sep-16	Pediastrum duplex Meyen	3200	0.32
MEL - 0102		10-Sep-16	Oocystis lacustris Chodat	14368	0.41
MEL - 0102		10-Sep-16	Elakatothrix gelatinosa Willen	7184	0.14
MEL - 0102		10-Sep-16	Planctonema lauterbornii Schmidle	21552	2.71
MEL - 0102		10-Sep-16	Cosmarium sp.	200	0.20
MEL - 0102		10-Sep-16	Staurodesmus paradoxum Meyen	200	1.01
MEL - 0102		10-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0102		10-Sep-16	Mougeotia sp.	400	0.52
MEL - 0102		10-Sep-16	Botryococcus braunii Kutzing	200	0.35
MEL - 0102		10-Sep-16	Ankistrodesmus spiralis Lemmermann	7184	0.55
MEL - 0102		10-Sep-16	Small chrysophyceae	323280	4.56
MEL - 0102		10-Sep-16	Large chrysophyceae	43104	7.74
MEL - 0102		10-Sep-16	Chrysochromulina parva Lackey	625008	40.88
MEL - 0102		10-Sep-16	Chrysococcus sp.	423856	27.72
MEL - 0102		10-Sep-16	Chrysostephanospaera globulifera Scherffel	21552	11.28
MEL - 0102		10-Sep-16	Kephyrion boreale Skuja	7184	0.81
MEL - 0102		10-Sep-16	Kephyrion sp.	71840	0.74
MEL - 0102		10-Sep-16	Spiniferomonas sirrata**********	7184	0.81
MEL - 0102		10-Sep-16	Dinobryon borgei Lemmermann	7184	0.33
MEL - 0102		10-Sep-16	Dinobryon bavaricum Imhof	43104	9.75
MEL - 0102		10-Sep-16	Dinobryon bavaricum Imhof	800	1.59
MEL - 0102		10-Sep-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	5.71
MEL - 0102		10-Sep-16	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0102		10-Sep-16	Dinobryon sertularia Ehrenberg	200	1.02
MEL - 0102		10-Sep-16	Dinobryon sociale Ehrenberg	86208	19.50
MEL - 0102		10-Sep-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0102		10-Sep-16	Chrysolkos skuja (Nauwerck) Willen	57472	1.02
MEL - 0102		10-Sep-16	Uroglena volvox Ehrenberg	201152	22.75
MEL - 0102		10-Sep-16	Chrysochromulina laurentiana Kling	416672	238.42
MEL - 0102		10-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	71840	1.72
MEL - 0102		10-Sep-16	Pteridomonas sp.	7184	1.71

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102		10-Sep-16	Cyclotella stelligera Cleve and Grunow	2800	5.09
MEL - 0102		10-Sep-16	Rhizosolenia eriense H.L. Smith	100576	6.40
MEL - 0102		10-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	1000	0.83
MEL - 0102		10-Sep-16	Synedra acus Kutzing	20400	2.14
MEL - 0102		10-Sep-16	Asterionella formosa Hassall	8200	0.86
MEL - 0102		10-Sep-16	Cyclotella michiganiana Skvortzow	28736	0.55
MEL - 0102		10-Sep-16	Rhodomonas minuta Skuja	122128	18.42
MEL - 0102		10-Sep-16	Cryptomonas erosa Ehrenberg	8200	13.30
MEL - 0102		10-Sep-16	Katablepharis ovalis Skuja	43104	1.97
MEL - 0102		10-Sep-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0102		10-Sep-16	Gymnodinium sp.	1000	11.01
MEL - 0102		10-Sep-16	Peridinium willei Huitfeldt-Kaas	400	13.40
MEL - 0102		10-Sep-16	Peridinium pusillum (Penard) Lemmermann	3400	7.43
MEL - 0102		10-Sep-16	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0102	REP6	10-Sep-16	Aphanocapsa delicatissima W. and G.S. West	200	0.42
MEL - 0102	REP6	10-Sep-16	Anabaena solitaria Klebs	200	0.05
MEL - 0102	REP6	10-Sep-16	Chlamydomonas spp.	7184	0.14
MEL - 0102	REP6	10-Sep-16	Sphaerocystis schroeteri Chodat	7184	0.07
MEL - 0102	REP6	10-Sep-16	Oocystis lacustris Chodat	7184	0.17
MEL - 0102	REP6	10-Sep-16	Crucigenia quadrata Morr.	28736	0.32
MEL - 0102	REP6	10-Sep-16	Elakatothrix gelatinosa Willen	28736	0.54
MEL - 0102	REP6	10-Sep-16	Planctonema lauterbornii Schmidle	50288	6.95
MEL - 0102	REP6	10-Sep-16	Cosmarium sp.	200	0.28
MEL - 0102	REP6	10-Sep-16	Staurodesmus extensus (Andersson) Teiling	600	0.23
MEL - 0102	REP6	10-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0102	REP6	10-Sep-16	Botryococcus braunii Kutzing	200	0.10
MEL - 0102	REP6	10-Sep-16	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL - 0102	REP6	10-Sep-16	Small chrysophyceae	323280	4.56
MEL - 0102	REP6	10-Sep-16	Large chrysophyceae	28736	5.16
MEL - 0102	REP6	10-Sep-16	Chrysochromulina parva Lackey	438224	28.66
MEL - 0102	REP6	10-Sep-16	Chrysococcus sp.	510064	33.36
MEL - 0102	REP6	10-Sep-16	Chrysostephanospaera globulifera Scherffel	14368	5.30
MEL - 0102	REP6	10-Sep-16	Kephyrion boreale Skuja	7184	0.85

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0102	REP6	10-Sep-16	Kephyrion sp.	43104	0.61
MEL - 0102	REP6	10-Sep-16	Spiniferomonas sirrata**********	43104	4.88
MEL - 0102	REP6	10-Sep-16	Mallomonas crassisquama (Asmund) Fott	400	0.41
MEL - 0102	REP6	10-Sep-16	Dinobryon borgei Lemmermann	14368	0.66
MEL - 0102	REP6	10-Sep-16	Dinobryon bavaricum Imhof	35920	8.13
MEL - 0102	REP6	10-Sep-16	Dinobryon bavaricum Imhof	1200	2.39
MEL - 0102	REP6	10-Sep-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.86
MEL - 0102	REP6	10-Sep-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0102	REP6	10-Sep-16	Dinobryon sertularia Ehrenberg	200	0.25
MEL - 0102	REP6	10-Sep-16	Dinobryon sertularia Ehrenberg	200	1.02
MEL - 0102	REP6	10-Sep-16	Dinobryon sociale Ehrenberg	57472	13.00
MEL - 0102	REP6	10-Sep-16	Chrysolkos skuja (Nauwerck) Willen	50288	0.89
MEL - 0102	REP6	10-Sep-16	Uroglena volvox Ehrenberg	502880	56.88
MEL - 0102	REP6	10-Sep-16	Chrysochromulina laurentiana Kling	387936	221.98
MEL - 0102	REP6	10-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	93392	2.24
MEL - 0102	REP6	10-Sep-16	Cyclotella stelligera Cleve and Grunow	3200	5.03
MEL - 0102	REP6	10-Sep-16	Rhizosolenia eriense H.L. Smith	79024	6.70
MEL - 0102	REP6	10-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	6000	4.92
MEL - 0102	REP6	10-Sep-16	Fragilaria crotonensis Kitton	2000	0.58
MEL - 0102	REP6	10-Sep-16	Synedra acus Kutzing	22000	2.10
MEL - 0102	REP6	10-Sep-16	Asterionella formosa Hassall	6200	0.65
MEL - 0102	REP6	10-Sep-16	Cyclotella michiganiana Skvortzow	64656	1.23
MEL - 0102	REP6	10-Sep-16	Rhodomonas minuta Skuja	93392	11.74
MEL - 0102	REP6	10-Sep-16	Cryptomonas erosa Ehrenberg	8800	14.45
MEL - 0102	REP6	10-Sep-16	Cryptomonas rostratiformis Skuja	1000	2.33
MEL - 0102	REP6	10-Sep-16	Katablepharis ovalis Skuja	50288	2.59
MEL - 0102	REP6	10-Sep-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0102	REP6	10-Sep-16	Gymnodinium sp.	7184	2.65
MEL - 0102	REP6	10-Sep-16	Gymnodinium sp.	1400	19.59
MEL - 0102	REP6	10-Sep-16	Peridinium pusillum (Penard) Lemmermann	1200	2.57
MEL - 0102	REP6	10-Sep-16	Peridinium aciculiferum Lemmermann	1400	12.67
MEL - 0103		21-Jul-16	Sphaerocystis schroeteri Chodat	35920	0.46
MEL - 0103		21-Jul-16	Scenedesmus denticulatus Lagerhiem	28736	0.98

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103		21-Jul-16	Elakatothrix gelatinosa Willen	28736	0.50
MEL - 0103		21-Jul-16	Planctonema lauterbornii Schmidle	50288	6.32
MEL - 0103		21-Jul-16	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL - 0103		21-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0103		21-Jul-16	Botryococcus braunii Kutzing	200	0.18
MEL - 0103		21-Jul-16	Euglena acus Ehrenberg	200	1.85
MEL - 0103		21-Jul-16	Small chrysophyceae	632192	8.91
MEL - 0103		21-Jul-16	Large chrysophyceae	43104	7.74
MEL - 0103		21-Jul-16	Chrysochromulina parva Lackey	352016	23.02
MEL - 0103		21-Jul-16	Chrysococcus sp.	718400	46.98
MEL - 0103		21-Jul-16	Chrysostephanospaera globulifera Scherffel	35920	18.81
MEL - 0103		21-Jul-16	Kephyrion sp.	79024	1.11
MEL - 0103		21-Jul-16	Spiniferomonas sirrata**********	28736	2.64
MEL - 0103		21-Jul-16	Mallomonas crassisquama (Asmund) Fott	400	0.41
MEL - 0103		21-Jul-16	Dinobryon borgei Lemmermann	71840	3.69
MEL - 0103		21-Jul-16	Dinobryon bavaricum Imhof	186784	42.25
MEL - 0103		21-Jul-16	Dinobryon bavaricum Imhof	5600	6.86
MEL - 0103		21-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	28736	10.76
MEL - 0103		21-Jul-16	Dinobryon sertularia Ehrenberg	107760	24.38
MEL - 0103		21-Jul-16	Dinobryon sertularia Ehrenberg	2200	4.38
MEL - 0103		21-Jul-16	Epiphyxis sp.	64656	4.77
MEL - 0103		21-Jul-16	Chrysolkos skuja (Nauwerck) Willen	93392	1.82
MEL - 0103		21-Jul-16	Uroglena volvox Ehrenberg	510064	57.69
MEL - 0103		21-Jul-16	Chrysochromulina laurentiana Kling	86208	37.49
MEL - 0103		21-Jul-16	Stichogloea spp.	57472	2.89
MEL - 0103		21-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.00
MEL - 0103		21-Jul-16	Pteridomonas sp.	14368	3.19
MEL - 0103		21-Jul-16	Cyclotella stelligera Cleve and Grunow	2000	3.14
MEL - 0103		21-Jul-16	Cyclotella pseudostelligera	14368	5.12
MEL - 0103		21-Jul-16	Rhizosolenia eriense H.L. Smith	876448	68.19
MEL - 0103		21-Jul-16	Synedra acus Kutzing	24000	3.04
MEL - 0103		21-Jul-16	Synedra ulna (Nitzsch) Ehrenberg	1000	2.07
MEL - 0103		21-Jul-16	Asterionella formosa Hassall	4000	0.42

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103		21-Jul-16	Cyclotella michiganiana Skvortzow	71840	1.76
MEL - 0103		21-Jul-16	Rhodomonas minuta Skuja	71840	6.02
MEL - 0103		21-Jul-16	Cryptomonas erosa Ehrenberg	2000	3.16
MEL - 0103		21-Jul-16	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0103		21-Jul-16	Cryptomonas reflexa (Marsson) Skuja	1000	0.68
MEL - 0103		21-Jul-16	Cryptomonas rostratiformis Skuja	200	0.41
MEL - 0103		21-Jul-16	Katablepharis ovalis Skuja	21552	1.11
MEL - 0103		21-Jul-16	Gymnodinium helveticum Penard	600	14.42
MEL - 0103		21-Jul-16	Gymnodinium sp.	1600	16.31
MEL - 0103		21-Jul-16	Peridinium willei Huitfeldt-Kaas	600	21.65
MEL - 0103		21-Jul-16	Peridinium pusillum (Penard) Lemmermann	7600	23.21
MEL - 0103		11-Aug-16	Snowella sp	200	0.10
MEL - 0103		11-Aug-16	Anabaena solitaria Klebs	2800	0.55
MEL - 0103		11-Aug-16	Carteria spp.	800	1.81
MEL - 0103		11-Aug-16	Sphaerocystis schroeteri Chodat	57472	1.08
MEL - 0103		11-Aug-16	Oocystis lacustris Chodat	57472	2.89
MEL - 0103		11-Aug-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	21552	1.22
MEL - 0103		11-Aug-16	Elakatothrix gelatinosa Willen	28736	0.45
MEL - 0103		11-Aug-16	Planctonema lauterbornii Schmidle	122128	15.35
MEL - 0103		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0103		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL - 0103		11-Aug-16	Botryococcus braunii Kutzing	400	0.57
MEL - 0103		11-Aug-16	Oocystis gigas Archer	400	0.97
MEL - 0103		11-Aug-16	Small chrysophyceae	524432	5.40
MEL - 0103		11-Aug-16	Large chrysophyceae	7184	1.29
MEL - 0103		11-Aug-16	Chrysochromulina parva Lackey	222704	14.56
MEL - 0103		11-Aug-16	Chrysococcus sp.	567536	37.12
MEL - 0103		11-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	3.65
MEL - 0103		11-Aug-16	Kephyrion boreale Skuja	28736	3.59
MEL - 0103		11-Aug-16	Kephyrion sp.	57472	0.74
MEL - 0103		11-Aug-16	Spiniferomonas sirrata**********	57472	6.50
MEL - 0103		11-Aug-16	Mallomonas crassisquama (Asmund) Fott	2100	2.20
MEL - 0103		11-Aug-16	Dinobryon bavaricum Imhof	14368	3.25

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103		11-Aug-16	Dinobryon bavaricum Imhof	1800	3.58
MEL - 0103		11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	1.30
MEL - 0103		11-Aug-16	Dinobryon sertularia Ehrenberg	57472	13.00
MEL - 0103		11-Aug-16	Dinobryon sertularia Ehrenberg	400	0.80
MEL - 0103		11-Aug-16	Dinobryon sociale Ehrenberg	93392	21.13
MEL - 0103		11-Aug-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0103		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	50288	1.51
MEL - 0103		11-Aug-16	Uroglena volvox Ehrenberg	43104	4.88
MEL - 0103		11-Aug-16	Chrysochromulina laurentiana Kling	229888	99.98
MEL - 0103		11-Aug-16	Stichogloea spp.	14368	0.72
MEL - 0103		11-Aug-16	Pteridomonas sp.	7184	1.71
MEL - 0103		11-Aug-16	Cyclotella stelligera Cleve and Grunow	1600	2.51
MEL - 0103		11-Aug-16	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL - 0103		11-Aug-16	Synedra acus Kutzing	5400	0.62
MEL - 0103		11-Aug-16	Cyclotella michiganiana Skvortzow	71840	1.76
MEL - 0103		11-Aug-16	Rhodomonas minuta Skuja	143680	18.06
MEL - 0103		11-Aug-16	Cryptomonas erosa Ehrenberg	4200	5.00
MEL - 0103		11-Aug-16	Cryptomonas ovata Ehrenberg	200	0.65
MEL - 0103		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	800	0.53
MEL - 0103		11-Aug-16	Cryptomonas rostratiformis Skuja	1600	3.28
MEL - 0103		11-Aug-16	Gymnodinium helveticum Penard	600	14.70
MEL - 0103		11-Aug-16	Gymnodinium sp.	7184	2.41
MEL - 0103		11-Aug-16	Gymnodinium sp.	1800	25.45
MEL - 0103		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	3400	9.38
MEL - 0103		10-Sep-16	Snowella sp	400	0.40
MEL - 0103		10-Sep-16	Pyramidomonas tetrarhynchus Schmarda	200	0.10
MEL - 0103		10-Sep-16	Chlamydomonas spp.	7184	0.17
MEL - 0103		10-Sep-16	Sphaerocystis schroeteri Chodat	14368	0.20
MEL - 0103		10-Sep-16	Elakatothrix gelatinosa Willen	7184	0.15
MEL - 0103		10-Sep-16	Planctonema lauterbornii Schmidle	28736	3.97
MEL - 0103		10-Sep-16	Staurodesmus extensus (Andersson) Teiling	400	0.14
MEL - 0103		10-Sep-16	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	400	0.37
MEL - 0103		10-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103		10-Sep-16	Botryococcus braunii Kutzing	1000	0.90
MEL - 0103		10-Sep-16	Ankistrodesmus spiralis Lemmermann	7184	0.46
MEL - 0103		10-Sep-16	Trachelomonas volvocina Ehrenberg	200	0.41
MEL - 0103		10-Sep-16	Small chrysophyceae	373568	5.27
MEL - 0103		10-Sep-16	Large chrysophyceae	35920	6.45
MEL - 0103		10-Sep-16	Chrysochromulina parva Lackey	387936	25.37
MEL - 0103		10-Sep-16	Kephyrion boreale Skuja	14368	1.32
MEL - 0103		10-Sep-16	Kephyrion sp.	50288	0.46
MEL - 0103		10-Sep-16	Spiniferomonas sirrata**********	28736	0.69
MEL - 0103		10-Sep-16	Mallomonas crassisquama (Asmund) Fott	800	0.84
MEL - 0103		10-Sep-16	Synura sphagnicola Korschikow	200	3.10
MEL - 0103		10-Sep-16	Dinobryon bavaricum Imhof	100576	22.75
MEL - 0103		10-Sep-16	Dinobryon bavaricum Imhof	2600	5.18
MEL - 0103		10-Sep-16	Dinobryon sertularia Ehrenberg	200	0.25
MEL - 0103		10-Sep-16	Dinobryon sociale Ehrenberg	28736	6.50
MEL - 0103		10-Sep-16	Epiphyxis sp.	7184	0.52
MEL - 0103		10-Sep-16	Chrysolkos skuja (Nauwerck) Willen	43104	1.14
MEL - 0103		10-Sep-16	Uroglena volvox Ehrenberg	208336	23.56
MEL - 0103		10-Sep-16	Chrysochromulina laurentiana Kling	502880	263.31
MEL - 0103		10-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.74
MEL - 0103		10-Sep-16	Cyclotella stelligera Cleve and Grunow	1800	3.56
MEL - 0103		10-Sep-16	Cyclotella ocellata Pant.	14368	1.61
MEL - 0103		10-Sep-16	Rhizosolenia eriense H.L. Smith	79024	6.70
MEL - 0103		10-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.62
MEL - 0103		10-Sep-16	Synedra acus Kutzing	23400	2.23
MEL - 0103		10-Sep-16	Asterionella formosa Hassall	24600	2.58
MEL - 0103		10-Sep-16	Cyclotella michiganiana Skvortzow	79024	1.94
MEL - 0103		10-Sep-16	Rhodomonas minuta Skuja	100576	12.64
MEL - 0103		10-Sep-16	Cryptomonas erosa Ehrenberg	3800	6.01
MEL - 0103		10-Sep-16	Cryptomonas rostratiformis Skuja	600	1.35
MEL - 0103		10-Sep-16	Katablepharis ovalis Skuja	50288	2.36
MEL - 0103		10-Sep-16	Gymnodinium helveticum Penard	600	14.70
MEL - 0103		10-Sep-16	Gymnodinium sp.	1200	12.37

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0103		10-Sep-16	Peridinium pusillum (Penard) Lemmermann	2200	4.72
MEL - 0103		10-Sep-16	Peridinium aciculiferum Lemmermann	800	7.24
MEL - 0104		22-Jul-16	Chlamydomonas spp.	7184	0.07
MEL - 0104		22-Jul-16	Sphaerocystis schroeteri Chodat	7184	0.22
MEL - 0104		22-Jul-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0104		22-Jul-16	Botryococcus braunii Kutzing	600	0.54
MEL - 0104		22-Jul-16	Ankistrodesmus spiralis Lemmermann	7184	0.49
MEL - 0104		22-Jul-16	Small chrysophyceae	431040	6.08
MEL - 0104		22-Jul-16	Large chrysophyceae	28736	5.16
MEL - 0104		22-Jul-16	Chrysochromulina parva Lackey	445408	29.13
MEL - 0104		22-Jul-16	Chrysococcus sp.	984208	53.54
MEL - 0104		22-Jul-16	Chrysostephanospaera globulifera Scherffel	14368	7.52
MEL - 0104		22-Jul-16	Kephyrion sp.	79024	1.36
MEL - 0104		22-Jul-16	Spiniferomonas sirrata**********	50288	4.63
MEL - 0104		22-Jul-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0104		22-Jul-16	Synura sphagnicola Korschikow	7184	2.89
MEL - 0104		22-Jul-16	Dinobryon borgei Lemmermann	79024	4.05
MEL - 0104		22-Jul-16	Dinobryon bavaricum Imhof	150864	34.13
MEL - 0104		22-Jul-16	Dinobryon bavaricum Imhof	4400	5.39
MEL - 0104		22-Jul-16	Dinobryon sertularia Ehrenberg	114944	26.00
MEL - 0104		22-Jul-16	Dinobryon sertularia Ehrenberg	2200	5.56
MEL - 0104		22-Jul-16	Epiphyxis sp.	7184	0.55
MEL - 0104		22-Jul-16	Chrysolkos skuja (Nauwerck) Willen	28736	0.52
MEL - 0104		22-Jul-16	Uroglena volvox Ehrenberg	747136	84.50
MEL - 0104		22-Jul-16	Chrysochromulina laurentiana Kling	143680	62.49
MEL - 0104		22-Jul-16	Stichogloea spp.	7184	0.36
MEL - 0104		22-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.36
MEL - 0104		22-Jul-16	Dinobryon attenatum Hill	14368	2.44
MEL - 0104		22-Jul-16	Cyclotella stelligera Cleve and Grunow	2000	3.64
MEL - 0104		22-Jul-16	Cyclotella pseudostelligera	14368	5.64
MEL - 0104		22-Jul-16	Rhizosolenia eriense H.L. Smith	847712	65.95
MEL - 0104		22-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	3600	3.09
MEL - 0104		22-Jul-16	Tabellaria flocculsa (Roth) Kutzing	2000	2.60

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104		22-Jul-16	Synedra acus Kutzing	19800	2.45
MEL - 0104		22-Jul-16	Synedra ulna (Nitzsch) Ehrenberg	4600	10.40
MEL - 0104		22-Jul-16	Asterionella formosa Hassall	13800	1.44
MEL - 0104		22-Jul-16	Cyclotella michiganiana Skvortzow	57472	1.41
MEL - 0104		22-Jul-16	Cyclotella bodanica Eulenst.	600	4.23
MEL - 0104		22-Jul-16	Rhodomonas minuta Skuja	14368	1.20
MEL - 0104		22-Jul-16	Cryptomonas erosa Ehrenberg	5800	9.36
MEL - 0104		22-Jul-16	Cryptomonas reflexa (Marsson) Skuja	1600	1.23
MEL - 0104		22-Jul-16	Cryptomonas rostratiformis Skuja	2000	4.24
MEL - 0104		22-Jul-16	Katablepharis ovalis Skuja	35920	2.08
MEL - 0104		22-Jul-16	Gymnodinium helveticum Penard	200	5.00
MEL - 0104		22-Jul-16	Gymnodinium sp.	1400	21.84
MEL - 0104		22-Jul-16	Peridinium willei Huitfeldt-Kaas	200	7.76
MEL - 0104		22-Jul-16	Peridinium pusillum (Penard) Lemmermann	3600	8.16
MEL - 0104		22-Jul-16	Peridinium aciculiferum Lemmermann	400	3.74
MEL - 0104		11-Aug-16	Snowella sp	400	0.20
MEL - 0104		11-Aug-16	Pyramidomonas tetrarhynchus Schmarda	200	0.11
MEL - 0104		11-Aug-16	Chlamydomonas spp.	7184	0.09
MEL - 0104		11-Aug-16	Sphaerocystis schroeteri Chodat	14368	0.45
MEL - 0104		11-Aug-16	Oocystis lacustris Chodat	28736	1.45
MEL - 0104		11-Aug-16	Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	200	0.54
MEL - 0104		11-Aug-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL - 0104		11-Aug-16	Elakatothrix gelatinosa Willen	57472	0.90
MEL - 0104		11-Aug-16	Planctonema lauterbornii Schmidle	122128	15.35
MEL - 0104		11-Aug-16	Cosmarium sp.	800	3.77
MEL - 0104		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	1000	0.36
MEL - 0104		11-Aug-16	Botryococcus braunii Kutzing	200	0.29
MEL - 0104		11-Aug-16	Small chrysophyceae	301728	3.86
MEL - 0104		11-Aug-16	Large chrysophyceae	43104	7.74
MEL - 0104		11-Aug-16	Chrysochromulina parva Lackey	323280	21.14
MEL - 0104		11-Aug-16	Chrysococcus sp.	581904	38.06
MEL - 0104		11-Aug-16	Kephyrion boreale Skuja	43104	5.12
MEL - 0104		11-Aug-16	Kephyrion sp.	129312	2.43

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104		11-Aug-16	Spiniferomonas sirrata**********	79024	8.94
MEL - 0104		11-Aug-16	Dinobryon borgei Lemmermann	50288	2.62
MEL - 0104		11-Aug-16	Dinobryon bavaricum Imhof	57472	13.00
MEL - 0104		11-Aug-16	Dinobryon bavaricum Imhof	1400	2.79
MEL - 0104		11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	3.11
MEL - 0104		11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	2.03
MEL - 0104		11-Aug-16	Dinobryon sertularia Ehrenberg	64656	14.63
MEL - 0104		11-Aug-16	Dinobryon sertularia Ehrenberg	200	0.25
MEL - 0104		11-Aug-16	Dinobryon sertularia Ehrenberg	600	2.03
MEL - 0104		11-Aug-16	Dinobryon sociale Ehrenberg	179600	40.63
MEL - 0104		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	86208	1.65
MEL - 0104		11-Aug-16	Uroglena volvox Ehrenberg	186784	21.13
MEL - 0104		11-Aug-16	Chrysochromulina laurentiana Kling	215520	99.83
MEL - 0104		11-Aug-16	Stichogloea spp.	28736	1.45
MEL - 0104		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.47
MEL - 0104		11-Aug-16	Pteridomonas sp.	28736	7.07
MEL - 0104		11-Aug-16	Cyclotella stelligera Cleve and Grunow	4000	8.59
MEL - 0104		11-Aug-16	Cyclotella ocellata Pant.	50288	3.69
MEL - 0104		11-Aug-16	Rhizosolenia eriense H.L. Smith	14368	1.22
MEL - 0104		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	12000	10.08
MEL - 0104		11-Aug-16	Synedra acus Kutzing	5000	0.51
MEL - 0104		11-Aug-16	Cyclotella michiganiana Skvortzow	50288	1.09
MEL - 0104		11-Aug-16	Cyclotella bodanica Eulenst.	400	2.50
MEL - 0104		11-Aug-16	Rhodomonas minuta Skuja	193968	26.81
MEL - 0104		11-Aug-16	Cryptomonas erosa Ehrenberg	5800	6.59
MEL - 0104		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1000	0.70
MEL - 0104		11-Aug-16	Cryptomonas rostratiformis Skuja	800	1.70
MEL - 0104		11-Aug-16	Gymnodinium helveticum Penard	200	4.83
MEL - 0104		11-Aug-16	Gymnodinium sp.	7184	2.38
MEL - 0104		11-Aug-16	Gymnodinium sp.	2200	37.75
MEL - 0104		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	5600	12.93
MEL - 0104	RECOUNT	11-Aug-16	Snowella sp	400	0.20
MEL - 0104	RECOUNT	11-Aug-16	Chlamydomonas spp.	14368	0.24

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104	RECOUNT	11-Aug-16	Sphaerocystis schroeteri Chodat	43104	1.34
MEL - 0104	RECOUNT	11-Aug-16	Oocystis lacustris Chodat	21552	1.08
MEL - 0104	RECOUNT	11-Aug-16	Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	400	1.07
MEL - 0104	RECOUNT	11-Aug-16	Elakatothrix gelatinosa Willen	86208	1.35
MEL - 0104	RECOUNT	11-Aug-16	Planctonema lauterbornii Schmidle	136496	17.16
MEL - 0104	RECOUNT	11-Aug-16	Cosmarium sp.	600	2.83
MEL - 0104	RECOUNT	11-Aug-16	Staurodesmus extensus (Andersson) Teiling	600	0.22
MEL - 0104	RECOUNT	11-Aug-16	Small chrysophyceae	783056	10.02
MEL - 0104	RECOUNT	11-Aug-16	Large chrysophyceae	28736	5.16
MEL - 0104	RECOUNT	11-Aug-16	Chrysochromulina parva Lackey	366384	23.96
MEL - 0104	RECOUNT	11-Aug-16	Chrysococcus sp.	574720	37.59
MEL - 0104	RECOUNT	11-Aug-16	Kephyrion boreale Skuja	43104	5.12
MEL - 0104	RECOUNT	11-Aug-16	Kephyrion sp.	136496	2.57
MEL - 0104	RECOUNT	11-Aug-16	Spiniferomonas sirrata**********	86208	9.75
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon borgei Lemmermann	43104	2.25
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon bavaricum Imhof	71840	16.25
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon bavaricum Imhof	1800	3.58
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	6.23
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	600	3.05
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon sertularia Ehrenberg	50288	11.38
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon sertularia Ehrenberg	400	1.36
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon sociale Ehrenberg	172416	39.00
MEL - 0104	RECOUNT	11-Aug-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0104	RECOUNT	11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	71840	1.37
MEL - 0104	RECOUNT	11-Aug-16	Uroglena volvox Ehrenberg	222704	25.19
MEL - 0104	RECOUNT	11-Aug-16	Chrysochromulina laurentiana Kling	244256	113.14
MEL - 0104	RECOUNT	11-Aug-16	Stichogloea spp.	28736	1.45
MEL - 0104	RECOUNT	11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.74
MEL - 0104	RECOUNT	11-Aug-16	Pteridomonas sp.	14368	3.54
MEL - 0104	RECOUNT	11-Aug-16	Cyclotella stelligera Cleve and Grunow	3200	6.87
MEL - 0104	RECOUNT	11-Aug-16	Cyclotella ocellata Pant.	64656	4.74
MEL - 0104	RECOUNT	11-Aug-16	Rhizosolenia eriense H.L. Smith	28736	2.44

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104	RECOUNT	11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	11600	9.77
MEL - 0104	RECOUNT	11-Aug-16	Synedra acus Kutzing	5200	0.53
MEL - 0104	RECOUNT	11-Aug-16	Asterionella formosa Hassall	2000	0.21
MEL - 0104	RECOUNT	11-Aug-16	Cyclotella michiganiana Skvortzow	28736	0.62
MEL - 0104	RECOUNT	11-Aug-16	Cyclotella bodanica Eulenst.	1200	7.51
MEL - 0104	RECOUNT	11-Aug-16	Rhodomonas minuta Skuja	172416	23.83
MEL - 0104	RECOUNT	11-Aug-16	Cryptomonas erosa Ehrenberg	5000	5.68
MEL - 0104	RECOUNT	11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	800	0.56
MEL - 0104	RECOUNT	11-Aug-16	Cryptomonas rostratiformis Skuja	800	1.70
MEL - 0104	RECOUNT	11-Aug-16	Katablepharis ovalis Skuja	14368	0.74
MEL - 0104	RECOUNT	11-Aug-16	Gymnodinium helveticum Penard	200	4.52
MEL - 0104	RECOUNT	11-Aug-16	Gymnodinium sp.	1800	30.88
MEL - 0104	RECOUNT	11-Aug-16	Peridinium pusillum (Penard) Lemmermann	6200	14.32
MEL - 0104		10-Sep-16	Anabaena flos-aquae (Lyngb.) Breb. & Bornet	200	0.51
MEL - 0104		10-Sep-16	Carteria spp.	200	0.40
MEL - 0104		10-Sep-16	Sphaerocystis schroeteri Chodat	14368	0.20
MEL - 0104		10-Sep-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL - 0104		10-Sep-16	Crucigenia quadrata Morr.	79024	0.89
MEL - 0104		10-Sep-16	Elakatothrix gelatinosa Willen	43104	0.81
MEL - 0104		10-Sep-16	Planctonema lauterbornii Schmidle	43104	5.96
MEL - 0104		10-Sep-16	Cosmarium sp.	600	0.84
MEL - 0104		10-Sep-16	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL - 0104		10-Sep-16	Staurodesmus paradoxum Meyen	200	0.87
MEL - 0104		10-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0104		10-Sep-16	Botryococcus braunii Kutzing	600	0.54
MEL - 0104		10-Sep-16	Small chrysophyceae	237072	3.03
MEL - 0104		10-Sep-16	Large chrysophyceae	28736	10.97
MEL - 0104		10-Sep-16	Chrysochromulina parva Lackey	352016	23.02
MEL - 0104		10-Sep-16	Chrysococcus sp.	538800	35.24
MEL - 0104		10-Sep-16	Chrysostephanospaera globulifera Scherffel	7184	3.76
MEL - 0104		10-Sep-16	Kephyrion boreale Skuja	7184	0.66
MEL - 0104		10-Sep-16	Kephyrion sp.	50288	0.95
MEL - 0104		10-Sep-16	Mallomonas crassisquama (Asmund) Fott	200	0.21

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0104		10-Sep-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0104		10-Sep-16	Dinobryon bavaricum Imhof	1400	2.79
MEL - 0104		10-Sep-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	21552	8.63
MEL - 0104		10-Sep-16	Dinobryon sertularia Ehrenberg	200	1.02
MEL - 0104		10-Sep-16	Dinobryon sociale Ehrenberg	107760	24.38
MEL - 0104		10-Sep-16	Uroglena volvox Ehrenberg	244256	27.63
MEL - 0104		10-Sep-16	Chrysochromulina laurentiana Kling	452592	236.98
MEL - 0104		10-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	143680	3.65
MEL - 0104		10-Sep-16	Dinobryon attenatum Hill	7184	0.94
MEL - 0104		10-Sep-16	Cyclotella stelligera Cleve and Grunow	2400	5.09
MEL - 0104		10-Sep-16	Rhizosolenia eriense H.L. Smith	71840	6.09
MEL - 0104		10-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	1200	0.93
MEL - 0104		10-Sep-16	Tabellaria flocculsa (Roth) Kutzing	400	0.57
MEL - 0104		10-Sep-16	Synedra acus Kutzing	26000	2.34
MEL - 0104		10-Sep-16	Asterionella formosa Hassall	8000	0.84
MEL - 0104		10-Sep-16	Cyclotella michiganiana Skvortzow	114944	2.82
MEL - 0104		10-Sep-16	Rhodomonas minuta Skuja	122128	15.35
MEL - 0104		10-Sep-16	Cryptomonas erosa Ehrenberg	8000	12.70
MEL - 0104		10-Sep-16	Cryptomonas rostratiformis Skuja	600	1.27
MEL - 0104		10-Sep-16	Katablepharis ovalis Skuja	28736	1.48
MEL - 0104		10-Sep-16	Gymnodinium helveticum Penard	600	14.14
MEL - 0104		10-Sep-16	Gymnodinium sp.	14368	6.09
MEL - 0104		10-Sep-16	Gymnodinium sp.	2600	28.62
MEL - 0104		10-Sep-16	Peridinium willei Huitfeldt-Kaas	200	6.70
MEL - 0104		10-Sep-16	Peridinium pusillum (Penard) Lemmermann	5200	9.75
MEL - 0104		10-Sep-16	Peridinium aciculiferum Lemmermann	600	5.43
MEL - 0105		22-Jul-16	Snowella sp	200	0.30
MEL - 0105		22-Jul-16	Chlamydomonas spp.	7184	0.11
MEL - 0105		22-Jul-16	Sphaerocystis schroeteri Chodat	7184	0.24
MEL - 0105		22-Jul-16	Elakatothrix gelatinosa Willen	7184	0.12
MEL - 0105		22-Jul-16	Planctonema lauterbornii Schmidle	50288	6.32
MEL - 0105		22-Jul-16	Euastrum spp.	800	1.49
MEL - 0105		22-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105		22-Jul-16	Small chrysophyceae	416672	5.88
MEL - 0105		22-Jul-16	Large chrysophyceae	100576	18.06
MEL - 0105		22-Jul-16	Chrysochromulina parva Lackey	481328	31.48
MEL - 0105		22-Jul-16	Chrysococcus sp.	833344	45.33
MEL - 0105		22-Jul-16	Chrysostephanospaera globulifera Scherffel	43104	22.57
MEL - 0105		22-Jul-16	Kephyrion boreale Skuja	7184	0.66
MEL - 0105		22-Jul-16	Kephyrion sp.	122128	1.56
MEL - 0105		22-Jul-16	Spiniferomonas sirrata**********	21552	2.56
MEL - 0105		22-Jul-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0105		22-Jul-16	Synura sphagnicola Korschikow	200	3.70
MEL - 0105		22-Jul-16	Dinobryon borgei Lemmermann	143680	7.04
MEL - 0105		22-Jul-16	Dinobryon bavaricum Imhof	122128	27.63
MEL - 0105		22-Jul-16	Dinobryon bavaricum Imhof	8200	16.33
MEL - 0105		22-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.40
MEL - 0105		22-Jul-16	Dinobryon sertularia Ehrenberg	100576	22.75
MEL - 0105		22-Jul-16	Dinobryon sertularia Ehrenberg	2400	5.04
MEL - 0105		22-Jul-16	Epiphyxis sp.	21552	1.55
MEL - 0105		22-Jul-16	Chrysolkos skuja (Nauwerck) Willen	86208	2.34
MEL - 0105		22-Jul-16	Uroglena volvox Ehrenberg	660928	74.75
MEL - 0105		22-Jul-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.17
MEL - 0105		22-Jul-16	Chrysochromulina laurentiana Kling	79024	34.37
MEL - 0105		22-Jul-16	Stichogloea spp.	71840	3.61
MEL - 0105		22-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	57472	1.42
MEL - 0105		22-Jul-16	Cyclotella stelligera Cleve and Grunow	1600	2.91
MEL - 0105		22-Jul-16	Cyclotella pseudostelligera	21552	7.31
MEL - 0105		22-Jul-16	Rhizosolenia eriense H.L. Smith	1149440	73.10
MEL - 0105		22-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.17
MEL - 0105		22-Jul-16	Tabellaria flocculsa (Roth) Kutzing	4000	5.38
MEL - 0105		22-Jul-16	Synedra acus Kutzing	29800	3.59
MEL - 0105		22-Jul-16	Synedra ulna (Nitzsch) Ehrenberg	5400	11.20
MEL - 0105		22-Jul-16	Asterionella formosa Hassall	11400	1.21
MEL - 0105		22-Jul-16	Eunotia zazumenensis **********	5200	0.16
MEL - 0105		22-Jul-16	Cyclotella michiganiana Skvortzow	71840	1.87

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105		22-Jul-16	Cyclotella bodanica Eulenst.	400	2.34
MEL - 0105		22-Jul-16	Rhodomonas minuta Skuja	86208	7.22
MEL - 0105		22-Jul-16	Cryptomonas erosa Ehrenberg	9400	14.86
MEL - 0105		22-Jul-16	Cryptomonas ovata Ehrenberg	400	1.81
MEL - 0105		22-Jul-16	Cryptomonas reflexa (Marsson) Skuja	2600	1.91
MEL - 0105		22-Jul-16	Cryptomonas rostratiformis Skuja	2400	5.09
MEL - 0105		22-Jul-16	Katablepharis ovalis Skuja	28736	1.48
MEL - 0105		22-Jul-16	Gymnodinium helveticum Penard	200	4.90
MEL - 0105		22-Jul-16	Gymnodinium sp.	1600	24.96
MEL - 0105		22-Jul-16	Peridinium willei Huitfeldt-Kaas	200	4.69
MEL - 0105		22-Jul-16	Peridinium pusillum (Penard) Lemmermann	2400	7.33
MEL - 0105		22-Jul-16	Peridinium aciculiferum Lemmermann	600	5.61
MEL - 0105	REP1	22-Jul-16	Aphanothece sp.	14368	0.76
MEL - 0105	REP1	22-Jul-16	Snowella sp	400	0.60
MEL - 0105	REP1	22-Jul-16	Oocystis lacustris Chodat	43104	0.76
MEL - 0105	REP1	22-Jul-16	Elakatothrix gelatinosa Willen	14368	0.25
MEL - 0105	REP1	22-Jul-16	Planctonema lauterbornii Schmidle	28736	3.61
MEL - 0105	REP1	22-Jul-16	Euastrum spp.	200	0.37
MEL - 0105	REP1	22-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0105	REP1	22-Jul-16	Ankistrodesmus spiralis Lemmermann	14368	0.97
MEL - 0105	REP1	22-Jul-16	Small chrysophyceae	244256	3.44
MEL - 0105	REP1	22-Jul-16	Large chrysophyceae	64656	11.61
MEL - 0105	REP1	22-Jul-16	Chrysochromulina parva Lackey	438224	28.66
MEL - 0105	REP1	22-Jul-16	Chrysococcus sp.	926736	50.41
MEL - 0105	REP1	22-Jul-16	Chrysostephanospaera globulifera Scherffel	50288	26.33
MEL - 0105	REP1	22-Jul-16	Kephyrion boreale Skuja	14368	1.32
MEL - 0105	REP1	22-Jul-16	Kephyrion sp.	79024	1.01
MEL - 0105	REP1	22-Jul-16	Spiniferomonas sirrata**********	28736	3.41
MEL - 0105	REP1	22-Jul-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0105	REP1	22-Jul-16	Mallomonas crassisquama (Asmund) Fott	200	0.22
MEL - 0105	REP1	22-Jul-16	Dinobryon borgei Lemmermann	172416	8.45
MEL - 0105	REP1	22-Jul-16	Dinobryon bavaricum Imhof	79024	17.88
MEL - 0105	REP1	22-Jul-16	Dinobryon bavaricum Imhof	8000	15.93

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105	REP1	22-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	800	2.80
MEL - 0105	REP1	22-Jul-16	Dinobryon sertularia Ehrenberg	100576	22.75
MEL - 0105	REP1	22-Jul-16	Dinobryon sertularia Ehrenberg	1800	3.78
MEL - 0105	REP1	22-Jul-16	Epiphyxis sp.	28736	2.07
MEL - 0105	REP1	22-Jul-16	Chrysolkos skuja (Nauwerck) Willen	107760	2.93
MEL - 0105	REP1	22-Jul-16	Uroglena volvox Ehrenberg	617824	69.88
MEL - 0105	REP1	22-Jul-16	Chrysochromulina laurentiana Kling	71840	31.24
MEL - 0105	REP1	22-Jul-16	Stichogloea spp.	28736	1.45
MEL - 0105	REP1	22-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.71
MEL - 0105	REP1	22-Jul-16	Cyclotella stelligera Cleve and Grunow	2000	3.64
MEL - 0105	REP1	22-Jul-16	Rhizosolenia eriense H.L. Smith	1048864	66.71
MEL - 0105	REP1	22-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	1200	1.03
MEL - 0105	REP1	22-Jul-16	Tabellaria flocculsa (Roth) Kutzing	3200	4.32
MEL - 0105	REP1	22-Jul-16	Synedra acus Kutzing	34200	4.12
MEL - 0105	REP1	22-Jul-16	Synedra ulna (Nitzsch) Ehrenberg	5000	10.37
MEL - 0105	REP1	22-Jul-16	Asterionella formosa Hassall	12800	1.35
MEL - 0105	REP1	22-Jul-16	Eunotia zazumenensis **********	2800	0.09
MEL - 0105	REP1	22-Jul-16	Cyclotella michiganiana Skvortzow	57472	1.49
MEL - 0105	REP1	22-Jul-16	Cyclotella bodanica Eulenst.	200	1.17
MEL - 0105	REP1	22-Jul-16	Rhodomonas minuta Skuja	86208	7.22
MEL - 0105	REP1	22-Jul-16	Cryptomonas erosa Ehrenberg	10200	16.12
MEL - 0105	REP1	22-Jul-16	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0105	REP1	22-Jul-16	Cryptomonas reflexa (Marsson) Skuja	1800	1.32
MEL - 0105	REP1	22-Jul-16	Cryptomonas rostratiformis Skuja	1800	3.82
MEL - 0105	REP1	22-Jul-16	Katablepharis ovalis Skuja	28736	1.48
MEL - 0105	REP1	22-Jul-16	Gymnodinium sp.	1600	24.96
MEL - 0105	REP1	22-Jul-16	Gymnodinium sp.	400	9.80
MEL - 0105	REP1	22-Jul-16	Peridinium willei Huitfeldt-Kaas	600	14.06
MEL - 0105	REP1	22-Jul-16	Peridinium pusillum (Penard) Lemmermann	1600	4.89
MEL - 0105	REP1	22-Jul-16	Peridinium aciculiferum Lemmermann	600	5.61
MEL - 0105		11-Aug-16	Sphaerocystis schroeteri Chodat	21552	0.53
MEL - 0105		11-Aug-16	Oocystis lacustris Chodat	28736	0.70
MEL - 0105		11-Aug-16	Dictyosphaerium simplex Sukja	21552	0.10

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105		11-Aug-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.45
MEL - 0105		11-Aug-16	Elakatothrix gelatinosa Willen	43104	0.75
MEL - 0105		11-Aug-16	Planctonema lauterbornii Schmidle	93392	11.74
MEL - 0105		11-Aug-16	Cosmarium sp.	200	0.32
MEL - 0105		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	400	0.12
MEL - 0105		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0105		11-Aug-16	Botryococcus braunii Kutzing	200	0.10
MEL - 0105		11-Aug-16	Oocystis gigas Archer	400	0.97
MEL - 0105		11-Aug-16	Small chrysophyceae	725584	10.23
MEL - 0105		11-Aug-16	Large chrysophyceae	35920	6.45
MEL - 0105		11-Aug-16	Chrysochromulina parva Lackey	251440	16.44
MEL - 0105		11-Aug-16	Chrysococcus sp.	581904	38.06
MEL - 0105		11-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	3.12
MEL - 0105		11-Aug-16	Kephyrion sp.	71840	1.12
MEL - 0105		11-Aug-16	Spiniferomonas sirrata**********	64656	7.31
MEL - 0105		11-Aug-16	Dinobryon borgei Lemmermann	7184	0.43
MEL - 0105		11-Aug-16	Dinobryon mucronutom Nygaard	7184	0.88
MEL - 0105		11-Aug-16	Dinobryon bavaricum Imhof	28736	6.50
MEL - 0105		11-Aug-16	Dinobryon bavaricum Imhof	1600	3.19
MEL - 0105		11-Aug-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	1.02
MEL - 0105		11-Aug-16	Dinobryon sertularia Ehrenberg	35920	8.13
MEL - 0105		11-Aug-16	Dinobryon sertularia Ehrenberg	400	1.36
MEL - 0105		11-Aug-16	Dinobryon sociale Ehrenberg	143680	32.50
MEL - 0105		11-Aug-16	Dinobryon sociale Ehrenberg	200	0.40
MEL - 0105		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	79024	2.54
MEL - 0105		11-Aug-16	Uroglena volvox Ehrenberg	129312	14.63
MEL - 0105		11-Aug-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0105		11-Aug-16	Chrysochromulina laurentiana Kling	143680	62.49
MEL - 0105		11-Aug-16	Stichogloea spp.	50288	2.53
MEL - 0105		11-Aug-16	Bicoeca lacustris Clark	7184	0.63
MEL - 0105		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.63
MEL - 0105		11-Aug-16	Pteridomonas sp.	28736	5.95
MEL - 0105		11-Aug-16	Cyclotella stelligera Cleve and Grunow	3000	4.93

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105		11-Aug-16	Rhizosolenia eriense H.L. Smith	21552	1.37
MEL - 0105		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	4200	3.25
MEL - 0105		11-Aug-16	Synedra acus Kutzing	4800	0.50
MEL - 0105		11-Aug-16	Asterionella formosa Hassall	4000	0.42
MEL - 0105		11-Aug-16	Cyclotella michiganiana Skvortzow	93392	2.29
MEL - 0105		11-Aug-16	Rhodomonas minuta Skuja	79024	9.93
MEL - 0105		11-Aug-16	Cryptomonas erosa Ehrenberg	5200	6.27
MEL - 0105		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	600	0.38
MEL - 0105		11-Aug-16	Cryptomonas rostratiformis Skuja	800	1.53
MEL - 0105		11-Aug-16	Gymnodinium helveticum Penard	200	4.90
MEL - 0105		11-Aug-16	Gymnodinium sp.	2400	33.93
MEL - 0105		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	4800	11.50
MEL - 0105		10-Sep-16	Pyramidomonas tetrarhynchus Schmarda	200	0.11
MEL - 0105		10-Sep-16	Carteria spp.	400	1.24
MEL - 0105		10-Sep-16	Chlamydomonas spp.	21552	0.27
MEL - 0105		10-Sep-16	Sphaerocystis schroeteri Chodat	57472	0.90
MEL - 0105		10-Sep-16	Pediastrum duplex Meyen	2400	0.24
MEL - 0105		10-Sep-16	Oocystis lacustris Chodat	35920	0.93
MEL - 0105		10-Sep-16	Crucigenia quadrata Morr.	28736	0.32
MEL - 0105		10-Sep-16	Kichnerella lunaris (Kirchn.) Moeb.	57472	0.81
MEL - 0105		10-Sep-16	Planctonema lauterbornii Schmidle	35920	4.52
MEL - 0105		10-Sep-16	Cosmarium sp.	200	0.94
MEL - 0105		10-Sep-16	Staurodesmus extensus (Andersson) Teiling	600	0.25
MEL - 0105		10-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0105		10-Sep-16	Botryococcus braunii Kutzing	600	0.54
MEL - 0105		10-Sep-16	Monomastix minuta Skuja	7184	0.14
MEL - 0105		10-Sep-16	Small chrysophyceae	495696	6.34
MEL - 0105		10-Sep-16	Large chrysophyceae	21552	4.39
MEL - 0105		10-Sep-16	Chrysochromulina parva Lackey	330464	21.61
MEL - 0105		10-Sep-16	Chrysococcus sp.	617824	40.41
MEL - 0105		10-Sep-16	Chrysostephanospaera globulifera Scherffel	14368	5.67
MEL - 0105		10-Sep-16	Kephyrion boreale Skuja	14368	1.32
MEL - 0105		10-Sep-16	Kephyrion sp.	21552	0.28

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0105		10-Sep-16	Dinobryon bavaricum Imhof	57472	13.00
MEL - 0105		10-Sep-16	Dinobryon bavaricum Imhof	1200	2.39
MEL - 0105		10-Sep-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.86
MEL - 0105		10-Sep-16	Dinobryon sertularia Ehrenberg	600	3.05
MEL - 0105		10-Sep-16	Dinobryon sociale Ehrenberg	71840	16.25
MEL - 0105		10-Sep-16	Chrysolkos skuja (Nauwerck) Willen	28736	0.77
MEL - 0105		10-Sep-16	Uroglena volvox Ehrenberg	136496	15.44
MEL - 0105		10-Sep-16	Chrysochromulina laurentiana Kling	380752	211.55
MEL - 0105		10-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	129312	3.17
MEL - 0105		10-Sep-16	Dinobryon attenatum Hill	14368	1.69
MEL - 0105		10-Sep-16	Cyclotella stelligera Cleve and Grunow	8800	16.00
MEL - 0105		10-Sep-16	Cyclotella ocellata Pant.	14368	1.19
MEL - 0105		10-Sep-16	Rhizosolenia eriense H.L. Smith	50288	3.20
MEL - 0105		10-Sep-16	Fragilaria crotonensis Kitton	1600	0.54
MEL - 0105		10-Sep-16	Synedra acus Kutzing	24800	2.36
MEL - 0105		10-Sep-16	Asterionella formosa Hassall	200	0.02
MEL - 0105		10-Sep-16	Cyclotella michiganiana Skvortzow	122128	2.99
MEL - 0105		10-Sep-16	Rhodomonas minuta Skuja	86208	10.84
MEL - 0105		10-Sep-16	Cryptomonas erosa Ehrenberg	8400	13.56
MEL - 0105		10-Sep-16	Cryptomonas ovata Ehrenberg	200	1.12
MEL - 0105		10-Sep-16	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0105		10-Sep-16	Katablepharis ovalis Skuja	14368	0.74
MEL - 0105		10-Sep-16	Gymnodinium helveticum Penard	400	9.61
MEL - 0105		10-Sep-16	Gymnodinium sp.	21552	7.37
MEL - 0105		10-Sep-16	Gymnodinium sp.	2200	22.67
MEL - 0105		10-Sep-16	Peridinium willei Huitfeldt-Kaas	400	10.27
MEL - 0105		10-Sep-16	Peridinium pusillum (Penard) Lemmermann	4800	9.36
MEL - 0105		10-Sep-16	Peridinium aciculiferum Lemmermann	5200	47.05
MEL - 0201		23-Jul-16	Anabaena solitaria Klebs	12600	2.46
MEL - 0201		23-Jul-16	Sphaerocystis schroeteri Chodat	14368	0.22
MEL - 0201		23-Jul-16	Oocystis lacustris Chodat	14368	0.84
MEL - 0201		23-Jul-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.45
MEL - 0201		23-Jul-16	Elakatothrix gelatinosa Willen	14368	0.27

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201		23-Jul-16	Planctonema lauterbornii Schmidle	43104	5.42
MEL - 0201		23-Jul-16	Cosmarium sp.	400	0.74
MEL - 0201		23-Jul-16	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0201		23-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0201		23-Jul-16	Botryococcus braunii Kutzing	600	0.86
MEL - 0201		23-Jul-16	Small chrysophyceae	596272	9.30
MEL - 0201		23-Jul-16	Large chrysophyceae	50288	9.03
MEL - 0201		23-Jul-16	Chrysochromulina parva Lackey	581904	38.06
MEL - 0201		23-Jul-16	Chrysococcus sp.	495696	32.42
MEL - 0201		23-Jul-16	Kephyrion boreale Skuja	14368	1.71
MEL - 0201		23-Jul-16	Kephyrion sp.	165232	2.84
MEL - 0201		23-Jul-16	Spiniferomonas sirrata**********	43104	3.17
MEL - 0201		23-Jul-16	Mallomonas caudata Ivanov	400	2.14
MEL - 0201		23-Jul-16	Mallomonas crassisquama (Asmund) Fott	1600	1.68
MEL - 0201		23-Jul-16	Dinobryon borgei Lemmermann	43104	2.21
MEL - 0201		23-Jul-16	Dinobryon mucronutom Nygaard	64656	8.38
MEL - 0201		23-Jul-16	Dinobryon bavaricum Imhof	287360	65.00
MEL - 0201		23-Jul-16	Dinobryon bavaricum Imhof	3000	3.68
MEL - 0201		23-Jul-16	Dinobryon sertularia Ehrenberg	114944	26.00
MEL - 0201		23-Jul-16	Dinobryon sertularia Ehrenberg	4800	12.12
MEL - 0201		23-Jul-16	Epiphyxis sp.	21552	1.68
MEL - 0201		23-Jul-16	Chrysolkos skuja (Nauwerck) Willen	43104	1.22
MEL - 0201		23-Jul-16	Uroglena volvox Ehrenberg	890816	100.75
MEL - 0201		23-Jul-16	Chrysochromulina laurentiana Kling	79024	34.37
MEL - 0201		23-Jul-16	Stichogloea spp.	28736	1.66
MEL - 0201		23-Jul-16	Cyclotella stelligera Cleve and Grunow	3800	6.91
MEL - 0201		23-Jul-16	Rhizosolenia eriense H.L. Smith	423856	32.98
MEL - 0201		23-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	7400	6.21
MEL - 0201		23-Jul-16	Synedra acus Kutzing	8800	1.06
MEL - 0201		23-Jul-16	Asterionella formosa Hassall	5600	0.53
MEL - 0201		23-Jul-16	Cyclotella michiganiana Skvortzow	35920	0.93
MEL - 0201		23-Jul-16	Rhodomonas minuta Skuja	79024	11.02
MEL - 0201		23-Jul-16	Cryptomonas erosa Ehrenberg	7400	11.95

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201		23-Jul-16	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0201		23-Jul-16	Cryptomonas reflexa (Marsson) Skuja	200	0.13
MEL - 0201		23-Jul-16	Cryptomonas rostratiformis Skuja	800	1.70
MEL - 0201		23-Jul-16	Katablepharis ovalis Skuja	28736	1.62
MEL - 0201		23-Jul-16	Gymnodinium sp.	400	6.24
MEL - 0201		23-Jul-16	Peridinium pusillum (Penard) Lemmermann	4600	11.63
MEL - 0201		23-Jul-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0201		11-Aug-16	Chlamydomonas spp.	14368	0.22
MEL - 0201		11-Aug-16	Sphaerocystis schroeteri Chodat	14368	0.22
MEL - 0201		11-Aug-16	Elakatothrix gelatinosa Willen	129312	3.69
MEL - 0201		11-Aug-16	Planctonema lauterbornii Schmidle	71840	9.03
MEL - 0201		11-Aug-16	Euastrum spp.	800	1.93
MEL - 0201		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0201		11-Aug-16	Botryococcus braunii Kutzing	400	0.21
MEL - 0201		11-Aug-16	Oocystis gigas Archer	200	0.48
MEL - 0201		11-Aug-16	Small chrysophyceae	653744	3.66
MEL - 0201		11-Aug-16	Large chrysophyceae	21552	3.87
MEL - 0201		11-Aug-16	Chrysochromulina parva Lackey	143680	9.40
MEL - 0201		11-Aug-16	Chrysococcus sp.	359200	18.32
MEL - 0201		11-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	2.83
MEL - 0201		11-Aug-16	Kephyrion boreale Skuja	14368	1.71
MEL - 0201		11-Aug-16	Kephyrion sp.	64656	0.83
MEL - 0201		11-Aug-16	Dinobryon borgei Lemmermann	7184	0.31
MEL - 0201		11-Aug-16	Dinobryon bavaricum Imhof	200	0.40
MEL - 0201		11-Aug-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0201		11-Aug-16	Dinobryon sertularia Ehrenberg	400	0.80
MEL - 0201		11-Aug-16	Dinobryon sociale Ehrenberg	64656	14.63
MEL - 0201		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.20
MEL - 0201		11-Aug-16	Uroglena volvox Ehrenberg	43104	4.88
MEL - 0201		11-Aug-16	Chrysochromulina laurentiana Kling	71840	30.26
MEL - 0201		11-Aug-16	Stichogloea spp.	28736	1.45
MEL - 0201		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.20
MEL - 0201		11-Aug-16	Pteridomonas sp.	21552	5.30

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201		11-Aug-16	Cyclotella stelligera Cleve and Grunow	4400	8.00
MEL - 0201		11-Aug-16	Cyclotella pseudostelligera	7184	3.87
MEL - 0201		11-Aug-16	Cyclotella ocellata Pant.	14368	1.24
MEL - 0201		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	6400	5.31
MEL - 0201		11-Aug-16	Fragilaria crotonensis Kitton	2000	0.59
MEL - 0201		11-Aug-16	Synedra acus Kutzing	1600	0.18
MEL - 0201		11-Aug-16	Cyclotella michiganiana Skvortzow	43104	1.00
MEL - 0201		11-Aug-16	Cyclotella bodanica Eulenst.	1800	10.53
MEL - 0201		11-Aug-16	Diatoma elongatum Agardh	600	0.03
MEL - 0201		11-Aug-16	Rhodomonas minuta Skuja	150864	20.85
MEL - 0201		11-Aug-16	Cryptomonas erosa Ehrenberg	4200	4.90
MEL - 0201		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	2400	1.64
MEL - 0201		11-Aug-16	Cryptomonas rostratiformis Skuja	400	0.77
MEL - 0201		11-Aug-16	Katablepharis ovalis Skuja	14368	0.74
MEL - 0201		11-Aug-16	Gymnodinium sp.	7184	3.35
MEL - 0201		11-Aug-16	Gymnodinium sp.	600	4.68
MEL - 0201		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	1600	4.19
MEL - 0201		11-Aug-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0201		11-Sep-16	Snowella sp	200	0.15
MEL - 0201		11-Sep-16	Planktothrix	200	2.62
MEL - 0201		11-Sep-16	Pyramidomonas tetrarhynchus Schmarda	200	0.10
MEL - 0201		11-Sep-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	14368	0.82
MEL - 0201		11-Sep-16	Planctonema lauterbornii Schmidle	28736	3.61
MEL - 0201		11-Sep-16	Cosmarium sp.	200	0.55
MEL - 0201		11-Sep-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0201		11-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0201		11-Sep-16	Botryococcus braunii Kutzing	400	0.36
MEL - 0201		11-Sep-16	Small chrysophyceae	488512	6.89
MEL - 0201		11-Sep-16	Large chrysophyceae	14368	2.58
MEL - 0201		11-Sep-16	Chrysochromulina parva Lackey	330464	21.61
MEL - 0201		11-Sep-16	Chrysococcus sp.	466960	30.54
MEL - 0201		11-Sep-16	Kephyrion sp.	28736	0.70
MEL - 0201		11-Sep-16	Spiniferomonas sirrata**********	35920	3.30

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0201		11-Sep-16	Mallomonas crassisquama (Asmund) Fott	600	0.60
MEL - 0201		11-Sep-16	Dinobryon borgei Lemmermann	7184	0.35
MEL - 0201		11-Sep-16	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0201		11-Sep-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0201		11-Sep-16	Dinobryon bavaricum Imhof	3200	6.37
MEL - 0201		11-Sep-16	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0201		11-Sep-16	Dinobryon sertularia Ehrenberg	2600	13.22
MEL - 0201		11-Sep-16	Dinobryon sociale Ehrenberg	64656	14.63
MEL - 0201		11-Sep-16	Dinobryon sociale Ehrenberg	1000	1.25
MEL - 0201		11-Sep-16	Chrysolkos skuja (Nauwerck) Willen	35920	0.82
MEL - 0201		11-Sep-16	Uroglena volvox Ehrenberg	57472	6.50
MEL - 0201		11-Sep-16	Uroglena volvox Ehrenberg	200	14.52
MEL - 0201		11-Sep-16	Bitrichia chodatii (Reverdin) Chodat	21552	1.08
MEL - 0201		11-Sep-16	Chrysochromulina laurentiana Kling	79024	41.38
MEL - 0201		11-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.62
MEL - 0201		11-Sep-16	Pteridomonas sp.	7184	1.71
MEL - 0201		11-Sep-16	Cyclotella stelligera Cleve and Grunow	12200	24.14
MEL - 0201		11-Sep-16	Cyclotella ocellata Pant.	35920	3.75
MEL - 0201		11-Sep-16	Synedra acus Kutzing	3200	0.37
MEL - 0201		11-Sep-16	Asterionella formosa Hassall	19000	2.01
MEL - 0201		11-Sep-16	Cyclotella michiganiana Skvortzow	21552	0.39
MEL - 0201		11-Sep-16	Cyclotella bodanica Eulenst.	600	5.50
MEL - 0201		11-Sep-16	Rhodomonas minuta Skuja	122128	18.42
MEL - 0201		11-Sep-16	Cryptomonas erosa Ehrenberg	4800	7.75
MEL - 0201		11-Sep-16	Cryptomonas rostratiformis Skuja	400	0.85
MEL - 0201		11-Sep-16	Katablepharis ovalis Skuja	7184	0.37
MEL - 0201		11-Sep-16	Gymnodinium helveticum Penard	400	9.61
MEL - 0201		11-Sep-16	Gymnodinium sp.	1000	10.65
MEL - 0201		11-Sep-16	Peridinium willei Huitfeldt-Kaas	200	5.13
MEL - 0201		11-Sep-16	Peridinium pusillum (Penard) Lemmermann	3800	8.46
MEL - 0201		11-Sep-16	Peridinium aciculiferum Lemmermann	800	7.24
MEL - 0202		23-Jul-16	Pediastrum duplex Meyen	3600	0.37
MEL - 0202		23-Jul-16	Dictyosphaerium simplex Sukja	28736	0.14

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202		23-Jul-16	Cosmarium sp.	200	0.61
MEL - 0202		23-Jul-16	Botryococcus braunii Kutzing	200	0.29
MEL - 0202		23-Jul-16	Small chrysophyceae	308912	5.81
MEL - 0202		23-Jul-16	Large chrysophyceae	35920	6.18
MEL - 0202		23-Jul-16	Chrysochromulina parva Lackey	43104	2.82
MEL - 0202		23-Jul-16	Chrysococcus sp.	114944	7.52
MEL - 0202		23-Jul-16	Chrysostephanospaera globulifera Scherffel	21552	11.28
MEL - 0202		23-Jul-16	Kephyrion sp.	21552	0.20
MEL - 0202		23-Jul-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0202		23-Jul-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0202		23-Jul-16	Uroglena volvox Ehrenberg	14368	1.63
MEL - 0202		23-Jul-16	Chrysochromulina laurentiana Kling	7184	3.33
MEL - 0202		23-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	64656	2.08
MEL - 0202		23-Jul-16	Cyclotella stelligera Cleve and Grunow	800	1.45
MEL - 0202		23-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	5000	4.05
MEL - 0202		23-Jul-16	Tabellaria flocculsa (Roth) Kutzing	1600	2.55
MEL - 0202		23-Jul-16	Synedra acus Kutzing	800	0.10
MEL - 0202		23-Jul-16	Cyclotella michiganiana Skvortzow	50288	1.09
MEL - 0202		23-Jul-16	Cyclotella bodanica Eulenst.	200	1.54
MEL - 0202		23-Jul-16	Cryptomonas erosa Ehrenberg	200	0.34
MEL - 0202		23-Jul-16	Katablepharis ovalis Skuja	71840	3.69
MEL - 0202		23-Jul-16	Peridinium pusillum (Penard) Lemmermann	400	1.26
MEL - 0202		11-Aug-16	Aphanothece sp.	7184	0.18
MEL - 0202		11-Aug-16	Snowella sp	200	0.11
MEL - 0202		11-Aug-16	Sphaerocystis schroeteri Chodat	43104	1.44
MEL - 0202		11-Aug-16	Oocystis lacustris Chodat	14368	0.38
MEL - 0202		11-Aug-16	Elakatothrix gelatinosa Willen	43104	0.75
MEL - 0202		11-Aug-16	Planctonema lauterbornii Schmidle	50288	6.32
MEL - 0202		11-Aug-16	Cosmarium sp.	200	0.28
MEL - 0202		11-Aug-16	Euastrum spp.	600	1.12
MEL - 0202		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	600	0.26
MEL - 0202		11-Aug-16	Oocystis gigas Archer	200	0.68
MEL - 0202		11-Aug-16	Small chrysophyceae	517248	7.29

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202		11-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0202		11-Aug-16	Chrysochromulina parva Lackey	122128	7.99
MEL - 0202		11-Aug-16	Chrysococcus sp.	366384	23.96
MEL - 0202		11-Aug-16	Kephyrion sp.	114944	1.79
MEL - 0202		11-Aug-16	Spiniferomonas sirrata**********	35920	4.27
MEL - 0202		11-Aug-16	Dinobryon borgei Lemmermann	14368	0.61
MEL - 0202		11-Aug-16	Dinobryon bavaricum Imhof	600	1.19
MEL - 0202		11-Aug-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0202		11-Aug-16	Dinobryon sociale Ehrenberg	143680	32.50
MEL - 0202		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	21552	0.65
MEL - 0202		11-Aug-16	Uroglena volvox Ehrenberg	71840	8.13
MEL - 0202		11-Aug-16	Chrysochromulina laurentiana Kling	64656	29.95
MEL - 0202		11-Aug-16	Stichogloea spp.	21552	1.08
MEL - 0202		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.18
MEL - 0202		11-Aug-16	Pteridomonas sp.	14368	3.19
MEL - 0202		11-Aug-16	Cyclotella stelligera Cleve and Grunow	8000	15.83
MEL - 0202		11-Aug-16	Cyclotella pseudostelligera	28736	15.48
MEL - 0202		11-Aug-16	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL - 0202		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.65
MEL - 0202		11-Aug-16	Synedra acus Kutzing	1000	0.12
MEL - 0202		11-Aug-16	Asterionella formosa Hassall	2600	0.26
MEL - 0202		11-Aug-16	Cyclotella michiganiana Skvortzow	50288	1.23
MEL - 0202		11-Aug-16	Cyclotella bodanica Eulenst.	2600	20.06
MEL - 0202		11-Aug-16	Rhodomonas minuta Skuja	172416	23.83
MEL - 0202		11-Aug-16	Cryptomonas erosa Ehrenberg	3600	4.36
MEL - 0202		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1600	1.17
MEL - 0202		11-Aug-16	Cryptomonas rostratiformis Skuja	600	1.35
MEL - 0202		11-Aug-16	Katablepharis ovalis Skuja	7184	0.52
MEL - 0202		11-Aug-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0202		11-Aug-16	Gymnodinium sp.	400	4.60
MEL - 0202		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	4000	9.93
MEL - 0202		11-Sep-16	Snowella sp	200	0.15
MEL - 0202		11-Sep-16	Anabaena flos-aquae (Lyngb.) Breb. & Bornet	200	0.47

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202		11-Sep-16	Sphaerocystis schroeteri Chodat	7184	0.24
MEL - 0202		11-Sep-16	Elakatothrix gelatinosa Willen	14368	0.32
MEL - 0202		11-Sep-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0202		11-Sep-16	Cosmarium sp.	400	0.56
MEL - 0202		11-Sep-16	Staurodesmus extensus (Andersson) Teiling	400	0.17
MEL - 0202		11-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0202		11-Sep-16	Botryococcus braunii Kutzing	1800	1.63
MEL - 0202		11-Sep-16	Small chrysophyceae	510064	7.19
MEL - 0202		11-Sep-16	Large chrysophyceae	14368	2.58
MEL - 0202		11-Sep-16	Chrysochromulina parva Lackey	251440	16.44
MEL - 0202		11-Sep-16	Chrysococcus sp.	323280	21.14
MEL - 0202		11-Sep-16	Chrysostephanospaera globulifera Scherffel	7184	2.65
MEL - 0202		11-Sep-16	Kephyrion boreale Skuja	7184	0.77
MEL - 0202		11-Sep-16	Kephyrion sp.	86208	2.10
MEL - 0202		11-Sep-16	Spiniferomonas sirrata**********	14368	1.32
MEL - 0202		11-Sep-16	Mallomonas crassisquama (Asmund) Fott	400	0.44
MEL - 0202		11-Sep-16	Dinobryon borgei Lemmermann	14368	0.75
MEL - 0202		11-Sep-16	Dinobryon bavaricum Imhof	28736	6.50
MEL - 0202		11-Sep-16	Dinobryon bavaricum Imhof	1200	2.39
MEL - 0202		11-Sep-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0202		11-Sep-16	Dinobryon sertularia Ehrenberg	1400	7.12
MEL - 0202		11-Sep-16	Dinobryon sociale Ehrenberg	114944	26.00
MEL - 0202		11-Sep-16	Dinobryon sociale Ehrenberg	1000	1.25
MEL - 0202		11-Sep-16	Chrysolkos skuja (Nauwerck) Willen	14368	0.33
MEL - 0202		11-Sep-16	Uroglena volvox Ehrenberg	150864	17.06
MEL - 0202		11-Sep-16	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL - 0202		11-Sep-16	Chrysochromulina laurentiana Kling	129312	67.71
MEL - 0202		11-Sep-16	Stichogloea spp.	7184	0.36
MEL - 0202		11-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.39
MEL - 0202		11-Sep-16	Pteridomonas sp.	14368	3.42
MEL - 0202		11-Sep-16	Cyclotella stelligera Cleve and Grunow	8600	17.02
MEL - 0202		11-Sep-16	Cyclotella ocellata Pant.	35920	3.75
MEL - 0202		11-Sep-16	Rhizosolenia eriense H.L. Smith	7184	0.46

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202		11-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	2400	1.99
MEL - 0202		11-Sep-16	Synedra acus Kutzing	800	0.10
MEL - 0202		11-Sep-16	Asterionella formosa Hassall	8800	0.92
MEL - 0202		11-Sep-16	Cyclotella michiganiana Skvortzow	86208	1.87
MEL - 0202		11-Sep-16	Rhodomonas minuta Skuja	129312	16.25
MEL - 0202		11-Sep-16	Cryptomonas erosa Ehrenberg	6200	10.01
MEL - 0202		11-Sep-16	Cryptomonas reflexa (Marsson) Skuja	800	0.53
MEL - 0202		11-Sep-16	Cryptomonas rostratiformis Skuja	400	0.85
MEL - 0202		11-Sep-16	Gymnodinium sp.	1800	19.18
MEL - 0202		11-Sep-16	Peridinium pusillum (Penard) Lemmermann	1200	2.67
MEL - 0202		11-Sep-16	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0202	RECOUNT	11-Sep-16	Oocystis lacustris Chodat	43104	2.17
MEL - 0202	RECOUNT	11-Sep-16	Elakatothrix gelatinosa Willen	14368	0.32
MEL - 0202	RECOUNT	11-Sep-16	Planctonema lauterbornii Schmidle	43104	5.42
MEL - 0202	RECOUNT	11-Sep-16	Cosmarium sp.	200	0.28
MEL - 0202	RECOUNT	11-Sep-16	Staurodesmus extensus (Andersson) Teiling	800	0.34
MEL - 0202	RECOUNT	11-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0202	RECOUNT	11-Sep-16	Botryococcus braunii Kutzing	1400	1.27
MEL - 0202	RECOUNT	11-Sep-16	Ankistrodesmus spiralis Lemmermann	14368	0.98
MEL - 0202	RECOUNT	11-Sep-16	Small chrysophyceae	466960	6.58
MEL - 0202	RECOUNT	11-Sep-16	Large chrysophyceae	14368	2.58
MEL - 0202	RECOUNT	11-Sep-16	Chrysochromulina parva Lackey	301728	19.73
MEL - 0202	RECOUNT	11-Sep-16	Chrysococcus sp.	316096	20.67
MEL - 0202	RECOUNT	11-Sep-16	Chrysostephanospaera globulifera Scherffel	14368	5.30
MEL - 0202	RECOUNT	11-Sep-16	Kephyrion sp.	71840	1.75
MEL - 0202	RECOUNT	11-Sep-16	Spiniferomonas sirrata**********	7184	0.66
MEL - 0202	RECOUNT	11-Sep-16	Mallomonas crassisquama (Asmund) Fott	200	0.22
MEL - 0202	RECOUNT	11-Sep-16	Dinobryon borgei Lemmermann	21552	1.12
MEL - 0202	RECOUNT	11-Sep-16	Dinobryon mucronutom Nygaard	35920	8.13
MEL - 0202	RECOUNT	11-Sep-16	Dinobryon bavaricum Imhof	1600	3.19
MEL - 0202	RECOUNT	11-Sep-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0202	RECOUNT	11-Sep-16	Dinobryon sertularia Ehrenberg	1000	1.25
MEL - 0202	RECOUNT	11-Sep-16	Dinobryon sertularia Ehrenberg	2000	10.17

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0202	RECOUNT	11-Sep-16	Dinobryon sociale Ehrenberg	86208	19.50
MEL - 0202	RECOUNT	11-Sep-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.16
MEL - 0202	RECOUNT	11-Sep-16	Uroglena volvox Ehrenberg	186784	21.13
MEL - 0202	RECOUNT	11-Sep-16	Bitrichia chodatii (Reverdin) Chodat	28736	1.45
MEL - 0202	RECOUNT	11-Sep-16	Chrysochromulina laurentiana Kling	150864	78.99
MEL - 0202	RECOUNT	11-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	64656	2.08
MEL - 0202	RECOUNT	11-Sep-16	Pteridomonas sp.	21552	5.13
MEL - 0202	RECOUNT	11-Sep-16	Cyclotella stelligera Cleve and Grunow	9200	18.20
MEL - 0202	RECOUNT	11-Sep-16	Cyclotella ocellata Pant.	28736	3.00
MEL - 0202	RECOUNT	11-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	4200	3.48
MEL - 0202	RECOUNT	11-Sep-16	Synedra acus Kutzing	1800	0.22
MEL - 0202	RECOUNT	11-Sep-16	Asterionella formosa Hassall	7800	0.82
MEL - 0202	RECOUNT	11-Sep-16	Cyclotella michiganiana Skvortzow	136496	2.96
MEL - 0202	RECOUNT	11-Sep-16	Cyclotella bodanica Eulenst.	400	3.34
MEL - 0202	RECOUNT	11-Sep-16	Rhodomonas minuta Skuja	129312	16.25
MEL - 0202	RECOUNT	11-Sep-16	Cryptomonas erosa Ehrenberg	5200	8.40
MEL - 0202	RECOUNT	11-Sep-16	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL - 0202	RECOUNT	11-Sep-16	Cryptomonas rostratiformis Skuja	800	1.70
MEL - 0202	RECOUNT	11-Sep-16	Katablepharis ovalis Skuja	14368	0.67
MEL - 0202	RECOUNT	11-Sep-16	Gymnodinium sp.	1400	14.91
MEL - 0202	RECOUNT	11-Sep-16	Peridinium pusillum (Penard) Lemmermann	800	1.78
MEL - 0202	RECOUNT	11-Sep-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0203		23-Jul-16	Chroococcus limneticus Lemmermann	114944	12.36
MEL - 0203		23-Jul-16	Oocystis lacustris Chodat	14368	0.37
MEL - 0203		23-Jul-16	Dictyosphaerium simplex Sukja	14368	0.07
MEL - 0203		23-Jul-16	Elakatothrix gelatinosa Willen	35920	0.62
MEL - 0203		23-Jul-16	Planctonema lauterbornii Schmidle	64656	8.13
MEL - 0203		23-Jul-16	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0203		23-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0203		23-Jul-16	Mougeotia sp.	400	2.31
MEL - 0203		23-Jul-16	Botryococcus braunii Kutzing	200	0.29
MEL - 0203		23-Jul-16	Ankistrodesmus spiralis Lemmermann	7184	0.56
MEL - 0203		23-Jul-16	Small chrysophyceae	610640	12.58

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203		23-Jul-16	Large chrysophyceae	86208	32.91
MEL - 0203		23-Jul-16	Chrysochromulina parva Lackey	452592	29.60
MEL - 0203		23-Jul-16	Chrysococcus sp.	409488	5.77
MEL - 0203		23-Jul-16	Chrysostephanospaera globulifera Scherffel	21552	11.28
MEL - 0203		23-Jul-16	Kephyrion sp.	86208	0.79
MEL - 0203		23-Jul-16	Spiniferomonas sirrata**********	21552	2.56
MEL - 0203		23-Jul-16	Mallomonas crassisquama (Asmund) Fott	400	0.43
MEL - 0203		23-Jul-16	Dinobryon borgei Lemmermann	64656	3.33
MEL - 0203		23-Jul-16	Dinobryon mucronutom Nygaard	14368	1.45
MEL - 0203		23-Jul-16	Dinobryon bavaricum Imhof	237072	53.63
MEL - 0203		23-Jul-16	Dinobryon bavaricum Imhof	7200	8.82
MEL - 0203		23-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	2.03
MEL - 0203		23-Jul-16	Dinobryon sertularia Ehrenberg	79024	17.88
MEL - 0203		23-Jul-16	Dinobryon sertularia Ehrenberg	2600	5.18
MEL - 0203		23-Jul-16	Chrysolkos skuja (Nauwerck) Willen	43104	1.03
MEL - 0203		23-Jul-16	Uroglena volvox Ehrenberg	739952	83.69
MEL - 0203		23-Jul-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0203		23-Jul-16	Chrysochromulina laurentiana Kling	28736	11.72
MEL - 0203		23-Jul-16	Bicoeca lacustris Clark	7184	0.50
MEL - 0203		23-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.53
MEL - 0203		23-Jul-16	Pteridomonas sp.	14368	3.19
MEL - 0203		23-Jul-16	Cyclotella stelligera Cleve and Grunow	400	0.73
MEL - 0203		23-Jul-16	Rhizosolenia eriense H.L. Smith	344832	26.83
MEL - 0203		23-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	1600	1.48
MEL - 0203		23-Jul-16	Synedra acus Kutzing	1800	0.21
MEL - 0203		23-Jul-16	Asterionella formosa Hassall	5000	0.53
MEL - 0203		23-Jul-16	Cyclotella michiganiana Skvortzow	107760	2.64
MEL - 0203		23-Jul-16	Rhodomonas minuta Skuja	93392	12.32
MEL - 0203		23-Jul-16	Cryptomonas erosa Ehrenberg	3400	5.49
MEL - 0203		23-Jul-16	Cryptomonas reflexa (Marsson) Skuja	400	0.29
MEL - 0203		23-Jul-16	Cryptomonas rostratiformis Skuja	800	1.67
MEL - 0203		23-Jul-16	Katablepharis ovalis Skuja	14368	0.59
MEL - 0203		23-Jul-16	Gymnodinium sp.	800	7.36

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203		23-Jul-16	Peridinium willei Huitfeldt-Kaas	400	14.43
MEL - 0203		23-Jul-16	Peridinium pusillum (Penard) Lemmermann	1200	3.03
MEL - 0203		23-Jul-16	Peridinium aciculiferum Lemmermann	200	1.87
MEL - 0203		11-Aug-16	Aphanothece sp.	14368	0.73
MEL - 0203		11-Aug-16	Snowella sp	600	0.30
MEL - 0203		11-Aug-16	Chlamydomonas spp.	14368	0.18
MEL - 0203		11-Aug-16	Sphaerocystis schroeteri Chodat	14368	0.48
MEL - 0203		11-Aug-16	Oocystis lacustris Chodat	57472	1.36
MEL - 0203		11-Aug-16	Elakatothrix gelatinosa Willen	28736	0.41
MEL - 0203		11-Aug-16	Planctonema lauterbornii Schmidle	50288	6.32
MEL - 0203		11-Aug-16	Euastrum spp.	200	0.37
MEL - 0203		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	600	0.29
MEL - 0203		11-Aug-16	Staurodesmus paradoxum Meyen	200	0.82
MEL - 0203		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0203		11-Aug-16	Botryococcus braunii Kutzing	400	0.28
MEL - 0203		11-Aug-16	Oocystis gigas Archer	200	0.48
MEL - 0203		11-Aug-16	Small chrysophyceae	603456	8.51
MEL - 0203		11-Aug-16	Large chrysophyceae	28736	5.16
MEL - 0203		11-Aug-16	Chrysochromulina parva Lackey	71840	4.70
MEL - 0203		11-Aug-16	Chrysococcus sp.	495696	32.42
MEL - 0203		11-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	3.33
MEL - 0203		11-Aug-16	Kephyrion boreale Skuja	7184	0.85
MEL - 0203		11-Aug-16	Kephyrion sp.	114944	1.06
MEL - 0203		11-Aug-16	Spiniferomonas sirrata**********	14368	1.63
MEL - 0203		11-Aug-16	Mallomonas crassisquama (Asmund) Fott	400	0.40
MEL - 0203		11-Aug-16	Synura sphagnicola Korschikow	7184	4.51
MEL - 0203		11-Aug-16	Dinobryon borgei Lemmermann	7184	0.31
MEL - 0203		11-Aug-16	Dinobryon bavaricum Imhof	600	1.19
MEL - 0203		11-Aug-16	Dinobryon sertularia Ehrenberg	50288	11.38
MEL - 0203		11-Aug-16	Dinobryon sertularia Ehrenberg	1200	6.10
MEL - 0203		11-Aug-16	Dinobryon sociale Ehrenberg	158048	35.75
MEL - 0203		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	28736	0.51
MEL - 0203		11-Aug-16	Uroglena volvox Ehrenberg	107760	12.19

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203		11-Aug-16	Chrysochromulina laurentiana Kling	79024	34.37
MEL - 0203		11-Aug-16	Stichogloea spp.	28736	1.45
MEL - 0203		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43
MEL - 0203		11-Aug-16	Pteridomonas sp.	28736	6.38
MEL - 0203		11-Aug-16	Cyclotella stelligera Cleve and Grunow	5200	11.79
MEL - 0203		11-Aug-16	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL - 0203		11-Aug-16	Synedra acus Kutzing	3000	0.33
MEL - 0203		11-Aug-16	Asterionella formosa Hassall	3200	0.34
MEL - 0203		11-Aug-16	Cyclotella michiganiana Skvortzow	21552	0.53
MEL - 0203		11-Aug-16	Cyclotella bodanica Eulenst.	1000	8.42
MEL - 0203		11-Aug-16	Rhodomonas minuta Skuja	165232	20.77
MEL - 0203		11-Aug-16	Cryptomonas erosa Ehrenberg	7200	8.54
MEL - 0203		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	2000	1.33
MEL - 0203		11-Aug-16	Cryptomonas rostratiformis Skuja	200	0.40
MEL - 0203		11-Aug-16	Katablepharis ovalis Skuja	7184	0.51
MEL - 0203		11-Aug-16	Gymnodinium helveticum Penard	400	9.80
MEL - 0203		11-Aug-16	Gymnodinium sp.	800	7.62
MEL - 0203		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	17600	48.55
MEL - 0203		11-Sep-16	Chroococcus limneticus Lemmermann	129312	5.02
MEL - 0203		11-Sep-16	Oocystis lacustris Chodat	28736	0.80
MEL - 0203		11-Sep-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0203		11-Sep-16	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.36
MEL - 0203		11-Sep-16	Botryococcus braunii Kutzing	400	0.36
MEL - 0203		11-Sep-16	Small chrysophyceae	395120	5.57
MEL - 0203		11-Sep-16	Large chrysophyceae	28736	5.16
MEL - 0203		11-Sep-16	Chrysochromulina parva Lackey	265808	17.38
MEL - 0203		11-Sep-16	Chrysococcus sp.	380752	24.90
MEL - 0203		11-Sep-16	Kephyrion sp.	100576	2.45
MEL - 0203		11-Sep-16	Spiniferomonas sirrata**********	14368	1.32
MEL - 0203		11-Sep-16	Mallomonas crassisquama (Asmund) Fott	800	0.85
MEL - 0203		11-Sep-16	Dinobryon borgei Lemmermann	35920	1.81
MEL - 0203		11-Sep-16	Dinobryon mucronutom Nygaard	7184	0.93
MEL - 0203		11-Sep-16	Dinobryon bavaricum Imhof	35920	8.13

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0203		11-Sep-16	Dinobryon bavaricum Imhof	1800	3.58
MEL - 0203		11-Sep-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0203		11-Sep-16	Dinobryon sertularia Ehrenberg	1800	9.15
MEL - 0203		11-Sep-16	Dinobryon sociale Ehrenberg	64656	14.63
MEL - 0203		11-Sep-16	Dinobryon sociale Ehrenberg	400	0.50
MEL - 0203		11-Sep-16	Uroglena volvox Ehrenberg	251440	28.44
MEL - 0203		11-Sep-16	Uroglena volvox Ehrenberg	400	21.04
MEL - 0203		11-Sep-16	Chrysochromulina laurentiana Kling	86208	45.14
MEL - 0203		11-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.58
MEL - 0203		11-Sep-16	Pteridomonas sp.	14368	3.42
MEL - 0203		11-Sep-16	Cyclotella stelligera Cleve and Grunow	12400	22.87
MEL - 0203		11-Sep-16	Cyclotella ocellata Pant.	21552	1.65
MEL - 0203		11-Sep-16	Synedra acus Kutzing	3000	0.36
MEL - 0203		11-Sep-16	Asterionella formosa Hassall	18200	1.91
MEL - 0203		11-Sep-16	Cyclotella michiganiana Skvortzow	86208	1.99
MEL - 0203		11-Sep-16	Rhodomonas minuta Skuja	107760	13.55
MEL - 0203		11-Sep-16	Cryptomonas erosa Ehrenberg	4000	6.46
MEL - 0203		11-Sep-16	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL - 0203		11-Sep-16	Cryptomonas rostratiformis Skuja	600	1.23
MEL - 0203		11-Sep-16	Gymnodinium helveticum Penard	200	4.71
MEL - 0203		11-Sep-16	Gymnodinium sp.	2200	12.77
MEL - 0203		11-Sep-16	Peridinium willei Huitfeldt-Kaas	200	6.70
MEL - 0203		11-Sep-16	Peridinium pusillum (Penard) Lemmermann	3200	6.86
MEL - 0203		11-Sep-16	Peridinium aciculiferum Lemmermann	1600	14.48
MEL - 0204		23-Jul-16	Radiocystis geminata Skuja	7184	1.26
MEL - 0204		23-Jul-16	Chlamydomonas spp.	21552	0.23
MEL - 0204		23-Jul-16	Elakatothrix gelatinosa Willen	14368	0.27
MEL - 0204		23-Jul-16	Planctonema lauterbornii Schmidle	28736	3.61
MEL - 0204		23-Jul-16	Cosmarium sp.	400	2.74
MEL - 0204		23-Jul-16	Euastrum spp.	200	0.37
MEL - 0204		23-Jul-16	Staurodesmus extensus (Andersson) Teiling	800	0.30
MEL - 0204		23-Jul-16	Staurodesmus paradoxum Meyen	200	0.41
MEL - 0204		23-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204		23-Jul-16	Botryococcus braunii Kutzing	400	0.46
MEL - 0204		23-Jul-16	Small chrysophyceae	481328	7.51
MEL - 0204		23-Jul-16	Large chrysophyceae	50288	9.03
MEL - 0204		23-Jul-16	Chrysochromulina parva Lackey	445408	29.13
MEL - 0204		23-Jul-16	Chrysococcus sp.	416672	24.13
MEL - 0204		23-Jul-16	Chrysostephanospaera globulifera Scherffel	7184	3.76
MEL - 0204		23-Jul-16	Kephyrion sp.	86208	0.99
MEL - 0204		23-Jul-16	Spiniferomonas sirrata**********	14368	1.25
MEL - 0204		23-Jul-16	Mallomonas crassisquama (Asmund) Fott	1600	1.64
MEL - 0204		23-Jul-16	Dinobryon borgei Lemmermann	79024	4.07
MEL - 0204		23-Jul-16	Dinobryon mucronutom Nygaard	57472	6.37
MEL - 0204		23-Jul-16	Dinobryon bavaricum Imhof	294544	66.63
MEL - 0204		23-Jul-16	Dinobryon bavaricum Imhof	4800	5.88
MEL - 0204		23-Jul-16	Dinobryon sertularia Ehrenberg	71840	16.25
MEL - 0204		23-Jul-16	Dinobryon sertularia Ehrenberg	4400	8.76
MEL - 0204		23-Jul-16	Epiphyxis sp.	21552	1.37
MEL - 0204		23-Jul-16	Chrysolkos skuja (Nauwerck) Willen	100576	2.60
MEL - 0204		23-Jul-16	Uroglena volvox Ehrenberg	761504	86.13
MEL - 0204		23-Jul-16	Chrysochromulina laurentiana Kling	150864	69.88
MEL - 0204		23-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.20
MEL - 0204		23-Jul-16	Pteridomonas sp.	7184	1.59
MEL - 0204		23-Jul-16	Cyclotella stelligera Cleve and Grunow	2200	4.00
MEL - 0204		23-Jul-16	Cyclotella pseudostelligera	35920	19.35
MEL - 0204		23-Jul-16	Rhizosolenia eriense H.L. Smith	287360	22.36
MEL - 0204		23-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.17
MEL - 0204		23-Jul-16	Tabellaria flocculsa (Roth) Kutzing	200	0.23
MEL - 0204		23-Jul-16	Synedra acus Kutzing	5600	0.67
MEL - 0204		23-Jul-16	Asterionella formosa Hassall	4200	0.44
MEL - 0204		23-Jul-16	Cyclotella michiganiana Skvortzow	28736	0.70
MEL - 0204		23-Jul-16	Rhodomonas minuta Skuja	71840	11.57
MEL - 0204		23-Jul-16	Cryptomonas erosa Ehrenberg	4400	7.29
MEL - 0204		23-Jul-16	Cryptomonas reflexa (Marsson) Skuja	800	0.59
MEL - 0204		23-Jul-16	Cryptomonas rostratiformis Skuja	1400	2.87

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204		23-Jul-16	Katablepharis ovalis Skuja	14368	0.81
MEL - 0204		23-Jul-16	Gymnodinium helveticum Penard	200	5.18
MEL - 0204		23-Jul-16	Gymnodinium sp.	800	7.36
MEL - 0204		23-Jul-16	Peridinium pusillum (Penard) Lemmermann	3200	10.27
MEL - 0204		23-Jul-16	Peridinium aciculiferum Lemmermann	200	1.87
MEL - 0204		11-Aug-16	Sphaerocystis schroeteri Chodat	35920	1.20
MEL - 0204		11-Aug-16	Oocystis lacustris Chodat	21552	1.08
MEL - 0204		11-Aug-16	Elakatothrix gelatinosa Willen	93392	1.47
MEL - 0204		11-Aug-16	Planctonema lauterbornii Schmidle	71840	9.03
MEL - 0204		11-Aug-16	Cosmarium sp.	600	0.43
MEL - 0204		11-Aug-16	Euastrum spp.	200	0.37
MEL - 0204		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	800	0.28
MEL - 0204		11-Aug-16	Staurodesmus sp.	400	1.27
MEL - 0204		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0204		11-Aug-16	Botryococcus braunii Kutzing	800	1.15
MEL - 0204		11-Aug-16	Small chrysophyceae	639376	6.59
MEL - 0204		11-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0204		11-Aug-16	Chrysochromulina parva Lackey	57472	3.76
MEL - 0204		11-Aug-16	Chrysococcus sp.	344832	22.55
MEL - 0204		11-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	2.74
MEL - 0204		11-Aug-16	Kephyrion boreale Skuja	14368	1.47
MEL - 0204		11-Aug-16	Kephyrion sp.	122128	2.30
MEL - 0204		11-Aug-16	Spiniferomonas sirrata**********	43104	1.18
MEL - 0204		11-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0204		11-Aug-16	Dinobryon borgei Lemmermann	21552	0.94
MEL - 0204		11-Aug-16	Dinobryon bavaricum Imhof	14368	3.25
MEL - 0204		11-Aug-16	Dinobryon bavaricum Imhof	400	0.80
MEL - 0204		11-Aug-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0204		11-Aug-16	Dinobryon sertularia Ehrenberg	600	2.03
MEL - 0204		11-Aug-16	Dinobryon sociale Ehrenberg	107760	24.38
MEL - 0204		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	21552	0.57
MEL - 0204		11-Aug-16	Uroglena volvox Ehrenberg	50288	5.69
MEL - 0204		11-Aug-16	Chrysochromulina laurentiana Kling	64656	28.12

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204		11-Aug-16	Stichogloea spp.	21552	1.08
MEL - 0204		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.21
MEL - 0204		11-Aug-16	Pteridomonas sp.	28736	7.07
MEL - 0204		11-Aug-16	Cyclotella stelligera Cleve and Grunow	3600	6.55
MEL - 0204		11-Aug-16	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL - 0204		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	2800	2.08
MEL - 0204		11-Aug-16	Synedra acus Kutzing	1000	0.10
MEL - 0204		11-Aug-16	Asterionella formosa Hassall	2800	0.29
MEL - 0204		11-Aug-16	Cyclotella michiganiana Skvortzow	43104	1.12
MEL - 0204		11-Aug-16	Cyclotella bodanica Eulenst.	1800	12.70
MEL - 0204		11-Aug-16	Rhodomonas minuta Skuja	265808	36.73
MEL - 0204		11-Aug-16	Cryptomonas erosa Ehrenberg	6200	6.98
MEL - 0204		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1600	1.06
MEL - 0204		11-Aug-16	Cryptomonas rostratiformis Skuja	1000	2.19
MEL - 0204		11-Aug-16	Katablepharis ovalis Skuja	14368	0.93
MEL - 0204		11-Aug-16	Gymnodinium sp.	2000	18.41
MEL - 0204		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	4000	9.58
MEL - 0204		11-Sep-16	Pyramidomonas tetrarhynchus Schmarda	400	0.21
MEL - 0204		11-Sep-16	Sphaerocystis schroeteri Chodat	35920	1.20
MEL - 0204		11-Sep-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.32
MEL - 0204		11-Sep-16	Elakatothrix gelatinosa Willen	21552	0.57
MEL - 0204		11-Sep-16	Planctonema lauterbornii Schmidle	43104	5.42
MEL - 0204		11-Sep-16	Closterium sp.	200	0.28
MEL - 0204		11-Sep-16	Euastrum spp.	200	0.37
MEL - 0204		11-Sep-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0204		11-Sep-16	Small chrysophyceae	416672	5.88
MEL - 0204		11-Sep-16	Large chrysophyceae	28736	5.16
MEL - 0204		11-Sep-16	Chrysochromulina parva Lackey	352016	23.02
MEL - 0204		11-Sep-16	Chrysococcus sp.	431040	28.19
MEL - 0204		11-Sep-16	Kephyrion sp.	57472	1.79
MEL - 0204		11-Sep-16	Spiniferomonas sirrata**********	7184	1.08
MEL - 0204		11-Sep-16	Mallomonas crassisquama (Asmund) Fott	600	0.65
MEL - 0204		11-Sep-16	Dinobryon bavaricum Imhof	7184	1.63

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0204		11-Sep-16	Dinobryon bavaricum Imhof	2400	4.78
MEL - 0204		11-Sep-16	Dinobryon sertularia Ehrenberg	2200	11.19
MEL - 0204		11-Sep-16	Dinobryon sociale Ehrenberg	100576	22.75
MEL - 0204		11-Sep-16	Dinobryon sociale Ehrenberg	1200	1.50
MEL - 0204		11-Sep-16	Epiphyxis sp.	14368	1.09
MEL - 0204		11-Sep-16	Chrysolkos skuja (Nauwerck) Willen	14368	0.38
MEL - 0204		11-Sep-16	Uroglena volvox Ehrenberg	114944	13.00
MEL - 0204		11-Sep-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0204		11-Sep-16	Chrysochromulina laurentiana Kling	229888	120.37
MEL - 0204		11-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	86208	2.50
MEL - 0204		11-Sep-16	Cyclotella stelligera Cleve and Grunow	1000	2.12
MEL - 0204		11-Sep-16	Cyclotella ocellata Pant.	28736	2.11
MEL - 0204		11-Sep-16	Synedra acus Kutzing	3000	0.35
MEL - 0204		11-Sep-16	Asterionella formosa Hassall	14000	1.47
MEL - 0204		11-Sep-16	Cyclotella michiganiana Skvortzow	64656	1.58
MEL - 0204		11-Sep-16	Cyclotella bodanica Eulenst.	1200	10.99
MEL - 0204		11-Sep-16	Rhodomonas minuta Skuja	150864	18.96
MEL - 0204		11-Sep-16	Cryptomonas erosa Ehrenberg	4200	6.87
MEL - 0204		11-Sep-16	Cryptomonas reflexa (Marsson) Skuja	1000	0.70
MEL - 0204		11-Sep-16	Cryptomonas rostratiformis Skuja	800	1.64
MEL - 0204		11-Sep-16	Katablepharis ovalis Skuja	7184	0.42
MEL - 0204		11-Sep-16	Gymnodinium helveticum Penard	200	4.71
MEL - 0204		11-Sep-16	Gymnodinium sp.	800	6.78
MEL - 0204		11-Sep-16	Peridinium willei Huitfeldt-Kaas	400	13.40
MEL - 0204		11-Sep-16	Peridinium pusillum (Penard) Lemmermann	1800	4.01
MEL - 0204		11-Sep-16	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0205		23-Jul-16	Chroococcus limneticus Lemmermann	43104	5.12
MEL - 0205		23-Jul-16	Snowella sp	600	0.33
MEL - 0205		23-Jul-16	Chlamydomonas spp.	7184	0.07
MEL - 0205		23-Jul-16	Sphaerocystis schroeteri Chodat	7184	0.22
MEL - 0205		23-Jul-16	Oocystis lacustris Chodat	14368	0.72
MEL - 0205		23-Jul-16	Elakatothrix gelatinosa Willen	35920	0.68
MEL - 0205		23-Jul-16	Planctonema lauterbornii Schmidle	28736	3.61

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205		23-Jul-16	Cosmarium sp.	200	0.28
MEL - 0205		23-Jul-16	Micrasterias sp.	200	0.20
MEL - 0205		23-Jul-16	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0205		23-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0205		23-Jul-16	Small chrysophyceae	445408	8.37
MEL - 0205		23-Jul-16	Large chrysophyceae	35920	6.45
MEL - 0205		23-Jul-16	Chrysochromulina parva Lackey	359200	20.80
MEL - 0205		23-Jul-16	Chrysochromulina parva Lackey	589088	38.53
MEL - 0205		23-Jul-16	Chrysostephanospaera globulifera Scherffel	7184	3.76
MEL - 0205		23-Jul-16	Kephyrion boreale Skuja	7184	0.66
MEL - 0205		23-Jul-16	Kephyrion sp.	79024	1.11
MEL - 0205		23-Jul-16	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0205		23-Jul-16	Synura sphagnicola Korschikow	200	3.10
MEL - 0205		23-Jul-16	Dinobryon borgei Lemmermann	86208	3.98
MEL - 0205		23-Jul-16	Dinobryon mucronutom Nygaard	35920	4.70
MEL - 0205		23-Jul-16	Dinobryon bavaricum Imhof	387936	87.75
MEL - 0205		23-Jul-16	Dinobryon bavaricum Imhof	5400	6.62
MEL - 0205		23-Jul-16	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.88
MEL - 0205		23-Jul-16	Dinobryon sertularia Ehrenberg	114944	26.00
MEL - 0205		23-Jul-16	Dinobryon sertularia Ehrenberg	4200	8.36
MEL - 0205		23-Jul-16	Epiphyxis sp.	14368	1.06
MEL - 0205		23-Jul-16	Chrysolkos skuja (Nauwerck) Willen	50288	1.33
MEL - 0205		23-Jul-16	Uroglena volvox Ehrenberg	790240	89.38
MEL - 0205		23-Jul-16	Chrysochromulina laurentiana Kling	165232	76.54
MEL - 0205		23-Jul-16	Stichogloea spp.	7184	0.36
MEL - 0205		23-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.16
MEL - 0205		23-Jul-16	Dinobryon attenatum Hill	7184	1.22
MEL - 0205		23-Jul-16	Pteridomonas sp.	14368	3.42
MEL - 0205		23-Jul-16	Cyclotella stelligera Cleve and Grunow	3000	6.27
MEL - 0205		23-Jul-16	Cyclotella pseudostelligera	7184	3.87
MEL - 0205		23-Jul-16	Rhizosolenia eriense H.L. Smith	316096	24.59
MEL - 0205		23-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	1400	1.08
MEL - 0205		23-Jul-16	Synedra acus Kutzing	4800	0.59

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205		23-Jul-16	Asterionella formosa Hassall	800	0.08
MEL - 0205		23-Jul-16	Cyclotella michiganiana Skvortzow	7184	0.18
MEL - 0205		23-Jul-16	Cyclotella bodanica Eulenst.	200	2.51
MEL - 0205		23-Jul-16	Rhodomonas minuta Skuja	79024	12.72
MEL - 0205		23-Jul-16	Cryptomonas erosa Ehrenberg	5200	9.11
MEL - 0205		23-Jul-16	Cryptomonas ovata Ehrenberg	200	0.90
MEL - 0205		23-Jul-16	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL - 0205		23-Jul-16	Cryptomonas rostratiformis Skuja	1600	3.28
MEL - 0205		23-Jul-16	Katablepharis ovalis Skuja	21552	1.22
MEL - 0205		23-Jul-16	Gymnodinium sp.	1000	14.14
MEL - 0205		23-Jul-16	Peridinium pusillum (Penard) Lemmermann	1800	4.55
MEL - 0205		11-Aug-16	Chlamydomonas spp.	7184	0.13
MEL - 0205		11-Aug-16	Sphaerocystis schroeteri Chodat	50288	1.68
MEL - 0205		11-Aug-16	Tetraedron minimum (Brunow) Hansgrig	7184	1.25
MEL - 0205		11-Aug-16	Elakatothrix gelatinosa Willen	43104	1.10
MEL - 0205		11-Aug-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0205		11-Aug-16	Staurodesmus extensus (Andersson) Teiling	600	0.25
MEL - 0205		11-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0205		11-Aug-16	Botryococcus braunii Kutzing	400	0.28
MEL - 0205		11-Aug-16	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL - 0205		11-Aug-16	Monomastix minuta Skuja	7184	0.33
MEL - 0205		11-Aug-16	Small chrysophyceae	696848	10.87
MEL - 0205		11-Aug-16	Large chrysophyceae	28736	6.60
MEL - 0205		11-Aug-16	Chrysochromulina parva Lackey	43104	2.82
MEL - 0205		11-Aug-16	Chrysococcus sp.	488512	31.95
MEL - 0205		11-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	4.35
MEL - 0205		11-Aug-16	Kephyrion sp.	64656	1.01
MEL - 0205		11-Aug-16	Spiniferomonas sirrata**********	43104	3.97
MEL - 0205		11-Aug-16	Dinobryon borgei Lemmermann	21552	1.41
MEL - 0205		11-Aug-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0205		11-Aug-16	Dinobryon bavaricum Imhof	200	0.40
MEL - 0205		11-Aug-16	Dinobryon sertularia Ehrenberg	35920	8.13
MEL - 0205		11-Aug-16	Dinobryon sertularia Ehrenberg	1200	4.07

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205		11-Aug-16	Dinobryon sociale Ehrenberg	107760	24.38
MEL - 0205		11-Aug-16	Chrysolkos skuja (Nauwerck) Willen	14368	0.39
MEL - 0205		11-Aug-16	Uroglena volvox Ehrenberg	93392	10.56
MEL - 0205		11-Aug-16	Chrysochromulina laurentiana Kling	107760	46.86
MEL - 0205		11-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.29
MEL - 0205		11-Aug-16	Pteridomonas sp.	28736	6.84
MEL - 0205		11-Aug-16	Cyclotella stelligera Cleve and Grunow	6000	11.87
MEL - 0205		11-Aug-16	Cyclotella ocellata Pant.	14368	1.44
MEL - 0205		11-Aug-16	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL - 0205		11-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	1200	1.00
MEL - 0205		11-Aug-16	Synedra acus Kutzing	1600	0.17
MEL - 0205		11-Aug-16	Cyclotella michiganiana Skvortzow	93392	1.78
MEL - 0205		11-Aug-16	Cyclotella bodanica Eulenst.	1600	12.35
MEL - 0205		11-Aug-16	Rhodomonas minuta Skuja	208336	26.19
MEL - 0205		11-Aug-16	Cryptomonas erosa Ehrenberg	9800	11.43
MEL - 0205		11-Aug-16	Cryptomonas reflexa (Marsson) Skuja	2400	1.68
MEL - 0205		11-Aug-16	Cryptomonas rostratiformis Skuja	1000	2.12
MEL - 0205		11-Aug-16	Katablepharis ovalis Skuja	14368	0.84
MEL - 0205		11-Aug-16	Gymnodinium helveticum Penard	200	4.71
MEL - 0205		11-Aug-16	Gymnodinium sp.	14368	5.30
MEL - 0205		11-Aug-16	Gymnodinium sp.	1000	12.25
MEL - 0205		11-Aug-16	Peridinium pusillum (Penard) Lemmermann	2800	7.72
MEL - 0205		11-Sep-16	Pyramidomonas tetrarhynchus Schmarda	200	0.10
MEL - 0205		11-Sep-16	Elakatothrix gelatinosa Willen	7184	0.12
MEL - 0205		11-Sep-16	Planctonema lauterbornii Schmidle	28736	3.97
MEL - 0205		11-Sep-16	Staurodesmus extensus (Andersson) Teiling	600	0.24
MEL - 0205		11-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0205		11-Sep-16	Botryococcus braunii Kutzing	200	0.1
MEL - 0205		11-Sep-16	Monomastix minuta Skuja	7184	0.13
MEL - 0205		11-Sep-16	Small chrysophyceae	466960	6.58
MEL - 0205		11-Sep-16	Large chrysophyceae	35920	6.45
MEL - 0205		11-Sep-16	Chrysochromulina parva Lackey	287360	18.79
MEL - 0205		11-Sep-16	Chrysococcus sp.	308912	20.20

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0205		11-Sep-16	Kephyrion sp.	86208	2.10
MEL - 0205		11-Sep-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0205		11-Sep-16	Dinobryon borgei Lemmermann	7184	0.35
MEL - 0205		11-Sep-16	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0205		11-Sep-16	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0205		11-Sep-16	Dinobryon bavaricum Imhof	1600	3.19
MEL - 0205		11-Sep-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0205		11-Sep-16	Dinobryon sertularia Ehrenberg	1000	5.09
MEL - 0205		11-Sep-16	Dinobryon sociale Ehrenberg	64656	14.63
MEL - 0205		11-Sep-16	Dinobryon sociale Ehrenberg	1200	1.50
MEL - 0205		11-Sep-16	Epiphyxis sp.	14368	1.03
MEL - 0205		11-Sep-16	Uroglena volvox Ehrenberg	158048	17.88
MEL - 0205		11-Sep-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0205		11-Sep-16	Chrysochromulina laurentiana Kling	129312	67.71
MEL - 0205		11-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	71840	2.08
MEL - 0205		11-Sep-16	Pteridomonas sp.	7184	1.59
MEL - 0205		11-Sep-16	Cyclotella stelligera Cleve and Grunow	7600	16.11
MEL - 0205		11-Sep-16	Cyclotella ocellata Pant.	7184	0.55
MEL - 0205		11-Sep-16	Synedra acus Kutzing	1400	0.16
MEL - 0205		11-Sep-16	Asterionella formosa Hassall	9600	1.00
MEL - 0205		11-Sep-16	Cyclotella michiganiana Skvortzow	28736	0.70
MEL - 0205		11-Sep-16	Cyclotella bodanica Eulenst.	400	3.66
MEL - 0205		11-Sep-16	Rhodomonas minuta Skuja	165232	20.77
MEL - 0205		11-Sep-16	Cryptomonas erosa Ehrenberg	3600	5.91
MEL - 0205		11-Sep-16	Cryptomonas reflexa (Marsson) Skuja	1000	0.67
MEL - 0205		11-Sep-16	Cryptomonas rostratiformis Skuja	600	1.27
MEL - 0205		11-Sep-16	Gymnodinium sp.	1200	10.06
MEL - 0205		11-Sep-16	Peridinium willei Huitfeldt-Kaas	200	6.21
MEL - 0205		11-Sep-16	Peridinium pusillum (Penard) Lemmermann	1600	3.43
MEL - 0205		11-Sep-16	Peridinium aciculiferum Lemmermann	1600	14.48
MEL - 0301		26-Jul-16	Planktothrix	200	5.54
MEL - 0301		26-Jul-16	Chlamydomonas spp.	7184	0.07
MEL - 0301		26-Jul-16	Sphaerocystis schroeteri Chodat	21552	0.44

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0301		26-Jul-16	Dictyosphaerium simplex Sukja	28736	0.45
MEL - 0301		26-Jul-16	Elakatothrix gelatinosa Willen	43104	0.91
MEL - 0301		26-Jul-16	Euastrum spp.	200	0.37
MEL - 0301		26-Jul-16	Staurodesmus extensus (Andersson) Teiling	1000	0.35
MEL - 0301		26-Jul-16	Botryococcus braunii Kutzing	200	0.29
MEL - 0301		26-Jul-16	Small chrysophyceae	280176	5.27
MEL - 0301		26-Jul-16	Large chrysophyceae	14368	2.58
MEL - 0301		26-Jul-16	Chrysochromulina parva Lackey	158048	10.34
MEL - 0301		26-Jul-16	Chrysococcus sp.	366384	23.96
MEL - 0301		26-Jul-16	Chrysostephanospaera globulifera Scherffel	14368	7.52
MEL - 0301		26-Jul-16	Kephyrion sp.	86208	1.34
MEL - 0301		26-Jul-16	Spiniferomonas sirrata**********	14368	1.25
MEL - 0301		26-Jul-16	Mallomonas crassisquama (Asmund) Fott	1000	1.05
MEL - 0301		26-Jul-16	Dinobryon borgei Lemmermann	7184	0.32
MEL - 0301		26-Jul-16	Dinobryon bavaricum Imhof	114944	26.00
MEL - 0301		26-Jul-16	Dinobryon bavaricum Imhof	6000	7.35
MEL - 0301		26-Jul-16	Dinobryon sertularia Ehrenberg	71840	16.25
MEL - 0301		26-Jul-16	Dinobryon sertularia Ehrenberg	1800	6.10
MEL - 0301		26-Jul-16	Chrysolkos skuja (Nauwerck) Willen	28736	0.53
MEL - 0301		26-Jul-16	Uroglena volvox Ehrenberg	251440	28.44
MEL - 0301		26-Jul-16	Chrysosphaerella longispina Lauterborn	200	3.00
MEL - 0301		26-Jul-16	Chrysochromulina laurentiana Kling	129312	56.24
MEL - 0301		26-Jul-16	Stichogloea spp.	43104	2.17
MEL - 0301		26-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.42
MEL - 0301		26-Jul-16	Pteridomonas sp.	28736	6.84
MEL - 0301		26-Jul-16	Cyclotella stelligera Cleve and Grunow	400	0.63
MEL - 0301		26-Jul-16	Rhizosolenia eriense H.L. Smith	50288	3.20
MEL - 0301		26-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	1600	1.33
MEL - 0301		26-Jul-16	Tabellaria flocculsa (Roth) Kutzing	200	0.25
MEL - 0301		26-Jul-16	Synedra acus Kutzing	4600	0.58
MEL - 0301		26-Jul-16	Synedra ulna (Nitzsch) Ehrenberg	200	0.41
MEL - 0301		26-Jul-16	Asterionella formosa Hassall	1400	0.15
MEL - 0301		26-Jul-16	Cyclotella michiganiana Skvortzow	28736	0.48

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0301		26-Jul-16	Cyclotella bodanica Eulenst.	400	3.09
MEL - 0301		26-Jul-16	Rhodomonas minuta Skuja	79024	8.94
MEL - 0301		26-Jul-16	Cryptomonas erosa Ehrenberg	4400	7.83
MEL - 0301		26-Jul-16	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL - 0301		26-Jul-16	Cryptomonas rostratiformis Skuja	200	0.41
MEL - 0301		26-Jul-16	Katablepharis ovalis Skuja	21552	1.22
MEL - 0301		26-Jul-16	Gymnodinium helveticum Penard	600	14.42
MEL - 0301		26-Jul-16	Gymnodinium sp.	7184	3.05
MEL - 0301		26-Jul-16	Gymnodinium sp.	1400	11.32
MEL - 0301		26-Jul-16	Peridinium pusillum (Penard) Lemmermann	1600	3.83
MEL - 0301		12-Aug-16	Chlamydomonas spp.	7184	0.08
MEL - 0301		12-Aug-16	Sphaerocystis schroeteri Chodat	28736	0.41
MEL - 0301		12-Aug-16	Elakatothrix gelatinosa Willen	7184	0.13
MEL - 0301		12-Aug-16	Planctonema lauterbornii Schmidle	43104	5.42
MEL - 0301		12-Aug-16	Euastrum spp.	200	0.37
MEL - 0301		12-Aug-16	Staurodesmus paradoxum Meyen	200	0.73
MEL - 0301		12-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0301		12-Aug-16	Small chrysophyceae	495696	4.06
MEL - 0301		12-Aug-16	Large chrysophyceae	28736	5.16
MEL - 0301		12-Aug-16	Chrysochromulina parva Lackey	215520	14.10
MEL - 0301		12-Aug-16	Chrysococcus sp.	380752	24.90
MEL - 0301		12-Aug-16	Kephyrion boreale Skuja	14368	1.71
MEL - 0301		12-Aug-16	Kephyrion sp.	43104	0.40
MEL - 0301		12-Aug-16	Spiniferomonas sirrata**********	14368	1.25
MEL - 0301		12-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0301		12-Aug-16	Dinobryon borgei Lemmermann	7184	0.36
MEL - 0301		12-Aug-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0301		12-Aug-16	Dinobryon bavaricum Imhof	400	1.36
MEL - 0301		12-Aug-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0301		12-Aug-16	Dinobryon sertularia Ehrenberg	200	0.25
MEL - 0301		12-Aug-16	Dinobryon sertularia Ehrenberg	600	2.03
MEL - 0301		12-Aug-16	Dinobryon sociale Ehrenberg	215520	48.75
MEL - 0301		12-Aug-16	Chrysolkos skuja (Nauwerck) Willen	21552	0.54

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0301		12-Aug-16	Uroglena volvox Ehrenberg	43104	4.88
MEL - 0301		12-Aug-16	Chrysochromulina laurentiana Kling	79024	36.60
MEL - 0301		12-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.38
MEL - 0301		12-Aug-16	Pteridomonas sp.	14368	3.42
MEL - 0301		12-Aug-16	Cyclotella stelligera Cleve and Grunow	3000	5.94
MEL - 0301		12-Aug-16	Fragilaria crotonensis Kitton	3000	0.97
MEL - 0301		12-Aug-16	Synedra acus Kutzing	1400	0.15
MEL - 0301		12-Aug-16	Cyclotella michiganiana Skvortzow	7184	0.19
MEL - 0301		12-Aug-16	Cyclotella bodanica Eulenst.	800	6.17
MEL - 0301		12-Aug-16	Rhodomonas minuta Skuja	107760	13.55
MEL - 0301		12-Aug-16	Cryptomonas erosa Ehrenberg	1800	2.08
MEL - 0301		12-Aug-16	Cryptomonas reflexa (Marsson) Skuja	200	0.14
MEL - 0301		12-Aug-16	Cryptomonas rostratiformis Skuja	400	0.85
MEL - 0301		12-Aug-16	Gymnodinium helveticum Penard	200	4.71
MEL - 0301		12-Aug-16	Gymnodinium sp.	400	4.08
MEL - 0301		12-Aug-16	Peridinium pusillum (Penard) Lemmermann	400	0.99
MEL - 0301	RECOUNT	12-Aug-16	Chlamydomonas spp.	14368	0.17
MEL - 0301	RECOUNT	12-Aug-16	Sphaerocystis schroeteri Chodat	28736	0.41
MEL - 0301	RECOUNT	12-Aug-16	Elakatothrix gelatinosa Willen	7184	0.13
MEL - 0301	RECOUNT	12-Aug-16	Planctonema lauterbornii Schmidle	93392	12.91
MEL - 0301	RECOUNT	12-Aug-16	Euastrum spp.	200	0.37
MEL - 0301	RECOUNT	12-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.11
MEL - 0301	RECOUNT	12-Aug-16	Staurodesmus paradoxum Meyen	200	0.73
MEL - 0301	RECOUNT	12-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0301	RECOUNT	12-Aug-16	Oocystis gigas Archer	200	0.48
MEL - 0301	RECOUNT	12-Aug-16	Small chrysophyceae	531616	4.36
MEL - 0301	RECOUNT	12-Aug-16	Large chrysophyceae	35920	6.45
MEL - 0301	RECOUNT	12-Aug-16	Chrysochromulina parva Lackey	165232	10.81
MEL - 0301	RECOUNT	12-Aug-16	Chrysococcus sp.	344832	22.55
MEL - 0301	RECOUNT	12-Aug-16	Kephyrion sp.	64656	0.59
MEL - 0301	RECOUNT	12-Aug-16	Spiniferomonas sirrata**********	14368	1.25
MEL - 0301	RECOUNT	12-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0301	RECOUNT	12-Aug-16	Dinobryon borgei Lemmermann	14368	0.73

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0301	RECOUNT	12-Aug-16	Dinobryon bavaricum Imhof	35920	8.13
MEL - 0301	RECOUNT	12-Aug-16	Dinobryon bavaricum Imhof	200	0.68
MEL - 0301	RECOUNT	12-Aug-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0301	RECOUNT	12-Aug-16	Dinobryon sertularia Ehrenberg	1000	3.39
MEL - 0301	RECOUNT	12-Aug-16	Dinobryon sociale Ehrenberg	229888	52.00
MEL - 0301	RECOUNT	12-Aug-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0301	RECOUNT	12-Aug-16	Chrysolkos skuja (Nauwerck) Willen	28736	0.72
MEL - 0301	RECOUNT	12-Aug-16	Uroglena volvox Ehrenberg	28736	3.25
MEL - 0301	RECOUNT	12-Aug-16	Chrysochromulina laurentiana Kling	100576	46.59
MEL - 0301	RECOUNT	12-Aug-16	Pteridomonas sp.	7184	1.71
MEL - 0301	RECOUNT	12-Aug-16	Cyclotella stelligera Cleve and Grunow	1400	2.77
MEL - 0301	RECOUNT	12-Aug-16	Cyclotella ocellata Pant.	14368	1.24
MEL - 0301	RECOUNT	12-Aug-16	Fragilaria crotonensis Kitton	1800	0.58
MEL - 0301	RECOUNT	12-Aug-16	Synedra acus Kutzing	2200	0.23
MEL - 0301	RECOUNT	12-Aug-16	Cyclotella michiganiana Skvortzow	14368	0.37
MEL - 0301	RECOUNT	12-Aug-16	Cyclotella bodanica Eulenst.	800	6.17
MEL - 0301	RECOUNT	12-Aug-16	Rhodomonas minuta Skuja	122128	1.54
MEL - 0301	RECOUNT	12-Aug-16	Cryptomonas erosa Ehrenberg	1000	1.16
MEL - 0301	RECOUNT	12-Aug-16	Cryptomonas reflexa (Marsson) Skuja	200	0.14
MEL - 0301	RECOUNT	12-Aug-16	Katablepharis ovalis Skuja	7184	0.43
MEL - 0301	RECOUNT	12-Aug-16	Gymnodinium sp.	400	4.08
MEL - 0301	RECOUNT	12-Aug-16	Peridinium pusillum (Penard) Lemmermann	600	1.49
MEL - 0301		12-Sep-16	Pyramidomonas tetrarhynchus Schmarda	200	0.08
MEL - 0301		12-Sep-16	Sphaerocystis schroeteri Chodat	28736	0.54
MEL - 0301		12-Sep-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL - 0301		12-Sep-16	Elakatothrix gelatinosa Willen	7184	0.16
MEL - 0301		12-Sep-16	Planctonema lauterbornii Schmidle	64656	8.13
MEL - 0301		12-Sep-16	Cosmarium sp.	200	0.28
MEL - 0301		12-Sep-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0301		12-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0301		12-Sep-16	Botryococcus braunii Kutzing	400	0.36
MEL - 0301		12-Sep-16	Oocystis gigas Archer	200	0.48
MEL - 0301		12-Sep-16	Monomastix minuta Skuja	7184	0.10

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0301		12-Sep-16	Small chrysophyceae	373568	4.78
MEL - 0301		12-Sep-16	Large chrysophyceae	14368	2.58
MEL - 0301		12-Sep-16	Chrysochromulina parva Lackey	395120	25.84
MEL - 0301		12-Sep-16	Chrysococcus sp.	409488	26.78
MEL - 0301		12-Sep-16	Chrysostephanospaera globulifera Scherffel	21552	7.95
MEL - 0301		12-Sep-16	Kephyrion sp.	79024	1.01
MEL - 0301		12-Sep-16	Spiniferomonas sirrata**********	7184	0.66
MEL - 0301		12-Sep-16	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0301		12-Sep-16	Mallomonas akrokomos Asmund and Kristiansen	7184	1.63
MEL - 0301		12-Sep-16	Dinobryon borgei Lemmermann	28736	1.36
MEL - 0301		12-Sep-16	Dinobryon bavaricum Imhof	800	1.59
MEL - 0301		12-Sep-16	Dinobryon sertularia Ehrenberg	2600	13.22
MEL - 0301		12-Sep-16	Dinobryon sociale Ehrenberg	114944	26.00
MEL - 0301		12-Sep-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0301		12-Sep-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.20
MEL - 0301		12-Sep-16	Uroglena volvox Ehrenberg	107760	12.19
MEL - 0301		12-Sep-16	Chrysochromulina laurentiana Kling	107760	56.42
MEL - 0301		12-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.56
MEL - 0301		12-Sep-16	Cyclotella stelligera Cleve and Grunow	4400	7.55
MEL - 0301		12-Sep-16	Cyclotella ocellata Pant.	258624	26.97
MEL - 0301		12-Sep-16	Synedra acus Kutzing	4600	0.41
MEL - 0301		12-Sep-16	Asterionella formosa Hassall	3400	0.36
MEL - 0301		12-Sep-16	Cyclotella michiganiana Skvortzow	57472	1.41
MEL - 0301		12-Sep-16	Rhodomonas minuta Skuja	201152	25.79
MEL - 0301		12-Sep-16	Cryptomonas erosa Ehrenberg	1800	2.86
MEL - 0301		12-Sep-16	Cryptomonas rostratiformis Skuja	600	1.23
MEL - 0301		12-Sep-16	Katablepharis ovalis Skuja	14368	0.67
MEL - 0301		12-Sep-16	Gymnodinium helveticum Penard	400	9.42
MEL - 0301		12-Sep-16	Gymnodinium sp.	14368	4.62
MEL - 0301		12-Sep-16	Gymnodinium sp.	800	6.95
MEL - 0301		12-Sep-16	Peridinium pusillum (Penard) Lemmermann	800	1.75
MEL - 0301		12-Sep-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0301	REP7	12-Sep-16	Chlamydomonas spp.	7184	0.24

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0301	REP7	12-Sep-16	Elakatothrix gelatinosa Willen	14368	0.30
MEL - 0301	REP7	12-Sep-16	Planctonema lauterbornii Schmidle	28736	3.61
MEL - 0301	REP7	12-Sep-16	Cosmarium sp.	400	0.56
MEL - 0301	REP7	12-Sep-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0301	REP7	12-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0301	REP7	12-Sep-16	Ankistrodesmus spiralis Lemmermann	7184	0.42
MEL - 0301	REP7	12-Sep-16	Monomastix minuta Skuja	7184	0.14
MEL - 0301	REP7	12-Sep-16	Small chrysophyceae	445408	5.70
MEL - 0301	REP7	12-Sep-16	Large chrysophyceae	57472	10.32
MEL - 0301	REP7	12-Sep-16	Chrysochromulina parva Lackey	409488	26.78
MEL - 0301	REP7	12-Sep-16	Chrysococcus sp.	409488	26.78
MEL - 0301	REP7	12-Sep-16	Chrysostephanospaera globulifera Scherffel	7184	3.33
MEL - 0301	REP7	12-Sep-16	Kephyrion sp.	100576	1.29
MEL - 0301	REP7	12-Sep-16	Spiniferomonas sirrata**********	21552	2.32
MEL - 0301	REP7	12-Sep-16	Mallomonas crassisquama (Asmund) Fott	400	0.41
MEL - 0301	REP7	12-Sep-16	Dinobryon borgei Lemmermann	35920	1.61
MEL - 0301	REP7	12-Sep-16	Dinobryon bavaricum Imhof	14368	3.25
MEL - 0301	REP7	12-Sep-16	Dinobryon bavaricum Imhof	1800	3.58
MEL - 0301	REP7	12-Sep-16	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0301	REP7	12-Sep-16	Dinobryon sertularia Ehrenberg	1200	6.10
MEL - 0301	REP7	12-Sep-16	Dinobryon sociale Ehrenberg	158048	35.75
MEL - 0301	REP7	12-Sep-16	Dinobryon sociale Ehrenberg	1000	1.25
MEL - 0301	REP7	12-Sep-16	Chrysolkos skuja (Nauwerck) Willen	14368	0.26
MEL - 0301	REP7	12-Sep-16	Uroglena volvox Ehrenberg	129312	14.63
MEL - 0301	REP7	12-Sep-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0301	REP7	12-Sep-16	Chrysochromulina laurentiana Kling	64656	33.85
MEL - 0301	REP7	12-Sep-16	Stichogloea spp.	35920	1.81
MEL - 0301	REP7	12-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	64656	1.63
MEL - 0301	REP7	12-Sep-16	Pteridomonas sp.	7184	1.71
MEL - 0301	REP7	12-Sep-16	Cyclotella stelligera Cleve and Grunow	4800	8.85
MEL - 0301	REP7	12-Sep-16	Synedra acus Kutzing	3800	0.38
MEL - 0301	REP7	12-Sep-16	Asterionella formosa Hassall	3000	0.30
MEL - 0301	REP7	12-Sep-16	Cyclotella michiganiana Skvortzow	14368	0.27

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0301	REP7	12-Sep-16	Cyclotella bodanica Eulenst.	600	4.63
MEL - 0301	REP7	12-Sep-16	Rhodomonas minuta Skuja	122128	15.35
MEL - 0301	REP7	12-Sep-16	Cryptomonas erosa Ehrenberg	4200	6.61
MEL - 0301	REP7	12-Sep-16	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0301	REP7	12-Sep-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0301	REP7	12-Sep-16	Gymnodinium sp.	14368	5.30
MEL - 0301	REP7	12-Sep-16	Gymnodinium sp.	600	5.72
MEL - 0301	REP7	12-Sep-16	Peridinium pusillum (Penard) Lemmermann	1800	3.79
MEL - 0301	REP7	12-Sep-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0302		26-Jul-16	Aphanothece sp.	14368	0.73
MEL - 0302		26-Jul-16	Sphaerocystis schroeteri Chodat	165232	5.96
MEL - 0302		26-Jul-16	Oocystis lacustris Chodat	43104	1.22
MEL - 0302		26-Jul-16	Dictyosphaerium simplex Sukja	28736	0.12
MEL - 0302		26-Jul-16	Elakatothrix gelatinosa Willen	28736	0.50
MEL - 0302		26-Jul-16	Planctonema lauterbornii Schmidle	21552	2.71
MEL - 0302		26-Jul-16	Staurodesmus extensus (Andersson) Teiling	1400	0.49
MEL - 0302		26-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0302		26-Jul-16	Botryococcus braunii Kutzing	200	0.18
MEL - 0302		26-Jul-16	Small chrysophyceae	150864	2.84
MEL - 0302		26-Jul-16	Large chrysophyceae	21552	3.87
MEL - 0302		26-Jul-16	Chrysochromulina parva Lackey	222704	14.56
MEL - 0302		26-Jul-16	Chrysococcus sp.	287360	18.79
MEL - 0302		26-Jul-16	Kephyrion sp.	50288	0.71
MEL - 0302		26-Jul-16	Mallomonas crassisquama (Asmund) Fott	400	0.43
MEL - 0302		26-Jul-16	Dinobryon borgei Lemmermann	57472	2.63
MEL - 0302		26-Jul-16	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0302		26-Jul-16	Dinobryon bavaricum Imhof	136496	30.88
MEL - 0302		26-Jul-16	Dinobryon bavaricum Imhof	5200	6.37
MEL - 0302		26-Jul-16	Dinobryon sertularia Ehrenberg	50288	11.38
MEL - 0302		26-Jul-16	Dinobryon sertularia Ehrenberg	3400	6.77
MEL - 0302		26-Jul-16	Uroglena volvox Ehrenberg	603456	68.25
MEL - 0302		26-Jul-16	Uroglena volvox Ehrenberg	200	2.26
MEL - 0302		26-Jul-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0302		26-Jul-16	Chrysochromulina laurentiana Kling	79024	36.60
MEL - 0302		26-Jul-16	Stichogloea spp.	43104	2.17
MEL - 0302		26-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.21
MEL - 0302		26-Jul-16	Cyclotella stelligera Cleve and Grunow	1400	2.55
MEL - 0302		26-Jul-16	Cyclotella pseudostelligera	43104	23.22
MEL - 0302		26-Jul-16	Rhizosolenia eriense H.L. Smith	21552	1.68
MEL - 0302		26-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	6000	4.98
MEL - 0302		26-Jul-16	Synedra acus Kutzing	6000	0.75
MEL - 0302		26-Jul-16	Asterionella formosa Hassall	2000	0.21
MEL - 0302		26-Jul-16	Eunotia zazumenensis **********	800	0.03
MEL - 0302		26-Jul-16	Cyclotella michiganiana Skvortzow	21552	0.53
MEL - 0302		26-Jul-16	Rhodomonas minuta Skuja	100576	11.01
MEL - 0302		26-Jul-16	Cryptomonas erosa Ehrenberg	3400	5.82
MEL - 0302		26-Jul-16	Cryptomonas reflexa (Marsson) Skuja	200	0.14
MEL - 0302		26-Jul-16	Katablepharis ovalis Skuja	14368	0.83
MEL - 0302		26-Jul-16	Gymnodinium helveticum Penard	600	15.55
MEL - 0302		26-Jul-16	Gymnodinium sp.	600	5.52
MEL - 0302		26-Jul-16	Peridinium pusillum (Penard) Lemmermann	2000	6.11
MEL - 0302		12-Aug-16	Aphanothece sp.	7184	0.37
MEL - 0302		12-Aug-16	Chlamydomonas spp.	7184	0.07
MEL - 0302		12-Aug-16	Pediastrum duplex Meyen	4200	0.39
MEL - 0302		12-Aug-16	Oocystis lacustris Chodat	14368	0.34
MEL - 0302		12-Aug-16	Crucigenia quadrata Morr.	28736	0.14
MEL - 0302		12-Aug-16	Elakatothrix gelatinosa Willen	35920	0.62
MEL - 0302		12-Aug-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0302		12-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.14
MEL - 0302		12-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	43104	1.63
MEL - 0302		12-Aug-16	Small chrysophyceae	416672	5.33
MEL - 0302		12-Aug-16	Large chrysophyceae	7184	1.29
MEL - 0302		12-Aug-16	Chrysochromulina parva Lackey	215520	14.10
MEL - 0302		12-Aug-16	Chrysococcus sp.	359200	22.13
MEL - 0302		12-Aug-16	Kephyrion boreale Skuja	7184	0.90
MEL - 0302		12-Aug-16	Kephyrion sp.	57472	0.81

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0302		12-Aug-16	Spiniferomonas sirrata**********	14368	1.00
MEL - 0302		12-Aug-16	Mallomonas crassisquama (Asmund) Fott	600	0.62
MEL - 0302		12-Aug-16	Dinobryon borgei Lemmermann	21552	0.80
MEL - 0302		12-Aug-16	Dinobryon bavaricum Imhof	28736	6.50
MEL - 0302		12-Aug-16	Dinobryon bavaricum Imhof	400	0.39
MEL - 0302		12-Aug-16	Dinobryon sertularia Ehrenberg	43104	9.75
MEL - 0302		12-Aug-16	Dinobryon sertularia Ehrenberg	1200	2.39
MEL - 0302		12-Aug-16	Dinobryon sociale Ehrenberg	143680	32.50
MEL - 0302		12-Aug-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0302		12-Aug-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.23
MEL - 0302		12-Aug-16	Uroglena volvox Ehrenberg	79024	8.94
MEL - 0302		12-Aug-16	Chrysochromulina laurentiana Kling	114944	49.99
MEL - 0302		12-Aug-16	Stichogloea spp.	21552	1.08
MEL - 0302		12-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.19
MEL - 0302		12-Aug-16	Pteridomonas sp.	28736	6.61
MEL - 0302		12-Aug-16	Cyclotella stelligera Cleve and Grunow	3000	5.46
MEL - 0302		12-Aug-16	Cyclotella ocellata Pant.	14368	1.44
MEL - 0302		12-Aug-16	Synedra acus Kutzing	1800	0.19
MEL - 0302		12-Aug-16	Asterionella formosa Hassall	1200	0.12
MEL - 0302		12-Aug-16	Cyclotella michiganiana Skvortzow	64656	1.58
MEL - 0302		12-Aug-16	Cyclotella bodanica Eulenst.	1000	7.06
MEL - 0302		12-Aug-16	Rhodomonas minuta Skuja	100576	12.64
MEL - 0302		12-Aug-16	Cryptomonas erosa Ehrenberg	2200	2.55
MEL - 0302		12-Aug-16	Cryptomonas reflexa (Marsson) Skuja	600	0.41
MEL - 0302		12-Aug-16	Cryptomonas rostratiformis Skuja	400	0.77
MEL - 0302		12-Aug-16	Gymnodinium sp.	600	5.52
MEL - 0302		12-Aug-16	Peridinium pusillum (Penard) Lemmermann	1400	3.73
MEL - 0302		13-Sep-16	Elakatothrix gelatinosa Willen	21552	0.41
MEL - 0302		13-Sep-16	Planctonema lauterbornii Schmidle	35920	4.52
MEL - 0302		13-Sep-16	Cosmarium sp.	200	0.28
MEL - 0302		13-Sep-16	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0302		13-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0302		13-Sep-16	Botryococcus braunii Kutzing	800	0.92

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0302		13-Sep-16	Small chrysophyceae	359200	4.60
MEL - 0302		13-Sep-16	Large chrysophyceae	35920	6.45
MEL - 0302		13-Sep-16	Chrysochromulina parva Lackey	452592	29.60
MEL - 0302		13-Sep-16	Chrysococcus sp.	323280	21.14
MEL - 0302		13-Sep-16	Chrysostephanospaera globulifera Scherffel	14368	5.67
MEL - 0302		13-Sep-16	Kephyrion boreale Skuja	7184	0.81
MEL - 0302		13-Sep-16	Kephyrion sp.	79024	1.36
MEL - 0302		13-Sep-16	Spiniferomonas sirrata**********	7184	0.85
MEL - 0302		13-Sep-16	Dinobryon borgei Lemmermann	35920	1.78
MEL - 0302		13-Sep-16	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0302		13-Sep-16	Dinobryon bavaricum Imhof	1600	3.19
MEL - 0302		13-Sep-16	Dinobryon sertularia Ehrenberg	28736	6.50
MEL - 0302		13-Sep-16	Dinobryon sertularia Ehrenberg	2400	12.20
MEL - 0302		13-Sep-16	Dinobryon sociale Ehrenberg	143680	32.50
MEL - 0302		13-Sep-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0302		13-Sep-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.19
MEL - 0302		13-Sep-16	Uroglena volvox Ehrenberg	179600	20.31
MEL - 0302		13-Sep-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0302		13-Sep-16	Chrysochromulina laurentiana Kling	57472	30.09
MEL - 0302		13-Sep-16	Stichogloea spp.	14368	0.72
MEL - 0302		13-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	79024	2.16
MEL - 0302		13-Sep-16	Pteridomonas sp.	7184	1.77
MEL - 0302		13-Sep-16	Cyclotella stelligera Cleve and Grunow	4200	9.02
MEL - 0302		13-Sep-16	Cyclotella ocellata Pant.	7184	0.78
MEL - 0302		13-Sep-16	Rhizosolenia eriense H.L. Smith	7184	0.61
MEL - 0302		13-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	4000	3.36
MEL - 0302		13-Sep-16	Fragilaria crotonensis Kitton	2400	0.77
MEL - 0302		13-Sep-16	Synedra acus Kutzing	2600	0.26
MEL - 0302		13-Sep-16	Asterionella formosa Hassall	9600	1.01
MEL - 0302		13-Sep-16	Cyclotella michiganiana Skvortzow	43104	1.06
MEL - 0302		13-Sep-16	Cyclotella bodanica Eulenst.	1000	9.16
MEL - 0302		13-Sep-16	Rhodomonas minuta Skuja	86208	10.84
MEL - 0302		13-Sep-16	Cryptomonas erosa Ehrenberg	2400	3.81

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0302		13-Sep-16	Gymnodinium sp.	600	5.09
MEL - 0302		13-Sep-16	Peridinium pusillum (Penard) Lemmermann	1600	3.5
MEL - 0302		13-Sep-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0303		26-Jul-16	Aphanothece sp.	14368	0.72
MEL - 0303		26-Jul-16	Snowella sp	400	0.68
MEL - 0303		26-Jul-16	Chlamydomonas spp.	28736	0.29
MEL - 0303		26-Jul-16	Sphaerocystis schroeteri Chodat	21552	0.72
MEL - 0303		26-Jul-16	Oocystis lacustris Chodat	7184	0.17
MEL - 0303		26-Jul-16	Elakatothrix gelatinosa Willen	14368	0.29
MEL - 0303		26-Jul-16	Planctonema lauterbornii Schmidle	14368	1.81
MEL - 0303		26-Jul-16	Cosmarium sp.	400	0.56
MEL - 0303		26-Jul-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0303		26-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0303		26-Jul-16	Small chrysophyceae	581904	11.99
MEL - 0303		26-Jul-16	Large chrysophyceae	64656	11.61
MEL - 0303		26-Jul-16	Chrysochromulina parva Lackey	395120	25.84
MEL - 0303		26-Jul-16	Chrysococcus sp.	359200	23.49
MEL - 0303		26-Jul-16	Kephyrion sp.	93392	1.2
MEL - 0303		26-Jul-16	Mallomonas crassisquama (Asmund) Fott	1400	1.51
MEL - 0303		26-Jul-16	Dinobryon borgei Lemmermann	21552	0.92
MEL - 0303		26-Jul-16	Dinobryon mucronutom Nygaard	7184	0.9
MEL - 0303		26-Jul-16	Dinobryon bavaricum Imhof	280176	63.38
MEL - 0303		26-Jul-16	Dinobryon bavaricum Imhof	6800	8.33
MEL - 0303		26-Jul-16	Dinobryon sertularia Ehrenberg	35920	8.13
MEL - 0303		26-Jul-16	Dinobryon sertularia Ehrenberg	2800	5.57
MEL - 0303		26-Jul-16	Chrysolkos skuja (Nauwerck) Willen	64656	1.82
MEL - 0303		26-Jul-16	Uroglena volvox Ehrenberg	481328	54.44
MEL - 0303		26-Jul-16	Chrysosphaerella longispina Lauterborn	200	3.02
MEL - 0303		26-Jul-16	Chrysochromulina laurentiana Kling	129312	56.24
MEL - 0303		26-Jul-16	Bicoeca lacustris Clark	7184	0.7
MEL - 0303		26-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43
MEL - 0303		26-Jul-16	Cyclotella stelligera Cleve and Grunow	1400	2.55
MEL - 0303		26-Jul-16	Cyclotella pseudostelligera	14368	7.74

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0303		26-Jul-16	Rhizosolenia eriense H.L. Smith	43104	3.35
MEL - 0303		26-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.33
MEL - 0303		26-Jul-16	Tabellaria flocculsa (Roth) Kutzing	4000	5.34
MEL - 0303		26-Jul-16	Synedra acus Kutzing	3400	0.42
MEL - 0303		26-Jul-16	Asterionella formosa Hassall	2400	0.25
MEL - 0303		26-Jul-16	Cyclotella michiganiana Skvortzow	43104	1.06
MEL - 0303		26-Jul-16	Rhodomonas minuta Skuja	172416	21.45
MEL - 0303		26-Jul-16	Cryptomonas erosa Ehrenberg	2800	4.64
MEL - 0303		26-Jul-16	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL - 0303		26-Jul-16	Katablepharis ovalis Skuja	21552	1.22
MEL - 0303		26-Jul-16	Gymnodinium sp.	7184	3.35
MEL - 0303		26-Jul-16	Gymnodinium sp.	200	3.12
MEL - 0303		26-Jul-16	Peridinium willei Huitfeldt-Kaas	400	13.4
MEL - 0303		26-Jul-16	Peridinium pusillum (Penard) Lemmermann	2400	6.07
MEL - 0303		12-Aug-16	Chlamydomonas spp.	21552	0.3
MEL - 0303		12-Aug-16	Pediastrum duplex Meyen	4800	0.4
MEL - 0303		12-Aug-16	Oocystis lacustris Chodat	14368	0.72
MEL - 0303		12-Aug-16	Elakatothrix gelatinosa Willen	93392	1.47
MEL - 0303		12-Aug-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0303		12-Aug-16	Cosmarium sp.	400	1.88
MEL - 0303		12-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.11
MEL - 0303		12-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0303		12-Aug-16	Small chrysophyceae	431040	5.52
MEL - 0303		12-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0303		12-Aug-16	Chrysochromulina parva Lackey	301728	22.21
MEL - 0303		12-Aug-16	Chrysococcus sp.	301728	19.73
MEL - 0303		12-Aug-16	Chrysostephanospaera globulifera Scherffel	14368	7.52
MEL - 0303		12-Aug-16	Kephyrion sp.	71840	1.01
MEL - 0303		12-Aug-16	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL - 0303		12-Aug-16	Mallomonas akrokomos Asmund and Kristiansen	7184	1.9
MEL - 0303		12-Aug-16	Dinobryon borgei Lemmermann	28736	1.17
MEL - 0303		12-Aug-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0303		12-Aug-16	Dinobryon bavaricum Imhof	800	1.59

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0303		12-Aug-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0303		12-Aug-16	Dinobryon sertularia Ehrenberg	400	2.03
MEL - 0303		12-Aug-16	Dinobryon sociale Ehrenberg	143680	32.5
MEL - 0303		12-Aug-16	Dinobryon sociale Ehrenberg	200	0.2
MEL - 0303		12-Aug-16	Chrysolkos skuja (Nauwerck) Willen	21552	0.74
MEL - 0303		12-Aug-16	Uroglena volvox Ehrenberg	79024	8.94
MEL - 0303		12-Aug-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0303		12-Aug-16	Chrysochromulina laurentiana Kling	114944	53.24
MEL - 0303		12-Aug-16	Stichogloea spp.	28736	1.45
MEL - 0303		12-Aug-16	Pteridomonas sp.	28736	5.74
MEL - 0303		12-Aug-16	Cyclotella stelligera Cleve and Grunow	800	1.18
MEL - 0303		12-Aug-16	Cyclotella ocellata Pant.	7184	1.03
MEL - 0303		12-Aug-16	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL - 0303		12-Aug-16	Synedra acus Kutzing	2800	0.34
MEL - 0303		12-Aug-16	Cyclotella michiganiana Skvortzow	79024	1.51
MEL - 0303		12-Aug-16	Cyclotella bodanica Eulenst.	600	3.51
MEL - 0303		12-Aug-16	Diatoma elongatum Agardh	400	0.08
MEL - 0303		12-Aug-16	Rhodomonas minuta Skuja	294544	37.02
MEL - 0303		12-Aug-16	Cryptomonas erosa Ehrenberg	1200	1.39
MEL - 0303		12-Aug-16	Cryptomonas reflexa (Marsson) Skuja	600	0.41
MEL - 0303		12-Aug-16	Cryptomonas rostratiformis Skuja	200	0.39
MEL - 0303		12-Aug-16	Gymnodinium sp.	1200	9.02
MEL - 0303		12-Aug-16	Peridinium pusillum (Penard) Lemmermann	1400	3.48
MEL - 0303		13-Sep-16	Chlamydomonas spp.	14368	0.84
MEL - 0303		13-Sep-16	Sphaerocystis schroeteri Chodat	35920	0.74
MEL - 0303		13-Sep-16	Oocystis lacustris Chodat	35920	1.02
MEL - 0303		13-Sep-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.5
MEL - 0303		13-Sep-16	Planctonema lauterbornii Schmidle	7184	0.9
MEL - 0303		13-Sep-16	Cosmarium sp.	600	0.84
MEL - 0303		13-Sep-16	Cosmarium sp.	200	0.32
MEL - 0303		13-Sep-16	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL - 0303		13-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0303		13-Sep-16	Botryococcus braunii Kutzing	200	0.18

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0303		13-Sep-16	Small chrysophyceae	395120	5.57
MEL - 0303		13-Sep-16	Large chrysophyceae	35920	6.45
MEL - 0303		13-Sep-16	Chrysochromulina parva Lackey	359200	23.49
MEL - 0303		13-Sep-16	Chrysococcus sp.	308912	20.2
MEL - 0303		13-Sep-16	Chrysostephanospaera globulifera Scherffel	28736	14.6
MEL - 0303		13-Sep-16	Kephyrion sp.	64656	0.91
MEL - 0303		13-Sep-16	Spiniferomonas sirrata**********	14368	1.54
MEL - 0303		13-Sep-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0303		13-Sep-16	Dinobryon borgei Lemmermann	14368	0.79
MEL - 0303		13-Sep-16	Dinobryon mucronutom Nygaard	7184	0.94
MEL - 0303		13-Sep-16	Dinobryon bavaricum Imhof	800	1.59
MEL - 0303		13-Sep-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0303		13-Sep-16	Dinobryon sertularia Ehrenberg	1600	8.14
MEL - 0303		13-Sep-16	Dinobryon sociale Ehrenberg	43104	9.75
MEL - 0303		13-Sep-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0303		13-Sep-16	Epiphyxis sp.	7184	0.55
MEL - 0303		13-Sep-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.17
MEL - 0303		13-Sep-16	Uroglena volvox Ehrenberg	28736	3.25
MEL - 0303		13-Sep-16	Chrysochromulina laurentiana Kling	57472	30.09
MEL - 0303		13-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.58
MEL - 0303		13-Sep-16	Cyclotella stelligera Cleve and Grunow	4000	7.27
MEL - 0303		13-Sep-16	Cyclotella ocellata Pant.	21552	2.17
MEL - 0303		13-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.34
MEL - 0303		13-Sep-16	Synedra acus Kutzing	1200	0.12
MEL - 0303		13-Sep-16	Asterionella formosa Hassall	5200	0.54
MEL - 0303		13-Sep-16	Cyclotella michiganiana Skvortzow	35920	0.88
MEL - 0303		13-Sep-16	Cyclotella bodanica Eulenst.	400	3.66
MEL - 0303		13-Sep-16	Rhodomonas minuta Skuja	107760	13.55
MEL - 0303		13-Sep-16	Cryptomonas erosa Ehrenberg	2000	2.31
MEL - 0303		13-Sep-16	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0303		13-Sep-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0303		13-Sep-16	Gymnodinium sp.	200	1.5
MEL - 0303		13-Sep-16	Peridinium pusillum (Penard) Lemmermann	1000	2.14

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0303		13-Sep-16	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0303	RECOUNT	13-Sep-16	Chlamydomonas spp.	7184	0.42
MEL - 0303	RECOUNT	13-Sep-16	Sphaerocystis schroeteri Chodat	28736	0.59
MEL - 0303	RECOUNT	13-Sep-16	Oocystis lacustris Chodat	43104	1.22
MEL - 0303	RECOUNT	13-Sep-16	Elakatothrix gelatinosa Willen	28736	0.54
MEL - 0303	RECOUNT	13-Sep-16	Planctonema lauterbornii Schmidle	14368	1.81
MEL - 0303	RECOUNT	13-Sep-16	Cosmarium sp.	600	0.84
MEL - 0303	RECOUNT	13-Sep-16	Euastrum spp.	200	0.37
MEL - 0303	RECOUNT	13-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0303	RECOUNT	13-Sep-16	Botryococcus braunii Kutzing	400	0.36
MEL - 0303	RECOUNT	13-Sep-16	Ankistrodesmus spiralis Lemmermann	14368	1.06
MEL - 0303	RECOUNT	13-Sep-16	Small chrysophyceae	438224	6.18
MEL - 0303	RECOUNT	13-Sep-16	Large chrysophyceae	64656	11.61
MEL - 0303	RECOUNT	13-Sep-16	Chrysochromulina parva Lackey	294544	19.26
MEL - 0303	RECOUNT	13-Sep-16	Chrysococcus sp.	287360	18.79
MEL - 0303	RECOUNT	13-Sep-16	Chrysostephanospaera globulifera Scherffel	43104	21.9
MEL - 0303	RECOUNT	13-Sep-16	Kephyrion sp.	43104	0.61
MEL - 0303	RECOUNT	13-Sep-16	Spiniferomonas sirrata**********	28736	3.09
MEL - 0303	RECOUNT	13-Sep-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0303	RECOUNT	13-Sep-16	Dinobryon borgei Lemmermann	7184	0.4
MEL - 0303	RECOUNT	13-Sep-16	Dinobryon mucronutom Nygaard	14368	1.88
MEL - 0303	RECOUNT	13-Sep-16	Dinobryon bavaricum Imhof	400	0.8
MEL - 0303	RECOUNT	13-Sep-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0303	RECOUNT	13-Sep-16	Dinobryon sertularia Ehrenberg	800	4.07
MEL - 0303	RECOUNT	13-Sep-16	Dinobryon sociale Ehrenberg	28736	6.5
MEL - 0303	RECOUNT	13-Sep-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0303	RECOUNT	13-Sep-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.17
MEL - 0303	RECOUNT	13-Sep-16	Uroglena volvox Ehrenberg	21552	2.44
MEL - 0303	RECOUNT	13-Sep-16	Chrysochromulina laurentiana Kling	28736	15.05
MEL - 0303	RECOUNT	13-Sep-16	Stichogloea spp.	14368	0.72
MEL - 0303	RECOUNT	13-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.19
MEL - 0303	RECOUNT	13-Sep-16	Cyclotella stelligera Cleve and Grunow	5000	9.09
MEL - 0303	RECOUNT	13-Sep-16	Cyclotella ocellata Pant.	28736	2.89

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0303	RECOUNT	13-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.67
MEL - 0303	RECOUNT	13-Sep-16	Synedra acus Kutzing	1000	0.1
MEL - 0303	RECOUNT	13-Sep-16	Asterionella formosa Hassall	4000	0.42
MEL - 0303	RECOUNT	13-Sep-16	Cyclotella michiganiana Skvortzow	28736	0.7
MEL - 0303	RECOUNT	13-Sep-16	Rhodomonas minuta Skuja	143680	18.06
MEL - 0303	RECOUNT	13-Sep-16	Cryptomonas erosa Ehrenberg	3200	3.7
MEL - 0303	RECOUNT	13-Sep-16	Cryptomonas rostratiformis Skuja	200	0.42
MEL - 0303	RECOUNT	13-Sep-16	Gymnodinium sp.	400	3.01
MEL - 0303	RECOUNT	13-Sep-16	Peridinium willei Huitfeldt-Kaas	200	4.89
MEL - 0303	RECOUNT	13-Sep-16	Peridinium pusillum (Penard) Lemmermann	400	0.86
MEL - 0303	RECOUNT	13-Sep-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0304		26-Jul-16	Chlamydomonas spp.	7184	0.07
MEL - 0304		26-Jul-16	Sphaerocystis schroeteri Chodat	43104	1.56
MEL - 0304		26-Jul-16	Oocystis lacustris Chodat	7184	0.36
MEL - 0304		26-Jul-16	Elakatothrix gelatinosa Willen	71840	1.48
MEL - 0304		26-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0304		26-Jul-16	Botryococcus braunii Kutzing	200	0.1
MEL - 0304		26-Jul-16	Small chrysophyceae	201152	2.84
MEL - 0304		26-Jul-16	Large chrysophyceae	35920	6.45
MEL - 0304		26-Jul-16	Chrysochromulina parva Lackey	395120	25.84
MEL - 0304		26-Jul-16	Chrysococcus sp.	373568	24.43
MEL - 0304		26-Jul-16	Kephyrion sp.	129312	1.66
MEL - 0304		26-Jul-16	Spiniferomonas sirrata**********	7184	1.08
MEL - 0304		26-Jul-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0304		26-Jul-16	Dinobryon borgei Lemmermann	35920	1.57
MEL - 0304		26-Jul-16	Dinobryon bavaricum Imhof	330464	74.75
MEL - 0304		26-Jul-16	Dinobryon bavaricum Imhof	4800	5.88
MEL - 0304		26-Jul-16	Dinobryon sertularia Ehrenberg	64656	14.63
MEL - 0304		26-Jul-16	Dinobryon sertularia Ehrenberg	2600	5.18
MEL - 0304		26-Jul-16	Chrysolkos skuja (Nauwerck) Willen	57472	1.85
MEL - 0304		26-Jul-16	Uroglena volvox Ehrenberg	459776	52
MEL - 0304		26-Jul-16	Chrysosphaerella longispina Lauterborn	200	3.62
MEL - 0304		26-Jul-16	Chrysochromulina laurentiana Kling	122128	56.57

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0304		26-Jul-16	Stichogloea spp.	14368	0.72
MEL - 0304		26-Jul-16	Bicoeca lacustris Clark	7184	0.63
MEL - 0304		26-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.48
MEL - 0304		26-Jul-16	Pteridomonas sp.	7184	1.71
MEL - 0304		26-Jul-16	Cyclotella stelligera Cleve and Grunow	1200	2.18
MEL - 0304		26-Jul-16	Rhizosolenia eriense H.L. Smith	57472	4.47
MEL - 0304		26-Jul-16	Tabellaria fenestrata (Lyngbye) Kutzing	3200	2.74
MEL - 0304		26-Jul-16	Synedra acus Kutzing	1800	0.21
MEL - 0304		26-Jul-16	Asterionella formosa Hassall	400	0.04
MEL - 0304		26-Jul-16	Cyclotella michiganiana Skvortzow	35920	0.88
MEL - 0304		26-Jul-16	Rhodomonas minuta Skuja	79024	9.93
MEL - 0304		26-Jul-16	Cryptomonas erosa Ehrenberg	3200	5.25
MEL - 0304		26-Jul-16	Cryptomonas reflexa (Marsson) Skuja	200	0.14
MEL - 0304		26-Jul-16	Katablepharis ovalis Skuja	14368	0.84
MEL - 0304		26-Jul-16	Gymnodinium sp.	800	7.36
MEL - 0304		26-Jul-16	Peridinium willei Huitfeldt-Kaas	200	7.22
MEL - 0304		26-Jul-16	Peridinium pusillum (Penard) Lemmermann	2600	6.23
MEL - 0304		26-Jul-16	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0304		12-Aug-16	Aphanothece sp.	7184	0.28
MEL - 0304		12-Aug-16	Chlamydomonas spp.	14368	0.18
MEL - 0304		12-Aug-16	Sphaerocystis schroeteri Chodat	57472	0.66
MEL - 0304		12-Aug-16	Oocystis lacustris Chodat	7184	0.36
MEL - 0304		12-Aug-16	Oocystis lacustris Chodat	7184	0.42
MEL - 0304		12-Aug-16	Elakatothrix gelatinosa Willen	86208	1.23
MEL - 0304		12-Aug-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0304		12-Aug-16	Cosmarium sp.	200	0.28
MEL - 0304		12-Aug-16	Euastrum spp.	200	0.37
MEL - 0304		12-Aug-16	Staurodesmus extensus (Andersson) Teiling	600	0.28
MEL - 0304		12-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	64656	2.44
MEL - 0304		12-Aug-16	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL - 0304		12-Aug-16	Oocystis gigas Archer	400	0.93
MEL - 0304		12-Aug-16	Small chrysophyceae	459776	5.89
MEL - 0304		12-Aug-16	Large chrysophyceae	14368	1.88

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0304		12-Aug-16	Chrysochromulina parva Lackey	179600	11.75
MEL - 0304		12-Aug-16	Chrysococcus sp.	344832	21.24
MEL - 0304		12-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	3.33
MEL - 0304		12-Aug-16	Kephyrion boreale Skuja	7184	0.85
MEL - 0304		12-Aug-16	Kephyrion sp.	57472	0.53
MEL - 0304		12-Aug-16	Spiniferomonas sirrata**********	28736	3.25
MEL - 0304		12-Aug-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0304		12-Aug-16	Mallomonas crassisquama (Asmund) Fott	400	0.4
MEL - 0304		12-Aug-16	Dinobryon borgei Lemmermann	28736	1.32
MEL - 0304		12-Aug-16	Dinobryon bavaricum Imhof	43104	9.75
MEL - 0304		12-Aug-16	Dinobryon bavaricum Imhof	400	0.39
MEL - 0304		12-Aug-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0304		12-Aug-16	Dinobryon sertularia Ehrenberg	800	1.59
MEL - 0304		12-Aug-16	Dinobryon sociale Ehrenberg	150864	34.13
MEL - 0304		12-Aug-16	Uroglena volvox Ehrenberg	28736	3.25
MEL - 0304		12-Aug-16	Uroglena volvox Ehrenberg	200	11.26
MEL - 0304		12-Aug-16	Chrysochromulina laurentiana Kling	86208	37.49
MEL - 0304		12-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.65
MEL - 0304		12-Aug-16	Pteridomonas sp.	50288	10.04
MEL - 0304		12-Aug-16	Cyclotella stelligera Cleve and Grunow	1400	3.01
MEL - 0304		12-Aug-16	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL - 0304		12-Aug-16	Synedra acus Kutzing	1200	0.14
MEL - 0304		12-Aug-16	Asterionella formosa Hassall	200	0.02
MEL - 0304		12-Aug-16	Cyclotella michiganiana Skvortzow	43104	1
MEL - 0304		12-Aug-16	Cyclotella bodanica Eulenst.	200	1.17
MEL - 0304		12-Aug-16	Rhodomonas minuta Skuja	186784	19.22
MEL - 0304		12-Aug-16	Cryptomonas erosa Ehrenberg	3600	4.34
MEL - 0304		12-Aug-16	Cryptomonas ovata Ehrenberg	200	0.9
MEL - 0304		12-Aug-16	Cryptomonas reflexa (Marsson) Skuja	600	0.4
MEL - 0304		12-Aug-16	Gymnodinium sp.	1400	15.41
MEL - 0304		12-Aug-16	Peridinium willei Huitfeldt-Kaas	200	4.89
MEL - 0304		12-Aug-16	Peridinium pusillum (Penard) Lemmermann	3000	7.45
MEL - 0304		22-Sep-16	Chlamydomonas spp.	7184	0.42

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0304		22-Sep-16	Sphaerocystis schroeteri Chodat	7184	0.18
MEL - 0304		22-Sep-16	Cosmarium sp.	200	0.37
MEL - 0304		22-Sep-16	Staurodesmus extensus (Andersson) Teiling	400	0.17
MEL - 0304		22-Sep-16	Staurodesmus paradoxum Meyen	200	0.82
MEL - 0304		22-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0304		22-Sep-16	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL - 0304		22-Sep-16	Ankistrodesmus spiralis Lemmermann	7184	0.54
MEL - 0304		22-Sep-16	Small chrysophyceae	574720	8.1
MEL - 0304		22-Sep-16	Large chrysophyceae	50288	9.03
MEL - 0304		22-Sep-16	Chrysochromulina parva Lackey	366384	23.96
MEL - 0304		22-Sep-16	Chrysococcus sp.	545984	35.71
MEL - 0304		22-Sep-16	Chrysostephanospaera globulifera Scherffel	21552	10.95
MEL - 0304		22-Sep-16	Kephyrion sp.	150864	2.84
MEL - 0304		22-Sep-16	Spiniferomonas sirrata**********	7184	0.81
MEL - 0304		22-Sep-16	Mallomonas crassisquama (Asmund) Fott	200	0.22
MEL - 0304		22-Sep-16	Dinobryon borgei Lemmermann	57472	2.78
MEL - 0304		22-Sep-16	Dinobryon bavaricum Imhof	200	0.4
MEL - 0304		22-Sep-16	Dinobryon sertularia Ehrenberg	35920	8.13
MEL - 0304		22-Sep-16	Dinobryon sertularia Ehrenberg	1800	9.15
MEL - 0304		22-Sep-16	Dinobryon sociale Ehrenberg	237072	53.63
MEL - 0304		22-Sep-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0304		22-Sep-16	Uroglena volvox Ehrenberg	193968	21.94
MEL - 0304		22-Sep-16	Bitrichia chodatii (Reverdin) Chodat	21552	1.5
MEL - 0304		22-Sep-16	Chrysochromulina laurentiana Kling	122128	63.95
MEL - 0304		22-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	71840	1.86
MEL - 0304		22-Sep-16	Pteridomonas sp.	7184	1.59
MEL - 0304		22-Sep-16	Cyclotella stelligera Cleve and Grunow	4400	9.2
MEL - 0304		22-Sep-16	Cyclotella ocellata Pant.	35920	3.61
MEL - 0304		22-Sep-16	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL - 0304		22-Sep-16	Fragilaria crotonensis Kitton	2000	0.63
MEL - 0304		22-Sep-16	Synedra acus Kutzing	4400	0.44
MEL - 0304		22-Sep-16	Asterionella formosa Hassall	13600	1.41
MEL - 0304		22-Sep-16	Cyclotella michiganiana Skvortzow	122128	2.65

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0304		22-Sep-16	Rhodomonas minuta Skuja	79024	9.93
MEL - 0304		22-Sep-16	Cryptomonas erosa Ehrenberg	1400	1.59
MEL - 0304		22-Sep-16	Katablepharis ovalis Skuja	7184	0.29
MEL - 0304		22-Sep-16	Gymnodinium sp.	200	1.86
MEL - 0304		22-Sep-16	Peridinium willei Huitfeldt-Kaas	400	9.37
MEL - 0304		22-Sep-16	Peridinium pusillum (Penard) Lemmermann	1200	2.39
MEL - 0304		22-Sep-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0305		26-Jul-16	Aphanothece sp.	35920	2.12
MEL - 0305		26-Jul-16	Chlamydomonas spp.	14368	0.15
MEL - 0305		26-Jul-16	Sphaerocystis schroeteri Chodat	64656	2.17
MEL - 0305		26-Jul-16	Pediastrum duplex Meyen	3200	0.37
MEL - 0305		26-Jul-16	Elakatothrix gelatinosa Willen	35920	0.73
MEL - 0305		26-Jul-16	Cosmarium sp.	200	0.28
MEL - 0305		26-Jul-16	Euastrum spp.	200	0.32
MEL - 0305		26-Jul-16	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL - 0305		26-Jul-16	Staurodesmus bullardii G.M. Smith	200	0.44
MEL - 0305		26-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0305		26-Jul-16	Mougeotia sp.	400	1.92
MEL - 0305		26-Jul-16	Small chrysophyceae	294544	3.77
MEL - 0305		26-Jul-16	Large chrysophyceae	28736	5.16
MEL - 0305		26-Jul-16	Chrysochromulina parva Lackey	294544	19.26
MEL - 0305		26-Jul-16	Chrysococcus sp.	265808	17.38
MEL - 0305		26-Jul-16	Kephyrion sp.	100576	1.04
MEL - 0305		26-Jul-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0305		26-Jul-16	Mallomonas crassisquama (Asmund) Fott	800	0.81
MEL - 0305		26-Jul-16	Synura sphagnicola Korschikow	7184	2.41
MEL - 0305		26-Jul-16	Dinobryon borgei Lemmermann	14368	0.62
MEL - 0305		26-Jul-16	Dinobryon bavaricum Imhof	258624	58.5
MEL - 0305		26-Jul-16	Dinobryon bavaricum Imhof	4800	5.88
MEL - 0305		26-Jul-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0305		26-Jul-16	Dinobryon sertularia Ehrenberg	2800	9.49
MEL - 0305		26-Jul-16	Chrysolkos skuja (Nauwerck) Willen	21552	0.65
MEL - 0305		26-Jul-16	Uroglena volvox Ehrenberg	366384	41.44

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0305		26-Jul-16	Chrysochromulina laurentiana Kling	71840	33.28
MEL - 0305		26-Jul-16	Stichogloea spp.	7184	0.36
MEL - 0305		26-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL - 0305		26-Jul-16	Dinobryon attenatum Hill	14368	1.5
MEL - 0305		26-Jul-16	Pteridomonas sp.	35920	6.91
MEL - 0305		26-Jul-16	Cyclotella stelligera Cleve and Grunow	1000	1.82
MEL - 0305		26-Jul-16	Cyclotella pseudostelligera	28736	15.48
MEL - 0305		26-Jul-16	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL - 0305		26-Jul-16	Synedra acus Kutzing	4600	0.57
MEL - 0305		26-Jul-16	Asterionella formosa Hassall	3600	0.38
MEL - 0305		26-Jul-16	Cyclotella michiganiana Skvortzow	28736	0.7
MEL - 0305		26-Jul-16	Cyclotella bodanica Eulenst.	400	3.66
MEL - 0305		26-Jul-16	Rhodomonas minuta Skuja	129312	14.63
MEL - 0305		26-Jul-16	Cryptomonas erosa Ehrenberg	3600	5.71
MEL - 0305		26-Jul-16	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL - 0305		26-Jul-16	Cryptomonas rostratiformis Skuja	800	1.7
MEL - 0305		26-Jul-16	Katablepharis ovalis Skuja	28736	1.62
MEL - 0305		26-Jul-16	Gymnodinium helveticum Penard	400	9.61
MEL - 0305		26-Jul-16	Gymnodinium sp.	800	6.54
MEL - 0305		26-Jul-16	Peridinium willei Huitfeldt-Kaas	600	21.65
MEL - 0305		26-Jul-16	Peridinium pusillum (Penard) Lemmermann	2800	8.69
MEL - 0305	RECOUNT	26-Jul-16	Aphanothece sp.	7184	0.42
MEL - 0305	RECOUNT	26-Jul-16	Chlamydomonas spp.	14368	0.15
MEL - 0305	RECOUNT	26-Jul-16	Sphaerocystis schroeteri Chodat	14368	0.48
MEL - 0305	RECOUNT	26-Jul-16	Oocystis lacustris Chodat	28736	0.76
MEL - 0305	RECOUNT	26-Jul-16	Elakatothrix gelatinosa Willen	14368	0.29
MEL - 0305	RECOUNT	26-Jul-16	Cosmarium sp.	400	0.56
MEL - 0305	RECOUNT	26-Jul-16	Euastrum spp.	400	0.65
MEL - 0305	RECOUNT	26-Jul-16	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL - 0305	RECOUNT	26-Jul-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0305	RECOUNT	26-Jul-16	Mougeotia sp.	1600	7.67
MEL - 0305	RECOUNT	26-Jul-16	Small chrysophyceae	251440	3.22
MEL - 0305	RECOUNT	26-Jul-16	Large chrysophyceae	64656	11.61

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0305	RECOUNT	26-Jul-16	Chrysochromulina parva Lackey	352016	23.02
MEL - 0305	RECOUNT	26-Jul-16	Chrysococcus sp.	294544	19.26
MEL - 0305	RECOUNT	26-Jul-16	Kephyrion boreale Skuja	14368	1.79
MEL - 0305	RECOUNT	26-Jul-16	Kephyrion sp.	114944	1.18
MEL - 0305	RECOUNT	26-Jul-16	Mallomonas crassisquama (Asmund) Fott	1400	1.42
MEL - 0305	RECOUNT	26-Jul-16	Dinobryon borgei Lemmermann	7184	0.31
MEL - 0305	RECOUNT	26-Jul-16	Dinobryon bavaricum Imhof	222704	50.38
MEL - 0305	RECOUNT	26-Jul-16	Dinobryon bavaricum Imhof	5400	6.62
MEL - 0305	RECOUNT	26-Jul-16	Dinobryon sertularia Ehrenberg	64656	14.63
MEL - 0305	RECOUNT	26-Jul-16	Dinobryon sertularia Ehrenberg	2800	9.49
MEL - 0305	RECOUNT	26-Jul-16	Chrysolkos skuja (Nauwerck) Willen	43104	1.29
MEL - 0305	RECOUNT	26-Jul-16	Uroglena volvox Ehrenberg	445408	50.38
MEL - 0305	RECOUNT	26-Jul-16	Chrysochromulina laurentiana Kling	57472	26.62
MEL - 0305	RECOUNT	26-Jul-16	Stichogloea spp.	7184	0.36
MEL - 0305	RECOUNT	26-Jul-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL - 0305	RECOUNT	26-Jul-16	Pteridomonas sp.	43104	8.3
MEL - 0305	RECOUNT	26-Jul-16	Cyclotella stelligera Cleve and Grunow	1000	1.82
MEL - 0305	RECOUNT	26-Jul-16	Cyclotella pseudostelligera	14368	7.74
MEL - 0305	RECOUNT	26-Jul-16	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL - 0305	RECOUNT	26-Jul-16	Synedra acus Kutzing	6200	0.77
MEL - 0305	RECOUNT	26-Jul-16	Asterionella formosa Hassall	2400	0.25
MEL - 0305	RECOUNT	26-Jul-16	Cyclotella michiganiana Skvortzow	28736	0.7
MEL - 0305	RECOUNT	26-Jul-16	Cyclotella bodanica Eulenst.	200	1.83
MEL - 0305	RECOUNT	26-Jul-16	Rhodomonas minuta Skuja	158048	17.88
MEL - 0305	RECOUNT	26-Jul-16	Cryptomonas erosa Ehrenberg	2200	3.49
MEL - 0305	RECOUNT	26-Jul-16	Cryptomonas reflexa (Marsson) Skuja	800	0.59
MEL - 0305	RECOUNT	26-Jul-16	Cryptomonas rostratiformis Skuja	800	1.7
MEL - 0305	RECOUNT	26-Jul-16	Gymnodinium helveticum Penard	400	9.61
MEL - 0305	RECOUNT	26-Jul-16	Gymnodinium sp.	400	3.27
MEL - 0305	RECOUNT	26-Jul-16	Peridinium willei Huitfeldt-Kaas	200	7.22
MEL - 0305	RECOUNT	26-Jul-16	Peridinium pusillum (Penard) Lemmermann	2200	6.83
MEL - 0305	RECOUNT	26-Jul-16	Peridinium aciculiferum Lemmermann	400	3.62
MEL - 0305		12-Aug-16	Chlamydomonas spp.	35920	0.46

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0305		12-Aug-16	Oocystis lacustris Chodat	7184	0.36
MEL - 0305		12-Aug-16	Chodatella sp.	7184	0.36
MEL - 0305		12-Aug-16	Elakatothrix gelatinosa Willen	43104	0.81
MEL - 0305		12-Aug-16	Planctonema lauterbornii Schmidle	64656	8.13
MEL - 0305		12-Aug-16	Cosmarium sp.	200	0.28
MEL - 0305		12-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0305		12-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0305		12-Aug-16	Botryococcus braunii Kutzing	800	1.15
MEL - 0305		12-Aug-16	Oocystis gigas Archer	200	0.51
MEL - 0305		12-Aug-16	Small chrysophyceae	531616	3.4
MEL - 0305		12-Aug-16	Large chrysophyceae	21552	3.87
MEL - 0305		12-Aug-16	Chrysochromulina parva Lackey	193968	12.69
MEL - 0305		12-Aug-16	Chrysococcus sp.	395120	20.15
MEL - 0305		12-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	3.76
MEL - 0305		12-Aug-16	Kephyrion boreale Skuja	7184	0.77
MEL - 0305		12-Aug-16	Kephyrion sp.	143680	2.24
MEL - 0305		12-Aug-16	Spiniferomonas sirrata**********	28736	2
MEL - 0305		12-Aug-16	Mallomonas caudata Ivanov	200	1.02
MEL - 0305		12-Aug-16	Dinobryon borgei Lemmermann	35920	1.46
MEL - 0305		12-Aug-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0305		12-Aug-16	Dinobryon bavaricum Imhof	800	1.59
MEL - 0305		12-Aug-16	Dinobryon sertularia Ehrenberg	35920	8.13
MEL - 0305		12-Aug-16	Dinobryon sertularia Ehrenberg	1000	1.25
MEL - 0305		12-Aug-16	Dinobryon sertularia Ehrenberg	800	1.59
MEL - 0305		12-Aug-16	Dinobryon sociale Ehrenberg	222704	50.38
MEL - 0305		12-Aug-16	Chrysolkos skuja (Nauwerck) Willen	14368	0.25
MEL - 0305		12-Aug-16	Uroglena volvox Ehrenberg	35920	4.06
MEL - 0305		12-Aug-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0305		12-Aug-16	Chrysochromulina laurentiana Kling	64656	28.12
MEL - 0305		12-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.18
MEL - 0305		12-Aug-16	Pteridomonas sp.	21552	5.13
MEL - 0305		12-Aug-16	Cyclotella stelligera Cleve and Grunow	2200	4.35
MEL - 0305		12-Aug-16	Rhizosolenia eriense H.L. Smith	14368	1.22

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0305		12-Aug-16	Synedra acus Kutzing	1000	0.11
MEL - 0305		12-Aug-16	Cyclotella michiganiana Skvortzow	79024	1.94
MEL - 0305		12-Aug-16	Rhodomonas minuta Skuja	179600	22.58
MEL - 0305		12-Aug-16	Cryptomonas erosa Ehrenberg	6800	8.2
MEL - 0305		12-Aug-16	Cryptomonas reflexa (Marsson) Skuja	800	0.51
MEL - 0305		12-Aug-16	Cryptomonas rostratiformis Skuja	400	0.77
MEL - 0305		12-Aug-16	Gymnodinium sp.	14368	4.77
MEL - 0305		12-Aug-16	Gymnodinium sp.	1200	9.02
MEL - 0305		12-Aug-16	Peridinium willei Huitfeldt-Kaas	200	4.89
MEL - 0305		12-Aug-16	Peridinium pusillum (Penard) Lemmermann	5200	12.91
MEL - 0306		22-Sep-16	Sphaerocystis schroeteri Chodat	7184	0.1
MEL - 0306		22-Sep-16	Elakatothrix gelatinosa Willen	7184	0.14
MEL - 0306		22-Sep-16	Cosmarium sp.	200	0.28
MEL - 0306		22-Sep-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0306		22-Sep-16	Mougeotia sp.	600	1.03
MEL - 0306		22-Sep-16	Small chrysophyceae	337648	3.48
MEL - 0306		22-Sep-16	Large chrysophyceae	14368	2.58
MEL - 0306		22-Sep-16	Chrysochromulina parva Lackey	387936	25.37
MEL - 0306		22-Sep-16	Chrysococcus sp.	265808	17.38
MEL - 0306		22-Sep-16	Chrysostephanospaera globulifera Scherffel	7184	3.33
MEL - 0306		22-Sep-16	Kephyrion sp.	129312	2.22
MEL - 0306		22-Sep-16	Spiniferomonas sirrata**********	14368	1.25
MEL - 0306		22-Sep-16	Dinobryon borgei Lemmermann	35920	1.61
MEL - 0306		22-Sep-16	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0306		22-Sep-16	Dinobryon bavaricum Imhof	800	1.59
MEL - 0306		22-Sep-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0306		22-Sep-16	Dinobryon sertularia Ehrenberg	200	0.25
MEL - 0306		22-Sep-16	Dinobryon sertularia Ehrenberg	1000	5.09
MEL - 0306		22-Sep-16	Dinobryon sociale Ehrenberg	150864	34.13
MEL - 0306		22-Sep-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.17
MEL - 0306		22-Sep-16	Uroglena volvox Ehrenberg	71840	8.13
MEL - 0306		22-Sep-16	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL - 0306		22-Sep-16	Chrysochromulina laurentiana Kling	71840	37.62

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0306		22-Sep-16	Stichogloea spp.	7184	0.36
MEL - 0306		22-Sep-16	Bicoeca lacustris Clark	7184	0.5
MEL - 0306		22-Sep-16	Salpingoeca frequentissima (Zach.) Lemmermann	57472	1.49
MEL - 0306		22-Sep-16	Dinobryon attenatum Hill	7184	0.66
MEL - 0306		22-Sep-16	Pteridomonas sp.	7184	1.77
MEL - 0306		22-Sep-16	Cyclotella stelligera Cleve and Grunow	4200	8.31
MEL - 0306		22-Sep-16	Cyclotella ocellata Pant.	21552	2.69
MEL - 0306		22-Sep-16	Rhizosolenia eriense H.L. Smith	7184	0.61
MEL - 0306		22-Sep-16	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.17
MEL - 0306		22-Sep-16	Synedra acus Kutzing	4000	0.42
MEL - 0306		22-Sep-16	Asterionella formosa Hassall	13600	1.42
MEL - 0306		22-Sep-16	Cyclotella michiganiana Skvortzow	93392	2.29
MEL - 0306		22-Sep-16	Cyclotella bodanica Eulenst.	800	5.64
MEL - 0306		22-Sep-16	Rhodomonas minuta Skuja	136496	17.16
MEL - 0306		22-Sep-16	Cryptomonas erosa Ehrenberg	2800	4.6
MEL - 0306		22-Sep-16	Gymnodinium sp.	1000	8.68
MEL - 0306		22-Sep-16	Peridinium pusillum (Penard) Lemmermann	1600	3.5
MEL - 0306		22-Sep-16	Peridinium aciculiferum Lemmermann	600	5.43
MEL - 0401		14-Aug-16	Aphanothece sp.	14368	0.73
MEL - 0401		14-Aug-16	Snowella sp	200	0.15
MEL - 0401		14-Aug-16	Sphaerocystis schroeteri Chodat	57472	1.93
MEL - 0401		14-Aug-16	Oocystis lacustris Chodat	35920	0.41
MEL - 0401		14-Aug-16	Dictyosphaerium simplex Sukja	50288	0.24
MEL - 0401		14-Aug-16	Elakatothrix gelatinosa Willen	35920	0.68
MEL - 0401		14-Aug-16	Planctonema lauterbornii Schmidle	21552	2.71
MEL - 0401		14-Aug-16	Cosmarium sp.	400	0.56
MEL - 0401		14-Aug-16	Staurodesmus bullardii G.M. Smith	200	0.64
MEL - 0401		14-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0401		14-Aug-16	Botryococcus braunii Kutzing	600	0.54
MEL - 0401		14-Aug-16	Oocystis gigas Archer	200	0.49
MEL - 0401		14-Aug-16	Small chrysophyceae	294544	2.71
MEL - 0401		14-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0401		14-Aug-16	Chrysochromulina parva Lackey	50288	3.29

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0401		14-Aug-16	Chrysococcus sp.	208336	13.63
MEL - 0401		14-Aug-16	Kephyrion boreale Skuja	7184	0.77
MEL - 0401		14-Aug-16	Kephyrion sp.	64656	0.59
MEL - 0401		14-Aug-16	Spiniferomonas sirrata**********	21552	1.98
MEL - 0401		14-Aug-16	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL - 0401		14-Aug-16	Dinobryon borgei Lemmermann	7184	0.31
MEL - 0401		14-Aug-16	Dinobryon bavaricum Imhof	14368	3.25
MEL - 0401		14-Aug-16	Dinobryon bavaricum Imhof	200	0.68
MEL - 0401		14-Aug-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0401		14-Aug-16	Dinobryon sertularia Ehrenberg	600	2.03
MEL - 0401		14-Aug-16	Dinobryon sociale Ehrenberg	71840	16.25
MEL - 0401		14-Aug-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.13
MEL - 0401		14-Aug-16	Uroglena volvox Ehrenberg	35920	4.06
MEL - 0401		14-Aug-16	Chrysochromulina laurentiana Kling	100576	43.74
MEL - 0401		14-Aug-16	Stichogloea spp.	21552	1.08
MEL - 0401		14-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.38
MEL - 0401		14-Aug-16	Cyclotella stelligera Cleve and Grunow	3200	4.73
MEL - 0401		14-Aug-16	Cyclotella ocellata Pant.	14368	1.44
MEL - 0401		14-Aug-16	Synedra acus Kutzing	400	0.04
MEL - 0401		14-Aug-16	Cyclotella michiganiana Skvortzow	14368	0.24
MEL - 0401		14-Aug-16	Rhodomonas minuta Skuja	179600	27.08
MEL - 0401		14-Aug-16	Cryptomonas erosa Ehrenberg	600	0.7
MEL - 0401		14-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1000	0.66
MEL - 0401		14-Aug-16	Gymnodinium sp.	1000	8.78
MEL - 0401		14-Aug-16	Peridinium pusillum (Penard) Lemmermann	1200	2.98
MEL - 0401		14-Aug-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0402		14-Aug-16	Aphanothece sp.	7184	0.25
MEL - 0402		14-Aug-16	Chlamydomonas spp.	7184	0.07
MEL - 0402		14-Aug-16	Sphaerocystis schroeteri Chodat	7184	0.18
MEL - 0402		14-Aug-16	Oocystis lacustris Chodat	21552	0.58
MEL - 0402		14-Aug-16	Dictyosphaerium simplex Sukja	50288	0.24
MEL - 0402		14-Aug-16	Elakatothrix gelatinosa Willen	86208	1.22
MEL - 0402		14-Aug-16	Planctonema lauterbornii Schmidle	64656	8.13

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0402		14-Aug-16	Cosmarium sp.	200	0.28
MEL - 0402		14-Aug-16	Staurodesmus extensus (Andersson) Teiling	800	0.38
MEL - 0402		14-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL - 0402		14-Aug-16	Botryococcus braunii Kutzing	200	0.18
MEL - 0402		14-Aug-16	Ankistrodesmus spiralis Lemmermann	7184	0.45
MEL - 0402		14-Aug-16	Oocystis gigas Archer	200	0.42
MEL - 0402		14-Aug-16	Monomastix minuta Skuja	7184	0.2
MEL - 0402		14-Aug-16	Small chrysophyceae	517248	4.76
MEL - 0402		14-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0402		14-Aug-16	Chrysochromulina parva Lackey	229888	15.03
MEL - 0402		14-Aug-16	Chrysococcus sp.	193968	12.69
MEL - 0402		14-Aug-16	Chrysostephanospaera globulifera Scherffel	7184	3.33
MEL - 0402		14-Aug-16	Kephyrion sp.	122128	1.72
MEL - 0402		14-Aug-16	Spiniferomonas sirrata**********	7184	0.73
MEL - 0402		14-Aug-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0402		14-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0402		14-Aug-16	Dinobryon borgei Lemmermann	14368	0.7
MEL - 0402		14-Aug-16	Dinobryon bavaricum Imhof	14368	3.25
MEL - 0402		14-Aug-16	Dinobryon bavaricum Imhof	600	2.03
MEL - 0402		14-Aug-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0402		14-Aug-16	Dinobryon sertularia Ehrenberg	200	0.4
MEL - 0402		14-Aug-16	Dinobryon sertularia Ehrenberg	800	2.71
MEL - 0402		14-Aug-16	Dinobryon sociale Ehrenberg	107760	24.38
MEL - 0402		14-Aug-16	Uroglena volvox Ehrenberg	79024	8.94
MEL - 0402		14-Aug-16	Chrysochromulina laurentiana Kling	71840	30.26
MEL - 0402		14-Aug-16	Stichogloea spp.	21552	1.08
MEL - 0402		14-Aug-16	Pteridomonas sp.	21552	5.13
MEL - 0402		14-Aug-16	Cyclotella stelligera Cleve and Grunow	2400	3.39
MEL - 0402		14-Aug-16	Cyclotella ocellata Pant.	28736	2.89
MEL - 0402		14-Aug-16	Synedra acus Kutzing	2400	0.25
MEL - 0402		14-Aug-16	Cyclotella michiganiana Skvortzow	57472	1.1
MEL - 0402		14-Aug-16	Cyclotella bodanica Eulenst.	600	4.23
MEL - 0402		14-Aug-16	Rhodomonas minuta Skuja	208336	26.19

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0402		14-Aug-16	Cryptomonas erosa Ehrenberg	3400	3.93
MEL - 0402		14-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1600	1.06
MEL - 0402		14-Aug-16	Cryptomonas rostratiformis Skuja	400	0.81
MEL - 0402		14-Aug-16	Gymnodinium sp.	7184	3.35
MEL - 0402		14-Aug-16	Gymnodinium sp.	400	5.65
MEL - 0402		14-Aug-16	Peridinium pusillum (Penard) Lemmermann	600	1.31
MEL - 0402	REP2	14-Aug-16	Aphanothece sp.	14368	0.5
MEL - 0402	REP2	14-Aug-16	Planktolyngbya limnetica	200	0.04
MEL - 0402	REP2	14-Aug-16	Snowella sp	400	0.3
MEL - 0402	REP2	14-Aug-16	Sphaerocystis schroeteri Chodat	21552	0.53
MEL - 0402	REP2	14-Aug-16	Oocystis lacustris Chodat	21552	0.38
MEL - 0402	REP2	14-Aug-16	Dictyosphaerium simplex Sukja	71840	0.34
MEL - 0402	REP2	14-Aug-16	Elakatothrix gelatinosa Willen	107760	1.52
MEL - 0402	REP2	14-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.1
MEL - 0402	REP2	14-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0402	REP2	14-Aug-16	Mougeotia sp.	200	0.83
MEL - 0402	REP2	14-Aug-16	Botryococcus braunii Kutzing	200	0.18
MEL - 0402	REP2	14-Aug-16	Oocystis gigas Archer	200	0.42
MEL - 0402	REP2	14-Aug-16	Monomastix minuta Skuja	21552	0.61
MEL - 0402	REP2	14-Aug-16	Small chrysophyceae	531616	4.89
MEL - 0402	REP2	14-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0402	REP2	14-Aug-16	Chrysochromulina parva Lackey	272992	17.85
MEL - 0402	REP2	14-Aug-16	Chrysococcus sp.	445408	29.13
MEL - 0402	REP2	14-Aug-16	Kephyrion sp.	193968	2.73
MEL - 0402	REP2	14-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0402	REP2	14-Aug-16	Dinobryon bavaricum Imhof	400	1.36
MEL - 0402	REP2	14-Aug-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0402	REP2	14-Aug-16	Dinobryon sertularia Ehrenberg	800	2.71
MEL - 0402	REP2	14-Aug-16	Dinobryon sociale Ehrenberg	186784	42.25
MEL - 0402	REP2	14-Aug-16	Chrysolkos skuja (Nauwerck) Willen	35920	0.89
MEL - 0402	REP2	14-Aug-16	Uroglena volvox Ehrenberg	57472	6.5
MEL - 0402	REP2	14-Aug-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.33
MEL - 0402	REP2	14-Aug-16	Chrysochromulina laurentiana Kling	79024	33.28

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0402	REP2	14-Aug-16	Stichogloea spp.	57472	2.89
MEL - 0402	REP2	14-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.33
MEL - 0402	REP2	14-Aug-16	Pteridomonas sp.	7184	1.71
MEL - 0402	REP2	14-Aug-16	Cyclotella stelligera Cleve and Grunow	1400	1.98
MEL - 0402	REP2	14-Aug-16	Cyclotella ocellata Pant.	7184	0.72
MEL - 0402	REP2	14-Aug-16	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL - 0402	REP2	14-Aug-16	Synedra acus Kutzing	2800	0.29
MEL - 0402	REP2	14-Aug-16	Cyclotella michiganiana Skvortzow	14368	0.27
MEL - 0402	REP2	14-Aug-16	Cyclotella bodanica Eulenst.	400	2.82
MEL - 0402	REP2	14-Aug-16	Diatoma elongatum Agardh	400	0.02
MEL - 0402	REP2	14-Aug-16	Rhodomonas minuta Skuja	215520	27.09
MEL - 0402	REP2	14-Aug-16	Cryptomonas erosa Ehrenberg	1200	1.39
MEL - 0402	REP2	14-Aug-16	Cryptomonas reflexa (Marsson) Skuja	600	0.4
MEL - 0402	REP2	14-Aug-16	Gymnodinium sp.	7184	3.81
MEL - 0402	REP2	14-Aug-16	Gymnodinium sp.		
MEL - 0402	REP2	14-Aug-16	Peridinium pusillum (Penard) Lemmermann	1000	2.19
MEL - 0403		14-Aug-16	Chlamydomonas spp.	3546	0.08
MEL - 0403		14-Aug-16	Oocystis lacustris Chodat	60284	1.07
MEL - 0403		14-Aug-16	Dictyosphaerium simplex Sukja	113475	0.48
MEL - 0403		14-Aug-16	Elakatothrix gelatinosa Willen	3546	0.06
MEL - 0403		14-Aug-16	Cosmarium sp.	200	0.32
MEL - 0403		14-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	3546	0.13
MEL - 0403		14-Aug-16	Collodictyon sp	3546	2.47
MEL - 0403		14-Aug-16	Small chrysophyceae	170213	1.4
MEL - 0403		14-Aug-16	Large chrysophyceae	10638	1.91
MEL - 0403		14-Aug-16	Chrysochromulina parva Lackey	92199	6.03
MEL - 0403		14-Aug-16	Chrysococcus sp.	187943	9.59
MEL - 0403		14-Aug-16	Kephyrion sp.	39007	0.36
MEL - 0403		14-Aug-16	Dinobryon sertularia Ehrenberg	200	0.4
MEL - 0403		14-Aug-16	Dinobryon sociale Ehrenberg	14184	3.21
MEL - 0403		14-Aug-16	Chrysolkos skuja (Nauwerck) Willen	3546	0.09
MEL - 0403		14-Aug-16	Uroglena volvox Ehrenberg	3546	0.4
MEL - 0403		14-Aug-16	Stichogloea spp.	28369	1.43

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0403		14-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	85106	2.4
MEL - 0403		14-Aug-16	Cyclotella stelligera Cleve and Grunow	2100	3.3
MEL - 0403		14-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	4800	4.12
MEL - 0403		14-Aug-16	Synedra acus Kutzing	400	0.04
MEL - 0403		14-Aug-16	Cyclotella michiganiana Skvortzow	88653	1.92
MEL - 0403		14-Aug-16	Diatoma elongatum Agardh	100	0.02
MEL - 0403		14-Aug-16	Cryptomonas erosa Ehrenberg	100	0.12
MEL - 0403		14-Aug-16	Katablepharis ovalis Skuja	24823	1.14
MEL - 0404		14-Aug-16	Aphanothece sp.	7184	0.25
MEL - 0404		14-Aug-16	Chlamydomonas spp.	7184	0.16
MEL - 0404		14-Aug-16	Sphaerocystis schroeteri Chodat	28736	1.28
MEL - 0404		14-Aug-16	Dictyosphaerium simplex Sukja	50288	0.21
MEL - 0404		14-Aug-16	Elakatothrix gelatinosa Willen	28736	0.41
MEL - 0404		14-Aug-16	Planctonema lauterbornii Schmidle	64656	8.13
MEL - 0404		14-Aug-16	Cosmarium sp.	200	0.48
MEL - 0404		14-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.09
MEL - 0404		14-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0404		14-Aug-16	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL - 0404		14-Aug-16	Small chrysophyceae	272992	2.81
MEL - 0404		14-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0404		14-Aug-16	Chrysochromulina parva Lackey	193968	12.69
MEL - 0404		14-Aug-16	Chrysococcus sp.	344832	22.55
MEL - 0404		14-Aug-16	Kephyrion boreale Skuja	21552	2.2
MEL - 0404		14-Aug-16	Kephyrion sp.	64656	0.59
MEL - 0404		14-Aug-16	Spiniferomonas sirrata**********	7184	0.66
MEL - 0404		14-Aug-16	Spiniferomonas sirrata**********	14368	1.32
MEL - 0404		14-Aug-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0404		14-Aug-16	Mallomonas crassisquama (Asmund) Fott	800	0.84
MEL - 0404		14-Aug-16	Dinobryon borgei Lemmermann	7184	0.39
MEL - 0404		14-Aug-16	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0404		14-Aug-16	Dinobryon bavaricum Imhof	400	1.36
MEL - 0404		14-Aug-16	Dinobryon sertularia Ehrenberg	35920	8.13
MEL - 0404		14-Aug-16	Dinobryon sertularia Ehrenberg	1400	7.12

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0404		14-Aug-16	Dinobryon sociale Ehrenberg	158048	35.75
MEL - 0404		14-Aug-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.18
MEL - 0404		14-Aug-16	Uroglena volvox Ehrenberg	50288	5.69
MEL - 0404		14-Aug-16	Chrysochromulina laurentiana Kling	79024	32.22
MEL - 0404		14-Aug-16	Stichogloea spp.	43104	2.17
MEL - 0404		14-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.13
MEL - 0404		14-Aug-16	Pteridomonas sp.	14368	3.42
MEL - 0404		14-Aug-16	Cyclotella stelligera Cleve and Grunow	3200	5.03
MEL - 0404		14-Aug-16	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL - 0404		14-Aug-16	Synedra acus Kutzing	3200	0.35
MEL - 0404		14-Aug-16	Synedra ulna (Nitzsch) Ehrenberg	200	0.48
MEL - 0404		14-Aug-16	Cyclotella michiganiana Skvortzow	50288	1.23
MEL - 0404		14-Aug-16	Cyclotella bodanica Eulenst.	600	3.72
MEL - 0404		14-Aug-16	Rhodomonas minuta Skuja	208336	26.19
MEL - 0404		14-Aug-16	Cryptomonas erosa Ehrenberg	3600	4.22
MEL - 0404		14-Aug-16	Cryptomonas reflexa (Marsson) Skuja	800	0.55
MEL - 0404		14-Aug-16	Gymnodinium sp.	200	3.12
MEL - 0404		14-Aug-16	Peridinium pusillum (Penard) Lemmermann	200	0.48
MEL - 0405		14-Aug-16	Aphanothece sp.	21552	0.75
MEL - 0405		14-Aug-16	Chlamydomonas spp.	7184	0.16
MEL - 0405		14-Aug-16	Sphaerocystis schroeteri Chodat	79024	1.23
MEL - 0405		14-Aug-16	Dictyosphaerium simplex Sukja	28736	0.12
MEL - 0405		14-Aug-16	Elakatothrix gelatinosa Willen	79024	1.24
MEL - 0405		14-Aug-16	Elakatothrix gelatinosa Willen	21552	0.34
MEL - 0405		14-Aug-16	Cosmarium sp.	600	1.12
MEL - 0405		14-Aug-16	Staurodesmus extensus (Andersson) Teiling	400	0.19
MEL - 0405		14-Aug-16	Staurodesmus bullardii G.M. Smith	400	1.12
MEL - 0405		14-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL - 0405		14-Aug-16	Botryococcus braunii Kutzing	800	0.72
MEL - 0405		14-Aug-16	Ankistrodesmus spiralis Lemmermann	7184	0.4
MEL - 0405		14-Aug-16	Small chrysophyceae	402304	5.15
MEL - 0405		14-Aug-16	Large chrysophyceae	21552	3.87
MEL - 0405		14-Aug-16	Chrysochromulina parva Lackey	150864	9.87

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0405		14-Aug-16	Chrysococcus sp.	265808	17.38
MEL - 0405		14-Aug-16	Kephyrion sp.	86208	0.79
MEL - 0405		14-Aug-16	Spiniferomonas sirrata**********	21552	1.88
MEL - 0405		14-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.2
MEL - 0405		14-Aug-16	Dinobryon borgei Lemmermann	28736	1.43
MEL - 0405		14-Aug-16	Dinobryon bavaricum Imhof	50288	11.38
MEL - 0405		14-Aug-16	Dinobryon bavaricum Imhof	200	0.4
MEL - 0405		14-Aug-16	Dinobryon sertularia Ehrenberg	7184	1.63
MEL - 0405		14-Aug-16	Dinobryon sertularia Ehrenberg	800	2.71
MEL - 0405		14-Aug-16	Dinobryon sociale Ehrenberg	150864	34.13
MEL - 0405		14-Aug-16	Dinobryon sociale Ehrenberg	200	0.25
MEL - 0405		14-Aug-16	Epiphyxis sp.	7184	0.48
MEL - 0405		14-Aug-16	Chrysolkos skuja (Nauwerck) Willen	14368	0.35
MEL - 0405		14-Aug-16	Uroglena volvox Ehrenberg	93392	10.56
MEL - 0405		14-Aug-16	Chrysochromulina laurentiana Kling	28736	12.1
MEL - 0405		14-Aug-16	Stichogloea spp.	21552	1.08
MEL - 0405		14-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.22
MEL - 0405		14-Aug-16	Pteridomonas sp.	7184	1.28
MEL - 0405		14-Aug-16	Cyclotella stelligera Cleve and Grunow	3400	6.18
MEL - 0405		14-Aug-16	Cyclotella ocellata Pant.	7184	0.55
MEL - 0405		14-Aug-16	Synedra acus Kutzing	200	0.02
MEL - 0405		14-Aug-16	Cyclotella michiganiana Skvortzow	50288	1.09
MEL - 0405		14-Aug-16	Cyclotella bodanica Eulenst.	800	4.33
MEL - 0405		14-Aug-16	Rhopalodia gibba (Ehrenberg) O. Muller	200	6.94
MEL - 0405		14-Aug-16	Rhodomonas minuta Skuja	201152	25.28
MEL - 0405		14-Aug-16	Cryptomonas erosa Ehrenberg	2000	2.27
MEL - 0405		14-Aug-16	Cryptomonas reflexa (Marsson) Skuja	200	0.13
MEL - 0405		14-Aug-16	Gymnodinium sp.	7184	2.5
MEL - 0405		14-Aug-16	Gymnodinium sp.	200	4.49
MEL - 0405		14-Aug-16	Peridinium pusillum (Penard) Lemmermann	600	1.31
MEL - 0501		16-Aug-16	Chlamydomonas spp.	21552	0.27
MEL - 0501		16-Aug-16	Sphaerocystis schroeteri Chodat	50288	0.95
MEL - 0501		16-Aug-16	Oocystis lacustris Chodat	21552	0.51

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0501		16-Aug-16	Elakatothrix gelatinosa Willen	14368	0.25
MEL - 0501		16-Aug-16	Planctonema lauterbornii Schmidle	28736	3.61
MEL - 0501		16-Aug-16	Cosmarium sp.	200	0.28
MEL - 0501		16-Aug-16	Staurodesmus extensus (Andersson) Teiling	800	0.38
MEL - 0501		16-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0501		16-Aug-16	Mougeotia sp.	600	2.64
MEL - 0501		16-Aug-16	Botryococcus braunii Kutzing	1200	1.72
MEL - 0501		16-Aug-16	Oocystis gigas Archer	200	0.48
MEL - 0501		16-Aug-16	Small chrysophyceae	581904	7.45
MEL - 0501		16-Aug-16	Large chrysophyceae	35920	13.71
MEL - 0501		16-Aug-16	Chrysochromulina parva Lackey	344832	22.55
MEL - 0501		16-Aug-16	Chrysococcus sp.	474144	31.01
MEL - 0501		16-Aug-16	Kephyrion sp.	143680	1.32
MEL - 0501		16-Aug-16	Spiniferomonas sirrata**********	21552	2.44
MEL - 0501		16-Aug-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0501		16-Aug-16	Mallomonas crassisquama (Asmund) Fott	1000	0.99
MEL - 0501		16-Aug-16	Dinobryon borgei Lemmermann	21552	1.06
MEL - 0501		16-Aug-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0501		16-Aug-16	Dinobryon bavaricum Imhof	400	0.8
MEL - 0501		16-Aug-16	Dinobryon sertularia Ehrenberg	50288	11.38
MEL - 0501		16-Aug-16	Dinobryon sertularia Ehrenberg	200	0.25
MEL - 0501		16-Aug-16	Dinobryon sertularia Ehrenberg	1000	1.99
MEL - 0501		16-Aug-16	Dinobryon sociale Ehrenberg	172416	39
MEL - 0501		16-Aug-16	Epiphyxis sp.	7184	0.54
MEL - 0501		16-Aug-16	Chrysolkos skuja (Nauwerck) Willen	21552	1.12
MEL - 0501		16-Aug-16	Uroglena volvox Ehrenberg	122128	13.81
MEL - 0501		16-Aug-16	Chrysochromulina laurentiana Kling	79024	34.37
MEL - 0501		16-Aug-16	Stichogloea spp.	43104	2.17
MEL - 0501		16-Aug-16	Pteridomonas sp.	14368	3.42
MEL - 0501		16-Aug-16	Cyclotella stelligera Cleve and Grunow	4000	7.92
MEL - 0501		16-Aug-16	Cyclotella ocellata Pant.	21552	1.45
MEL - 0501		16-Aug-16	Synedra acus Kutzing	1800	0.19
MEL - 0501		16-Aug-16	Cyclotella michiganiana Skvortzow	71840	1.56

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0501		16-Aug-16	Cyclotella bodanica Eulenst.	1800	13.89
MEL - 0501		16-Aug-16	Rhodomonas minuta Skuja	481328	60.5
MEL - 0501		16-Aug-16	Cryptomonas erosa Ehrenberg	12200	14.23
MEL - 0501		16-Aug-16	Cryptomonas reflexa (Marsson) Skuja	2800	1.92
MEL - 0501		16-Aug-16	Cryptomonas rostratiformis Skuja	2600	5.51
MEL - 0501		16-Aug-16	Gymnodinium helveticum Penard	200	4.71
MEL - 0501		16-Aug-16	Gymnodinium sp.	2200	22.67
MEL - 0501		16-Aug-16	Peridinium pusillum (Penard) Lemmermann	3200	8.68
MEL - 0501		16-Aug-16	Peridinium aciculiferum Lemmermann	200	1.81
MEL - 0502		16-Aug-16	Aphanothece sp.	7184	0.25
MEL - 0502		16-Aug-16	Chlamydomonas spp.	14368	0.27
MEL - 0502		16-Aug-16	Dictyosphaerium simplex Sukja	35920	0.15
MEL - 0502		16-Aug-16	Elakatothrix gelatinosa Willen	35920	0.51
MEL - 0502		16-Aug-16	Planctonema lauterbornii Schmidle	35920	4.52
MEL - 0502		16-Aug-16	Cosmarium sp.	200	0.37
MEL - 0502		16-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL - 0502		16-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0502		16-Aug-16	Botryococcus braunii Kutzing	200	0.18
MEL - 0502		16-Aug-16	Small chrysophyceae	488512	6.89
MEL - 0502		16-Aug-16	Large chrysophyceae	21552	3.87
MEL - 0502		16-Aug-16	Chrysochromulina parva Lackey	107760	7.05
MEL - 0502		16-Aug-16	Chrysococcus sp.	380752	22.05
MEL - 0502		16-Aug-16	Kephyrion sp.	64656	0.67
MEL - 0502		16-Aug-16	Spiniferomonas sirrata**********	21552	1.98
MEL - 0502		16-Aug-16	Dinobryon borgei Lemmermann	14368	0.65
MEL - 0502		16-Aug-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0502		16-Aug-16	Dinobryon sertularia Ehrenberg	200	0.68
MEL - 0502		16-Aug-16	Dinobryon sociale Ehrenberg	114944	26
MEL - 0502		16-Aug-16	Uroglena volvox Ehrenberg	14368	1.63
MEL - 0502		16-Aug-16	Chrysochromulina laurentiana Kling	57472	24.99
MEL - 0502		16-Aug-16	Stichogloea spp.	21552	1.08
MEL - 0502		16-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.53
MEL - 0502		16-Aug-16	Cyclotella stelligera Cleve and Grunow	2000	3.5

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0502		16-Aug-16	Fragilaria crotonensis Kitton	1200	0.38
MEL - 0502		16-Aug-16	Synedra acus Kutzing	1800	0.19
MEL - 0502		16-Aug-16	Cyclotella michiganiana Skvortzow	50288	1.23
MEL - 0502		16-Aug-16	Cyclotella bodanica Eulenst.	800	4.24
MEL - 0502		16-Aug-16	Rhodomonas minuta Skuja	251440	31.61
MEL - 0502		16-Aug-16	Cryptomonas erosa Ehrenberg	7600	8.75
MEL - 0502		16-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1400	0.93
MEL - 0502		16-Aug-16	Gymnodinium helveticum Penard	400	9.61
MEL - 0502		16-Aug-16	Gymnodinium sp.	7184	2.65
MEL - 0502		16-Aug-16	Gymnodinium sp.	1400	13.18
MEL - 0502		16-Aug-16	Peridinium pusillum (Penard) Lemmermann	1600	4.04
MEL - 0502	REP3	16-Aug-16	Chlamydomonas spp.	7184	0.14
MEL - 0502	REP3	16-Aug-16	Oocystis lacustris Chodat	43104	1.06
MEL - 0502	REP3	16-Aug-16	Elakatothrix gelatinosa Willen	114944	1.62
MEL - 0502	REP3	16-Aug-16	Cosmarium sp.	200	0.28
MEL - 0502	REP3	16-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL - 0502	REP3	16-Aug-16	Staurodesmus sp.	200	2.54
MEL - 0502	REP3	16-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0502	REP3	16-Aug-16	Botryococcus braunii Kutzing	200	0.18
MEL - 0502	REP3	16-Aug-16	Small chrysophyceae	344832	4.86
MEL - 0502	REP3	16-Aug-16	Large chrysophyceae	21552	3.87
MEL - 0502	REP3	16-Aug-16	Chrysochromulina parva Lackey	179600	11.75
MEL - 0502	REP3	16-Aug-16	Chrysococcus sp.	229888	13.31
MEL - 0502	REP3	16-Aug-16	Kephyrion sp.	43104	0.4
MEL - 0502	REP3	16-Aug-16	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL - 0502	REP3	16-Aug-16	Dinobryon borgei Lemmermann	21552	1.06
MEL - 0502	REP3	16-Aug-16	Dinobryon sertularia Ehrenberg	28736	6.5
MEL - 0502	REP3	16-Aug-16	Dinobryon sertularia Ehrenberg	1200	4.07
MEL - 0502	REP3	16-Aug-16	Dinobryon sociale Ehrenberg	237072	53.63
MEL - 0502	REP3	16-Aug-16	Uroglena volvox Ehrenberg	43104	4.88
MEL - 0502	REP3	16-Aug-16	Chrysochromulina laurentiana Kling	79024	34.37
MEL - 0502	REP3	16-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.6
MEL - 0502	REP3	16-Aug-16	Pteridomonas sp.	21552	5.3

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0502	REP3	16-Aug-16	Cyclotella stelligera Cleve and Grunow	3400	6.27
MEL - 0502	REP3	16-Aug-16	Synedra acus Kutzing	600	0.06
MEL - 0502	REP3	16-Aug-16	Synedra ulna (Nitzsch) Ehrenberg	200	0.81
MEL - 0502	REP3	16-Aug-16	Cyclotella michiganiana Skvortzow	64656	1.58
MEL - 0502	REP3	16-Aug-16	Cyclotella bodanica Eulenst.	800	4.24
MEL - 0502	REP3	16-Aug-16	Rhodomonas minuta Skuja	222704	27.99
MEL - 0502	REP3	16-Aug-16	Cryptomonas erosa Ehrenberg	5200	5.99
MEL - 0502	REP3	16-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1400	0.93
MEL - 0502	REP3	16-Aug-16	Katablepharis ovalis Skuja	7184	0.51
MEL - 0502	REP3	16-Aug-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0502	REP3	16-Aug-16	Gymnodinium sp.	600	5.72
MEL - 0502	REP3	16-Aug-16	Peridinium pusillum (Penard) Lemmermann	400	1.01
MEL - 0503		16-Aug-16	Aphanothece sp.	35920	1.83
MEL - 0503		16-Aug-16	Chlamydomonas spp.	14368	0.15
MEL - 0503		16-Aug-16	Sphaerocystis schroeteri Chodat	71840	1.01
MEL - 0503		16-Aug-16	Elakatothrix gelatinosa Willen	21552	0.37
MEL - 0503		16-Aug-16	Elakatothrix gelatinosa Willen	50288	3.16
MEL - 0503		16-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL - 0503		16-Aug-16	Staurodesmus paradoxum Meyen	500	2.04
MEL - 0503		16-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0503		16-Aug-16	Small chrysophyceae	517248	4.24
MEL - 0503		16-Aug-16	Large chrysophyceae	35920	6.45
MEL - 0503		16-Aug-16	Chrysochromulina parva Lackey	143680	9.4
MEL - 0503		16-Aug-16	Chrysococcus sp.	208336	9.29
MEL - 0503		16-Aug-16	Kephyrion sp.	79024	0.81
MEL - 0503		16-Aug-16	Spiniferomonas sirrata**********	28736	3.25
MEL - 0503		16-Aug-16	Mallomonas crassisquama (Asmund) Fott	800	0.84
MEL - 0503		16-Aug-16	Dinobryon borgei Lemmermann	28736	1.32
MEL - 0503		16-Aug-16	Dinobryon mucronutom Nygaard	14368	1.81
MEL - 0503		16-Aug-16	Dinobryon bavaricum Imhof	200	0.25
MEL - 0503		16-Aug-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0503		16-Aug-16	Dinobryon sertularia Ehrenberg	400	0.8
MEL - 0503		16-Aug-16	Dinobryon sociale Ehrenberg	208336	47.13

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0503		16-Aug-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.23
MEL - 0503		16-Aug-16	Uroglena volvox Ehrenberg	71840	8.13
MEL - 0503		16-Aug-16	Chrysochromulina laurentiana Kling	57472	24.99
MEL - 0503		16-Aug-16	Bicoeca lacustris Clark	7184	0.56
MEL - 0503		16-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43
MEL - 0503		16-Aug-16	Pteridomonas sp.	50288	12.38
MEL - 0503		16-Aug-16	Cyclotella stelligera Cleve and Grunow	1400	2.55
MEL - 0503		16-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	600	0.5
MEL - 0503		16-Aug-16	Synedra acus Kutzing	1400	0.16
MEL - 0503		16-Aug-16	Asterionella formosa Hassall	1400	0.15
MEL - 0503		16-Aug-16	Cyclotella michiganiana Skvortzow	43104	1.12
MEL - 0503		16-Aug-16	Cyclotella bodanica Eulenst.	400	2.34
MEL - 0503		16-Aug-16	Rhodomonas minuta Skuja	229888	30.05
MEL - 0503		16-Aug-16	Cryptomonas erosa Ehrenberg	4000	4.46
MEL - 0503		16-Aug-16	Cryptomonas reflexa (Marsson) Skuja	600	0.4
MEL - 0503		16-Aug-16	Katablepharis ovalis Skuja	14368	0.93
MEL - 0503		16-Aug-16	Gymnodinium sp.	800	0.82
MEL - 0503		16-Aug-16	Peridinium pusillum (Penard) Lemmermann	1000	2.53
MEL - 0504		16-Aug-16	Oocystis lacustris Chodat	7184	0.2
MEL - 0504		16-Aug-16	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL - 0504		16-Aug-16	Elakatothrix gelatinosa Willen	28736	0.45
MEL - 0504		16-Aug-16	Planctonema lauterbornii Schmidle	57472	7.22
MEL - 0504		16-Aug-16	Cosmarium sp.	400	0.56
MEL - 0504		16-Aug-16	Staurodesmus extensus (Andersson) Teiling	800	0.3
MEL - 0504		16-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL - 0504		16-Aug-16	Scourfieldia cordiformis Takeda	7184	0.17
MEL - 0504		16-Aug-16	Botryococcus braunii Kutzing	600	0.42
MEL - 0504		16-Aug-16	Small chrysophyceae	330464	6.81
MEL - 0504		16-Aug-16	Large chrysophyceae	14368	2.58
MEL - 0504		16-Aug-16	Chrysochromulina parva Lackey	172416	12.69
MEL - 0504		16-Aug-16	Chrysococcus sp.	244256	17.98
MEL - 0504		16-Aug-16	Kephyrion sp.	57472	0.9
MEL - 0504		16-Aug-16	Spiniferomonas sirrata**********	7184	1.08

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0504		16-Aug-16	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL - 0504		16-Aug-16	Dinobryon borgei Lemmermann	14368	0.78
MEL - 0504		16-Aug-16	Dinobryon mucronutom Nygaard	14368	1.77
MEL - 0504		16-Aug-16	Dinobryon bavaricum Imhof	21552	4.88
MEL - 0504		16-Aug-16	Dinobryon bavaricum Imhof	200	0.68
MEL - 0504		16-Aug-16	Dinobryon sertularia Ehrenberg	21552	4.88
MEL - 0504		16-Aug-16	Dinobryon sertularia Ehrenberg	200	1.02
MEL - 0504		16-Aug-16	Dinobryon sociale Ehrenberg	114944	26
MEL - 0504		16-Aug-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.23
MEL - 0504		16-Aug-16	Uroglena volvox Ehrenberg	107760	12.19
MEL - 0504		16-Aug-16	Chrysochromulina laurentiana Kling	28736	11.72
MEL - 0504		16-Aug-16	Stichogloea spp.	57472	2.89
MEL - 0504		16-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.17
MEL - 0504		16-Aug-16	Pteridomonas sp.	21552	5.13
MEL - 0504		16-Aug-16	Cyclotella stelligera Cleve and Grunow	3600	6.55
MEL - 0504		16-Aug-16	Cyclotella ocellata Pant.	35920	5.14
MEL - 0504		16-Aug-16	Synedra acus Kutzing	1000	0.08
MEL - 0504		16-Aug-16	Asterionella formosa Hassall	400	0.03
MEL - 0504		16-Aug-16	Cyclotella bodanica Eulenst.	800	5.85
MEL - 0504		16-Aug-16	Rhodomonas minuta Skuja	179600	25.5
MEL - 0504		16-Aug-16	Cryptomonas erosa Ehrenberg	3800	4.32
MEL - 0504		16-Aug-16	Cryptomonas reflexa (Marsson) Skuja	1200	3.02
MEL - 0504		16-Aug-16	Cryptomonas rostratiformis Skuja	600	1.19
MEL - 0504		16-Aug-16	Katablepharis ovalis Skuja	7184	0.51
MEL - 0504		16-Aug-16	Gymnodinium sp.	400	4.12
MEL - 0504		16-Aug-16	Peridinium pusillum (Penard) Lemmermann	2600	4.99
MEL - 0504	REP4	16-Aug-16	Aphanocapsa sp.	200	0.3
MEL - 0504	REP4	16-Aug-16	Oocystis lacustris Chodat	43104	1.22
MEL - 0504	REP4	16-Aug-16	Dictyosphaerium simplex Sukja	86208	0.36
MEL - 0504	REP4	16-Aug-16	Elakatothrix gelatinosa Willen	7184	0.11
MEL - 0504	REP4	16-Aug-16	Planctonema lauterbornii Schmidle	43104	5.42
MEL - 0504	REP4	16-Aug-16	Euastrum spp.	200	0.37
MEL - 0504	REP4	16-Aug-16	Staurodesmus extensus (Andersson) Teiling	200	0.08

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0504	REP4	16-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL - 0504	REP4	16-Aug-16	Small chrysophyceae	466960	9.62
MEL - 0504	REP4	16-Aug-16	Large chrysophyceae	28736	5.16
MEL - 0504	REP4	16-Aug-16	Chrysochromulina parva Lackey	57472	4.23
MEL - 0504	REP4	16-Aug-16	Chrysococcus sp.	316096	23.26
MEL - 0504	REP4	16-Aug-16	Kephyrion boreale Skuja	7184	0.66
MEL - 0504	REP4	16-Aug-16	Kephyrion sp.	64656	0.91
MEL - 0504	REP4	16-Aug-16	Spiniferomonas sirrata**********	28736	4.32
MEL - 0504	REP4	16-Aug-16	Mallomonas crassisquama (Asmund) Fott	600	0.62
MEL - 0504	REP4	16-Aug-16	Dinobryon borgei Lemmermann	14368	0.78
MEL - 0504	REP4	16-Aug-16	Dinobryon mucronutom Nygaard	21552	2.65
MEL - 0504	REP4	16-Aug-16	Dinobryon bavaricum Imhof	7184	1.63
MEL - 0504	REP4	16-Aug-16	Dinobryon bavaricum Imhof	200	0.68
MEL - 0504	REP4	16-Aug-16	Dinobryon sertularia Ehrenberg	14368	3.25
MEL - 0504	REP4	16-Aug-16	Dinobryon sertularia Ehrenberg	800	4.07
MEL - 0504	REP4	16-Aug-16	Dinobryon sociale Ehrenberg	122128	27.63
MEL - 0504	REP4	16-Aug-16	Epiphyxis sp.	7184	0.56
MEL - 0504	REP4	16-Aug-16	Chrysolkos skuja (Nauwerck) Willen	7184	0.2
MEL - 0504	REP4	16-Aug-16	Uroglena volvox Ehrenberg	193968	21.94
MEL - 0504	REP4	16-Aug-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0504	REP4	16-Aug-16	Chrysochromulina laurentiana Kling	57472	23.43
MEL - 0504	REP4	16-Aug-16	Stichogloea spp.	114944	5.78
MEL - 0504	REP4	16-Aug-16	Bicoeca lacustris Clark	7184	0.56
MEL - 0504	REP4	16-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.17
MEL - 0504	REP4	16-Aug-16	Pteridomonas sp.	14368	3.42
MEL - 0504	REP4	16-Aug-16	Cyclotella stelligera Cleve and Grunow	5000	9.09
MEL - 0504	REP4	16-Aug-16	Cyclotella ocellata Pant.	64656	9.25
MEL - 0504	REP4	16-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.62
MEL - 0504	REP4	16-Aug-16	Synedra acus Kutzing	200	0.02
MEL - 0504	REP4	16-Aug-16	Asterionella formosa Hassall	800	0.09
MEL - 0504	REP4	16-Aug-16	Cyclotella bodanica Eulenst.	1200	8.78
MEL - 0504	REP4	16-Aug-16	Rhodomonas minuta Skuja	165232	23.46
MEL - 0504	REP4	16-Aug-16	Cryptomonas erosa Ehrenberg	6200	7.04

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0504	REP4	16-Aug-16	Cryptomonas reflexa (Marsson) Skuja	2200	1.46
MEL - 0504	REP4	16-Aug-16	Cryptomonas rostratiformis Skuja	1000	1.98
MEL - 0504	REP4	16-Aug-16	Katablepharis ovalis Skuja	7184	0.51
MEL - 0504	REP4	16-Aug-16	Gymnodinium helveticum Penard	200	4.81
MEL - 0504	REP4	16-Aug-16	Gymnodinium sp.	800	8.24
MEL - 0504	REP4	16-Aug-16	Peridinium pusillum (Penard) Lemmermann	1000	1.92
MEL - 0505		16-Aug-16	Aphanothece sp.	21552	1.08
MEL - 0505		16-Aug-16	Chlamydomonas spp.	14368	0.18
MEL - 0505		16-Aug-16	Sphaerocystis schroeteri Chodat	57472	1.08
MEL - 0505		16-Aug-16	Oocystis lacustris Chodat	43104	1.03
MEL - 0505		16-Aug-16	Planctonema lauterbornii Schmidle	64656	8.13
MEL - 0505		16-Aug-16	Planctonema lauterbornii Schmidle	57472	7.94
MEL - 0505		16-Aug-16	Cosmarium sp.	200	0.07
MEL - 0505		16-Aug-16	Cosmarium sp.	200	0.28
MEL - 0505		16-Aug-16	Euastrum spp.	200	0.37
MEL - 0505		16-Aug-16	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL - 0505		16-Aug-16	Botryococcus braunii Kutzing	200	0.29
MEL - 0505		16-Aug-16	Monomastix minuta Skuja	7184	0.23
MEL - 0505		16-Aug-16	Small chrysophyceae	373568	5.27
MEL - 0505		16-Aug-16	Large chrysophyceae	50288	9.03
MEL - 0505		16-Aug-16	Chrysochromulina parva Lackey	79024	5.17
MEL - 0505		16-Aug-16	Chrysococcus sp.	158048	10.34
MEL - 0505		16-Aug-16	Kephyrion sp.	57472	0.53
MEL - 0505		16-Aug-16	Spiniferomonas sirrata**********	7184	0.81
MEL - 0505		16-Aug-16	Mallomonas caudata Ivanov	200	1.07
MEL - 0505		16-Aug-16	Mallomonas crassisquama (Asmund) Fott	800	0.78
MEL - 0505		16-Aug-16	Dinobryon borgei Lemmermann	14368	0.66
MEL - 0505		16-Aug-16	Dinobryon mucronutom Nygaard	7184	0.86
MEL - 0505		16-Aug-16	Dinobryon bavaricum Imhof	143680	32.5
MEL - 0505		16-Aug-16	Dinobryon bavaricum Imhof	14368	3.25
MEL - 0505		16-Aug-16	Dinobryon bavaricum Imhof	400	0.8
MEL - 0505		16-Aug-16	Dinobryon sertularia Ehrenberg	43104	9.75
MEL - 0505		16-Aug-16	Dinobryon sertularia Ehrenberg	400	0.8

Table 11D-4: Raw Phytoplankton Data, Meliadine Lake 2016

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL - 0505		16-Aug-16	Uroglena volvox Ehrenberg	129312	14.63
MEL - 0505		16-Aug-16	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL - 0505		16-Aug-16	Chrysochromulina laurentiana Kling	35920	15.62
MEL - 0505		16-Aug-16	Stichogloea spp.	14368	0.72
MEL - 0505		16-Aug-16	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.18
MEL - 0505		16-Aug-16	Pteridomonas sp.	21552	5.3
MEL - 0505		16-Aug-16	Cyclotella stelligera Cleve and Grunow	3200	7.55
MEL - 0505		16-Aug-16	Cyclotella ocellata Pant.	21552	1.45
MEL - 0505		16-Aug-16	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.15
MEL - 0505		16-Aug-16	Synedra acus Kutzing	600	0.06
MEL - 0505		16-Aug-16	Cyclotella michiganiana Skvortzow	35920	0.69
MEL - 0505		16-Aug-16	Cyclotella bodanica Eulenst.	600	4.63
MEL - 0505		16-Aug-16	Rhodomonas minuta Skuja	272992	34.32
MEL - 0505		16-Aug-16	Cryptomonas erosa Ehrenberg	5400	6.05
MEL - 0505		16-Aug-16	Cryptomonas reflexa (Marsson) Skuja	2400	1.59
MEL - 0505		16-Aug-16	Cryptomonas rostratiformis Skuja	1200	2.46
MEL - 0505		16-Aug-16	Gymnodinium sp.	1400	10.78
MEL - 0505		16-Aug-16	Peridinium pusillum (Penard) Lemmermann	1800	4.55

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101		16-Jul-17	Chroococcus limneticus Lemmermann	28736	0.70
MEL- 0101		16-Jul-17	Snowella sp	200	0.10
MEL- 0101		16-Jul-17	Pyramidomonas tetrarhynchus Schmarda	200	0.15
MEL- 0101		16-Jul-17	Chlamydomonas spp.	7184	0.12
MEL- 0101		16-Jul-17	Sphaerocystis schroeteri Chodat	21552	0.48
MEL- 0101		16-Jul-17	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184	0.50
MEL- 0101		16-Jul-17	Planctonema lauterbornii Schmidle	35920	9.03
MEL- 0101		16-Jul-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0101		16-Jul-17	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.72
MEL- 0101		16-Jul-17	Staurodesmus paradoxum Meyen	200	0.37
MEL- 0101		16-Jul-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0101		16-Jul-17	Small chrysophyceae	517248	6.62
MEL- 0101		16-Jul-17	Large chrysophyceae	158048	28.39
MEL- 0101		16-Jul-17	Chrysochromulina parva Lackey	797424	52.15
MEL- 0101		16-Jul-17	Chrysococcus sp.	287360	18.79
MEL- 0101		16-Jul-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0101		16-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0101		16-Jul-17	Kephyrion sp.	64656	1.22
MEL- 0101		16-Jul-17	Spiniferomonas sirrata**********	43104	3.55
MEL- 0101		16-Jul-17	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL- 0101		16-Jul-17	Dinobryon borgei Lemmermann	57472	2.95
MEL- 0101		16-Jul-17	Dinobryon bavaricum Imhof	136496	30.88
MEL- 0101		16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.55
MEL- 0101		16-Jul-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0101		16-Jul-17	Dinobryon sertularia Ehrenberg	4800	9.56
MEL- 0101		16-Jul-17	Dinobryon sertularia Ehrenberg	1200	4.07
MEL- 0101		16-Jul-17	Dinobryon sociale Ehrenberg	107760	24.38
MEL- 0101		16-Jul-17	Dinobryon sociale Ehrenberg	200	0.25
MEL- 0101		16-Jul-17	Epiphyxis sp.	57472	4.48
MEL- 0101		16-Jul-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.65
MEL- 0101		16-Jul-17	Uroglena volvox Ehrenberg	1796000	203.13
MEL- 0101		16-Jul-17	Chrysochromulina laurentiana Kling	93392	36.85

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101		16-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.19
MEL- 0101		16-Jul-17	Cyclotella stelligera Cleve and Grunow	1000	1.82
MEL- 0101		16-Jul-17	Rhizosolenia eriense H.L. Smith	193968	15.09
MEL- 0101		16-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	7200	5.97
MEL- 0101		16-Jul-17	Synedra acus Kutzing	9000	1.04
MEL- 0101		16-Jul-17	Asterionella formosa Hassall	8000	0.80
MEL- 0101		16-Jul-17	Cyclotella michiganiana Skvortzow	64656	1.58
MEL- 0101		16-Jul-17	Rhodomonas minuta Skuja	122128	11.49
MEL- 0101		16-Jul-17	Cryptomonas erosa Ehrenberg	6200	7.48
MEL- 0101		16-Jul-17	Cryptomonas reflexa (Marsson) Skuja	600	0.44
MEL- 0101		16-Jul-17	Cryptomonas rostratiformis Skuja	800	1.81
MEL- 0101		16-Jul-17	Katablepharis ovalis Skuja	35920	2.03
MEL- 0101		16-Jul-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0101		16-Jul-17	Gymnodinium sp.	28736	10.59
MEL- 0101		16-Jul-17	Gymnodinium sp.	5200	44.09
MEL- 0101		16-Jul-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0101		16-Jul-17	Peridinium pusillum (Penard) Lemmermann	4600	9.87
MEL- 0101		16-Jul-17	Peridinium aciculiferum Lemmermann	24000	16.69
MEL- 0101		16-Jul-17	Peridinium aciculiferum Lemmermann	1000	9.05
MEL- 0101R	Recount	16-Jul-17	Chroococcus limneticus Lemmermann	57472	1.40
MEL- 0101R	Recount	16-Jul-17	Pyramidomonas tetrarhynchus Schmarda	600	0.46
MEL- 0101R	Recount	16-Jul-17	Chlamydomonas spp.	7184	0.12
MEL- 0101R	Recount	16-Jul-17	Sphaerocystis schroeteri Chodat	28736	0.64
MEL- 0101R	Recount	16-Jul-17	Oocystis lacustris Chodat	35920	1.02
MEL- 0101R	Recount	16-Jul-17	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184	0.50
MEL- 0101R	Recount	16-Jul-17	Elakatothrix gelatinosa Willen	14368	0.20
MEL- 0101R	Recount	16-Jul-17	Planctonema lauterbornii Schmidle	28736	7.22
MEL- 0101R	Recount	16-Jul-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0101R	Recount	16-Jul-17	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	400	0.70
MEL- 0101R	Recount	16-Jul-17	Ankistrodesmus spiralis Lemmermann	14368	0.68
MEL- 0101R	Recount	16-Jul-17	Small chrysophyceae	387936	4.97
MEL- 0101R	Recount	16-Jul-17	Large chrysophyceae	122128	21.93

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101R	Recount	16-Jul-17	Chrysochromulina parva Lackey	689664	45.10
MEL- 0101R	Recount	16-Jul-17	Chrysococcus sp.	366384	23.96
MEL- 0101R	Recount	16-Jul-17	Kephyrion sp.	86208	1.62
MEL- 0101R	Recount	16-Jul-17	Spiniferomonas sirrata**********	57472	4.74
MEL- 0101R	Recount	16-Jul-17	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL- 0101R	Recount	16-Jul-17	Dinobryon borgei Lemmermann	43104	2.21
MEL- 0101R	Recount	16-Jul-17	Dinobryon bavaricum Imhof	122128	27.63
MEL- 0101R	Recount	16-Jul-17	Dinobryon bavaricum Imhof	4200	8.36
MEL- 0101R	Recount	16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	1200	3.27
MEL- 0101R	Recount	16-Jul-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0101R	Recount	16-Jul-17	Dinobryon sertularia Ehrenberg	1600	5.42
MEL- 0101R	Recount	16-Jul-17	Dinobryon sociale Ehrenberg	122128	27.63
MEL- 0101R	Recount	16-Jul-17	Dinobryon sociale Ehrenberg	400	0.50
MEL- 0101R	Recount	16-Jul-17	Epiphyxis sp.	79024	6.16
MEL- 0101R	Recount	16-Jul-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.23
MEL- 0101R	Recount	16-Jul-17	Ochromonas sp.	14368	1.09
MEL- 0101R	Recount	16-Jul-17	Uroglena volvox Ehrenberg	1889392	213.69
MEL- 0101R	Recount	16-Jul-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0101R	Recount	16-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.38
MEL- 0101R	Recount	16-Jul-17	Cyclotella stelligera Cleve and Grunow	1800	3.27
MEL- 0101R	Recount	16-Jul-17	Rhizosolenia eriense H.L. Smith	136496	10.62
MEL- 0101R	Recount	16-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	8800	7.30
MEL- 0101R	Recount	16-Jul-17	Fragilaria crotonensis Kitton	29200	10.15
MEL- 0101R	Recount	16-Jul-17	Synedra acus Kutzing	7200	0.83
MEL- 0101R	Recount	16-Jul-17	Asterionella formosa Hassall	6200	0.62
MEL- 0101R	Recount	16-Jul-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0101R	Recount	16-Jul-17	Cyclotella bodanica Eulenst.	200	1.58
MEL- 0101R	Recount	16-Jul-17	Rhodomonas minuta Skuja	100576	9.46
MEL- 0101R	Recount	16-Jul-17	Cryptomonas erosa Ehrenberg	9200	11.10
MEL- 0101R	Recount	16-Jul-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0101R	Recount	16-Jul-17	Cryptomonas rostratiformis Skuja	800	1.81
MEL- 0101R	Recount	16-Jul-17	Katablepharis ovalis Skuja	28736	1.62

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101R	Recount	16-Jul-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0101R	Recount	16-Jul-17	Gymnodinium sp.	21552	7.94
MEL- 0101R	Recount	16-Jul-17	Gymnodinium sp.	5000	42.40
MEL- 0101R	Recount	16-Jul-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0101R	Recount	16-Jul-17	Peridinium pusillum (Penard) Lemmermann	3800	8.15
MEL- 0101R	Recount	16-Jul-17	Peridinium aciculiferum Lemmermann	2000	18.10
MEL- 0102		16-Jul-17	Chlamydomonas spp.	7184	0.11
MEL- 0102		16-Jul-17	Oocystis lacustris Chodat	43104	1.22
MEL- 0102		16-Jul-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0102		16-Jul-17	Planctonema lauterbornii Schmidle	71840	18.05
MEL- 0102		16-Jul-17	Staurodesmus paradoxum Meyen	200	0.56
MEL- 0102		16-Jul-17	Botryococcus braunii Kutzing	600	0.31
MEL- 0102		16-Jul-17	Ankistrodesmus spiralis Lemmermann	7184	0.25
MEL- 0102		16-Jul-17	Small chrysophyceae	531616	6.80
MEL- 0102		16-Jul-17	Large chrysophyceae	71840	12.90
MEL- 0102		16-Jul-17	Chrysochromulina parva Lackey	790240	51.68
MEL- 0102		16-Jul-17	Chrysococcus sp.	452592	29.60
MEL- 0102		16-Jul-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0102		16-Jul-17	Kephyrion sp.	57472	1.08
MEL- 0102		16-Jul-17	Spiniferomonas sirrata**********	50288	4.14
MEL- 0102		16-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0102		16-Jul-17	Dinobryon borgei Lemmermann	21552	1.11
MEL- 0102		16-Jul-17	Dinobryon mucronutom Nygaard	7184	0.85
MEL- 0102		16-Jul-17	Dinobryon bavaricum Imhof	136496	30.88
MEL- 0102		16-Jul-17	Dinobryon bavaricum Imhof	7200	14.34
MEL- 0102		16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.09
MEL- 0102		16-Jul-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0102		16-Jul-17	Dinobryon sociale Ehrenberg	107760	24.38
MEL- 0102		16-Jul-17	Dinobryon sociale Ehrenberg	1400	1.75
MEL- 0102		16-Jul-17	Epiphyxis sp.	21552	1.68
MEL- 0102		16-Jul-17	Chrysolkos skuja (Nauwerck) Willen	35920	1.15
MEL- 0102		16-Jul-17	Uroglena volvox Ehrenberg	1084784	122.69

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0102		16-Jul-17	Chrysochromulina laurentiana Kling	21552	8.50
MEL- 0102		16-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.16
MEL- 0102		16-Jul-17	Cyclotella stelligera Cleve and Grunow	600	1.09
MEL- 0102		16-Jul-17	Rhizosolenia eriense H.L. Smith	301728	23.47
MEL- 0102		16-Jul-17	Fragilaria crotonensis Kitton	32000	11.13
MEL- 0102		16-Jul-17	Synedra acus Kutzing	9000	1.04
MEL- 0102		16-Jul-17	Asterionella formosa Hassall	7400	0.73
MEL- 0102		16-Jul-17	Cyclotella michiganiana Skvortzow	50288	1.23
MEL- 0102		16-Jul-17	Rhodomonas minuta Skuja	129312	12.17
MEL- 0102		16-Jul-17	Cryptomonas erosa Ehrenberg	4200	4.98
MEL- 0102		16-Jul-17	Cryptomonas reflexa (Marsson) Skuja	1400	1.03
MEL- 0102		16-Jul-17	Cryptomonas rostratiformis Skuja	200	0.45
MEL- 0102		16-Jul-17	Katablepharis ovalis Skuja	71840	4.06
MEL- 0102		16-Jul-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0102		16-Jul-17	Gymnodinium sp.	1800	28.08
MEL- 0102		16-Jul-17	Peridinium willei Huitfeldt-Kaas	200	4.89
MEL- 0102		16-Jul-17	Peridinium pusillum (Penard) Lemmermann	3800	8.15
MEL- 0102		16-Jul-17	Peridinium aciculiferum Lemmermann	1400	12.67
MEL- 0103		16-Jul-17	Oocystis lacustris Chodat	21552	1.08
MEL- 0103		16-Jul-17	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	14368	1.07
MEL- 0103		16-Jul-17	Planctonema lauterbornii Schmidle	28736	7.22
MEL- 0103		16-Jul-17	Euastrum spp.	200	0.37
MEL- 0103		16-Jul-17	Staurodesmus extensus (Andersson) Teiling	1200	0.49
MEL- 0103		16-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0103		16-Jul-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0103		16-Jul-17	Ankistrodesmus spiralis Lemmermann	7184	0.34
MEL- 0103		16-Jul-17	Small chrysophyceae	438224	5.61
MEL- 0103		16-Jul-17	Large chrysophyceae	43104	7.74
MEL- 0103		16-Jul-17	Chrysochromulina parva Lackey	567536	37.12
MEL- 0103		16-Jul-17	Chrysococcus sp.	136496	8.93
MEL- 0103		16-Jul-17	Kephyrion sp.	150864	2.59
MEL- 0103		16-Jul-17	Spiniferomonas sirrata**********	28736	2.37

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0103		16-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0103		16-Jul-17	Dinobryon borgei Lemmermann	28736	1.47
MEL- 0103		16-Jul-17	Dinobryon bavaricum Imhof	79024	17.88
MEL- 0103		16-Jul-17	Dinobryon bavaricum Imhof	8200	16.33
MEL- 0103		16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	35920	14.38
MEL- 0103		16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.09
MEL- 0103		16-Jul-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0103		16-Jul-17	Dinobryon sertularia Ehrenberg	1000	3.39
MEL- 0103		16-Jul-17	Dinobryon sociale Ehrenberg	79024	17.88
MEL- 0103		16-Jul-17	Dinobryon sociale Ehrenberg	2200	2.75
MEL- 0103		16-Jul-17	Epiphyxis sp.	14368	1.25
MEL- 0103		16-Jul-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.35
MEL- 0103		16-Jul-17	Ochromonas sp.	7184	0.54
MEL- 0103		16-Jul-17	Uroglena volvox Ehrenberg	1831920	207.19
MEL- 0103		16-Jul-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0103		16-Jul-17	Chrysochromulina laurentiana Kling	28736	11.34
MEL- 0103		16-Jul-17	Stichogloea spp.	28736	1.45
MEL- 0103		16-Jul-17	Cyclotella stelligera Cleve and Grunow	400	0.73
MEL- 0103		16-Jul-17	Rhizosolenia eriense H.L. Smith	172416	13.41
MEL- 0103		16-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	8800	7.30
MEL- 0103		16-Jul-17	Tabellaria flocculsa (Roth) Kutzing	800	1.03
MEL- 0103		16-Jul-17	Fragilaria crotonensis Kitton	20200	7.02
MEL- 0103		16-Jul-17	Synedra acus Kutzing	600	0.06
MEL- 0103		16-Jul-17	Synedra ulna (Nitzsch) Ehrenberg	400	0.98
MEL- 0103		16-Jul-17	Asterionella formosa Hassall	3400	0.34
MEL- 0103		16-Jul-17	Cyclotella michiganiana Skvortzow	86208	1.44
MEL- 0103		16-Jul-17	Rhodomonas minuta Skuja	150864	14.80
MEL- 0103		16-Jul-17	Cryptomonas erosa Ehrenberg	3200	3.86
MEL- 0103		16-Jul-17	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL- 0103		16-Jul-17	Cryptomonas rostratiformis Skuja	1600	0.36
MEL- 0103		16-Jul-17	Katablepharis ovalis Skuja	64656	3.65
MEL- 0103		16-Jul-17	Gymnodinium sp.	14368	4.81

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0103		16-Jul-17	Gymnodinium sp.	2800	23.74
MEL- 0103		16-Jul-17	Peridinium pusillum (Penard) Lemmermann	4800	10.29
MEL- 0103		16-Jul-17	Peridinium aciculiferum Lemmermann	1400	12.67
MEL- 0103	Rep 2	16-Jul-17	Pyramidomonas tetrarhynchus Schmarda	200	0.15
MEL- 0103	Rep 2	16-Jul-17	Chlamydomonas spp.	7184	0.17
MEL- 0103	Rep 2	16-Jul-17	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	14368	1.07
MEL- 0103	Rep 2	16-Jul-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0103	Rep 2	16-Jul-17	Euastrum spp.	200	0.37
MEL- 0103	Rep 2	16-Jul-17	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL- 0103	Rep 2	16-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0103	Rep 2	16-Jul-17	Small chrysophyceae	625008	8.00
MEL- 0103	Rep 2	16-Jul-17	Large chrysophyceae	28736	5.16
MEL- 0103	Rep 2	16-Jul-17	Chrysochromulina parva Lackey	459776	30.07
MEL- 0103	Rep 2	16-Jul-17	Chrysococcus sp.	158048	10.34
MEL- 0103	Rep 2	16-Jul-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0103	Rep 2	16-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0103	Rep 2	16-Jul-17	Kephyrion sp.	122128	2.10
MEL- 0103	Rep 2	16-Jul-17	Spiniferomonas sirrata**********	14368	1.18
MEL- 0103	Rep 2	16-Jul-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0103	Rep 2	16-Jul-17	Dinobryon borgei Lemmermann	43104	2.21
MEL- 0103	Rep 2	16-Jul-17	Dinobryon bavaricum Imhof	100576	22.75
MEL- 0103	Rep 2	16-Jul-17	Dinobryon bavaricum Imhof	7000	13.94
MEL- 0103	Rep 2	16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	21552	8.63
MEL- 0103	Rep 2	16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	800	2.18
MEL- 0103	Rep 2	16-Jul-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0103	Rep 2	16-Jul-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0103	Rep 2	16-Jul-17	Dinobryon sociale Ehrenberg	136496	30.88
MEL- 0103	Rep 2	16-Jul-17	Dinobryon sociale Ehrenberg	2000	2.50
MEL- 0103	Rep 2	16-Jul-17	Epiphyxis sp.	21552	1.88
MEL- 0103	Rep 2	16-Jul-17	Chrysolkos skuja (Nauwerck) Willen	35920	0.88
MEL- 0103	Rep 2	16-Jul-17	Uroglena volvox Ehrenberg	1731344	195.82
MEL- 0103	Rep 2	16-Jul-17	Chrysochromulina laurentiana Kling	50288	19.84

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0103	Rep 2	16-Jul-17	Stichogloea spp.	14368	0.72
MEL- 0103	Rep 2	16-Jul-17	Cyclotella stelligera Cleve and Grunow	400	0.73
MEL- 0103	Rep 2	16-Jul-17	Cyclotella ocellata Pant.	14368	0.97
MEL- 0103	Rep 2	16-Jul-17	Rhizosolenia eriense H.L. Smith	150864	11.74
MEL- 0103	Rep 2	16-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	5400	4.48
MEL- 0103	Rep 2	16-Jul-17	Tabellaria flocculsa (Roth) Kutzing	600	0.77
MEL- 0103	Rep 2	16-Jul-17	Fragilaria crotonensis Kitton	22200	7.72
MEL- 0103	Rep 2	16-Jul-17	Synedra acus Kutzing	8200	0.86
MEL- 0103	Rep 2	16-Jul-17	Asterionella formosa Hassall	6000	0.60
MEL- 0103	Rep 2	16-Jul-17	Cyclotella michiganiana Skvortzow	129312	2.16
MEL- 0103	Rep 2	16-Jul-17	Rhodomonas minuta Skuja	107760	10.57
MEL- 0103	Rep 2	16-Jul-17	Cryptomonas erosa Ehrenberg	4400	5.31
MEL- 0103	Rep 2	16-Jul-17	Cryptomonas reflexa (Marsson) Skuja	400	0.29
MEL- 0103	Rep 2	16-Jul-17	Cryptomonas rostratiformis Skuja	600	1.35
MEL- 0103	Rep 2	16-Jul-17	Katablepharis ovalis Skuja	50288	2.84
MEL- 0103	Rep 2	16-Jul-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0103	Rep 2	16-Jul-17	Gymnodinium sp.	7184	2.65
MEL- 0103	Rep 2	16-Jul-17	Gymnodinium sp.	2600	22.05
MEL- 0103	Rep 2	16-Jul-17	Peridinium pusillum (Penard) Lemmermann	6400	13.73
MEL- 0103	Rep 2	16-Jul-17	Peridinium aciculiferum Lemmermann	400	3.62
MEL- 0104		16-Jul-17	Snowella sp	200	0.10
MEL- 0104		16-Jul-17	Chlamydomonas spp.	7184	0.17
MEL- 0104		16-Jul-17	Dictyosphaerium simplex Sukja	86208	0.41
MEL- 0104		16-Jul-17	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	7184	0.54
MEL- 0104		16-Jul-17	Planctonema lauterbornii Schmidle	79024	19.86
MEL- 0104		16-Jul-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0104		16-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0104		16-Jul-17	Small chrysophyceae	387936	4.97
MEL- 0104		16-Jul-17	Large chrysophyceae	100576	18.06
MEL- 0104		16-Jul-17	Chrysochromulina parva Lackey	811792	53.09
MEL- 0104		16-Jul-17	Chrysococcus sp.	193968	12.69
MEL- 0104		16-Jul-17	Kephyrion boreale Skuja	7184	0.85

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0104		16-Jul-17	Kephyrion sp.	114944	1.98
MEL- 0104		16-Jul-17	Spiniferomonas sirrata**********	28736	2.64
MEL- 0104		16-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0104		16-Jul-17	Dinobryon borgei Lemmermann	64656	3.32
MEL- 0104		16-Jul-17	Dinobryon bavaricum Imhof	57472	13.00
MEL- 0104		16-Jul-17	Dinobryon bavaricum Imhof	7200	14.34
MEL- 0104		16-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.88
MEL- 0104		16-Jul-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0104		16-Jul-17	Dinobryon sociale Ehrenberg	165232	37.38
MEL- 0104		16-Jul-17	Dinobryon sociale Ehrenberg	1400	1.75
MEL- 0104		16-Jul-17	Epiphyxis sp.	64656	4.93
MEL- 0104		16-Jul-17	Chrysolkos skuja (Nauwerck) Willen	35920	1.04
MEL- 0104		16-Jul-17	Uroglena volvox Ehrenberg	1558928	176.31
MEL- 0104		16-Jul-17	Chrysochromulina laurentiana Kling	122128	48.19
MEL- 0104		16-Jul-17	Cyclotella stelligera Cleve and Grunow	1600	2.91
MEL- 0104		16-Jul-17	Rhizosolenia eriense H.L. Smith	215520	16.77
MEL- 0104		16-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	5400	4.48
MEL- 0104		16-Jul-17	Tabellaria flocculsa (Roth) Kutzing	400	0.53
MEL- 0104		16-Jul-17	Fragilaria crotonensis Kitton	23200	8.07
MEL- 0104		16-Jul-17	Synedra acus Kutzing	3600	0.38
MEL- 0104		16-Jul-17	Synedra ulna (Nitzsch) Ehrenberg	200	0.48
MEL- 0104		16-Jul-17	Asterionella formosa Hassall	8400	0.84
MEL- 0104		16-Jul-17	Cyclotella michiganiana Skvortzow	57472	1.10
MEL- 0104		16-Jul-17	Rhodomonas minuta Skuja	64656	6.34
MEL- 0104		16-Jul-17	Cryptomonas erosa Ehrenberg	5800	7.00
MEL- 0104		16-Jul-17	Cryptomonas ovata Ehrenberg	200	0.90
MEL- 0104		16-Jul-17	Cryptomonas reflexa (Marsson) Skuja	1000	0.66
MEL- 0104		16-Jul-17	Cryptomonas rostratiformis Skuja	1400	2.87
MEL- 0104		16-Jul-17	Katablepharis ovalis Skuja	71840	4.06
MEL- 0104		16-Jul-17	Gymnodinium helveticum Penard	400	9.42
MEL- 0104		16-Jul-17	Gymnodinium sp.	3000	25.44
MEL- 0104		16-Jul-17	Peridinium willei Huitfeldt-Kaas	200	4.89

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0104		16-Jul-17	Peridinium pusillum (Penard) Lemmermann	4600	9.87
MEL- 0104		16-Jul-17	Peridinium aciculiferum Lemmermann	600	5.43
MEL- 0105		16-Jul-17	Aphanocapsa sp.	200	0.24
MEL- 0105		16-Jul-17	Snowella sp	400	0.30
MEL- 0105		16-Jul-17	Dictyosphaerium simplex Sukja	71840	0.34
MEL- 0105		16-Jul-17	Monoraphidium komarkovae (Nyg.) Komarkova-Legnerova	14368	1.00
MEL- 0105		16-Jul-17	Planctonema lauterbornii Schmidle	57472	14.44
MEL- 0105		16-Jul-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0105		16-Jul-17	Small chrysophyceae	610640	7.82
MEL- 0105		16-Jul-17	Large chrysophyceae	50288	9.03
MEL- 0105		16-Jul-17	Chrysochromulina parva Lackey	639376	41.82
MEL- 0105		16-Jul-17	Chrysococcus sp.	193968	12.69
MEL- 0105		16-Jul-17	Chrysostephanospaera globulifera Scherffel	14368	4.78
MEL- 0105		16-Jul-17	Kephyrion sp.	50288	0.86
MEL- 0105		16-Jul-17	Spiniferomonas sirrata**********	50288	4.38
MEL- 0105		16-Jul-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0105		16-Jul-17	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL- 0105		16-Jul-17	Dinobryon borgei Lemmermann	50288	2.58
MEL- 0105		16-Jul-17	Dinobryon bavaricum Imhof	79024	17.88
MEL- 0105		16-Jul-17	Dinobryon bavaricum Imhof	3600	7.17
MEL- 0105		16-Jul-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0105		16-Jul-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0105		16-Jul-17	Dinobryon sociale Ehrenberg	136496	30.88
MEL- 0105		16-Jul-17	Dinobryon sociale Ehrenberg	1200	1.50
MEL- 0105		16-Jul-17	Epiphyxis sp.	7184	0.54
MEL- 0105		16-Jul-17	Chrysolkos skuja (Nauwerck) Willen	100576	3.02
MEL- 0105		16-Jul-17	Uroglena volvox Ehrenberg	1587664	179.56
MEL- 0105		16-Jul-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0105		16-Jul-17	Pteridomonas sp.	7184	1.71
MEL- 0105		16-Jul-17	Cyclotella stelligera Cleve and Grunow	600	1.09
MEL- 0105		16-Jul-17	Cyclotella ocellata Pant.	21552	2.17
MEL- 0105		16-Jul-17	Rhizosolenia eriense H.L. Smith	258624	20.12

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0105		16-Jul-17	Tabellaria flocculsa (Roth) Kutzing	400	0.51
MEL- 0105		16-Jul-17	Fragilaria crotonensis Kitton	20000	6.87
MEL- 0105		16-Jul-17	Synedra acus Kutzing	4600	0.48
MEL- 0105		16-Jul-17	Asterionella formosa Hassall	3200	0.31
MEL- 0105		16-Jul-17	Cyclotella michiganiana Skvortzow	43104	0.82
MEL- 0105		16-Jul-17	Rhodomonas minuta Skuja	71840	7.05
MEL- 0105		16-Jul-17	Cryptomonas erosa Ehrenberg	2400	2.90
MEL- 0105		16-Jul-17	Cryptomonas reflexa (Marsson) Skuja	1600	1.06
MEL- 0105		16-Jul-17	Cryptomonas rostratiformis Skuja	400	0.82
MEL- 0105		16-Jul-17	Katablepharis ovalis Skuja	43104	2.44
MEL- 0105		16-Jul-17	Gymnodinium helveticum Penard	600	14.14
MEL- 0105		16-Jul-17	Gymnodinium sp.	3000	26.35
MEL- 0105		16-Jul-17	Peridinium willei Huitfeldt-Kaas	200	5.30
MEL- 0105		16-Jul-17	Peridinium pusillum (Penard) Lemmermann	2800	6.01
MEL- 0105		16-Jul-17	Peridinium aciculiferum Lemmermann	600	5.43
MEL- 0301		21-Jul-17	Oocystis lacustris Chodat	7184	0.20
MEL- 0301		21-Jul-17	Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	200	0.70
MEL- 0301		21-Jul-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0301		21-Jul-17	Staurodesmus paradoxum Meyen	200	0.82
MEL- 0301		21-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0301		21-Jul-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0301		21-Jul-17	Small chrysophyceae	244256	1.56
MEL- 0301		21-Jul-17	Large chrysophyceae	21552	3.87
MEL- 0301		21-Jul-17	Chrysochromulina parva Lackey	359200	23.49
MEL- 0301		21-Jul-17	Chrysococcus sp.	229888	15.03
MEL- 0301		21-Jul-17	Chrysostephanospaera globulifera Scherffel	14368	5.13
MEL- 0301		21-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0301		21-Jul-17	Kephyrion sp.	136496	2.35
MEL- 0301		21-Jul-17	Spiniferomonas sirrata**********	14368	1.25
MEL- 0301		21-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0301		21-Jul-17	Dinobryon borgei Lemmermann	86208	4.42
MEL- 0301		21-Jul-17	Dinobryon mucronutom Nygaard	21552	2.77

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0301		21-Jul-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0301		21-Jul-17	Dinobryon sertularia Ehrenberg	57472	13.00
MEL- 0301		21-Jul-17	Dinobryon sertularia Ehrenberg	1400	2.79
MEL- 0301		21-Jul-17	Dinobryon sociale Ehrenberg	107760	24.38
MEL- 0301		21-Jul-17	Epiphyxis sp.	7184	0.55
MEL- 0301		21-Jul-17	Chrysolkos skuja (Nauwerck) Willen	57472	1.49
MEL- 0301		21-Jul-17	Uroglena volvox Ehrenberg	488512	55.25
MEL- 0301		21-Jul-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0301		21-Jul-17	Stichogloea spp.	14368	0.72
MEL- 0301		21-Jul-17	Cyclotella stelligera Cleve and Grunow	1200	2.18
MEL- 0301		21-Jul-17	Cyclotella ocellata Pant.	14368	1.44
MEL- 0301		21-Jul-17	Rhizosolenia eriense H.L. Smith	21552	1.68
MEL- 0301		21-Jul-17	Fragilaria crotonensis Kitton	400	0.13
MEL- 0301		21-Jul-17	Synedra acus Kutzing	1000	0.10
MEL- 0301		21-Jul-17	Cyclotella michiganiana Skvortzow	57472	1.10
MEL- 0301		21-Jul-17	Cyclotella bodanica Eulenst.	200	1.17
MEL- 0301		21-Jul-17	Rhodomonas minuta Skuja	79024	7.18
MEL- 0301		21-Jul-17	Cryptomonas erosa Ehrenberg	1800	2.20
MEL- 0301		21-Jul-17	Cryptomonas reflexa (Marsson) Skuja	200	0.14
MEL- 0301		21-Jul-17	Cryptomonas rostratiformis Skuja	400	0.85
MEL- 0301		21-Jul-17	Katablepharis ovalis Skuja	7184	0.41
MEL- 0301		21-Jul-17	Gymnodinium sp.	1000	5.73
MEL- 0301		21-Jul-17	Peridinium pusillum (Penard) Lemmermann	400	0.96
MEL- 0301	Rep 2	21-Jul-17	Oocystis lacustris Chodat	14368	0.41
MEL- 0301	Rep 2	21-Jul-17	Elakatothrix gelatinosa Willen	28736	0.50
MEL- 0301	Rep 2	21-Jul-17	Planctonema lauterbornii Schmidle	7184	1.81
MEL- 0301	Rep 2	21-Jul-17	Cosmarium sp.	200	0.28
MEL- 0301	Rep 2	21-Jul-17	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL- 0301	Rep 2	21-Jul-17	Staurodesmus paradoxum Meyen	200	0.58
MEL- 0301	Rep 2	21-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0301	Rep 2	21-Jul-17	Oocystis gigas Archer	200	0.48
MEL- 0301	Rep 2	21-Jul-17	Small chrysophyceae	280176	1.79

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0301	Rep 2	21-Jul-17	Large chrysophyceae	7184	1.29
MEL- 0301	Rep 2	21-Jul-17	Chrysochromulina parva Lackey	258624	16.91
MEL- 0301	Rep 2	21-Jul-17	Chrysococcus sp.	222704	14.56
MEL- 0301	Rep 2	21-Jul-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0301	Rep 2	21-Jul-17	Kephyrion sp.	150864	2.59
MEL- 0301	Rep 2	21-Jul-17	Spiniferomonas sirrata**********	7184	0.63
MEL- 0301	Rep 2	21-Jul-17	Dinobryon borgei Lemmermann	71840	3.69
MEL- 0301	Rep 2	21-Jul-17	Dinobryon mucronutom Nygaard	7184	0.93
MEL- 0301	Rep 2	21-Jul-17	Dinobryon bavaricum Imhof	400	0.50
MEL- 0301	Rep 2	21-Jul-17	Dinobryon sertularia Ehrenberg	50288	11.38
MEL- 0301	Rep 2	21-Jul-17	Dinobryon sertularia Ehrenberg	1200	4.07
MEL- 0301	Rep 2	21-Jul-17	Dinobryon sociale Ehrenberg	100576	22.75
MEL- 0301	Rep 2	21-Jul-17	Epiphyxis sp.	7184	0.55
MEL- 0301	Rep 2	21-Jul-17	Chrysolkos skuja (Nauwerck) Willen	71840	1.86
MEL- 0301	Rep 2	21-Jul-17	Uroglena volvox Ehrenberg	373568	42.25
MEL- 0301	Rep 2	21-Jul-17	Chrysochromulina laurentiana Kling	50288	19.84
MEL- 0301	Rep 2	21-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.19
MEL- 0301	Rep 2	21-Jul-17	Cyclotella stelligera Cleve and Grunow	800	1.45
MEL- 0301	Rep 2	21-Jul-17	Cyclotella ocellata Pant.	28736	2.89
MEL- 0301	Rep 2	21-Jul-17	Rhizosolenia eriense H.L. Smith	43104	3.35
MEL- 0301	Rep 2	21-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	1600	1.24
MEL- 0301	Rep 2	21-Jul-17	Synedra acus Kutzing	400	0.04
MEL- 0301	Rep 2	21-Jul-17	Cyclotella michiganiana Skvortzow	43104	0.82
MEL- 0301	Rep 2	21-Jul-17	Rhodomonas minuta Skuja	64656	5.87
MEL- 0301	Rep 2	21-Jul-17	Cryptomonas erosa Ehrenberg	2600	3.18
MEL- 0301	Rep 2	21-Jul-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0301	Rep 2	21-Jul-17	Katablepharis ovalis Skuja	21552	1.22
MEL- 0301	Rep 2	21-Jul-17	Gymnodinium sp.	2800	16.04
MEL- 0301	Rep 2	21-Jul-17	Peridinium pusillum (Penard) Lemmermann	600	1.44
MEL- 0302		21-Jul-17	Oocystis lacustris Chodat	21552	1.08
MEL- 0302		21-Jul-17	Paulschulzia pseudovolvox (Schulz and Teiling) Skuja	200	0.70
MEL- 0302		21-Jul-17	Elakatothrix gelatinosa Willen	14368	0.25

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0302		21-Jul-17	Planctonema lauterbornii Schmidle	7184	1.63
MEL- 0302		21-Jul-17	Cosmarium sp.	200	1.14
MEL- 0302		21-Jul-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0302		21-Jul-17	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL- 0302		21-Jul-17	Small chrysophyceae	301728	2.17
MEL- 0302		21-Jul-17	Large chrysophyceae	7184	1.29
MEL- 0302		21-Jul-17	Chrysochromulina parva Lackey	208336	13.63
MEL- 0302		21-Jul-17	Chrysococcus sp.	265808	17.38
MEL- 0302		21-Jul-17	Kephyrion boreale Skuja	14368	1.71
MEL- 0302		21-Jul-17	Kephyrion sp.	107760	1.68
MEL- 0302		21-Jul-17	Dinobryon borgei Lemmermann	93392	4.79
MEL- 0302		21-Jul-17	Dinobryon mucronutom Nygaard	7184	0.93
MEL- 0302		21-Jul-17	Dinobryon bavaricum Imhof	400	0.50
MEL- 0302		21-Jul-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0302		21-Jul-17	Dinobryon sertularia Ehrenberg	1600	5.42
MEL- 0302		21-Jul-17	Dinobryon sociale Ehrenberg	100576	22.75
MEL- 0302		21-Jul-17	Chrysolkos skuja (Nauwerck) Willen	71840	1.76
MEL- 0302		21-Jul-17	Uroglena volvox Ehrenberg	524432	59.31
MEL- 0302		21-Jul-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0302		21-Jul-17	Cyclotella stelligera Cleve and Grunow	200	0.36
MEL- 0302		21-Jul-17	Cyclotella ocellata Pant.	21552	2.17
MEL- 0302		21-Jul-17	Rhizosolenia eriense H.L. Smith	28736	2.24
MEL- 0302		21-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	4800	3.80
MEL- 0302		21-Jul-17	Fragilaria crotonensis Kitton	600	0.20
MEL- 0302		21-Jul-17	Synedra acus Kutzing	800	0.08
MEL- 0302		21-Jul-17	Asterionella formosa Hassall	2400	0.24
MEL- 0302		21-Jul-17	Cyclotella michiganiana Skvortzow	35920	0.83
MEL- 0302		21-Jul-17	Rhodomonas minuta Skuja	143680	13.05
MEL- 0302		21-Jul-17	Cryptomonas erosa Ehrenberg	1400	1.70
MEL- 0302		21-Jul-17	Cryptomonas rostratiformis Skuja	200	0.45
MEL- 0302		21-Jul-17	Katablepharis ovalis Skuja	7184	0.42
MEL- 0302		21-Jul-17	Gymnodinium sp.	1000	6.37

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0302		21-Jul-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0302		21-Jul-17	Peridinium pusillum (Penard) Lemmermann	2000	4.37
MEL- 0302		21-Jul-17	Peridinium aciculiferum Lemmermann	600	5.43
MEL- 0303		21-Jul-17	Planktolyngbya limnetica	200	0.03
MEL- 0303		21-Jul-17	Snowella sp	400	0.31
MEL- 0303		21-Jul-17	Oocystis lacustris Chodat	14368	0.37
MEL- 0303		21-Jul-17	Elakatothrix gelatinosa Willen	7184	0.12
MEL- 0303		21-Jul-17	Planctonema lauterbornii Schmidle	7184	1.63
MEL- 0303		21-Jul-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0303		21-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0303		21-Jul-17	Mougeotia sp.	400	1.32
MEL- 0303		21-Jul-17	Small chrysophyceae	280176	1.79
MEL- 0303		21-Jul-17	Large chrysophyceae	7184	1.29
MEL- 0303		21-Jul-17	Chrysochromulina parva Lackey	402304	26.31
MEL- 0303		21-Jul-17	Chrysococcus sp.	244256	15.97
MEL- 0303		21-Jul-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0303		21-Jul-17	Kephyrion boreale Skuja	21552	2.69
MEL- 0303		21-Jul-17	Kephyrion sp.	158048	2.72
MEL- 0303		21-Jul-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0303		21-Jul-17	Dinobryon borgei Lemmermann	71840	5.15
MEL- 0303		21-Jul-17	Dinobryon bavaricum Imhof	600	2.03
MEL- 0303		21-Jul-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0303		21-Jul-17	Dinobryon sertularia Ehrenberg	1200	4.07
MEL- 0303		21-Jul-17	Dinobryon sociale Ehrenberg	150864	34.13
MEL- 0303		21-Jul-17	Chrysolkos skuja (Nauwerck) Willen	93392	2.47
MEL- 0303		21-Jul-17	Uroglena volvox Ehrenberg	675296	76.38
MEL- 0303		21-Jul-17	Chrysochromulina laurentiana Kling	35920	14.17
MEL- 0303		21-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.37
MEL- 0303		21-Jul-17	Cyclotella stelligera Cleve and Grunow	1000	1.57
MEL- 0303		21-Jul-17	Cyclotella ocellata Pant.	28736	3.23
MEL- 0303		21-Jul-17	Rhizosolenia eriense H.L. Smith	21552	1.37
MEL- 0303		21-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.15

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0303		21-Jul-17	Fragilaria crotonensis Kitton	800	0.27
MEL- 0303		21-Jul-17	Synedra acus Kutzing	800	0.08
MEL- 0303		21-Jul-17	Cyclotella michiganiana Skvortzow	79024	1.51
MEL- 0303		21-Jul-17	Rhodomonas minuta Skuja	129312	11.74
MEL- 0303		21-Jul-17	Cryptomonas erosa Ehrenberg	1400	1.71
MEL- 0303		21-Jul-17	Cryptomonas reflexa (Marsson) Skuja	400	0.28
MEL- 0303		21-Jul-17	Cryptomonas rostratiformis Skuja	1000	2.12
MEL- 0303		21-Jul-17	Katablepharis ovalis Skuja	7184	0.41
MEL- 0303		21-Jul-17	Gymnodinium sp.	1200	7.25
MEL- 0303		21-Jul-17	Peridinium willei Huitfeldt-Kaas	200	4.89
MEL- 0303		21-Jul-17	Peridinium pusillum (Penard) Lemmermann	1200	2.87
MEL- 0304		21-Jul-17	Oocystis lacustris Chodat	7184	0.19
MEL- 0304		21-Jul-17	Planctonema lauterbornii Schmidle	7184	1.63
MEL- 0304		21-Jul-17	Cosmarium sp.	400	0.56
MEL- 0304		21-Jul-17	Staurodesmus extensus (Andersson) Teiling	600	0.22
MEL- 0304		21-Jul-17	Staurodesmus paradoxum Meyen	200	0.82
MEL- 0304		21-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL- 0304		21-Jul-17	Botryococcus braunii Kutzing	600	0.42
MEL- 0304		21-Jul-17	Small chrysophyceae	466960	2.99
MEL- 0304		21-Jul-17	Large chrysophyceae	7184	1.29
MEL- 0304		21-Jul-17	Chrysochromulina parva Lackey	452592	29.60
MEL- 0304		21-Jul-17	Chrysococcus sp.	272992	17.85
MEL- 0304		21-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0304		21-Jul-17	Kephyrion sp.	122128	2.52
MEL- 0304		21-Jul-17	Spiniferomonas sirrata**********	14368	1.63
MEL- 0304		21-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0304		21-Jul-17	Dinobryon borgei Lemmermann	100576	4.86
MEL- 0304		21-Jul-17	Dinobryon mucronutom Nygaard	14368	1.81
MEL- 0304		21-Jul-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0304		21-Jul-17	Dinobryon sertularia Ehrenberg	1200	4.07
MEL- 0304		21-Jul-17	Dinobryon sociale Ehrenberg	57472	13.00
MEL- 0304		21-Jul-17	Chrysolkos skuja (Nauwerck) Willen	93392	2.47

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0304		21-Jul-17	Uroglena volvox Ehrenberg	560352	63.38
MEL- 0304		21-Jul-17	Uroglena volvox Ehrenberg	200	2.32
MEL- 0304		21-Jul-17	Chrysochromulina laurentiana Kling	71840	28.35
MEL- 0304		21-Jul-17	Stichogloea spp.	14368	0.72
MEL- 0304		21-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.74
MEL- 0304		21-Jul-17	Cyclotella stelligera Cleve and Grunow	800	1.45
MEL- 0304		21-Jul-17	Rhizosolenia eriense H.L. Smith	35920	2.28
MEL- 0304		21-Jul-17	Fragilaria crotonensis Kitton	600	0.20
MEL- 0304		21-Jul-17	Synedra acus Kutzing	800	0.09
MEL- 0304		21-Jul-17	Asterionella formosa Hassall	800	0.08
MEL- 0304		21-Jul-17	Cyclotella michiganiana Skvortzow	28736	0.55
MEL- 0304		21-Jul-17	Rhodomonas minuta Skuja	50288	4.57
MEL- 0304		21-Jul-17	Cryptomonas erosa Ehrenberg	1800	2.19
MEL- 0304		21-Jul-17	Cryptomonas reflexa (Marsson) Skuja	600	0.42
MEL- 0304		21-Jul-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0304		21-Jul-17	Katablepharis ovalis Skuja	7184	0.41
MEL- 0304		21-Jul-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0304		21-Jul-17	Gymnodinium sp.	7184	2.65
MEL- 0304		21-Jul-17	Gymnodinium sp.	1600	8.10
MEL- 0304		21-Jul-17	Peridinium pusillum (Penard) Lemmermann	2000	4.97
MEL- 0304		21-Jul-17	Peridinium aciculiferum Lemmermann	200	1.81
MEL- 0304R	Recount	21-Jul-17	Oocystis lacustris Chodat	21552	0.57
MEL- 0304R	Recount	21-Jul-17	Dictyosphaerium simplex Sukja	28736	0.12
MEL- 0304R	Recount	21-Jul-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0304R	Recount	21-Jul-17	Euastrum spp.	400	0.74
MEL- 0304R	Recount	21-Jul-17	Staurodesmus extensus (Andersson) Teiling	800	0.30
MEL- 0304R	Recount	21-Jul-17	Staurodesmus paradoxum Meyen	200	0.82
MEL- 0304R	Recount	21-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0304R	Recount	21-Jul-17	Botryococcus braunii Kutzing	200	0.14
MEL- 0304R	Recount	21-Jul-17	Small chrysophyceae	294544	1.89
MEL- 0304R	Recount	21-Jul-17	Chrysochromulina parva Lackey	510064	33.36
MEL- 0304R	Recount	21-Jul-17	Chrysococcus sp.	208336	13.63

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0304R	Recount	21-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0304R	Recount	21-Jul-17	Kephyrion sp.	86208	1.78
MEL- 0304R	Recount	21-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0304R	Recount	21-Jul-17	Synura sphagnicola Korschikow	200	3.11
MEL- 0304R	Recount	21-Jul-17	Dinobryon borgei Lemmermann	122128	5.90
MEL- 0304R	Recount	21-Jul-17	Dinobryon mucronutom Nygaard	21552	2.71
MEL- 0304R	Recount	21-Jul-17	Dinobryon bavaricum Imhof	28736	6.50
MEL- 0304R	Recount	21-Jul-17	Dinobryon bavaricum Imhof	7184	1.63
MEL- 0304R	Recount	21-Jul-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0304R	Recount	21-Jul-17	Dinobryon sertularia Ehrenberg	800	2.71
MEL- 0304R	Recount	21-Jul-17	Dinobryon sociale Ehrenberg	50288	11.38
MEL- 0304R	Recount	21-Jul-17	Chrysolkos skuja (Nauwerck) Willen	114944	3.03
MEL- 0304R	Recount	21-Jul-17	Uroglena volvox Ehrenberg	617824	69.88
MEL- 0304R	Recount	21-Jul-17	Uroglena volvox Ehrenberg	600	6.96
MEL- 0304R	Recount	21-Jul-17	Chrysochromulina laurentiana Kling	57472	22.68
MEL- 0304R	Recount	21-Jul-17	Stichogloea spp.	28736	1.45
MEL- 0304R	Recount	21-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.37
MEL- 0304R	Recount	21-Jul-17	Cyclotella stelligera Cleve and Grunow	1200	2.18
MEL- 0304R	Recount	21-Jul-17	Rhizosolenia eriense H.L. Smith	28736	1.83
MEL- 0304R	Recount	21-Jul-17	Tabellaria flocculsa (Roth) Kutzing	600	0.80
MEL- 0304R	Recount	21-Jul-17	Fragilaria crotonensis Kitton	400	0.13
MEL- 0304R	Recount	21-Jul-17	Synedra acus Kutzing	1400	0.16
MEL- 0304R	Recount	21-Jul-17	Asterionella formosa Hassall	1600	0.16
MEL- 0304R	Recount	21-Jul-17	Cyclotella michiganiana Skvortzow	7184	0.14
MEL- 0304R	Recount	21-Jul-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0304R	Recount	21-Jul-17	Rhodomonas minuta Skuja	86208	7.83
MEL- 0304R	Recount	21-Jul-17	Cryptomonas erosa Ehrenberg	2400	2.92
MEL- 0304R	Recount	21-Jul-17	Cryptomonas reflexa (Marsson) Skuja	400	0.28
MEL- 0304R	Recount	21-Jul-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0304R	Recount	21-Jul-17	Katablepharis ovalis Skuja	21552	1.22
MEL- 0304R	Recount	21-Jul-17	Gymnodinium sp.	1200	6.07
MEL- 0304R	Recount	21-Jul-17	Peridinium pusillum (Penard) Lemmermann	1200	2.98

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305		21-Jul-17	Planktolyngbya limnetica	200	0.04
MEL- 0305		21-Jul-17	Elakatothrix gelatinosa Willen	14368	0.25
MEL- 0305		21-Jul-17	Cosmarium sp.	600	0.84
MEL- 0305		21-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0305		21-Jul-17	Oocystis gigas Archer	200	0.48
MEL- 0305		21-Jul-17	Small chrysophyceae	474144	3.03
MEL- 0305		21-Jul-17	Large chrysophyceae	35920	6.45
MEL- 0305		21-Jul-17	Chrysochromulina parva Lackey	272992	17.85
MEL- 0305		21-Jul-17	Chrysococcus sp.	165232	10.81
MEL- 0305		21-Jul-17	Kephyrion sp.	28736	0.45
MEL- 0305		21-Jul-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0305		21-Jul-17	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL- 0305		21-Jul-17	Dinobryon borgei Lemmermann	93392	4.79
MEL- 0305		21-Jul-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0305		21-Jul-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0305		21-Jul-17	Dinobryon sertularia Ehrenberg	2200	11.19
MEL- 0305		21-Jul-17	Dinobryon sociale Ehrenberg	107760	24.38
MEL- 0305		21-Jul-17	Chrysolkos skuja (Nauwerck) Willen	71840	1.90
MEL- 0305		21-Jul-17	Uroglena volvox Ehrenberg	754320	85.31
MEL- 0305		21-Jul-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0305		21-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.56
MEL- 0305		21-Jul-17	Cyclotella stelligera Cleve and Grunow	200	0.31
MEL- 0305		21-Jul-17	Cyclotella ocellata Pant.	14368	1.92
MEL- 0305		21-Jul-17	Rhizosolenia eriense H.L. Smith	71840	4.57
MEL- 0305		21-Jul-17	Fragilaria crotonensis Kitton	200	0.07
MEL- 0305		21-Jul-17	Synedra acus Kutzing	1400	0.15
MEL- 0305		21-Jul-17	Cyclotella michiganiana Skvortzow	57472	1.10
MEL- 0305		21-Jul-17	Rhodomonas minuta Skuja	71840	6.52
MEL- 0305		21-Jul-17	Cryptomonas erosa Ehrenberg	800	0.97
MEL- 0305		21-Jul-17	Cryptomonas reflexa (Marsson) Skuja	400	0.28
MEL- 0305		21-Jul-17	Cryptomonas rostratiformis Skuja	400	0.85
MEL- 0305		21-Jul-17	Katablepharis ovalis Skuja	35920	2.03

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305		21-Jul-17	Gymnodinium sp.	600	3.35
MEL- 0305		21-Jul-17	Peridinium pusillum (Penard) Lemmermann	2400	5.54
MEL- 0201		23-Jul-17	Pyramidomonas tetrarhynchus Schmarda	200	0.11
MEL- 0201		23-Jul-17	Elakatothrix gelatinosa Willen	21552	0.37
MEL- 0201		23-Jul-17	Planctonema lauterbornii Schmidle	21552	5.42
MEL- 0201		23-Jul-17	Cosmarium sp.	200	2.23
MEL- 0201		23-Jul-17	Euastrum spp.	600	1.12
MEL- 0201		23-Jul-17	Staurodesmus extensus (Andersson) Teiling	600	0.25
MEL- 0201		23-Jul-17	Staurodesmus paradoxum Meyen	200	0.55
MEL- 0201		23-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL- 0201		23-Jul-17	Oocystis gigas Archer	200	0.48
MEL- 0201		23-Jul-17	Small chrysophyceae	352016	4.51
MEL- 0201		23-Jul-17	Large chrysophyceae	14368	2.58
MEL- 0201		23-Jul-17	Chrysochromulina parva Lackey	193968	12.69
MEL- 0201		23-Jul-17	Chrysococcus sp.	215520	14.10
MEL- 0201		23-Jul-17	Kephyrion sp.	100576	1.73
MEL- 0201		23-Jul-17	Spiniferomonas sirrata**********	14368	1.79
MEL- 0201		23-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0201		23-Jul-17	Dinobryon borgei Lemmermann	28736	1.47
MEL- 0201		23-Jul-17	Dinobryon mucronutom Nygaard	43104	5.64
MEL- 0201		23-Jul-17	Dinobryon bavaricum Imhof	7184	1.63
MEL- 0201		23-Jul-17	Dinobryon bavaricum Imhof	2400	8.14
MEL- 0201		23-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	5.90
MEL- 0201		23-Jul-17	Dinobryon sertularia Ehrenberg	43104	9.75
MEL- 0201		23-Jul-17	Dinobryon sertularia Ehrenberg	1000	5.09
MEL- 0201		23-Jul-17	Dinobryon sociale Ehrenberg	114944	26.00
MEL- 0201		23-Jul-17	Dinobryon sociale Ehrenberg	200	0.40
MEL- 0201		23-Jul-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.65
MEL- 0201		23-Jul-17	Uroglena volvox Ehrenberg	531616	60.13
MEL- 0201		23-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	35920	0.93
MEL- 0201		23-Jul-17	Chrysolykos anulatus	79024	31.18
MEL- 0201		23-Jul-17	Pteridomonas sp.	7184	1.71

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0201		23-Jul-17	Cyclotella stelligera Cleve and Grunow	1400	2.20
MEL- 0201		23-Jul-17	Cyclotella ocellata Pant.	7184	0.53
MEL- 0201		23-Jul-17	Rhizosolenia eriense H.L. Smith	35920	2.79
MEL- 0201		23-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.17
MEL- 0201		23-Jul-17	Fragilaria crotonensis Kitton	800	0.26
MEL- 0201		23-Jul-17	Synedra acus Kutzing	3400	0.36
MEL- 0201		23-Jul-17	Asterionella formosa Hassall	1200	0.12
MEL- 0201		23-Jul-17	Cyclotella michiganiana Skvortzow	100576	1.92
MEL- 0201		23-Jul-17	Rhodomonas minuta Skuja	179600	14.10
MEL- 0201		23-Jul-17	Cryptomonas erosa Ehrenberg	2000	2.46
MEL- 0201		23-Jul-17	Cryptomonas rostratiformis Skuja	400	0.88
MEL- 0201		23-Jul-17	Katablepharis ovalis Skuja	14368	0.81
MEL- 0201		23-Jul-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0201		23-Jul-17	Gymnodinium sp.	2600	17.00
MEL- 0201		23-Jul-17	Peridinium pusillum (Penard) Lemmermann	2600	5.58
MEL- 0202		23-Jul-17	Elakatothrix gelatinosa Willen	21552	0.37
MEL- 0202		23-Jul-17	Planctonema lauterbornii Schmidle	50288	12.64
MEL- 0202		23-Jul-17	Cosmarium sp.	200	0.28
MEL- 0202		23-Jul-17	Euastrum spp.	200	0.37
MEL- 0202		23-Jul-17	Staurodesmus extensus (Andersson) Teiling	800	0.29
MEL- 0202		23-Jul-17	Mougeotia sp.	200	0.41
MEL- 0202		23-Jul-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0202		23-Jul-17	Small chrysophyceae	545984	6.99
MEL- 0202		23-Jul-17	Large chrysophyceae	28736	5.16
MEL- 0202		23-Jul-17	Chrysochromulina parva Lackey	387936	25.37
MEL- 0202		23-Jul-17	Chrysococcus sp.	193968	12.69
MEL- 0202		23-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0202		23-Jul-17	Kephyrion sp.	129312	2.22
MEL- 0202		23-Jul-17	Spiniferomonas sirrata**********	7184	0.85
MEL- 0202		23-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0202		23-Jul-17	Dinobryon borgei Lemmermann	43104	2.21
MEL- 0202		23-Jul-17	Dinobryon mucronutom Nygaard	14368	1.88

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0202		23-Jul-17	Dinobryon bavaricum Imhof	50288	11.38
MEL- 0202		23-Jul-17	Dinobryon bavaricum Imhof	1800	6.10
MEL- 0202		23-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.55
MEL- 0202		23-Jul-17	Dinobryon sertularia Ehrenberg	43104	9.75
MEL- 0202		23-Jul-17	Dinobryon sertularia Ehrenberg	3000	15.26
MEL- 0202		23-Jul-17	Dinobryon sociale Ehrenberg	100576	22.75
MEL- 0202		23-Jul-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.22
MEL- 0202		23-Jul-17	Uroglena volvox Ehrenberg	790240	89.38
MEL- 0202		23-Jul-17	Chrysochromulina laurentiana Kling	93392	36.85
MEL- 0202		23-Jul-17	Stichogloea spp.	28736	1.45
MEL- 0202		23-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.56
MEL- 0202		23-Jul-17	Pteridomonas sp.	7184	1.71
MEL- 0202		23-Jul-17	Cyclotella stelligera Cleve and Grunow	1200	1.88
MEL- 0202		23-Jul-17	Cyclotella ocellata Pant.	7184	0.53
MEL- 0202		23-Jul-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0202		23-Jul-17	Tabellaria flocculsa (Roth) Kutzing	400	0.53
MEL- 0202		23-Jul-17	Fragilaria crotonensis Kitton	1600	0.53
MEL- 0202		23-Jul-17	Synedra acus Kutzing	1600	0.17
MEL- 0202		23-Jul-17	Asterionella formosa Hassall	1600	0.16
MEL- 0202		23-Jul-17	Cyclotella michiganiana Skvortzow	28736	0.55
MEL- 0202		23-Jul-17	Rhodomonas minuta Skuja	93392	7.33
MEL- 0202		23-Jul-17	Cryptomonas erosa Ehrenberg	1800	2.22
MEL- 0202		23-Jul-17	Cryptomonas reflexa (Marsson) Skuja	1000	0.66
MEL- 0202		23-Jul-17	Cryptomonas rostratiformis Skuja	400	0.85
MEL- 0202		23-Jul-17	Katablepharis ovalis Skuja	14368	0.81
MEL- 0202		23-Jul-17	Gymnodinium sp.	7184	2.31
MEL- 0202		23-Jul-17	Gymnodinium sp.	600	4.18
MEL- 0202		23-Jul-17	Peridinium pusillum (Penard) Lemmermann	1600	3.43
MEL- 0203		23-Jul-17	Planktolyngbya limnetica	21552	5.42
MEL- 0203		23-Jul-17	Oocystis lacustris Chodat	21552	0.61
MEL- 0203		23-Jul-17	Dictyosphaerium simplex Sukja	14368	0.06
MEL- 0203		23-Jul-17	Crucigenia quadrata Morr.	28736	0.32

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0203		23-Jul-17	Elakatothrix gelatinosa Willen	57472	0.99
MEL- 0203		23-Jul-17	Staurodesmus extensus (Andersson) Teiling	800	0.29
MEL- 0203		23-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0203		23-Jul-17	Oocystis gigas Archer	200	0.48
MEL- 0203		23-Jul-17	Small chrysophyceae	452592	5.79
MEL- 0203		23-Jul-17	Large chrysophyceae	258624	46.45
MEL- 0203		23-Jul-17	Chrysochromulina parva Lackey	459776	30.07
MEL- 0203		23-Jul-17	Chrysococcus sp.	344832	22.55
MEL- 0203		23-Jul-17	Kephyrion sp.	71840	1.24
MEL- 0203		23-Jul-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0203		23-Jul-17	Dinobryon borgei Lemmermann	50288	2.58
MEL- 0203		23-Jul-17	Dinobryon mucronutom Nygaard	71840	9.03
MEL- 0203		23-Jul-17	Dinobryon bavaricum Imhof	28736	6.50
MEL- 0203		23-Jul-17	Dinobryon bavaricum Imhof	2200	4.38
MEL- 0203		23-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.09
MEL- 0203		23-Jul-17	Dinobryon sertularia Ehrenberg	57472	13.00
MEL- 0203		23-Jul-17	Dinobryon sertularia Ehrenberg	2800	9.49
MEL- 0203		23-Jul-17	Dinobryon sociale Ehrenberg	100576	22.75
MEL- 0203		23-Jul-17	Chrysolkos skuja (Nauwerck) Willen	43104	1.29
MEL- 0203		23-Jul-17	Uroglena volvox Ehrenberg	847712	95.88
MEL- 0203		23-Jul-17	Chrysochromulina laurentiana Kling	129312	51.03
MEL- 0203		23-Jul-17	Stichogloea spp.	71840	3.61
MEL- 0203		23-Jul-17	Pteridomonas sp.	21552	5.13
MEL- 0203		23-Jul-17	Cyclotella stelligera Cleve and Grunow	1200	1.88
MEL- 0203		23-Jul-17	Cyclotella ocellata Pant.	14368	1.56
MEL- 0203		23-Jul-17	Rhizosolenia eriense H.L. Smith	35920	2.79
MEL- 0203		23-Jul-17	Fragilaria crotonensis Kitton	2000	0.66
MEL- 0203		23-Jul-17	Synedra acus Kutzing	1400	0.15
MEL- 0203		23-Jul-17	Asterionella formosa Hassall	2400	0.24
MEL- 0203		23-Jul-17	Cyclotella michiganiana Skvortzow	14368	0.27
MEL- 0203		23-Jul-17	Rhodomonas minuta Skuja	136496	10.71
MEL- 0203		23-Jul-17	Cryptomonas erosa Ehrenberg	1600	1.97

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0203		23-Jul-17	Cryptomonas reflexa (Marsson) Skuja	600	0.40
MEL- 0203		23-Jul-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0203		23-Jul-17	Katablepharis ovalis Skuja	21552	1.22
MEL- 0203		23-Jul-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0203		23-Jul-17	Gymnodinium sp.	3800	26.49
MEL- 0203		23-Jul-17	Peridinium pusillum (Penard) Lemmermann	3800	8.15
MEL- 0203		23-Jul-17	Peridinium aciculiferum Lemmermann	200	1.81
MEL- 0204		23-Jul-17	Oocystis lacustris Chodat	7184	0.17
MEL- 0204		23-Jul-17	Elakatothrix gelatinosa Willen	28736	0.50
MEL- 0204		23-Jul-17	Planctonema lauterbornii Schmidle	28736	7.22
MEL- 0204		23-Jul-17	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL- 0204		23-Jul-17	Staurodesmus paradoxum Meyen	200	0.22
MEL- 0204		23-Jul-17	Botryococcus braunii Kutzing	200	0.14
MEL- 0204		23-Jul-17	Oocystis gigas Archer	200	0.48
MEL- 0204		23-Jul-17	Small chrysophyceae	445408	5.70
MEL- 0204		23-Jul-17	Large chrysophyceae	21552	3.87
MEL- 0204		23-Jul-17	Chrysochromulina parva Lackey	538800	35.24
MEL- 0204		23-Jul-17	Chrysococcus sp.	222704	14.56
MEL- 0204		23-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0204		23-Jul-17	Kephyrion sp.	122128	2.10
MEL- 0204		23-Jul-17	Spiniferomonas sirrata**********	28736	3.41
MEL- 0204		23-Jul-17	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL- 0204		23-Jul-17	Dinobryon borgei Lemmermann	35920	1.52
MEL- 0204		23-Jul-17	Dinobryon mucronutom Nygaard	7184	0.85
MEL- 0204		23-Jul-17	Dinobryon bavaricum Imhof	35920	8.13
MEL- 0204		23-Jul-17	Dinobryon bavaricum Imhof	1200	2.39
MEL- 0204		23-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.55
MEL- 0204		23-Jul-17	Dinobryon sertularia Ehrenberg	57472	13.00
MEL- 0204		23-Jul-17	Dinobryon sertularia Ehrenberg	1200	4.07
MEL- 0204		23-Jul-17	Dinobryon sociale Ehrenberg	107760	24.38
MEL- 0204		23-Jul-17	Epiphyxis sp.	7184	0.55
MEL- 0204		23-Jul-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.39

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204		23-Jul-17	Uroglena volvox Ehrenberg	725584	82.06
MEL- 0204		23-Jul-17	Chrysochromulina laurentiana Kling	86208	34.02
MEL- 0204		23-Jul-17	Stichogloea spp.	7184	0.36
MEL- 0204		23-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.22
MEL- 0204		23-Jul-17	Pteridomonas sp.	21552	5.13
MEL- 0204		23-Jul-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0204		23-Jul-17	Cyclotella ocellata Pant.	35920	3.89
MEL- 0204		23-Jul-17	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL- 0204		23-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	600	0.50
MEL- 0204		23-Jul-17	Fragilaria crotonensis Kitton	1400	0.47
MEL- 0204		23-Jul-17	Synedra acus Kutzing	1600	0.17
MEL- 0204		23-Jul-17	Asterionella formosa Hassall	2800	0.28
MEL- 0204		23-Jul-17	Cyclotella michiganiana Skvortzow	14368	0.27
MEL- 0204		23-Jul-17	Rhodomonas minuta Skuja	86208	6.77
MEL- 0204		23-Jul-17	Cryptomonas erosa Ehrenberg	1800	2.22
MEL- 0204		23-Jul-17	Cryptomonas reflexa (Marsson) Skuja	200	0.13
MEL- 0204		23-Jul-17	Cryptomonas rostratiformis Skuja	200	0.45
MEL- 0204		23-Jul-17	Katablepharis ovalis Skuja	21552	1.22
MEL- 0204		23-Jul-17	Gymnodinium sp.	1200	11.04
MEL- 0204		23-Jul-17	Peridinium pusillum (Penard) Lemmermann	2200	4.72
MEL- 0205		23-Jul-17	Sphaerocystis schroeteri Chodat	14368	0.48
MEL- 0205		23-Jul-17	Elakatothrix gelatinosa Willen	28736	0.50
MEL- 0205		23-Jul-17	Planctonema lauterbornii Schmidle	28736	7.22
MEL- 0205		23-Jul-17	Cosmarium sp.	200	0.28
MEL- 0205		23-Jul-17	Staurodesmus extensus (Andersson) Teiling	1000	0.38
MEL- 0205		23-Jul-17	Staurodesmus paradoxum Meyen	400	1.63
MEL- 0205		23-Jul-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0205		23-Jul-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0205		23-Jul-17	Oocystis gigas Archer	800	1.93
MEL- 0205		23-Jul-17	Small chrysophyceae	459776	5.89
MEL- 0205		23-Jul-17	Large chrysophyceae	21552	3.87
MEL- 0205		23-Jul-17	Chrysochromulina parva Lackey	387936	25.37

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0205		23-Jul-17	Chrysococcus sp.	215520	14.10
MEL- 0205		23-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0205		23-Jul-17	Kephyrion sp.	86208	1.48
MEL- 0205		23-Jul-17	Spiniferomonas sirrata**********	14368	1.32
MEL- 0205		23-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0205		23-Jul-17	Dinobryon borgei Lemmermann	21552	1.11
MEL- 0205		23-Jul-17	Dinobryon mucronutom Nygaard	43104	5.64
MEL- 0205		23-Jul-17	Dinobryon bavaricum Imhof	35920	8.13
MEL- 0205		23-Jul-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0205		23-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.09
MEL- 0205		23-Jul-17	Dinobryon sertularia Ehrenberg	43104	9.75
MEL- 0205		23-Jul-17	Dinobryon sertularia Ehrenberg	1600	5.42
MEL- 0205		23-Jul-17	Dinobryon sociale Ehrenberg	93392	21.13
MEL- 0205		23-Jul-17	Chrysolkos skuja (Nauwerck) Willen	35920	0.88
MEL- 0205		23-Jul-17	Uroglena volvox Ehrenberg	653744	73.94
MEL- 0205		23-Jul-17	Chrysochromulina laurentiana Kling	100576	39.69
MEL- 0205		23-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43
MEL- 0205		23-Jul-17	Cyclotella stelligera Cleve and Grunow	2000	3.14
MEL- 0205		23-Jul-17	Cyclotella ocellata Pant.	7184	0.75
MEL- 0205		23-Jul-17	Rhizosolenia eriense H.L. Smith	35920	2.79
MEL- 0205		23-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	3200	2.62
MEL- 0205		23-Jul-17	Fragilaria crotonensis Kitton	1600	0.53
MEL- 0205		23-Jul-17	Synedra acus Kutzing	1600	0.17
MEL- 0205		23-Jul-17	Asterionella formosa Hassall	2000	0.20
MEL- 0205		23-Jul-17	Cyclotella michiganiana Skvortzow	71840	1.66
MEL- 0205		23-Jul-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0205		23-Jul-17	Rhodomonas minuta Skuja	71840	6.27
MEL- 0205		23-Jul-17	Cryptomonas erosa Ehrenberg	1800	2.22
MEL- 0205		23-Jul-17	Cryptomonas rostratiformis Skuja	200	0.45
MEL- 0205		23-Jul-17	Katablepharis ovalis Skuja	7184	0.41
MEL- 0205		23-Jul-17	Gymnodinium sp.	1400	12.88
MEL- 0205		23-Jul-17	Peridinium pusillum (Penard) Lemmermann	1000	2.14

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0205	Rep 2	23-Jul-17	Chlamydomonas spp.	7184	0.24
MEL- 0205	Rep 2	23-Jul-17	Sphaerocystis schroeteri Chodat	28736	0.96
MEL- 0205	Rep 2	23-Jul-17	Crucigenia quadrata Morr.	28736	0.14
MEL- 0205	Rep 2	23-Jul-17	Elakatothrix gelatinosa Willen	28736	0.50
MEL- 0205	Rep 2	23-Jul-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0205	Rep 2	23-Jul-17	Cosmarium sp.	200	0.28
MEL- 0205	Rep 2	23-Jul-17	Staurodesmus extensus (Andersson) Teiling	600	0.23
MEL- 0205	Rep 2	23-Jul-17	Oocystis gigas Archer	600	1.45
MEL- 0205	Rep 2	23-Jul-17	Small chrysophyceae	567536	7.26
MEL- 0205	Rep 2	23-Jul-17	Large chrysophyceae	7184	1.29
MEL- 0205	Rep 2	23-Jul-17	Chrysochromulina parva Lackey	452592	29.60
MEL- 0205	Rep 2	23-Jul-17	Chrysococcus sp.	251440	16.44
MEL- 0205	Rep 2	23-Jul-17	Chrysostephanospaera globulifera Scherffel	14368	3.85
MEL- 0205	Rep 2	23-Jul-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0205	Rep 2	23-Jul-17	Kephyrion sp.	64656	1.11
MEL- 0205	Rep 2	23-Jul-17	Spiniferomonas sirrata**********	35920	3.30
MEL- 0205	Rep 2	23-Jul-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0205	Rep 2	23-Jul-17	Dinobryon borgei Lemmermann	43104	2.21
MEL- 0205	Rep 2	23-Jul-17	Dinobryon mucronutom Nygaard	43104	5.64
MEL- 0205	Rep 2	23-Jul-17	Dinobryon bavaricum Imhof	28736	6.50
MEL- 0205	Rep 2	23-Jul-17	Dinobryon bavaricum Imhof	64656	14.63
MEL- 0205	Rep 2	23-Jul-17	Dinobryon bavaricum Imhof	600	1.19
MEL- 0205	Rep 2	23-Jul-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	800	2.18
MEL- 0205	Rep 2	23-Jul-17	Dinobryon sertularia Ehrenberg	2400	8.14
MEL- 0205	Rep 2	23-Jul-17	Dinobryon sociale Ehrenberg	71840	16.25
MEL- 0205	Rep 2	23-Jul-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.35
MEL- 0205	Rep 2	23-Jul-17	Uroglena volvox Ehrenberg	725584	82.06
MEL- 0205	Rep 2	23-Jul-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0205	Rep 2	23-Jul-17	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.08
MEL- 0205	Rep 2	23-Jul-17	Cyclotella stelligera Cleve and Grunow	1200	1.88
MEL- 0205	Rep 2	23-Jul-17	Rhizosolenia eriense H.L. Smith	28736	2.24
MEL- 0205	Rep 2	23-Jul-17	Tabellaria fenestrata (Lyngbye) Kutzing	6200	5.08

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0205	Rep 2	23-Jul-17	Fragilaria crotonensis Kitton	400	0.13
MEL- 0205	Rep 2	23-Jul-17	Synedra acus Kutzing	2000	0.21
MEL- 0205	Rep 2	23-Jul-17	Asterionella formosa Hassall	2800	0.28
MEL- 0205	Rep 2	23-Jul-17	Cyclotella michiganiana Skvortzow	43104	1.00
MEL- 0205	Rep 2	23-Jul-17	Rhodomonas minuta Skuja	43104	3.76
MEL- 0205	Rep 2	23-Jul-17	Cryptomonas erosa Ehrenberg	1200	1.48
MEL- 0205	Rep 2	23-Jul-17	Cryptomonas rostratiformis Skuja	400	0.90
MEL- 0205	Rep 2	23-Jul-17	Katablepharis ovalis Skuja	7184	0.41
MEL- 0205	Rep 2	23-Jul-17	Gymnodinium sp.	2200	20.25
MEL- 0205	Rep 2	23-Jul-17	Peridinium pusillum (Penard) Lemmermann	1000	2.14
MEL- 0101		09-Aug-17	Snowella sp	200	0.11
MEL- 0101		09-Aug-17	Chlamydomonas spp.	14368	0.72
MEL- 0101		09-Aug-17	Pediastrum duplex Meyen	200	0.85
MEL- 0101		09-Aug-17	Oocystis lacustris Chodat	21552	0.56
MEL- 0101		09-Aug-17	Elakatothrix gelatinosa Willen	129312	2.24
MEL- 0101		09-Aug-17	Planctonema lauterbornii Schmidle	79024	17.88
MEL- 0101		09-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0101		09-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0101		09-Aug-17	Botryococcus braunii Kutzing	200	0.18
MEL- 0101		09-Aug-17	Ankistrodesmus spiralis Lemmermann	7184	0.39
MEL- 0101		09-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0101		09-Aug-17	Small chrysophyceae	423856	1.78
MEL- 0101		09-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0101		09-Aug-17	Chrysochromulina parva Lackey	251440	16.44
MEL- 0101		09-Aug-17	Chrysococcus sp.	632192	41.35
MEL- 0101		09-Aug-17	Kephyrion boreale Skuja	28736	3.41
MEL- 0101		09-Aug-17	Kephyrion sp.	86208	1.10
MEL- 0101		09-Aug-17	Spiniferomonas sirrata**********	7184	1.08
MEL- 0101		09-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0101		09-Aug-17	Dinobryon borgei Lemmermann	7184	0.37
MEL- 0101		09-Aug-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0101		09-Aug-17	Dinobryon bavaricum Imhof	114944	26.00

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101		09-Aug-17	Dinobryon bavaricum Imhof	1000	1.25
MEL- 0101		09-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.80
MEL- 0101		09-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.84
MEL- 0101		09-Aug-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0101		09-Aug-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0101		09-Aug-17	Dinobryon sociale Ehrenberg	50288	11.38
MEL- 0101		09-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.23
MEL- 0101		09-Aug-17	Uroglena volvox Ehrenberg	114944	13.00
MEL- 0101		09-Aug-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0101		09-Aug-17	Stichogloea spp.	28736	1.45
MEL- 0101		09-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.69
MEL- 0101		09-Aug-17	Cyclotella stelligera Cleve and Grunow	1200	1.88
MEL- 0101		09-Aug-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0101		09-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	8000	11.13
MEL- 0101		09-Aug-17	Fragilaria crotonensis Kitton	10800	3.76
MEL- 0101		09-Aug-17	Synedra acus Kutzing	4200	0.48
MEL- 0101		09-Aug-17	Asterionella formosa Hassall	5600	0.56
MEL- 0101		09-Aug-17	Cyclotella michiganiana Skvortzow	64656	1.58
MEL- 0101		09-Aug-17	Rhodomonas minuta Skuja	165232	24.92
MEL- 0101		09-Aug-17	Cryptomonas erosa Ehrenberg	2400	2.85
MEL- 0101		09-Aug-17	Cryptomonas reflexa (Marsson) Skuja	400	0.31
MEL- 0101		09-Aug-17	Katablepharis ovalis Skuja	28736	1.48
MEL- 0101		09-Aug-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0101		09-Aug-17	Gymnodinium sp.	3400	39.92
MEL- 0101		09-Aug-17	Peridinium pusillum (Penard) Lemmermann	4600	10.43
MEL- 0101R	Recount	09-Aug-17	Snowella sp	600	0.33
MEL- 0101R	Recount	09-Aug-17	Pediastrum duplex Meyen	200	0.85
MEL- 0101R	Recount	09-Aug-17	Oocystis lacustris Chodat	21552	0.56
MEL- 0101R	Recount	09-Aug-17	Elakatothrix gelatinosa Willen	100576	1.74
MEL- 0101R	Recount	09-Aug-17	Planctonema lauterbornii Schmidle	64656	14.63
MEL- 0101R	Recount	09-Aug-17	Staurodesmus extensus (Andersson) Teiling	200	0.09
MEL- 0101R	Recount	09-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101R	Recount	09-Aug-17	Botryococcus braunii Kutzing	200	0.18
MEL- 0101R	Recount	09-Aug-17	Ankistrodesmus spiralis Lemmermann	21552	1.16
MEL- 0101R	Recount	09-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0101R	Recount	09-Aug-17	Small chrysophyceae	502880	6.44
MEL- 0101R	Recount	09-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0101R	Recount	09-Aug-17	Chrysochromulina parva Lackey	337648	22.08
MEL- 0101R	Recount	09-Aug-17	Chrysococcus sp.	574720	37.59
MEL- 0101R	Recount	09-Aug-17	Kephyrion boreale Skuja	14368	1.71
MEL- 0101R	Recount	09-Aug-17	Kephyrion sp.	71840	0.92
MEL- 0101R	Recount	09-Aug-17	Spiniferomonas sirrata**********	14368	2.16
MEL- 0101R	Recount	09-Aug-17	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL- 0101R	Recount	09-Aug-17	Dinobryon borgei Lemmermann	14368	0.74
MEL- 0101R	Recount	09-Aug-17	Dinobryon bavaricum Imhof	86208	19.50
MEL- 0101R	Recount	09-Aug-17	Dinobryon bavaricum Imhof	400	0.50
MEL- 0101R	Recount	09-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	5.60
MEL- 0101R	Recount	09-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.68
MEL- 0101R	Recount	09-Aug-17	Dinobryon sertularia Ehrenberg	43104	9.75
MEL- 0101R	Recount	09-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0101R	Recount	09-Aug-17	Dinobryon sociale Ehrenberg	71840	16.25
MEL- 0101R	Recount	09-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.23
MEL- 0101R	Recount	09-Aug-17	Uroglena volvox Ehrenberg	86208	9.75
MEL- 0101R	Recount	09-Aug-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0101R	Recount	09-Aug-17	Chrysochromulina laurentiana Kling	71840	28.35
MEL- 0101R	Recount	09-Aug-17	Stichogloea spp.	71840	3.61
MEL- 0101R	Recount	09-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.23
MEL- 0101R	Recount	09-Aug-17	Cyclotella stelligera Cleve and Grunow	2000	3.14
MEL- 0101R	Recount	09-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	9600	13.35
MEL- 0101R	Recount	09-Aug-17	Fragilaria crotonensis Kitton	7200	2.50
MEL- 0101R	Recount	09-Aug-17	Synedra acus Kutzing	3800	0.44
MEL- 0101R	Recount	09-Aug-17	Asterionella formosa Hassall	4000	0.40
MEL- 0101R	Recount	09-Aug-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0101R	Recount	09-Aug-17	Rhodomonas minuta Skuja	136496	20.58

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101R	Recount	09-Aug-17	Cryptomonas erosa Ehrenberg	1200	1.42
MEL- 0101R	Recount	09-Aug-17	Cryptomonas reflexa (Marsson) Skuja	800	0.61
MEL- 0101R	Recount	09-Aug-17	Katablepharis ovalis Skuja	7184	0.37
MEL- 0101R	Recount	09-Aug-17	Gymnodinium sp.	3200	37.57
MEL- 0101R	Recount	09-Aug-17	Peridinium pusillum (Penard) Lemmermann	5000	11.34
MEL- 0102		09-Aug-17	Snowella sp	1400	0.77
MEL- 0102		09-Aug-17	Pediastrum duplex Meyen	200	0.85
MEL- 0102		09-Aug-17	Elakatothrix gelatinosa Willen	93392	1.62
MEL- 0102		09-Aug-17	Planctonema lauterbornii Schmidle	71840	16.25
MEL- 0102		09-Aug-17	Cosmarium sp.	200	0.28
MEL- 0102		09-Aug-17	Staurodesmus extensus (Andersson) Teiling	1200	0.55
MEL- 0102		09-Aug-17	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.33
MEL- 0102		09-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL- 0102		09-Aug-17	Botryococcus braunii Kutzing	600	0.54
MEL- 0102		09-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0102		09-Aug-17	Monomastix minuta Skuja	7184	0.14
MEL- 0102		09-Aug-17	Small chrysophyceae	481328	6.16
MEL- 0102		09-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0102		09-Aug-17	Chrysochromulina parva Lackey	201152	13.16
MEL- 0102		09-Aug-17	Chrysococcus sp.	840528	54.97
MEL- 0102		09-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0102		09-Aug-17	Kephyrion sp.	71840	0.92
MEL- 0102		09-Aug-17	Spiniferomonas sirrata**********	7184	1.08
MEL- 0102		09-Aug-17	Dinobryon borgei Lemmermann	7184	0.37
MEL- 0102		09-Aug-17	Dinobryon bavaricum Imhof	79024	17.88
MEL- 0102		09-Aug-17	Dinobryon bavaricum Imhof	800	1.00
MEL- 0102		09-Aug-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0102		09-Aug-17	Dinobryon sertularia Ehrenberg	1000	3.39
MEL- 0102		09-Aug-17	Dinobryon sociale Ehrenberg	35920	8.13
MEL- 0102		09-Aug-17	Chrysolkos skuja (Nauwerck) Willen	28736	0.93
MEL- 0102		09-Aug-17	Uroglena volvox Ehrenberg	43104	4.88
MEL- 0102		09-Aug-17	Chrysochromulina laurentiana Kling	107760	43.93

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0102		09-Aug-17	Stichogloea spp.	14368	0.72
MEL- 0102		09-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.60
MEL- 0102		09-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0102		09-Aug-17	Cyclotella stelligera Cleve and Grunow	1400	2.20
MEL- 0102		09-Aug-17	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL- 0102		09-Aug-17	Fragilaria crotonensis Kitton	11200	3.89
MEL- 0102		09-Aug-17	Synedra acus Kutzing	4000	0.46
MEL- 0102		09-Aug-17	Asterionella formosa Hassall	10200	1.03
MEL- 0102		09-Aug-17	Cyclotella michiganiana Skvortzow	21552	0.53
MEL- 0102		09-Aug-17	Rhodomonas minuta Skuja	215520	32.50
MEL- 0102		09-Aug-17	Cryptomonas erosa Ehrenberg	1200	1.42
MEL- 0102		09-Aug-17	Cryptomonas ovata Ehrenberg	200	0.90
MEL- 0102		09-Aug-17	Cryptomonas reflexa (Marsson) Skuja	800	0.61
MEL- 0102		09-Aug-17	Katablepharis ovalis Skuja	21552	1.11
MEL- 0102		09-Aug-17	Gymnodinium sp.	21552	7.94
MEL- 0102		09-Aug-17	Gymnodinium sp.	400	3.12
MEL- 0102		09-Aug-17	Peridinium pusillum (Penard) Lemmermann	3600	8.16
MEL- 0103		09-Aug-17	Snowella sp	200	0.11
MEL- 0103		09-Aug-17	Oocystis lacustris Chodat	14368	0.37
MEL- 0103		09-Aug-17	Dictyosphaerium simplex Sukja	14368	0.06
MEL- 0103		09-Aug-17	Elakatothrix gelatinosa Willen	64656	1.12
MEL- 0103		09-Aug-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0103		09-Aug-17	Euastrum spp.	200	0.37
MEL- 0103		09-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0103		09-Aug-17	Staurodesmus paradoxum Meyen	600	2.45
MEL- 0103		09-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL- 0103		09-Aug-17	Botryococcus braunii Kutzing	800	0.42
MEL- 0103		09-Aug-17	Small chrysophyceae	402304	5.15
MEL- 0103		09-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0103		09-Aug-17	Chrysochromulina parva Lackey	323280	21.14
MEL- 0103		09-Aug-17	Chrysococcus sp.	538800	35.24
MEL- 0103		09-Aug-17	Kephyrion boreale Skuja	14368	1.71

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0103		09-Aug-17	Kephyrion sp.	14368	0.18
MEL- 0103		09-Aug-17	Spiniferomonas sirrata**********	14368	1.06
MEL- 0103		09-Aug-17	Mallomonas crassisquama (Asmund) Fott	800	0.84
MEL- 0103		09-Aug-17	Dinobryon bavaricum Imhof	150864	34.13
MEL- 0103		09-Aug-17	Dinobryon bavaricum Imhof	1000	1.25
MEL- 0103		09-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.68
MEL- 0103		09-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0103		09-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0103		09-Aug-17	Dinobryon sociale Ehrenberg	43104	9.75
MEL- 0103		09-Aug-17	Uroglena volvox Ehrenberg	186784	21.13
MEL- 0103		09-Aug-17	Chrysochromulina laurentiana Kling	150864	59.53
MEL- 0103		09-Aug-17	Stichogloea spp.	21552	1.08
MEL- 0103		09-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.85
MEL- 0103		09-Aug-17	Cyclotella stelligera Cleve and Grunow	2600	4.08
MEL- 0103		09-Aug-17	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL- 0103		09-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	12600	17.52
MEL- 0103		09-Aug-17	Tabellaria flocculsa (Roth) Kutzing	200	0.23
MEL- 0103		09-Aug-17	Fragilaria crotonensis Kitton	10200	3.46
MEL- 0103		09-Aug-17	Synedra acus Kutzing	2400	0.28
MEL- 0103		09-Aug-17	Asterionella formosa Hassall	13000	1.31
MEL- 0103		09-Aug-17	Cyclotella michiganiana Skvortzow	57472	1.41
MEL- 0103		09-Aug-17	Rhodomonas minuta Skuja	251440	37.92
MEL- 0103		09-Aug-17	Cryptomonas erosa Ehrenberg	4400	5.22
MEL- 0103		09-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0103		09-Aug-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0103		09-Aug-17	Katablepharis ovalis Skuja	14368	0.66
MEL- 0103		09-Aug-17	Gymnodinium helveticum Penard	400	9.42
MEL- 0103		09-Aug-17	Gymnodinium sp.	3200	36.78
MEL- 0103		09-Aug-17	Peridinium pusillum (Penard) Lemmermann	5400	12.02
MEL- 0103		09-Aug-17	Peridinium aciculiferum Lemmermann	200	1.81
MEL- 0104		09-Aug-17	Snowella sp	200	0.11
MEL- 0104		09-Aug-17	Oocystis lacustris Chodat	7184	0.19

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0104		09-Aug-17	Tetraedron minimum (Brunow) Hansgrig	7184	1.25
MEL- 0104		09-Aug-17	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.50
MEL- 0104		09-Aug-17	Crucigenia quadrata Morr.	28736	0.14
MEL- 0104		09-Aug-17	Elakatothrix gelatinosa Willen	7184	0.12
MEL- 0104		09-Aug-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0104		09-Aug-17	Cosmarium sp.	200	0.94
MEL- 0104		09-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0104		09-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL- 0104		09-Aug-17	Botryococcus braunii Kutzing	600	0.54
MEL- 0104		09-Aug-17	Tetraedron caudatum (Corda) Hansgrig	28736	0.32
MEL- 0104		09-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0104		09-Aug-17	Small chrysophyceae	452592	5.79
MEL- 0104		09-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0104		09-Aug-17	Chrysochromulina parva Lackey	466960	30.54
MEL- 0104		09-Aug-17	Chrysococcus sp.	402304	26.31
MEL- 0104		09-Aug-17	Chrysostephanospaera globulifera Scherffel	7184	2.00
MEL- 0104		09-Aug-17	Kephyrion boreale Skuja	21552	2.56
MEL- 0104		09-Aug-17	Kephyrion sp.	93392	1.20
MEL- 0104		09-Aug-17	Spiniferomonas sirrata**********	14368	2.16
MEL- 0104		09-Aug-17	Mallomonas crassisquama (Asmund) Fott	800	0.84
MEL- 0104		09-Aug-17	Dinobryon borgei Lemmermann	7184	0.37
MEL- 0104		09-Aug-17	Dinobryon bavaricum Imhof	79024	17.88
MEL- 0104		09-Aug-17	Dinobryon bavaricum Imhof	2200	2.75
MEL- 0104		09-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.68
MEL- 0104		09-Aug-17	Dinobryon sertularia Ehrenberg	57472	13.00
MEL- 0104		09-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0104		09-Aug-17	Dinobryon sociale Ehrenberg	50288	11.38
MEL- 0104		09-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.46
MEL- 0104		09-Aug-17	Uroglena volvox Ehrenberg	208336	23.56
MEL- 0104		09-Aug-17	Chrysochromulina laurentiana Kling	114944	45.36
MEL- 0104		09-Aug-17	Stichogloea spp.	50288	2.53
MEL- 0104		09-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	57472	1.70

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0104		09-Aug-17	Cyclotella stelligera Cleve and Grunow	2400	3.77
MEL- 0104		09-Aug-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0104		09-Aug-17	Fragilaria crotonensis Kitton	5000	1.74
MEL- 0104		09-Aug-17	Synedra acus Kutzing	2000	0.23
MEL- 0104		09-Aug-17	Asterionella formosa Hassall	11200	1.13
MEL- 0104		09-Aug-17	Cyclotella michiganiana Skvortzow	50288	1.23
MEL- 0104		09-Aug-17	Rhodomonas minuta Skuja	308912	46.58
MEL- 0104		09-Aug-17	Cryptomonas erosa Ehrenberg	2200	2.65
MEL- 0104		09-Aug-17	Cryptomonas reflexa (Marsson) Skuja	1600	1.23
MEL- 0104		09-Aug-17	Cryptomonas rostratiformis Skuja	200	0.45
MEL- 0104		09-Aug-17	Katablepharis ovalis Skuja	35920	1.65
MEL- 0104		09-Aug-17	Gymnodinium helveticum Penard	400	9.42
MEL- 0104		09-Aug-17	Gymnodinium sp.	7184	2.65
MEL- 0104		09-Aug-17	Gymnodinium sp.	4000	46.97
MEL- 0104		09-Aug-17	Peridinium pusillum (Penard) Lemmermann	7800	17.69
MEL- 0104		09-Aug-17	Peridinium wisconsiense Eddy	600	5.61
MEL- 0105		09-Aug-17	Snowella sp	1200	0.66
MEL- 0105		09-Aug-17	Sphaerocystis schroeteri Chodat	57472	2.23
MEL- 0105		09-Aug-17	Pediastrum tetras (Ehrenberg) Ralfs	28736	0.32
MEL- 0105		09-Aug-17	Oocystis lacustris Chodat	7184	0.19
MEL- 0105		09-Aug-17	Crucigenia quadrata Morr.	28736	0.14
MEL- 0105		09-Aug-17	Elakatothrix gelatinosa Willen	100576	1.74
MEL- 0105		09-Aug-17	Planctonema lauterbornii Schmidle	107760	24.38
MEL- 0105		09-Aug-17	Staurodesmus extensus (Andersson) Teiling	1200	0.55
MEL- 0105		09-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0105		09-Aug-17	Botryococcus braunii Kutzing	800	0.72
MEL- 0105		09-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0105		09-Aug-17	Small chrysophyceae	589088	7.54
MEL- 0105		09-Aug-17	Large chrysophyceae	28736	5.16
MEL- 0105		09-Aug-17	Chrysochromulina parva Lackey	294544	19.26
MEL- 0105		09-Aug-17	Chrysococcus sp.	560352	36.65
MEL- 0105		09-Aug-17	Kephyrion boreale Skuja	21552	2.56

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0105		09-Aug-17	Kephyrion sp.	71840	0.92
MEL- 0105		09-Aug-17	Dinobryon borgei Lemmermann	7184	0.37
MEL- 0105		09-Aug-17	Dinobryon bavaricum Imhof	136496	30.88
MEL- 0105		09-Aug-17	Dinobryon bavaricum Imhof	800	1.00
MEL- 0105		09-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.84
MEL- 0105		09-Aug-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0105		09-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0105		09-Aug-17	Dinobryon sociale Ehrenberg	21552	4.88
MEL- 0105		09-Aug-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.65
MEL- 0105		09-Aug-17	Uroglena volvox Ehrenberg	395120	44.69
MEL- 0105		09-Aug-17	Chrysochromulina laurentiana Kling	114944	45.36
MEL- 0105		09-Aug-17	Stichogloea spp.	35920	1.81
MEL- 0105		09-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.65
MEL- 0105		09-Aug-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0105		09-Aug-17	Rhizosolenia eriense H.L. Smith	35920	2.79
MEL- 0105		09-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	2000	2.78
MEL- 0105		09-Aug-17	Fragilaria crotonensis Kitton	13000	4.52
MEL- 0105		09-Aug-17	Synedra acus Kutzing	2400	0.28
MEL- 0105		09-Aug-17	Asterionella formosa Hassall	10600	1.07
MEL- 0105		09-Aug-17	Cyclotella michiganiana Skvortzow	71840	1.37
MEL- 0105		09-Aug-17	Rhodomonas minuta Skuja	143680	21.67
MEL- 0105		09-Aug-17	Cryptomonas erosa Ehrenberg	3000	3.62
MEL- 0105		09-Aug-17	Cryptomonas reflexa (Marsson) Skuja	1000	0.77
MEL- 0105		09-Aug-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0105		09-Aug-17	Katablepharis ovalis Skuja	14368	0.66
MEL- 0105		09-Aug-17	Gymnodinium helveticum Penard	400	9.61
MEL- 0105		09-Aug-17	Gymnodinium sp.	7184	2.67
MEL- 0105		09-Aug-17	Gymnodinium sp.	1800	21.14
MEL- 0105		09-Aug-17	Peridinium pusillum (Penard) Lemmermann	5800	13.15
MEL- 0105		09-Aug-17	Peridinium aciculiferum Lemmermann	400	3.74
MEL- 0201		11-Aug-17	Snowella sp	200	0.20
MEL- 0201		11-Aug-17	Chlamydomonas spp.	28736	0.59

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0201		11-Aug-17	Sphaerocystis schroeteri Chodat	79024	1.93
MEL- 0201		11-Aug-17	Oocystis lacustris Chodat	7184	0.18
MEL- 0201		11-Aug-17	Crucigenia quadrata Morr.	57472	0.64
MEL- 0201		11-Aug-17	Elakatothrix gelatinosa Willen	57472	0.99
MEL- 0201		11-Aug-17	Planctonema lauterbornii Schmidle	28736	6.50
MEL- 0201		11-Aug-17	Cosmarium sp.	200	0.28
MEL- 0201		11-Aug-17	Euastrum spp.	200	0.37
MEL- 0201		11-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0201		11-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0201		11-Aug-17	Oocystis gigas Archer	600	1.45
MEL- 0201		11-Aug-17	Nephrocytiun lunatum W. West	400	1.07
MEL- 0201		11-Aug-17	Small chrysophyceae	344832	4.41
MEL- 0201		11-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0201		11-Aug-17	Chrysochromulina parva Lackey	158048	10.34
MEL- 0201		11-Aug-17	Chrysococcus sp.	531616	34.77
MEL- 0201		11-Aug-17	Chrysostephanospaera globulifera Scherffel	7184	2.15
MEL- 0201		11-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0201		11-Aug-17	Kephyrion sp.	93392	0.96
MEL- 0201		11-Aug-17	Spiniferomonas sirrata**********	7184	0.85
MEL- 0201		11-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0201		11-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0201		11-Aug-17	Dinobryon sociale Ehrenberg	35920	8.13
MEL- 0201		11-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.39
MEL- 0201		11-Aug-17	Uroglena volvox Ehrenberg	86208	9.75
MEL- 0201		11-Aug-17	Chrysochromulina laurentiana Kling	100576	41.00
MEL- 0201		11-Aug-17	Stichogloea spp.	28736	1.45
MEL- 0201		11-Aug-17	Bicoeca lacustris Clark	7184	0.37
MEL- 0201		11-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.56
MEL- 0201		11-Aug-17	Pteridomonas sp.	7184	1.59
MEL- 0201		11-Aug-17	Cyclotella stelligera Cleve and Grunow	3200	5.82
MEL- 0201		11-Aug-17	Cyclotella ocellata Pant.	57472	6.69
MEL- 0201		11-Aug-17	Rhizosolenia eriense H.L. Smith	7184	0.46

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0201		11-Aug-17	Fragilaria crotonensis Kitton	1400	0.49
MEL- 0201		11-Aug-17	Synedra acus Kutzing	600	0.07
MEL- 0201		11-Aug-17	Cyclotella michiganiana Skvortzow	86208	1.65
MEL- 0201		11-Aug-17	Cyclotella bodanica Eulenst.	600	4.23
MEL- 0201		11-Aug-17	Rhodomonas minuta Skuja	186784	28.17
MEL- 0201		11-Aug-17	Cryptomonas erosa Ehrenberg	2200	2.65
MEL- 0201		11-Aug-17	Cryptomonas reflexa (Marsson) Skuja	1000	0.74
MEL- 0201		11-Aug-17	Cryptomonas rostratiformis Skuja	400	0.60
MEL- 0201		11-Aug-17	Katablepharis ovalis Skuja	7184	0.36
MEL- 0201		11-Aug-17	Gymnodinium sp.	14368	5.10
MEL- 0201		11-Aug-17	Gymnodinium sp.	1200	14.24
MEL- 0201		11-Aug-17	Peridinium pusillum (Penard) Lemmermann	1000	1.99
MEL- 0202		11-Aug-17	Snowella sp	600	0.30
MEL- 0202		11-Aug-17	Chlamydomonas spp.	35920	0.86
MEL- 0202		11-Aug-17	Sphaerocystis schroeteri Chodat	14368	0.48
MEL- 0202		11-Aug-17	Oocystis lacustris Chodat	50288	1.23
MEL- 0202		11-Aug-17	Dictyosphaerium simplex Sukja	14368	0.06
MEL- 0202		11-Aug-17	Quadrigula closterioides (Bohl.) Printz	57472	2.03
MEL- 0202		11-Aug-17	Elakatothrix gelatinosa Willen	93392	1.62
MEL- 0202		11-Aug-17	Planctonema lauterbornii Schmidle	28736	7.22
MEL- 0202		11-Aug-17	Staurodesmus extensus (Andersson) Teiling	200	0.09
MEL- 0202		11-Aug-17	Staurodesmus paradoxum Meyen	200	0.58
MEL- 0202		11-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0202		11-Aug-17	Mougeotia sp.	200	0.28
MEL- 0202		11-Aug-17	Botryococcus braunii Kutzing	200	0.18
MEL- 0202		11-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0202		11-Aug-17	Small chrysophyceae	237072	3.03
MEL- 0202		11-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0202		11-Aug-17	Chrysochromulina parva Lackey	143680	9.40
MEL- 0202		11-Aug-17	Chrysococcus sp.	632192	41.35
MEL- 0202		11-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0202		11-Aug-17	Kephyrion sp.	129312	1.33

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0202		11-Aug-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0202		11-Aug-17	Dinobryon bavaricum Imhof	7184	1.63
MEL- 0202		11-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0202		11-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0202		11-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0202		11-Aug-17	Dinobryon sociale Ehrenberg	28736	6.50
MEL- 0202		11-Aug-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.59
MEL- 0202		11-Aug-17	Uroglena volvox Ehrenberg	186784	21.13
MEL- 0202		11-Aug-17	Chrysochromulina laurentiana Kling	57472	23.43
MEL- 0202		11-Aug-17	Stichogloea spp.	21552	1.08
MEL- 0202		11-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.74
MEL- 0202		11-Aug-17	Cyclotella stelligera Cleve and Grunow	5000	9.09
MEL- 0202		11-Aug-17	Cyclotella ocellata Pant.	50288	5.65
MEL- 0202		11-Aug-17	Tabellaria flocculsa (Roth) Kutzing	1600	2.05
MEL- 0202		11-Aug-17	Fragilaria crotonensis Kitton	600	0.21
MEL- 0202		11-Aug-17	Synedra acus Kutzing	200	0.02
MEL- 0202		11-Aug-17	Asterionella formosa Hassall	1600	0.16
MEL- 0202		11-Aug-17	Cyclotella michiganiana Skvortzow	28736	0.55
MEL- 0202		11-Aug-17	Cyclotella bodanica Eulenst.	600	4.23
MEL- 0202		11-Aug-17	Rhodomonas minuta Skuja	215520	32.50
MEL- 0202		11-Aug-17	Cryptomonas erosa Ehrenberg	2000	2.41
MEL- 0202		11-Aug-17	Cryptomonas rostratiformis Skuja	200	0.30
MEL- 0202		11-Aug-17	Katablepharis ovalis Skuja	7184	0.36
MEL- 0202		11-Aug-17	Gymnodinium sp.	14368	5.30
MEL- 0202		11-Aug-17	Gymnodinium sp.	600	7.58
MEL- 0202		11-Aug-17	Peridinium pusillum (Penard) Lemmermann	2600	5.18
MEL- 0202	Rep 2	11-Aug-17	Chlamydomonas spp.	14368	0.34
MEL- 0202	Rep 2	11-Aug-17	Sphaerocystis schroeteri Chodat	7184	0.24
MEL- 0202	Rep 2	11-Aug-17	Oocystis lacustris Chodat	21552	0.53
MEL- 0202	Rep 2	11-Aug-17	Dictyosphaerium simplex Sukja	14368	0.06
MEL- 0202	Rep 2	11-Aug-17	Elakatothrix gelatinosa Willen	71840	1.24
MEL- 0202	Rep 2	11-Aug-17	Planctonema lauterbornii Schmidle	28736	6.50

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0202	Rep 2	11-Aug-17	Cosmarium sp.	600	0.84
MEL- 0202	Rep 2	11-Aug-17	Euastrum spp.	400	0.74
MEL- 0202	Rep 2	11-Aug-17	Staurodesmus extensus (Andersson) Teiling	800	0.37
MEL- 0202	Rep 2	11-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0202	Rep 2	11-Aug-17	Botryococcus braunii Kutzing	800	0.72
MEL- 0202	Rep 2	11-Aug-17	Oocystis gigas Archer	400	0.97
MEL- 0202	Rep 2	11-Aug-17	Small chrysophyceae	330464	4.23
MEL- 0202	Rep 2	11-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0202	Rep 2	11-Aug-17	Chrysochromulina parva Lackey	222704	14.56
MEL- 0202	Rep 2	11-Aug-17	Chrysococcus sp.	581904	38.06
MEL- 0202	Rep 2	11-Aug-17	Kephyrion boreale Skuja	14368	1.71
MEL- 0202	Rep 2	11-Aug-17	Kephyrion sp.	107760	1.11
MEL- 0202	Rep 2	11-Aug-17	Spiniferomonas sirrata**********	7184	0.85
MEL- 0202	Rep 2	11-Aug-17	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL- 0202	Rep 2	11-Aug-17	Dinobryon borgei Lemmermann	28736	1.47
MEL- 0202	Rep 2	11-Aug-17	Dinobryon mucronutom Nygaard	21552	2.71
MEL- 0202	Rep 2	11-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0202	Rep 2	11-Aug-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0202	Rep 2	11-Aug-17	Dinobryon sociale Ehrenberg	43104	9.75
MEL- 0202	Rep 2	11-Aug-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.59
MEL- 0202	Rep 2	11-Aug-17	Uroglena volvox Ehrenberg	229888	26.00
MEL- 0202	Rep 2	11-Aug-17	Chrysochromulina laurentiana Kling	50288	20.50
MEL- 0202	Rep 2	11-Aug-17	Stichogloea spp.	14368	0.72
MEL- 0202	Rep 2	11-Aug-17	Bicoeca lacustris Clark	14368	0.73
MEL- 0202	Rep 2	11-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.12
MEL- 0202	Rep 2	11-Aug-17	Cyclotella stelligera Cleve and Grunow	3000	5.46
MEL- 0202	Rep 2	11-Aug-17	Cyclotella ocellata Pant.	35920	4.03
MEL- 0202	Rep 2	11-Aug-17	Fragilaria crotonensis Kitton	1000	0.35
MEL- 0202	Rep 2	11-Aug-17	Synedra acus Kutzing	400	0.05
MEL- 0202	Rep 2	11-Aug-17	Asterionella formosa Hassall	800	0.08
MEL- 0202	Rep 2	11-Aug-17	Cyclotella michiganiana Skvortzow	28736	0.55
MEL- 0202	Rep 2	11-Aug-17	Cyclotella bodanica Eulenst.	600	4.23

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0202	Rep 2	11-Aug-17	Rhodomonas minuta Skuja	222704	33.58
MEL- 0202	Rep 2	11-Aug-17	Cryptomonas erosa Ehrenberg	2600	3.14
MEL- 0202	Rep 2	11-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0202	Rep 2	11-Aug-17	Cryptomonas rostratiformis Skuja	600	0.89
MEL- 0202	Rep 2	11-Aug-17	Katablepharis ovalis Skuja	21552	1.09
MEL- 0202	Rep 2	11-Aug-17	Gymnodinium sp.	200	2.53
MEL- 0202	Rep 2	11-Aug-17	Peridinium pusillum (Penard) Lemmermann	3800	7.57
MEL- 0203		11-Aug-17	Chroococcus turgidus (Kutzing) Nageli	28736	10.59
MEL- 0203		11-Aug-17	Chlamydomonas spp.	14368	0.34
MEL- 0203		11-Aug-17	Pediastrum duplex Meyen	200	0.88
MEL- 0203		11-Aug-17	Oocystis lacustris Chodat	7184	0.18
MEL- 0203		11-Aug-17	Dictyosphaerium simplex Sukja	14368	0.08
MEL- 0203		11-Aug-17	Elakatothrix gelatinosa Willen	265808	5.85
MEL- 0203		11-Aug-17	Planctonema lauterbornii Schmidle	57472	14.44
MEL- 0203		11-Aug-17	Cosmarium sp.	400	0.56
MEL- 0203		11-Aug-17	Euastrum spp.	200	0.37
MEL- 0203		11-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0203		11-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL- 0203		11-Aug-17	Monomastix minuta Skuja	7184	0.16
MEL- 0203		11-Aug-17	Nephrocytiun lunatum W. West	200	0.54
MEL- 0203		11-Aug-17	Small chrysophyceae	272992	3.49
MEL- 0203		11-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0203		11-Aug-17	Chrysochromulina parva Lackey	93392	6.11
MEL- 0203		11-Aug-17	Chrysococcus sp.	553168	36.18
MEL- 0203		11-Aug-17	Kephyrion boreale Skuja	21552	2.56
MEL- 0203		11-Aug-17	Kephyrion sp.	100576	1.04
MEL- 0203		11-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0203		11-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0203		11-Aug-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0203		11-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0203		11-Aug-17	Dinobryon sociale Ehrenberg	28736	6.50
MEL- 0203		11-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.39

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0203		11-Aug-17	Uroglena volvox Ehrenberg	186784	21.13
MEL- 0203		11-Aug-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.58
MEL- 0203		11-Aug-17	Chrysochromulina laurentiana Kling	86208	35.15
MEL- 0203		11-Aug-17	Stichogloea spp.	35920	1.81
MEL- 0203		11-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.56
MEL- 0203		11-Aug-17	Pteridomonas sp.	14368	3.19
MEL- 0203		11-Aug-17	Cyclotella stelligera Cleve and Grunow	5000	9.09
MEL- 0203		11-Aug-17	Fragilaria crotonensis Kitton	400	0.14
MEL- 0203		11-Aug-17	Synedra acus Kutzing	400	0.05
MEL- 0203		11-Aug-17	Cyclotella michiganiana Skvortzow	21552	0.41
MEL- 0203		11-Aug-17	Rhodomonas minuta Skuja	201152	30.33
MEL- 0203		11-Aug-17	Cryptomonas erosa Ehrenberg	2000	2.41
MEL- 0203		11-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0203		11-Aug-17	Cryptomonas rostratiformis Skuja	200	0.30
MEL- 0203		11-Aug-17	Katablepharis ovalis Skuja	14368	0.72
MEL- 0203		11-Aug-17	Gymnodinium sp.	800	10.11
MEL- 0203		11-Aug-17	Peridinium pusillum (Penard) Lemmermann	1600	3.19
MEL- 0203R	Recount	11-Aug-17	Snowella sp	200	0.10
MEL- 0203R	Recount	11-Aug-17	Chlamydomonas spp.	7184	0.17
MEL- 0203R	Recount	11-Aug-17	Pediastrum duplex Meyen	200	0.88
MEL- 0203R	Recount	11-Aug-17	Oocystis lacustris Chodat	7184	0.18
MEL- 0203R	Recount	11-Aug-17	Dictyosphaerium simplex Sukja	86208	0.48
MEL- 0203R	Recount	11-Aug-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0203R	Recount	11-Aug-17	Elakatothrix gelatinosa Willen	193968	4.27
MEL- 0203R	Recount	11-Aug-17	Planctonema lauterbornii Schmidle	64656	24.38
MEL- 0203R	Recount	11-Aug-17	Cosmarium sp.	400	0.56
MEL- 0203R	Recount	11-Aug-17	Euastrum spp.	200	0.37
MEL- 0203R	Recount	11-Aug-17	Staurodesmus extensus (Andersson) Teiling	200	0.09
MEL- 0203R	Recount	11-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0203R	Recount	11-Aug-17	Small chrysophyceae	186784	2.39
MEL- 0203R	Recount	11-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0203R	Recount	11-Aug-17	Chrysochromulina parva Lackey	136496	8.93

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0203R	Recount	11-Aug-17	Chrysococcus sp.	495696	32.42
MEL- 0203R	Recount	11-Aug-17	Kephyrion boreale Skuja	14368	1.71
MEL- 0203R	Recount	11-Aug-17	Kephyrion sp.	114944	1.18
MEL- 0203R	Recount	11-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0203R	Recount	11-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0203R	Recount	11-Aug-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0203R	Recount	11-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0203R	Recount	11-Aug-17	Dinobryon sociale Ehrenberg	21552	4.88
MEL- 0203R	Recount	11-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.20
MEL- 0203R	Recount	11-Aug-17	Ochromonas sp.	7184	0.55
MEL- 0203R	Recount	11-Aug-17	Uroglena volvox Ehrenberg	251440	28.44
MEL- 0203R	Recount	11-Aug-17	Chrysochromulina laurentiana Kling	64656	26.36
MEL- 0203R	Recount	11-Aug-17	Stichogloea spp.	28736	1.45
MEL- 0203R	Recount	11-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.19
MEL- 0203R	Recount	11-Aug-17	Pteridomonas sp.	28736	6.38
MEL- 0203R	Recount	11-Aug-17	Cyclotella stelligera Cleve and Grunow	4600	8.36
MEL- 0203R	Recount	11-Aug-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0203R	Recount	11-Aug-17	Fragilaria crotonensis Kitton	3200	1.11
MEL- 0203R	Recount	11-Aug-17	Synedra acus Kutzing	400	0.05
MEL- 0203R	Recount	11-Aug-17	Cyclotella michiganiana Skvortzow	14368	0.27
MEL- 0203R	Recount	11-Aug-17	Cyclotella bodanica Eulenst.	400	2.82
MEL- 0203R	Recount	11-Aug-17	Rhodomonas minuta Skuja	179600	27.08
MEL- 0203R	Recount	11-Aug-17	Cryptomonas erosa Ehrenberg	2800	3.38
MEL- 0203R	Recount	11-Aug-17	Cryptomonas rostratiformis Skuja	400	0.60
MEL- 0203R	Recount	11-Aug-17	Katablepharis ovalis Skuja	7184	0.36
MEL- 0203R	Recount	11-Aug-17	Gymnodinium sp.	1200	15.17
MEL- 0203R	Recount	11-Aug-17	Peridinium pusillum (Penard) Lemmermann	1200	2.39
MEL- 0204		11-Aug-17	Snowella sp	200	0.10
MEL- 0204		11-Aug-17	Sphaerocystis schroeteri Chodat	14368	0.52
MEL- 0204		11-Aug-17	Oocystis lacustris Chodat	7184	0.18
MEL- 0204		11-Aug-17	Elakatothrix gelatinosa Willen	229888	5.06
MEL- 0204		11-Aug-17	Planctonema lauterbornii Schmidle	14368	3.61

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204		11-Aug-17	Cosmarium sp.	400	0.56
MEL- 0204		11-Aug-17	Staurodesmus extensus (Andersson) Teiling	1000	0.48
MEL- 0204		11-Aug-17	Staurodesmus paradoxum Meyen	200	0.63
MEL- 0204		11-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0204		11-Aug-17	Botryococcus braunii Kutzing	50288	45.50
MEL- 0204		11-Aug-17	Ankistrodesmus spiralis Lemmermann	7184	0.41
MEL- 0204		11-Aug-17	Nephrocytiun lunatum W. West	200	0.54
MEL- 0204		11-Aug-17	Small chrysophyceae	265808	3.40
MEL- 0204		11-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0204		11-Aug-17	Chrysochromulina parva Lackey	86208	5.64
MEL- 0204		11-Aug-17	Chrysococcus sp.	603456	39.47
MEL- 0204		11-Aug-17	Kephyrion sp.	71840	0.74
MEL- 0204		11-Aug-17	Spiniferomonas sirrata**********	14368	1.71
MEL- 0204		11-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0204		11-Aug-17	Dinobryon borgei Lemmermann	7184	0.37
MEL- 0204		11-Aug-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0204		11-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0204		11-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0204		11-Aug-17	Dinobryon sertularia Ehrenberg	1400	4.75
MEL- 0204		11-Aug-17	Dinobryon sociale Ehrenberg	50288	11.38
MEL- 0204		11-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.39
MEL- 0204		11-Aug-17	Uroglena volvox Ehrenberg	258624	29.25
MEL- 0204		11-Aug-17	Chrysochromulina laurentiana Kling	100576	39.69
MEL- 0204		11-Aug-17	Stichogloea spp.	14368	0.72
MEL- 0204		11-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.56
MEL- 0204		11-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0204		11-Aug-17	Cyclotella stelligera Cleve and Grunow	4000	7.27
MEL- 0204		11-Aug-17	Cyclotella ocellata Pant.	57472	7.18
MEL- 0204		11-Aug-17	Fragilaria crotonensis Kitton	1600	0.54
MEL- 0204		11-Aug-17	Synedra acus Kutzing	800	0.09
MEL- 0204		11-Aug-17	Asterionella formosa Hassall	1200	0.12
MEL- 0204		11-Aug-17	Cyclotella michiganiana Skvortzow	35920	0.88

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204		11-Aug-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0204		11-Aug-17	Rhodomonas minuta Skuja	237072	35.75
MEL- 0204		11-Aug-17	Cryptomonas erosa Ehrenberg	3000	3.62
MEL- 0204		11-Aug-17	Cryptomonas rostratiformis Skuja	200	0.29
MEL- 0204		11-Aug-17	Katablepharis ovalis Skuja	14368	0.72
MEL- 0204		11-Aug-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0204		11-Aug-17	Gymnodinium sp.	7184	2.65
MEL- 0204		11-Aug-17	Gymnodinium sp.	1200	14.39
MEL- 0204		11-Aug-17	Peridinium pusillum (Penard) Lemmermann	3200	6.37
MEL- 0205		11-Aug-17	Chlamydomonas spp.	14368	0.34
MEL- 0205		11-Aug-17	Sphaerocystis schroeteri Chodat	7184	0.24
MEL- 0205		11-Aug-17	Oocystis lacustris Chodat	28736	0.70
MEL- 0205		11-Aug-17	Elakatothrix gelatinosa Willen	50288	1.11
MEL- 0205		11-Aug-17	Planctonema lauterbornii Schmidle	28736	7.22
MEL- 0205		11-Aug-17	Cosmarium sp.	400	0.56
MEL- 0205		11-Aug-17	Euastrum spp.	200	0.37
MEL- 0205		11-Aug-17	Staurodesmus extensus (Andersson) Teiling	400	0.19
MEL- 0205		11-Aug-17	Staurodesmus paradoxum Meyen	200	0.59
MEL- 0205		11-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL- 0205		11-Aug-17	Botryococcus braunii Kutzing	600	0.54
MEL- 0205		11-Aug-17	Oocystis gigas Archer	400	0.97
MEL- 0205		11-Aug-17	Small chrysophyceae	272992	3.49
MEL- 0205		11-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0205		11-Aug-17	Chrysochromulina parva Lackey	136496	8.93
MEL- 0205		11-Aug-17	Chrysococcus sp.	538800	35.24
MEL- 0205		11-Aug-17	Kephyrion boreale Skuja	14368	1.71
MEL- 0205		11-Aug-17	Kephyrion sp.	107760	1.11
MEL- 0205		11-Aug-17	Spiniferomonas sirrata**********	7184	0.85
MEL- 0205		11-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0205		11-Aug-17	Dinobryon borgei Lemmermann	14368	0.74
MEL- 0205		11-Aug-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0205		11-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0205		11-Aug-17	Dinobryon sociale Ehrenberg	7184	1.63
MEL- 0205		11-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.20
MEL- 0205		11-Aug-17	Uroglena volvox Ehrenberg	201152	22.75
MEL- 0205		11-Aug-17	Chrysochromulina laurentiana Kling	43104	17.57
MEL- 0205		11-Aug-17	Stichogloea spp.	7184	0.36
MEL- 0205		11-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.37
MEL- 0205		11-Aug-17	Cyclotella stelligera Cleve and Grunow	1600	2.91
MEL- 0205		11-Aug-17	Cyclotella ocellata Pant.	21552	2.42
MEL- 0205		11-Aug-17	Fragilaria crotonensis Kitton	400	0.14
MEL- 0205		11-Aug-17	Synedra acus Kutzing	800	0.09
MEL- 0205		11-Aug-17	Asterionella formosa Hassall	1400	0.15
MEL- 0205		11-Aug-17	Cyclotella michiganiana Skvortzow	35920	0.88
MEL- 0205		11-Aug-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0205		11-Aug-17	Rhodomonas minuta Skuja	208336	31.42
MEL- 0205		11-Aug-17	Cryptomonas erosa Ehrenberg	3800	4.58
MEL- 0205		11-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0205		11-Aug-17	Katablepharis ovalis Skuja	7184	0.36
MEL- 0205		11-Aug-17	Gymnodinium sp.	1200	13.94
MEL- 0205		11-Aug-17	Peridinium pusillum (Penard) Lemmermann	4000	7.96
MEL- 0501		12-Aug-17	Snowella sp	400	0.20
MEL- 0501		12-Aug-17	Chlamydomonas spp.	21552	0.47
MEL- 0501		12-Aug-17	Sphaerocystis schroeteri Chodat	28736	0.96
MEL- 0501		12-Aug-17	Oocystis lacustris Chodat	14368	0.37
MEL- 0501		12-Aug-17	Elakatothrix gelatinosa Willen	107760	1.86
MEL- 0501		12-Aug-17	Planctonema lauterbornii Schmidle	7184	1.81
MEL- 0501		12-Aug-17	Cosmarium sp.	200	0.28
MEL- 0501		12-Aug-17	Staurodesmus extensus (Andersson) Teiling	800	0.37
MEL- 0501		12-Aug-17	Staurodesmus bullardii G.M. Smith	200	0.50
MEL- 0501		12-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0501		12-Aug-17	Mougeotia sp.	400	0.95
MEL- 0501		12-Aug-17	Botryococcus braunii Kutzing	400	0.36
MEL- 0501		12-Aug-17	Oocystis gigas Archer	200	0.48

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0501		12-Aug-17	Nephrocytiun lunatum W. West	200	0.54
MEL- 0501		12-Aug-17	Small chrysophyceae	589088	7.54
MEL- 0501		12-Aug-17	Large chrysophyceae	21552	3.87
MEL- 0501		12-Aug-17	Chrysochromulina parva Lackey	100576	6.58
MEL- 0501		12-Aug-17	Chrysococcus sp.	610640	39.94
MEL- 0501		12-Aug-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0501		12-Aug-17	Kephyrion sp.	64656	0.91
MEL- 0501		12-Aug-17	Spiniferomonas sirrata**********	28736	2.50
MEL- 0501		12-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0501		12-Aug-17	Dinobryon borgei Lemmermann	28736	1.47
MEL- 0501		12-Aug-17	Dinobryon mucronutom Nygaard	28736	3.72
MEL- 0501		12-Aug-17	Dinobryon bavaricum Imhof	50288	11.38
MEL- 0501		12-Aug-17	Dinobryon bavaricum Imhof	600	0.75
MEL- 0501		12-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0501		12-Aug-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0501		12-Aug-17	Dinobryon sociale Ehrenberg	7184	1.63
MEL- 0501		12-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.17
MEL- 0501		12-Aug-17	Uroglena volvox Ehrenberg	337648	38.19
MEL- 0501		12-Aug-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0501		12-Aug-17	Chrysochromulina laurentiana Kling	71840	28.35
MEL- 0501		12-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.06
MEL- 0501		12-Aug-17	Cyclotella stelligera Cleve and Grunow	2200	3.46
MEL- 0501		12-Aug-17	Cyclotella ocellata Pant.	57472	6.45
MEL- 0501		12-Aug-17	Synedra acus Kutzing	1400	0.16
MEL- 0501		12-Aug-17	Asterionella formosa Hassall	1200	0.12
MEL- 0501		12-Aug-17	Cyclotella michiganiana Skvortzow	57472	1.41
MEL- 0501		12-Aug-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0501		12-Aug-17	Rhodomonas minuta Skuja	352016	50.87
MEL- 0501		12-Aug-17	Cryptomonas erosa Ehrenberg	3200	3.96
MEL- 0501		12-Aug-17	Cryptomonas reflexa (Marsson) Skuja	1000	0.77
MEL- 0501		12-Aug-17	Cryptomonas rostratiformis Skuja	800	1.17
MEL- 0501		12-Aug-17	Katablepharis ovalis Skuja	7184	0.33

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0501		12-Aug-17	Gymnodinium sp.	7184	3.14
MEL- 0501		12-Aug-17	Gymnodinium sp.	1200	12.23
MEL- 0501		12-Aug-17	Peridinium pusillum (Penard) Lemmermann	2000	3.98
MEL- 0502		12-Aug-17	Chlamydomonas spp.	7184	0.14
MEL- 0502		12-Aug-17	Sphaerocystis schroeteri Chodat	28736	0.96
MEL- 0502		12-Aug-17	Oocystis lacustris Chodat	14368	0.34
MEL- 0502		12-Aug-17	Elakatothrix gelatinosa Willen	244256	4.23
MEL- 0502		12-Aug-17	Planctonema lauterbornii Schmidle	14368	3.25
MEL- 0502		12-Aug-17	Cosmarium sp.	400	0.56
MEL- 0502		12-Aug-17	Euastrum spp.	200	0.37
MEL- 0502		12-Aug-17	Staurodesmus extensus (Andersson) Teiling	1400	0.67
MEL- 0502		12-Aug-17	Staurodesmus paradoxum Meyen	400	2.21
MEL- 0502		12-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0502		12-Aug-17	Botryococcus braunii Kutzing	400	0.36
MEL- 0502		12-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0502		12-Aug-17	Small chrysophyceae	380752	4.87
MEL- 0502		12-Aug-17	Large chrysophyceae	57472	10.32
MEL- 0502		12-Aug-17	Chrysochromulina parva Lackey	86208	5.64
MEL- 0502		12-Aug-17	Chrysococcus sp.	668112	43.69
MEL- 0502		12-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0502		12-Aug-17	Kephyrion sp.	79024	1.11
MEL- 0502		12-Aug-17	Spiniferomonas sirrata**********	28736	3.41
MEL- 0502		12-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0502		12-Aug-17	Mallomonas akrokomos Asmund and Kristiansen	7184	0.93
MEL- 0502		12-Aug-17	Dinobryon borgei Lemmermann	7184	0.37
MEL- 0502		12-Aug-17	Dinobryon mucronutom Nygaard	7184	0.93
MEL- 0502		12-Aug-17	Dinobryon bavaricum Imhof	7184	1.63
MEL- 0502		12-Aug-17	Dinobryon bavaricum Imhof	800	1.00
MEL- 0502		12-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0502		12-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0502		12-Aug-17	Dinobryon sociale Ehrenberg	50288	11.38
MEL- 0502		12-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.17

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0502		12-Aug-17	Uroglena volvox Ehrenberg	222704	25.19
MEL- 0502		12-Aug-17	Chrysochromulina laurentiana Kling	93392	36.85
MEL- 0502		12-Aug-17	Stichogloea spp.	28736	1.45
MEL- 0502		12-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.64
MEL- 0502		12-Aug-17	Pteridomonas sp.	7184	1.59
MEL- 0502		12-Aug-17	Cyclotella stelligera Cleve and Grunow	2600	4.08
MEL- 0502		12-Aug-17	Cyclotella ocellata Pant.	93392	9.74
MEL- 0502		12-Aug-17	Fragilaria crotonensis Kitton	400	0.13
MEL- 0502		12-Aug-17	Synedra acus Kutzing	1000	0.12
MEL- 0502		12-Aug-17	Cyclotella michiganiana Skvortzow	28736	0.70
MEL- 0502		12-Aug-17	Rhodomonas minuta Skuja	158048	22.84
MEL- 0502		12-Aug-17	Cryptomonas erosa Ehrenberg	1800	2.23
MEL- 0502		12-Aug-17	Cryptomonas reflexa (Marsson) Skuja	1600	1.23
MEL- 0502		12-Aug-17	Cryptomonas rostratiformis Skuja	600	0.88
MEL- 0502		12-Aug-17	Katablepharis ovalis Skuja	21552	0.99
MEL- 0502		12-Aug-17	Gymnodinium sp.	800	10.32
MEL- 0502		12-Aug-17	Peridinium pusillum (Penard) Lemmermann	1400	2.79
MEL- 0502	Rep 2	12-Aug-17	Chlamydomonas spp.	7184	0.14
MEL- 0502	Rep 2	12-Aug-17	Pediastrum duplex Meyen	200	0.74
MEL- 0502	Rep 2	12-Aug-17	Oocystis lacustris Chodat	28736	0.69
MEL- 0502	Rep 2	12-Aug-17	Elakatothrix gelatinosa Willen	57472	0.99
MEL- 0502	Rep 2	12-Aug-17	Cosmarium sp.	600	0.84
MEL- 0502	Rep 2	12-Aug-17	Euastrum spp.	200	1.50
MEL- 0502	Rep 2	12-Aug-17	Staurodesmus extensus (Andersson) Teiling	1000	0.48
MEL- 0502	Rep 2	12-Aug-17	Staurodesmus paradoxum Meyen	400	2.32
MEL- 0502	Rep 2	12-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0502	Rep 2	12-Aug-17	Botryococcus braunii Kutzing	400	0.36
MEL- 0502	Rep 2	12-Aug-17	Oocystis gigas Archer	400	0.97
MEL- 0502	Rep 2	12-Aug-17	Small chrysophyceae	287360	3.68
MEL- 0502	Rep 2	12-Aug-17	Large chrysophyceae	43104	7.74
MEL- 0502	Rep 2	12-Aug-17	Chrysochromulina parva Lackey	107760	7.05
MEL- 0502	Rep 2	12-Aug-17	Chrysococcus sp.	574720	37.59

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0502	Rep 2	12-Aug-17	Chrysostephanospaera globulifera Scherffel	14368	5.13
MEL- 0502	Rep 2	12-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0502	Rep 2	12-Aug-17	Kephyrion sp.	79024	1.11
MEL- 0502	Rep 2	12-Aug-17	Spiniferomonas sirrata**********	50288	5.97
MEL- 0502	Rep 2	12-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0502	Rep 2	12-Aug-17	Mallomonas akrokomos Asmund and Kristiansen	7184	0.97
MEL- 0502	Rep 2	12-Aug-17	Dinobryon borgei Lemmermann	21552	1.11
MEL- 0502	Rep 2	12-Aug-17	Dinobryon mucronutom Nygaard	7184	0.93
MEL- 0502	Rep 2	12-Aug-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0502	Rep 2	12-Aug-17	Dinobryon bavaricum Imhof	600	0.75
MEL- 0502	Rep 2	12-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0502	Rep 2	12-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0502	Rep 2	12-Aug-17	Dinobryon sociale Ehrenberg	57472	13.00
MEL- 0502	Rep 2	12-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.17
MEL- 0502	Rep 2	12-Aug-17	Uroglena volvox Ehrenberg	179600	20.31
MEL- 0502	Rep 2	12-Aug-17	Chrysochromulina laurentiana Kling	35920	14.17
MEL- 0502	Rep 2	12-Aug-17	Stichogloea spp.	21552	1.08
MEL- 0502	Rep 2	12-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.64
MEL- 0502	Rep 2	12-Aug-17	Pteridomonas sp.	7184	1.59
MEL- 0502	Rep 2	12-Aug-17	Cyclotella stelligera Cleve and Grunow	2200	3.46
MEL- 0502	Rep 2	12-Aug-17	Cyclotella ocellata Pant.	14368	1.44
MEL- 0502	Rep 2	12-Aug-17	Fragilaria crotonensis Kitton	400	0.13
MEL- 0502	Rep 2	12-Aug-17	Synedra acus Kutzing	2200	0.25
MEL- 0502	Rep 2	12-Aug-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0502	Rep 2	12-Aug-17	Rhodomonas minuta Skuja	222704	32.18
MEL- 0502	Rep 2	12-Aug-17	Cryptomonas erosa Ehrenberg	3400	4.20
MEL- 0502	Rep 2	12-Aug-17	Cryptomonas reflexa (Marsson) Skuja	400	0.31
MEL- 0502	Rep 2	12-Aug-17	Cryptomonas rostratiformis Skuja	200	0.29
MEL- 0502	Rep 2	12-Aug-17	Katablepharis ovalis Skuja	7184	0.33
MEL- 0502	Rep 2	12-Aug-17	Gymnodinium sp.	800	10.32
MEL- 0502	Rep 2	12-Aug-17	Peridinium pusillum (Penard) Lemmermann	2600	5.18
MEL- 0503		12-Aug-17	Pediastrum duplex Meyen	200	0.84

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0503		12-Aug-17	Oocystis lacustris Chodat	14368	0.37
MEL- 0503		12-Aug-17	Elakatothrix gelatinosa Willen	57472	0.99
MEL- 0503		12-Aug-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0503		12-Aug-17	Cosmarium sp.	200	0.28
MEL- 0503		12-Aug-17	Euastrum spp.	400	0.74
MEL- 0503		12-Aug-17	Staurodesmus extensus (Andersson) Teiling	400	0.19
MEL- 0503		12-Aug-17	Staurodesmus paradoxum Meyen	400	2.21
MEL- 0503		12-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0503		12-Aug-17	Botryococcus braunii Kutzing	200	0.18
MEL- 0503		12-Aug-17	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL- 0503		12-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0503		12-Aug-17	Nephrocytiun lunatum W. West	200	0.54
MEL- 0503		12-Aug-17	Small chrysophyceae	229888	2.94
MEL- 0503		12-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0503		12-Aug-17	Chrysochromulina parva Lackey	129312	8.46
MEL- 0503		12-Aug-17	Chrysococcus sp.	567536	37.12
MEL- 0503		12-Aug-17	Kephyrion sp.	57472	0.81
MEL- 0503		12-Aug-17	Spiniferomonas sirrata**********	7184	1.08
MEL- 0503		12-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0503		12-Aug-17	Dinobryon borgei Lemmermann	21552	1.11
MEL- 0503		12-Aug-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0503		12-Aug-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0503		12-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0503		12-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0503		12-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0503		12-Aug-17	Dinobryon sociale Ehrenberg	43104	9.75
MEL- 0503		12-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.17
MEL- 0503		12-Aug-17	Uroglena volvox Ehrenberg	208336	23.56
MEL- 0503		12-Aug-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0503		12-Aug-17	Chrysochromulina laurentiana Kling	71840	28.35
MEL- 0503		12-Aug-17	Stichogloea spp.	7184	0.36
MEL- 0503		12-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.74

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0503		12-Aug-17	Pteridomonas sp.	21552	4.78
MEL- 0503		12-Aug-17	Cyclotella stelligera Cleve and Grunow	1600	2.51
MEL- 0503		12-Aug-17	Cyclotella ocellata Pant.	28736	2.78
MEL- 0503		12-Aug-17	Rhizosolenia eriense H.L. Smith	7184	0.61
MEL- 0503		12-Aug-17	Tabellaria flocculsa (Roth) Kutzing	600	0.77
MEL- 0503		12-Aug-17	Synedra acus Kutzing	400	0.05
MEL- 0503		12-Aug-17	Cyclotella michiganiana Skvortzow	7184	0.18
MEL- 0503		12-Aug-17	Cyclotella bodanica Eulenst.	400	2.82
MEL- 0503		12-Aug-17	Rhodomonas minuta Skuja	229888	33.22
MEL- 0503		12-Aug-17	Cryptomonas erosa Ehrenberg	2800	3.32
MEL- 0503		12-Aug-17	Cryptomonas reflexa (Marsson) Skuja	800	0.61
MEL- 0503		12-Aug-17	Cryptomonas rostratiformis Skuja	200	0.30
MEL- 0503		12-Aug-17	Katablepharis ovalis Skuja	7184	0.33
MEL- 0503		12-Aug-17	Gymnodinium sp.	400	5.16
MEL- 0503		12-Aug-17	Peridinium pusillum (Penard) Lemmermann	2800	5.54
MEL- 0504		12-Aug-17	Chlamydomonas spp.	14368	0.39
MEL- 0504		12-Aug-17	Sphaerocystis schroeteri Chodat	21552	0.41
MEL- 0504		12-Aug-17	Oocystis lacustris Chodat	28736	0.74
MEL- 0504		12-Aug-17	Elakatothrix gelatinosa Willen	64656	1.12
MEL- 0504		12-Aug-17	Planctonema lauterbornii Schmidle	7184	1.63
MEL- 0504		12-Aug-17	Cosmarium sp.	400	1.88
MEL- 0504		12-Aug-17	Euastrum spp.	400	0.74
MEL- 0504		12-Aug-17	Staurodesmus extensus (Andersson) Teiling	400	0.19
MEL- 0504		12-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0504		12-Aug-17	Botryococcus braunii Kutzing	200	0.18
MEL- 0504		12-Aug-17	Ankistrodesmus spiralis Lemmermann	7184	0.41
MEL- 0504		12-Aug-17	Small chrysophyceae	510064	6.53
MEL- 0504		12-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0504		12-Aug-17	Chrysochromulina parva Lackey	129312	8.46
MEL- 0504		12-Aug-17	Chrysococcus sp.	524432	34.30
MEL- 0504		12-Aug-17	Chrysostephanospaera globulifera Scherffel	7184	2.65
MEL- 0504		12-Aug-17	Kephyrion sp.	79024	1.11

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0504		12-Aug-17	Spiniferomonas sirrata**********	21552	1.98
MEL- 0504		12-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0504		12-Aug-17	Dinobryon mucronutom Nygaard	7184	0.93
MEL- 0504		12-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0504		12-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0504		12-Aug-17	Dinobryon sociale Ehrenberg	50288	11.38
MEL- 0504		12-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.43
MEL- 0504		12-Aug-17	Uroglena volvox Ehrenberg	158048	17.88
MEL- 0504		12-Aug-17	Chrysochromulina laurentiana Kling	71840	28.35
MEL- 0504		12-Aug-17	Stichogloea spp.	14368	0.72
MEL- 0504		12-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.12
MEL- 0504		12-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0504		12-Aug-17	Cyclotella stelligera Cleve and Grunow	2600	4.08
MEL- 0504		12-Aug-17	Cyclotella ocellata Pant.	28736	3.59
MEL- 0504		12-Aug-17	Fragilaria crotonensis Kitton	2400	0.80
MEL- 0504		12-Aug-17	Synedra acus Kutzing	400	0.05
MEL- 0504		12-Aug-17	Asterionella formosa Hassall	200	0.02
MEL- 0504		12-Aug-17	Cyclotella michiganiana Skvortzow	14368	0.35
MEL- 0504		12-Aug-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0504		12-Aug-17	Rhodomonas minuta Skuja	215520	31.14
MEL- 0504		12-Aug-17	Cryptomonas erosa Ehrenberg	2200	2.65
MEL- 0504		12-Aug-17	Cryptomonas reflexa (Marsson) Skuja	800	0.61
MEL- 0504		12-Aug-17	Cryptomonas rostratiformis Skuja	200	0.30
MEL- 0504		12-Aug-17	Katablepharis ovalis Skuja	7184	0.33
MEL- 0504		12-Aug-17	Gymnodinium sp.	7184	2.46
MEL- 0504		12-Aug-17	Gymnodinium sp.	1000	13.04
MEL- 0504		12-Aug-17	Peridinium pusillum (Penard) Lemmermann	1800	3.52
MEL- 0504R	Recount	12-Aug-17	Chlamydomonas spp.	7184	0.19
MEL- 0504R	Recount	12-Aug-17	Sphaerocystis schroeteri Chodat	14368	0.27
MEL- 0504R	Recount	12-Aug-17	Oocystis lacustris Chodat	14368	0.37
MEL- 0504R	Recount	12-Aug-17	Elakatothrix gelatinosa Willen	21552	0.37
MEL- 0504R	Recount	12-Aug-17	Planctonema lauterbornii Schmidle	7184	0.73

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0504R	Recount	12-Aug-17	Cosmarium sp.	400	1.88
MEL- 0504R	Recount	12-Aug-17	Euastrum spp.	200	0.37
MEL- 0504R	Recount	12-Aug-17	Staurodesmus extensus (Andersson) Teiling	200	0.10
MEL- 0504R	Recount	12-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0504R	Recount	12-Aug-17	Botryococcus braunii Kutzing	200	0.18
MEL- 0504R	Recount	12-Aug-17	Small chrysophyceae	617824	7.91
MEL- 0504R	Recount	12-Aug-17	Small chrysophyceae	114944	1.62
MEL- 0504R	Recount	12-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0504R	Recount	12-Aug-17	Chrysochromulina parva Lackey	179600	11.75
MEL- 0504R	Recount	12-Aug-17	Chrysococcus sp.	502880	32.89
MEL- 0504R	Recount	12-Aug-17	Spiniferomonas sirrata**********	14368	1.32
MEL- 0504R	Recount	12-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0504R	Recount	12-Aug-17	Dinobryon borgei Lemmermann	7184	0.35
MEL- 0504R	Recount	12-Aug-17	Dinobryon mucronutom Nygaard	7184	0.93
MEL- 0504R	Recount	12-Aug-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0504R	Recount	12-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0504R	Recount	12-Aug-17	Dinobryon sociale Ehrenberg	28736	6.50
MEL- 0504R	Recount	12-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.43
MEL- 0504R	Recount	12-Aug-17	Uroglena volvox Ehrenberg	136496	15.44
MEL- 0504R	Recount	12-Aug-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0504R	Recount	12-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.37
MEL- 0504R	Recount	12-Aug-17	Pteridomonas sp.	21552	5.13
MEL- 0504R	Recount	12-Aug-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0504R	Recount	12-Aug-17	Cyclotella ocellata Pant.	14368	1.79
MEL- 0504R	Recount	12-Aug-17	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL- 0504R	Recount	12-Aug-17	Fragilaria crotonensis Kitton	800	0.27
MEL- 0504R	Recount	12-Aug-17	Synedra acus Kutzing	1000	0.12
MEL- 0504R	Recount	12-Aug-17	Cyclotella michiganiana Skvortzow	7184	0.18
MEL- 0504R	Recount	12-Aug-17	Cyclotella bodanica Eulenst.	400	2.82
MEL- 0504R	Recount	12-Aug-17	Rhodomonas minuta Skuja	186784	26.99
MEL- 0504R	Recount	12-Aug-17	Cryptomonas erosa Ehrenberg	3200	3.86
MEL- 0504R	Recount	12-Aug-17	Cryptomonas reflexa (Marsson) Skuja	600	0.46

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0504R	Recount	12-Aug-17	Cryptomonas rostratiformis Skuja	400	0.60
MEL- 0504R	Recount	12-Aug-17	Katablepharis ovalis Skuja	7184	0.33
MEL- 0504R	Recount	12-Aug-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0504R	Recount	12-Aug-17	Gymnodinium sp.	14368	4.91
MEL- 0504R	Recount	12-Aug-17	Gymnodinium sp.	1400	18.25
MEL- 0504R	Recount	12-Aug-17	Peridinium pusillum (Penard) Lemmermann	1000	1.96
MEL- 0505		12-Aug-17	Sphaerocystis schroeteri Chodat	35920	1.20
MEL- 0505		12-Aug-17	Oocystis lacustris Chodat	21552	0.56
MEL- 0505		12-Aug-17	Elakatothrix gelatinosa Willen	14368	0.25
MEL- 0505		12-Aug-17	Cosmarium sp.	200	0.20
MEL- 0505		12-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.29
MEL- 0505		12-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL- 0505		12-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0505		12-Aug-17	Small chrysophyceae	294544	3.77
MEL- 0505		12-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0505		12-Aug-17	Chrysochromulina parva Lackey	57472	3.76
MEL- 0505		12-Aug-17	Chrysococcus sp.	330464	21.61
MEL- 0505		12-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0505		12-Aug-17	Kephyrion sp.	57472	0.81
MEL- 0505		12-Aug-17	Spiniferomonas sirrata**********	14368	1.32
MEL- 0505		12-Aug-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0505		12-Aug-17	Dinobryon borgei Lemmermann	35920	1.84
MEL- 0505		12-Aug-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0505		12-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0505		12-Aug-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.95
MEL- 0505		12-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0505		12-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0505		12-Aug-17	Dinobryon sociale Ehrenberg	100576	22.75
MEL- 0505		12-Aug-17	Uroglena volvox Ehrenberg	237072	26.81
MEL- 0505		12-Aug-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0505		12-Aug-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0505		12-Aug-17	Stichogloea spp.	43104	2.17

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0505		12-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.63
MEL- 0505		12-Aug-17	Cyclotella stelligera Cleve and Grunow	2400	3.77
MEL- 0505		12-Aug-17	Cyclotella ocellata Pant.	21552	2.42
MEL- 0505		12-Aug-17	Fragilaria crotonensis Kitton	200	0.07
MEL- 0505		12-Aug-17	Synedra acus Kutzing	200	0.02
MEL- 0505		12-Aug-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0505		12-Aug-17	Rhodomonas minuta Skuja	316096	45.68
MEL- 0505		12-Aug-17	Cryptomonas erosa Ehrenberg	4200	4.92
MEL- 0505		12-Aug-17	Cryptomonas reflexa (Marsson) Skuja	600	0.46
MEL- 0505		12-Aug-17	Cryptomonas rostratiformis Skuja	600	0.88
MEL- 0505		12-Aug-17	Gymnodinium sp.	600	7.74
MEL- 0505		12-Aug-17	Peridinium pusillum (Penard) Lemmermann	1200	2.39
MEL- 0301		13-Aug-17	Sphaerocystis schroeteri Chodat	7184	0.18
MEL- 0301		13-Aug-17	Oocystis lacustris Chodat	57472	1.49
MEL- 0301		13-Aug-17	Elakatothrix gelatinosa Willen	28736	0.50
MEL- 0301		13-Aug-17	Cosmarium sp.	200	0.28
MEL- 0301		13-Aug-17	Staurodesmus extensus (Andersson) Teiling	400	0.18
MEL- 0301		13-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0301		13-Aug-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0301		13-Aug-17	Ankistrodesmus spiralis Lemmermann	14368	0.90
MEL- 0301		13-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0301		13-Aug-17	Small chrysophyceae	229888	3.24
MEL- 0301		13-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0301		13-Aug-17	Chrysochromulina parva Lackey	79024	5.17
MEL- 0301		13-Aug-17	Chrysococcus sp.	409488	26.78
MEL- 0301		13-Aug-17	Chrysostephanospaera globulifera Scherffel	21552	7.18
MEL- 0301		13-Aug-17	Kephyrion sp.	28736	0.41
MEL- 0301		13-Aug-17	Spiniferomonas sirrata**********	14368	1.63
MEL- 0301		13-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0301		13-Aug-17	Dinobryon borgei Lemmermann	7184	0.30
MEL- 0301		13-Aug-17	Dinobryon bavaricum Imhof	2000	2.50
MEL- 0301		13-Aug-17	Dinobryon sertularia Ehrenberg	57472	13.00

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0301		13-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0301		13-Aug-17	Dinobryon sociale Ehrenberg	28736	6.50
MEL- 0301		13-Aug-17	Uroglena volvox Ehrenberg	136496	15.44
MEL- 0301		13-Aug-17	Chrysochromulina laurentiana Kling	107760	42.52
MEL- 0301		13-Aug-17	Stichogloea spp.	35920	1.81
MEL- 0301		13-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	122128	3.38
MEL- 0301		13-Aug-17	Pteridomonas sp.	7184	0.80
MEL- 0301		13-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0301		13-Aug-17	Cyclotella stelligera Cleve and Grunow	1800	3.27
MEL- 0301		13-Aug-17	Fragilaria crotonensis Kitton	200	0.07
MEL- 0301		13-Aug-17	Synedra acus Kutzing	1400	0.16
MEL- 0301		13-Aug-17	Asterionella formosa Hassall	1400	0.15
MEL- 0301		13-Aug-17	Cyclotella michiganiana Skvortzow	21552	0.53
MEL- 0301		13-Aug-17	Rhodomonas minuta Skuja	172416	24.91
MEL- 0301		13-Aug-17	Cryptomonas erosa Ehrenberg	1800	2.17
MEL- 0301		13-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0301		13-Aug-17	Cryptomonas rostratiformis Skuja	400	0.60
MEL- 0301		13-Aug-17	Katablepharis ovalis Skuja	14368	0.66
MEL- 0301		13-Aug-17	Gymnodinium sp.	14368	5.30
MEL- 0301		13-Aug-17	Gymnodinium sp.	1400	16.26
MEL- 0301		13-Aug-17	Peridinium pusillum (Penard) Lemmermann	3000	5.94
MEL- 0302		13-Aug-17	Chlamydomonas spp.	7184	0.30
MEL- 0302		13-Aug-17	Sphaerocystis schroeteri Chodat	28736	0.70
MEL- 0302		13-Aug-17	Oocystis lacustris Chodat	21552	0.56
MEL- 0302		13-Aug-17	Quadrigula closterioides (Bohl.) Printz	7184	0.17
MEL- 0302		13-Aug-17	Elakatothrix gelatinosa Willen	7184	0.12
MEL- 0302		13-Aug-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0302		13-Aug-17	Cosmarium sp.	400	0.56
MEL- 0302		13-Aug-17	Staurodesmus extensus (Andersson) Teiling	1000	0.46
MEL- 0302		13-Aug-17	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.14
MEL- 0302		13-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0302		13-Aug-17	Botryococcus braunii Kutzing	200	0.10

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0302		13-Aug-17	Ankistrodesmus spiralis Lemmermann	14368	0.90
MEL- 0302		13-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0302		13-Aug-17	Small chrysophyceae	287360	4.05
MEL- 0302		13-Aug-17	Large chrysophyceae	21552	3.87
MEL- 0302		13-Aug-17	Chrysochromulina parva Lackey	86208	5.64
MEL- 0302		13-Aug-17	Chrysococcus sp.	488512	31.95
MEL- 0302		13-Aug-17	Kephyrion sp.	79024	1.11
MEL- 0302		13-Aug-17	Spiniferomonas sirrata**********	14368	1.63
MEL- 0302		13-Aug-17	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL- 0302		13-Aug-17	Dinobryon borgei Lemmermann	7184	0.30
MEL- 0302		13-Aug-17	Dinobryon mucronutom Nygaard	21552	2.71
MEL- 0302		13-Aug-17	Dinobryon bavaricum Imhof	7184	1.63
MEL- 0302		13-Aug-17	Dinobryon bavaricum Imhof	1600	2.00
MEL- 0302		13-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0302		13-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0302		13-Aug-17	Dinobryon sociale Ehrenberg	7184	1.63
MEL- 0302		13-Aug-17	Uroglena volvox Ehrenberg	136496	15.44
MEL- 0302		13-Aug-17	Chrysochromulina laurentiana Kling	93392	36.85
MEL- 0302		13-Aug-17	Stichogloea spp.	28736	1.45
MEL- 0302		13-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	93392	2.59
MEL- 0302		13-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0302		13-Aug-17	Cyclotella stelligera Cleve and Grunow	1800	3.27
MEL- 0302		13-Aug-17	Cyclotella ocellata Pant.	14368	1.61
MEL- 0302		13-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	600	0.50
MEL- 0302		13-Aug-17	Fragilaria crotonensis Kitton	200	0.07
MEL- 0302		13-Aug-17	Synedra acus Kutzing	1200	0.14
MEL- 0302		13-Aug-17	Cyclotella michiganiana Skvortzow	35920	0.88
MEL- 0302		13-Aug-17	Rhodomonas minuta Skuja	237072	34.26
MEL- 0302		13-Aug-17	Cryptomonas erosa Ehrenberg	1000	1.18
MEL- 0302		13-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0302		13-Aug-17	Katablepharis ovalis Skuja	14368	0.66
MEL- 0302		13-Aug-17	Gymnodinium sp.	2200	25.56

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0302		13-Aug-17	Peridinium pusillum (Penard) Lemmermann	2400	4.75
MEL- 0302	Rep 2	13-Aug-17	Chlamydomonas spp.	7184	0.30
MEL- 0302	Rep 2	13-Aug-17	Sphaerocystis schroeteri Chodat	7184	0.18
MEL- 0302	Rep 2	13-Aug-17	Oocystis lacustris Chodat	21552	0.56
MEL- 0302	Rep 2	13-Aug-17	Elakatothrix gelatinosa Willen	100576	1.74
MEL- 0302	Rep 2	13-Aug-17	Planctonema lauterbornii Schmidle	21552	5.42
MEL- 0302	Rep 2	13-Aug-17	Cosmarium sp.	400	0.56
MEL- 0302	Rep 2	13-Aug-17	Staurodesmus extensus (Andersson) Teiling	1000	0.46
MEL- 0302	Rep 2	13-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL- 0302	Rep 2	13-Aug-17	Ankistrodesmus spiralis Lemmermann	7184	0.45
MEL- 0302	Rep 2	13-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0302	Rep 2	13-Aug-17	Nephrocytiun lunatum W. West	200	0.54
MEL- 0302	Rep 2	13-Aug-17	Small chrysophyceae	114944	1.62
MEL- 0302	Rep 2	13-Aug-17	Large chrysophyceae	64656	11.61
MEL- 0302	Rep 2	13-Aug-17	Chrysochromulina parva Lackey	122128	7.99
MEL- 0302	Rep 2	13-Aug-17	Chrysococcus sp.	416672	27.25
MEL- 0302	Rep 2	13-Aug-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0302	Rep 2	13-Aug-17	Kephyrion sp.	57472	0.81
MEL- 0302	Rep 2	13-Aug-17	Spiniferomonas sirrata**********	35920	4.06
MEL- 0302	Rep 2	13-Aug-17	Dinobryon mucronutom Nygaard	21552	2.71
MEL- 0302	Rep 2	13-Aug-17	Dinobryon bavaricum Imhof	800	1.00
MEL- 0302	Rep 2	13-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0302	Rep 2	13-Aug-17	Dinobryon sertularia Ehrenberg	1200	4.07
MEL- 0302	Rep 2	13-Aug-17	Dinobryon sociale Ehrenberg	71840	16.25
MEL- 0302	Rep 2	13-Aug-17	Uroglena volvox Ehrenberg	186784	21.13
MEL- 0302	Rep 2	13-Aug-17	Chrysochromulina laurentiana Kling	71840	28.35
MEL- 0302	Rep 2	13-Aug-17	Stichogloea spp.	7184	0.36
MEL- 0302	Rep 2	13-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	107760	2.98
MEL- 0302	Rep 2	13-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0302	Rep 2	13-Aug-17	Cyclotella stelligera Cleve and Grunow	1600	2.91
MEL- 0302	Rep 2	13-Aug-17	Cyclotella ocellata Pant.	57472	6.45
MEL- 0302	Rep 2	13-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.17

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0302	Rep 2	13-Aug-17	Fragilaria crotonensis Kitton	800	0.27
MEL- 0302	Rep 2	13-Aug-17	Synedra acus Kutzing	400	0.05
MEL- 0302	Rep 2	13-Aug-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0302	Rep 2	13-Aug-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0302	Rep 2	13-Aug-17	Rhodomonas minuta Skuja	143680	20.76
MEL- 0302	Rep 2	13-Aug-17	Cryptomonas erosa Ehrenberg	1800	2.12
MEL- 0302	Rep 2	13-Aug-17	Katablepharis ovalis Skuja	7184	0.33
MEL- 0302	Rep 2	13-Aug-17	Gymnodinium sp.	14368	4.91
MEL- 0302	Rep 2	13-Aug-17	Gymnodinium sp.	1600	18.59
MEL- 0302	Rep 2	13-Aug-17	Peridinium pusillum (Penard) Lemmermann	2400	4.75
MEL- 0303		13-Aug-17	Chlamydomonas spp.	14368	0.63
MEL- 0303		13-Aug-17	Sphaerocystis schroeteri Chodat	7184	0.18
MEL- 0303		13-Aug-17	Oocystis lacustris Chodat	14368	0.37
MEL- 0303		13-Aug-17	Elakatothrix gelatinosa Willen	86208	1.49
MEL- 0303		13-Aug-17	Planctonema lauterbornii Schmidle	14368	3.61
MEL- 0303		13-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0303		13-Aug-17	Staurodesmus paradoxum Meyen	200	0.52
MEL- 0303		13-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0303		13-Aug-17	Trachelomonas hispida (Perty) Stein	200	2.08
MEL- 0303		13-Aug-17	Small chrysophyceae	352016	4.96
MEL- 0303		13-Aug-17	Large chrysophyceae	21552	3.87
MEL- 0303		13-Aug-17	Chrysochromulina parva Lackey	86208	5.64
MEL- 0303		13-Aug-17	Chrysococcus sp.	481328	31.48
MEL- 0303		13-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0303		13-Aug-17	Kephyrion sp.	28736	0.41
MEL- 0303		13-Aug-17	Spiniferomonas sirrata**********	28736	3.41
MEL- 0303		13-Aug-17	Dinobryon borgei Lemmermann	14368	0.61
MEL- 0303		13-Aug-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0303		13-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0303		13-Aug-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0303		13-Aug-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0303		13-Aug-17	Dinobryon sociale Ehrenberg	28736	6.50

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0303		13-Aug-17	Chrysolkos skuja (Nauwerck) Willen	35920	0.98
MEL- 0303		13-Aug-17	Uroglena volvox Ehrenberg	193968	21.94
MEL- 0303		13-Aug-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0303		13-Aug-17	Stichogloea spp.	21552	1.08
MEL- 0303		13-Aug-17	Bicoeca lacustris Clark	7184	0.37
MEL- 0303		13-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	64656	1.79
MEL- 0303		13-Aug-17	Cyclotella stelligera Cleve and Grunow	1000	1.82
MEL- 0303		13-Aug-17	Cyclotella ocellata Pant.	21552	2.25
MEL- 0303		13-Aug-17	Fragilaria crotonensis Kitton	200	0.07
MEL- 0303		13-Aug-17	Synedra acus Kutzing	400	0.05
MEL- 0303		13-Aug-17	Asterionella formosa Hassall	400	0.04
MEL- 0303		13-Aug-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0303		13-Aug-17	Rhodomonas minuta Skuja	136496	19.72
MEL- 0303		13-Aug-17	Cryptomonas erosa Ehrenberg	2200	2.65
MEL- 0303		13-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0303		13-Aug-17	Katablepharis ovalis Skuja	7184	0.33
MEL- 0303		13-Aug-17	Gymnodinium sp.	1400	16.26
MEL- 0303		13-Aug-17	Peridinium pusillum (Penard) Lemmermann	2200	4.35
MEL- 0304		13-Aug-17	Snowella sp	200	0.10
MEL- 0304		13-Aug-17	Chlamydomonas spp.	14368	0.96
MEL- 0304		13-Aug-17	Oocystis lacustris Chodat	7184	0.19
MEL- 0304		13-Aug-17	Dictyosphaerium simplex Sukja	14368	0.06
MEL- 0304		13-Aug-17	Elakatothrix gelatinosa Willen	35920	0.62
MEL- 0304		13-Aug-17	Cosmarium sp.	400	0.56
MEL- 0304		13-Aug-17	Staurodesmus extensus (Andersson) Teiling	200	0.09
MEL- 0304		13-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL- 0304		13-Aug-17	Botryococcus braunii Kutzing	600	0.54
MEL- 0304		13-Aug-17	Ankistrodesmus spiralis Lemmermann	7184	0.45
MEL- 0304		13-Aug-17	Oocystis gigas Archer	400	0.97
MEL- 0304		13-Aug-17	Small chrysophyceae	308912	4.36
MEL- 0304		13-Aug-17	Large chrysophyceae	43104	7.74
MEL- 0304		13-Aug-17	Chrysochromulina parva Lackey	136496	8.93

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0304		13-Aug-17	Chrysococcus sp.	445408	29.13
MEL- 0304		13-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0304		13-Aug-17	Kephyrion sp.	107760	1.52
MEL- 0304		13-Aug-17	Spiniferomonas sirrata**********	14368	1.71
MEL- 0304		13-Aug-17	Mallomonas crassisquama (Asmund) Fott	600	0.62
MEL- 0304		13-Aug-17	Dinobryon borgei Lemmermann	28736	1.22
MEL- 0304		13-Aug-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0304		13-Aug-17	Dinobryon bavaricum Imhof	1800	2.25
MEL- 0304		13-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0304		13-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0304		13-Aug-17	Dinobryon sociale Ehrenberg	50288	11.38
MEL- 0304		13-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.39
MEL- 0304		13-Aug-17	Uroglena volvox Ehrenberg	265808	30.06
MEL- 0304		13-Aug-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0304		13-Aug-17	Chrysochromulina laurentiana Kling	100576	39.69
MEL- 0304		13-Aug-17	Stichogloea spp.	35920	1.81
MEL- 0304		13-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	93392	2.42
MEL- 0304		13-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0304		13-Aug-17	Cyclotella stelligera Cleve and Grunow	1000	1.82
MEL- 0304		13-Aug-17	Cyclotella ocellata Pant.	21552	2.25
MEL- 0304		13-Aug-17	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL- 0304		13-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	2400	1.99
MEL- 0304		13-Aug-17	Synedra acus Kutzing	1000	0.12
MEL- 0304		13-Aug-17	Cyclotella michiganiana Skvortzow	21552	0.53
MEL- 0304		13-Aug-17	Rhodomonas minuta Skuja	122128	17.65
MEL- 0304		13-Aug-17	Cryptomonas erosa Ehrenberg	800	0.97
MEL- 0304		13-Aug-17	Cryptomonas reflexa (Marsson) Skuja	1000	0.73
MEL- 0304		13-Aug-17	Cryptomonas rostratiformis Skuja	200	0.31
MEL- 0304		13-Aug-17	Gymnodinium sp.	7184	2.55
MEL- 0304		13-Aug-17	Gymnodinium sp.	200	2.35
MEL- 0304		13-Aug-17	Peridinium pusillum (Penard) Lemmermann	3600	7.13
MEL- 0305		13-Aug-17	Anabaena solitaria Klebs	200	0.93

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305		13-Aug-17	Elakatothrix gelatinosa Willen	57472	0.99
MEL- 0305		13-Aug-17	Planctonema lauterbornii Schmidle	35920	9.03
MEL- 0305		13-Aug-17	Cosmarium sp.	200	0.94
MEL- 0305		13-Aug-17	Staurodesmus extensus (Andersson) Teiling	1000	0.46
MEL- 0305		13-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0305		13-Aug-17	Ankistrodesmus spiralis Lemmermann	7184	0.45
MEL- 0305		13-Aug-17	Oocystis gigas Archer	400	0.97
MEL- 0305		13-Aug-17	Small chrysophyceae	287360	4.05
MEL- 0305		13-Aug-17	Large chrysophyceae	14368	2.58
MEL- 0305		13-Aug-17	Chrysochromulina parva Lackey	100576	6.58
MEL- 0305		13-Aug-17	Chrysococcus sp.	718400	46.98
MEL- 0305		13-Aug-17	Kephyrion boreale Skuja	7184	0.81
MEL- 0305		13-Aug-17	Kephyrion sp.	57472	0.81
MEL- 0305		13-Aug-17	Spiniferomonas sirrata**********	21552	2.56
MEL- 0305		13-Aug-17	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL- 0305		13-Aug-17	Dinobryon borgei Lemmermann	337648	14.32
MEL- 0305		13-Aug-17	Dinobryon bavaricum Imhof	2800	3.50
MEL- 0305		13-Aug-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0305		13-Aug-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0305		13-Aug-17	Dinobryon sociale Ehrenberg	43104	9.75
MEL- 0305		13-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.20
MEL- 0305		13-Aug-17	Uroglena volvox Ehrenberg	86208	9.75
MEL- 0305		13-Aug-17	Chrysochromulina laurentiana Kling	86208	35.15
MEL- 0305		13-Aug-17	Stichogloea spp.	21552	1.08
MEL- 0305		13-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	129312	3.35
MEL- 0305		13-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0305		13-Aug-17	Cyclotella stelligera Cleve and Grunow	1200	1.88
MEL- 0305		13-Aug-17	Cyclotella ocellata Pant.	21552	2.25
MEL- 0305		13-Aug-17	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL- 0305		13-Aug-17	Tabellaria fenestrata (Lyngbye) Kutzing	7600	6.30
MEL- 0305		13-Aug-17	Fragilaria crotonensis Kitton	400	0.14
MEL- 0305		13-Aug-17	Synedra acus Kutzing	200	0.02

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305		13-Aug-17	Cyclotella michiganiana Skvortzow	21552	0.53
MEL- 0305		13-Aug-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0305		13-Aug-17	Rhodomonas minuta Skuja	215520	31.14
MEL- 0305		13-Aug-17	Cryptomonas erosa Ehrenberg	1800	2.17
MEL- 0305		13-Aug-17	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL- 0305		13-Aug-17	Cryptomonas rostratiformis Skuja	400	0.59
MEL- 0305		13-Aug-17	Gymnodinium helveticum Penard	400	9.42
MEL- 0305		13-Aug-17	Gymnodinium sp.	1800	21.14
MEL- 0305		13-Aug-17	Peridinium pusillum (Penard) Lemmermann	3200	6.33
MEL- 0401		15-Aug-17	Sphaerocystis schroeteri Chodat	28736	0.96
MEL- 0401		15-Aug-17	Pediastrum duplex Meyen	200	0.92
MEL- 0401		15-Aug-17	Oocystis lacustris Chodat	7184	0.19
MEL- 0401		15-Aug-17	Elakatothrix gelatinosa Willen	86208	1.49
MEL- 0401		15-Aug-17	Cosmarium sp.	600	0.84
MEL- 0401		15-Aug-17	Staurodesmus extensus (Andersson) Teiling	800	0.37
MEL- 0401		15-Aug-17	Staurodesmus paradoxum Meyen	200	0.64
MEL- 0401		15-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0401		15-Aug-17	Mougeotia sp.	200	0.38
MEL- 0401		15-Aug-17	Botryococcus braunii Kutzing	400	0.36
MEL- 0401		15-Aug-17	Oocystis gigas Archer	200	0.48
MEL- 0401		15-Aug-17	Monomastix minuta Skuja	7184	0.14
MEL- 0401		15-Aug-17	Small chrysophyceae	265808	2.74
MEL- 0401		15-Aug-17	Large chrysophyceae	21552	3.87
MEL- 0401		15-Aug-17	Chrysochromulina parva Lackey	79024	5.17
MEL- 0401		15-Aug-17	Chrysococcus sp.	625008	40.88
MEL- 0401		15-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0401		15-Aug-17	Kephyrion sp.	71840	0.92
MEL- 0401		15-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0401		15-Aug-17	Dinobryon borgei Lemmermann	14368	0.62
MEL- 0401		15-Aug-17	Dinobryon bavaricum Imhof	400	0.50
MEL- 0401		15-Aug-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0401		15-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0401		15-Aug-17	Dinobryon sociale Ehrenberg	14368	3.25
MEL- 0401		15-Aug-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.38
MEL- 0401		15-Aug-17	Ochromonas sp.	7184	0.55
MEL- 0401		15-Aug-17	Uroglena volvox Ehrenberg	86208	9.75
MEL- 0401		15-Aug-17	Chrysochromulina laurentiana Kling	57472	22.68
MEL- 0401		15-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.21
MEL- 0401		15-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0401		15-Aug-17	Cyclotella stelligera Cleve and Grunow	1800	3.27
MEL- 0401		15-Aug-17	Cyclotella ocellata Pant.	28736	2.20
MEL- 0401		15-Aug-17	Rhizosolenia eriense H.L. Smith	7184	0.61
MEL- 0401		15-Aug-17	Tabellaria flocculsa (Roth) Kutzing	200	0.24
MEL- 0401		15-Aug-17	Synedra acus Kutzing	600	0.07
MEL- 0401		15-Aug-17	Asterionella formosa Hassall	1600	0.17
MEL- 0401		15-Aug-17	Cyclotella michiganiana Skvortzow	7184	0.17
MEL- 0401		15-Aug-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0401		15-Aug-17	Rhodomonas minuta Skuja	316096	45.68
MEL- 0401		15-Aug-17	Cryptomonas erosa Ehrenberg	2400	2.90
MEL- 0401		15-Aug-17	Cryptomonas rostratiformis Skuja	200	0.30
MEL- 0401		15-Aug-17	Gymnodinium sp.	400	4.70
MEL- 0401		15-Aug-17	Peridinium pusillum (Penard) Lemmermann	600	1.19
MEL- 0402		15-Aug-17	Chroococcus turgidus (Kutzing) Nageli	57472	19.26
MEL- 0402		15-Aug-17	Chlamydomonas spp.	7184	0.36
MEL- 0402		15-Aug-17	Oocystis lacustris Chodat	7184	0.19
MEL- 0402		15-Aug-17	Elakatothrix gelatinosa Willen	93392	1.62
MEL- 0402		15-Aug-17	Planctonema lauterbornii Schmidle	14368	3.25
MEL- 0402		15-Aug-17	Cosmarium sp.	800	1.12
MEL- 0402		15-Aug-17	Staurodesmus extensus (Andersson) Teiling	400	0.19
MEL- 0402		15-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0402		15-Aug-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0402		15-Aug-17	Nephrocytiun lunatum W. West	400	1.07
MEL- 0402		15-Aug-17	Small chrysophyceae	452592	5.79
MEL- 0402		15-Aug-17	Large chrysophyceae	35920	6.45

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0402		15-Aug-17	Chrysochromulina parva Lackey	114944	7.52
MEL- 0402		15-Aug-17	Chrysococcus sp.	510064	33.36
MEL- 0402		15-Aug-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0402		15-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0402		15-Aug-17	Kephyrion sp.	86208	1.10
MEL- 0402		15-Aug-17	Spiniferomonas sirrata**********	35920	4.06
MEL- 0402		15-Aug-17	Dinobryon mucronutom Nygaard	14368	1.81
MEL- 0402		15-Aug-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0402		15-Aug-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0402		15-Aug-17	Dinobryon sociale Ehrenberg	64656	14.63
MEL- 0402		15-Aug-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.20
MEL- 0402		15-Aug-17	Uroglena volvox Ehrenberg	57472	6.50
MEL- 0402		15-Aug-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0402		15-Aug-17	Stichogloea spp.	14368	0.72
MEL- 0402		15-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.52
MEL- 0402		15-Aug-17	Pteridomonas sp.	7184	1.71
MEL- 0402		15-Aug-17	Cyclotella stelligera Cleve and Grunow	3000	5.46
MEL- 0402		15-Aug-17	Cyclotella ocellata Pant.	35920	4.03
MEL- 0402		15-Aug-17	Fragilaria crotonensis Kitton	200	0.07
MEL- 0402		15-Aug-17	Large diatoms	200	0.02
MEL- 0402		15-Aug-17	Cyclotella michiganiana Skvortzow	14368	0.33
MEL- 0402		15-Aug-17	Cyclotella bodanica Eulenst.	200	1.45
MEL- 0402		15-Aug-17	Rhodomonas minuta Skuja	222704	32.18
MEL- 0402		15-Aug-17	Cryptomonas erosa Ehrenberg	1400	1.69
MEL- 0402		15-Aug-17	Cryptomonas erosa Ehrenberg	400	3.13
MEL- 0402		15-Aug-17	Katablepharis ovalis Skuja	7184	0.34
MEL- 0402		15-Aug-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0402		15-Aug-17	Peridinium pusillum (Penard) Lemmermann	800	1.58
MEL- 0403		15-Aug-17	Sphaerocystis schroeteri Chodat	14368	0.48
MEL- 0403		15-Aug-17	Dictyosphaerium simplex Sukja	28736	0.12
MEL- 0403		15-Aug-17	Elakatothrix gelatinosa Willen	57472	0.99
MEL- 0403		15-Aug-17	Planctonema lauterbornii Schmidle	7184	1.63

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0403		15-Aug-17	Cosmarium sp.	200	0.28
MEL- 0403		15-Aug-17	Staurodesmus extensus (Andersson) Teiling	600	0.27
MEL- 0403		15-Aug-17	Staurodesmus paradoxum Meyen	200	0.82
MEL- 0403		15-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL- 0403		15-Aug-17	Botryococcus braunii Kutzing	400	0.36
MEL- 0403		15-Aug-17	Small chrysophyceae	452592	4.66
MEL- 0403		15-Aug-17	Large chrysophyceae	35920	6.45
MEL- 0403		15-Aug-17	Chrysochromulina parva Lackey	86208	5.64
MEL- 0403		15-Aug-17	Chrysococcus sp.	553168	36.18
MEL- 0403		15-Aug-17	Kephyrion sp.	93392	1.20
MEL- 0403		15-Aug-17	Spiniferomonas sirrata**********	14368	1.63
MEL- 0403		15-Aug-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0403		15-Aug-17	Dinobryon borgei Lemmermann	43104	1.83
MEL- 0403		15-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0403		15-Aug-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0403		15-Aug-17	Dinobryon sertularia Ehrenberg	200	0.68
MEL- 0403		15-Aug-17	Dinobryon sociale Ehrenberg	28736	6.50
MEL- 0403		15-Aug-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.60
MEL- 0403		15-Aug-17	Uroglena volvox Ehrenberg	50288	5.69
MEL- 0403		15-Aug-17	Chrysochromulina laurentiana Kling	86208	34.02
MEL- 0403		15-Aug-17	Bicoeca lacustris Clark	7184	0.37
MEL- 0403		15-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	35920	0.86
MEL- 0403		15-Aug-17	Cyclotella stelligera Cleve and Grunow	2400	4.36
MEL- 0403		15-Aug-17	Cyclotella ocellata Pant.	14368	1.10
MEL- 0403		15-Aug-17	Synedra acus Kutzing	600	0.07
MEL- 0403		15-Aug-17	Asterionella formosa Hassall	600	0.06
MEL- 0403		15-Aug-17	Cyclotella michiganiana Skvortzow	57472	1.33
MEL- 0403		15-Aug-17	Cyclotella bodanica Eulenst.	600	3.51
MEL- 0403		15-Aug-17	Rhodomonas minuta Skuja	359200	51.90
MEL- 0403		15-Aug-17	Cryptomonas erosa Ehrenberg	1600	1.93
MEL- 0403		15-Aug-17	Cryptomonas reflexa (Marsson) Skuja	800	0.61
MEL- 0403		15-Aug-17	Cryptomonas rostratiformis Skuja	200	0.30

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0403		15-Aug-17	Katablepharis ovalis Skuja	7184	0.33
MEL- 0403		15-Aug-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0403		15-Aug-17	Gymnodinium sp.	200	2.35
MEL- 0403		15-Aug-17	Peridinium pusillum (Penard) Lemmermann	1600	3.19
MEL- 0404		15-Aug-17	Chroococcus turgidus (Kutzing) Nageli	114944	38.52
MEL- 0404		15-Aug-17	Chlamydomonas spp.	7184	0.17
MEL- 0404		15-Aug-17	Sphaerocystis schroeteri Chodat	28736	0.96
MEL- 0404		15-Aug-17	Oocystis lacustris Chodat	50288	1.30
MEL- 0404		15-Aug-17	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL- 0404		15-Aug-17	Elakatothrix gelatinosa Willen	86208	1.49
MEL- 0404		15-Aug-17	Planctonema lauterbornii Schmidle	14368	3.25
MEL- 0404		15-Aug-17	Cosmarium sp.	200	0.28
MEL- 0404		15-Aug-17	Staurodesmus extensus (Andersson) Teiling	1200	0.55
MEL- 0404		15-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL- 0404		15-Aug-17	Botryococcus braunii Kutzing	200	0.18
MEL- 0404		15-Aug-17	Nephrocytiun lunatum W. West	200	0.54
MEL- 0404		15-Aug-17	Small chrysophyceae	402304	4.14
MEL- 0404		15-Aug-17	Large chrysophyceae	7184	1.29
MEL- 0404		15-Aug-17	Chrysochromulina parva Lackey	122128	7.99
MEL- 0404		15-Aug-17	Chrysococcus sp.	660928	43.22
MEL- 0404		15-Aug-17	Kephyrion sp.	114944	1.47
MEL- 0404		15-Aug-17	Spiniferomonas sirrata**********	21552	2.44
MEL- 0404		15-Aug-17	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL- 0404		15-Aug-17	Dinobryon borgei Lemmermann	21552	0.92
MEL- 0404		15-Aug-17	Dinobryon bavaricum Imhof	400	0.50
MEL- 0404		15-Aug-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0404		15-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0404		15-Aug-17	Dinobryon sociale Ehrenberg	35920	8.13
MEL- 0404		15-Aug-17	Uroglena volvox Ehrenberg	93392	10.56
MEL- 0404		15-Aug-17	Chrysochromulina laurentiana Kling	93392	36.85
MEL- 0404		15-Aug-17	Stichogloea spp.	14368	0.72
MEL- 0404		15-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.03

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0404		15-Aug-17	Pteridomonas sp.	28736	6.84
MEL- 0404		15-Aug-17	Cyclotella stelligera Cleve and Grunow	3000	5.46
MEL- 0404		15-Aug-17	Cyclotella ocellata Pant.	28736	2.20
MEL- 0404		15-Aug-17	Fragilaria crotonensis Kitton	1400	0.48
MEL- 0404		15-Aug-17	Synedra acus Kutzing	200	0.02
MEL- 0404		15-Aug-17	Cyclotella michiganiana Skvortzow	35920	0.83
MEL- 0404		15-Aug-17	Cyclotella bodanica Eulenst.	200	1.24
MEL- 0404		15-Aug-17	Rhodomonas minuta Skuja	208336	30.10
MEL- 0404		15-Aug-17	Cryptomonas erosa Ehrenberg	1400	1.66
MEL- 0404		15-Aug-17	Cryptomonas reflexa (Marsson) Skuja	400	0.29
MEL- 0404		15-Aug-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0404		15-Aug-17	Gymnodinium sp.	7184	2.55
MEL- 0404		15-Aug-17	Gymnodinium sp.	400	4.70
MEL- 0405		15-Aug-17	Aphanocapsa delicatissima W. and G.S. West	200	0.43
MEL- 0405		15-Aug-17	Chlamydomonas spp.	7184	0.17
MEL- 0405		15-Aug-17	Sphaerocystis schroeteri Chodat	28736	0.96
MEL- 0405		15-Aug-17	Oocystis lacustris Chodat	64656	1.67
MEL- 0405		15-Aug-17	Elakatothrix gelatinosa Willen	43104	0.75
MEL- 0405		15-Aug-17	Planctonema lauterbornii Schmidle	14368	3.25
MEL- 0405		15-Aug-17	Cosmarium sp.	400	0.56
MEL- 0405		15-Aug-17	Staurodesmus extensus (Andersson) Teiling	1000	0.46
MEL- 0405		15-Aug-17	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL- 0405		15-Aug-17	Small chrysophyceae	366384	3.77
MEL- 0405		15-Aug-17	Large chrysophyceae	21552	3.87
MEL- 0405		15-Aug-17	Chrysochromulina parva Lackey	100576	6.58
MEL- 0405		15-Aug-17	Chrysococcus sp.	553168	36.18
MEL- 0405		15-Aug-17	Kephyrion boreale Skuja	7184	0.85
MEL- 0405		15-Aug-17	Kephyrion sp.	136496	1.75
MEL- 0405		15-Aug-17	Spiniferomonas sirrata**********	14368	1.63
MEL- 0405		15-Aug-17	Mallomonas crassisquama (Asmund) Fott	800	0.84
MEL- 0405		15-Aug-17	Dinobryon borgei Lemmermann	14368	0.62
MEL- 0405		15-Aug-17	Dinobryon mucronutom Nygaard	14368	1.81

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0405		15-Aug-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0405		15-Aug-17	Dinobryon bavaricum Imhof	200	0.25
MEL- 0405		15-Aug-17	Dinobryon sertularia Ehrenberg	600	2.03
MEL- 0405		15-Aug-17	Dinobryon sociale Ehrenberg	71840	16.25
MEL- 0405		15-Aug-17	Uroglena volvox Ehrenberg	150864	17.06
MEL- 0405		15-Aug-17	Chrysochromulina laurentiana Kling	86208	34.02
MEL- 0405		15-Aug-17	Stichogloea spp.	50288	2.53
MEL- 0405		15-Aug-17	Salpingoeca frequentissima (Zach.) Lemmermann	136496	3.28
MEL- 0405		15-Aug-17	Pteridomonas sp.	21552	5.13
MEL- 0405		15-Aug-17	Cyclotella stelligera Cleve and Grunow	1200	2.18
MEL- 0405		15-Aug-17	Cyclotella ocellata Pant.	14368	1.10
MEL- 0405		15-Aug-17	Synedra acus Kutzing	200	0.02
MEL- 0405		15-Aug-17	Asterionella formosa Hassall	1400	0.15
MEL- 0405		15-Aug-17	Cyclotella michiganiana Skvortzow	21552	0.50
MEL- 0405		15-Aug-17	Rhodomonas minuta Skuja	229888	33.22
MEL- 0405		15-Aug-17	Cryptomonas erosa Ehrenberg	1200	1.45
MEL- 0405		15-Aug-17	Cryptomonas reflexa (Marsson) Skuja	600	0.46
MEL- 0405		15-Aug-17	Cryptomonas rostratiformis Skuja	200	0.30
MEL- 0405		15-Aug-17	Gymnodinium sp.	1000	11.74
MEL- 0405		15-Aug-17	Peridinium pusillum (Penard) Lemmermann	1200	2.39
MEL- 0301		01-Sep-17	Oocystis lacustris Chodat	35920	1.08
MEL- 0301		01-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0301		01-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0301		01-Sep-17	Cosmarium sp.	200	0.28
MEL- 0301		01-Sep-17	Euastrum spp.	200	0.37
MEL- 0301		01-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL- 0301		01-Sep-17	Small chrysophyceae	122128	1.72
MEL- 0301		01-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0301		01-Sep-17	Chrysochromulina parva Lackey	21552	1.41
MEL- 0301		01-Sep-17	Chrysococcus sp.	711216	41.18
MEL- 0301		01-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	4.78
MEL- 0301		01-Sep-17	Kephyrion boreale Skuja	7184	0.77

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0301		01-Sep-17	Kephyrion sp.	21552	0.20
MEL- 0301		01-Sep-17	Spiniferomonas sirrata**********	21552	1.98
MEL- 0301		01-Sep-17	Dinobryon borgei Lemmermann	14368	0.62
MEL- 0301		01-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0301		01-Sep-17	Dinobryon bavaricum Imhof	400	0.80
MEL- 0301		01-Sep-17	Dinobryon sertularia Ehrenberg	71840	16.25
MEL- 0301		01-Sep-17	Dinobryon sertularia Ehrenberg	400	1.36
MEL- 0301		01-Sep-17	Epiphyxis sp.	28736	2.19
MEL- 0301		01-Sep-17	Chrysochromulina laurentiana Kling	57472	22.68
MEL- 0301		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	100576	3.24
MEL- 0301		01-Sep-17	Cyclotella stelligera Cleve and Grunow	4200	6.60
MEL- 0301		01-Sep-17	Cyclotella ocellata Pant.	43104	5.38
MEL- 0301		01-Sep-17	Tabellaria flocculsa (Roth) Kutzing	800	1.07
MEL- 0301		01-Sep-17	Fragilaria crotonensis Kitton	800	0.25
MEL- 0301		01-Sep-17	Synedra acus Kutzing	1400	0.15
MEL- 0301		01-Sep-17	Asterionella formosa Hassall	5600	0.59
MEL- 0301		01-Sep-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0301		01-Sep-17	Cyclotella bodanica Eulenst.	600	4.63
MEL- 0301		01-Sep-17	Rhodomonas minuta Skuja	136496	18.86
MEL- 0301		01-Sep-17	Cryptomonas erosa Ehrenberg	600	0.78
MEL- 0301		01-Sep-17	Gymnodinium sp.	800	8.24
MEL- 0301		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	1400	3.48
MEL- 0302		01-Sep-17	Oocystis lacustris Chodat	28736	0.87
MEL- 0302		01-Sep-17	Planctonema lauterbornii Schmidle	7184	1.63
MEL- 0302		01-Sep-17	Cosmarium sp.	200	0.28
MEL- 0302		01-Sep-17	Small chrysophyceae	136496	1.92
MEL- 0302		01-Sep-17	Large chrysophyceae	57472	10.32
MEL- 0302		01-Sep-17	Chrysochromulina parva Lackey	28736	1.88
MEL- 0302		01-Sep-17	Chrysococcus sp.	366384	21.21
MEL- 0302		01-Sep-17	Kephyrion sp.	21552	0.20
MEL- 0302		01-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0302		01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0302		01-Sep-17	Dinobryon bavaricum Imhof	7184	1.63
MEL- 0302		01-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0302		01-Sep-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0302		01-Sep-17	Dinobryon sertularia Ehrenberg	200	1.02
MEL- 0302		01-Sep-17	Ochromonas sp.	14368	0.88
MEL- 0302		01-Sep-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0302		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	251440	8.10
MEL- 0302		01-Sep-17	Cyclotella stelligera Cleve and Grunow	3200	5.03
MEL- 0302		01-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0302		01-Sep-17	Tabellaria flocculsa (Roth) Kutzing	200	0.27
MEL- 0302		01-Sep-17	Synedra acus Kutzing	200	0.02
MEL- 0302		01-Sep-17	Synedra ulna (Nitzsch) Ehrenberg	200	1.47
MEL- 0302		01-Sep-17	Asterionella formosa Hassall	1800	0.19
MEL- 0302		01-Sep-17	Cyclotella michiganiana Skvortzow	57472	1.41
MEL- 0302		01-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0302		01-Sep-17	Rhodomonas minuta Skuja	14368	1.99
MEL- 0302		01-Sep-17	Cryptomonas erosa Ehrenberg	1000	1.31
MEL- 0302		01-Sep-17	Katablepharis ovalis Skuja	64656	2.34
MEL- 0302		01-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0302		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	800	1.99
MEL- 0303		01-Sep-17	Snowella sp	200	0.15
MEL- 0303		01-Sep-17	Oocystis lacustris Chodat	50288	1.52
MEL- 0303		01-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0303		01-Sep-17	Cosmarium sp.	200	0.28
MEL- 0303		01-Sep-17	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL- 0303		01-Sep-17	Staurodesmus paradoxum Meyen	200	1.05
MEL- 0303		01-Sep-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0303		01-Sep-17	Small chrysophyceae	193968	2.73
MEL- 0303		01-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0303		01-Sep-17	Chrysochromulina parva Lackey	64656	4.23
MEL- 0303		01-Sep-17	Chrysococcus sp.	524432	30.36
MEL- 0303		01-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	4.78

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0303		01-Sep-17	Kephyrion sp.	35920	0.88
MEL- 0303		01-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0303		01-Sep-17	Dinobryon mucronutom Nygaard	7184	0.90
MEL- 0303		01-Sep-17	Dinobryon bavaricum Imhof	57472	13.00
MEL- 0303		01-Sep-17	Dinobryon bavaricum Imhof	400	0.80
MEL- 0303		01-Sep-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0303		01-Sep-17	Dinobryon sertularia Ehrenberg	800	1.00
MEL- 0303		01-Sep-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0303		01-Sep-17	Stichogloea spp.	7184	0.36
MEL- 0303		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	86208	2.78
MEL- 0303		01-Sep-17	Cyclotella stelligera Cleve and Grunow	4200	6.60
MEL- 0303		01-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0303		01-Sep-17	Fragilaria crotonensis Kitton	200	0.06
MEL- 0303		01-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0303		01-Sep-17	Asterionella formosa Hassall	1800	0.19
MEL- 0303		01-Sep-17	Cyclotella michiganiana Skvortzow	35920	0.88
MEL- 0303		01-Sep-17	Cyclotella bodanica Eulenst.	200	1.41
MEL- 0303		01-Sep-17	Rhodomonas minuta Skuja	43104	5.96
MEL- 0303		01-Sep-17	Cryptomonas erosa Ehrenberg	600	0.78
MEL- 0303		01-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0303		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	4400	10.92
MEL- 0304		01-Sep-17	Sphaerocystis schroeteri Chodat	35920	0.56
MEL- 0304		01-Sep-17	Oocystis lacustris Chodat	28736	0.87
MEL- 0304		01-Sep-17	Planctonema lauterbornii Schmidle	28736	6.50
MEL- 0304		01-Sep-17	Cosmarium sp.	200	0.28
MEL- 0304		01-Sep-17	Staurodesmus extensus (Andersson) Teiling	1400	0.54
MEL- 0304		01-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0304		01-Sep-17	Small chrysophyceae	100576	1.42
MEL- 0304		01-Sep-17	Large chrysophyceae	43104	7.74
MEL- 0304		01-Sep-17	Chrysochromulina parva Lackey	28736	1.88
MEL- 0304		01-Sep-17	Chrysococcus sp.	395120	22.88
MEL- 0304		01-Sep-17	Kephyrion sp.	35920	0.88

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0304		01-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0304		01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0304		01-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0304		01-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0304		01-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0304		01-Sep-17	Dinobryon sertularia Ehrenberg	1600	11.62
MEL- 0304		01-Sep-17	Chrysochromulina laurentiana Kling	100576	39.69
MEL- 0304		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.93
MEL- 0304		01-Sep-17	Pteridomonas sp.	7184	1.38
MEL- 0304		01-Sep-17	Cyclotella stelligera Cleve and Grunow	1600	2.51
MEL- 0304		01-Sep-17	Cyclotella ocellata Pant.	35920	4.49
MEL- 0304		01-Sep-17	Fragilaria crotonensis Kitton	200	0.06
MEL- 0304		01-Sep-17	Synedra acus Kutzing	1400	0.15
MEL- 0304		01-Sep-17	Asterionella formosa Hassall	2200	0.23
MEL- 0304		01-Sep-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0304		01-Sep-17	Cyclotella bodanica Eulenst.	400	3.09
MEL- 0304		01-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0304		01-Sep-17	Cryptomonas erosa Ehrenberg	1000	1.31
MEL- 0304		01-Sep-17	Gymnodinium sp.	1600	16.49
MEL- 0304		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	1600	3.97
MEL- 0305		01-Sep-17	Elakatothrix gelatinosa Willen	35920	0.68
MEL- 0305		01-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0305		01-Sep-17	Cosmarium sp.	600	0.84
MEL- 0305		01-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.14
MEL- 0305		01-Sep-17	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL- 0305		01-Sep-17	Small chrysophyceae	208336	2.94
MEL- 0305		01-Sep-17	Large chrysophyceae	64656	11.61
MEL- 0305		01-Sep-17	Chrysochromulina parva Lackey	35920	2.35
MEL- 0305		01-Sep-17	Chrysococcus sp.	466960	27.04
MEL- 0305		01-Sep-17	Kephyrion boreale Skuja	7184	0.77
MEL- 0305		01-Sep-17	Kephyrion sp.	107760	0.99
MEL- 0305		01-Sep-17	Spiniferomonas sirrata**********	21552	1.98

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305		01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0305		01-Sep-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0305		01-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0305		01-Sep-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0305		01-Sep-17	Dinobryon sertularia Ehrenberg	1200	6.10
MEL- 0305		01-Sep-17	Chrysochromulina laurentiana Kling	86208	34.02
MEL- 0305		01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL- 0305		01-Sep-17	Cyclotella stelligera Cleve and Grunow	2400	3.77
MEL- 0305		01-Sep-17	Cyclotella ocellata Pant.	50288	6.28
MEL- 0305		01-Sep-17	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL- 0305		01-Sep-17	Tabellaria flocculsa (Roth) Kutzing	600	0.80
MEL- 0305		01-Sep-17	Fragilaria crotonensis Kitton	1400	0.45
MEL- 0305		01-Sep-17	Synedra acus Kutzing	600	0.06
MEL- 0305		01-Sep-17	Asterionella formosa Hassall	2000	0.21
MEL- 0305		01-Sep-17	Cyclotella michiganiana Skvortzow	50288	1.23
MEL- 0305		01-Sep-17	Rhodomonas minuta Skuja	64656	8.94
MEL- 0305		01-Sep-17	Cryptomonas erosa Ehrenberg	800	1.05
MEL- 0305		01-Sep-17	Cryptomonas reflexa (Marsson) Skuja	600	0.41
MEL- 0305		01-Sep-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0305		01-Sep-17	Gymnodinium sp.	1000	10.31
MEL- 0305		01-Sep-17	Peridinium pusillum (Penard) Lemmermann	2000	4.62
MEL- 0305R	Recount	01-Sep-17	Elakatothrix gelatinosa Willen	28736	0.54
MEL- 0305R	Recount	01-Sep-17	Planctonema lauterbornii Schmidle	28736	6.50
MEL- 0305R	Recount	01-Sep-17	Cosmarium sp.	600	0.84
MEL- 0305R	Recount	01-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0305R	Recount	01-Sep-17	Spondylosium planum (Wolle) W. and G.S. West	43104	1.63
MEL- 0305R	Recount	01-Sep-17	Small chrysophyceae	107760	1.52
MEL- 0305R	Recount	01-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0305R	Recount	01-Sep-17	Chrysochromulina parva Lackey	14368	0.94
MEL- 0305R	Recount	01-Sep-17	Chrysococcus sp.	431040	24.96
MEL- 0305R	Recount	01-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	4.78
MEL- 0305R	Recount	01-Sep-17	Kephyrion boreale Skuja	7184	0.77

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0305R	Recount	01-Sep-17	Kephyrion sp.	64656	0.59
MEL- 0305R	Recount	01-Sep-17	Spiniferomonas sirrata**********	14368	1.32
MEL- 0305R	Recount	01-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0305R	Recount	01-Sep-17	Dinobryon mucronutom Nygaard	7184	0.86
MEL- 0305R	Recount	01-Sep-17	Dinobryon bavaricum Imhof	28736	6.50
MEL- 0305R	Recount	01-Sep-17	Dinobryon bavaricum Imhof	1200	2.39
MEL- 0305R	Recount	01-Sep-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0305R	Recount	01-Sep-17	Dinobryon sertularia Ehrenberg	2000	10.17
MEL- 0305R	Recount	01-Sep-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0305R	Recount	01-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	114944	3.70
MEL- 0305R	Recount	01-Sep-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0305R	Recount	01-Sep-17	Cyclotella ocellata Pant.	43104	5.38
MEL- 0305R	Recount	01-Sep-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0305R	Recount	01-Sep-17	Fragilaria crotonensis Kitton	3400	1.08
MEL- 0305R	Recount	01-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0305R	Recount	01-Sep-17	Asterionella formosa Hassall	3400	0.36
MEL- 0305R	Recount	01-Sep-17	Cyclotella michiganiana Skvortzow	79024	1.94
MEL- 0305R	Recount	01-Sep-17	Cyclotella bodanica Eulenst.	400	3.09
MEL- 0305R	Recount	01-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0305R	Recount	01-Sep-17	Cryptomonas erosa Ehrenberg	400	0.52
MEL- 0305R	Recount	01-Sep-17	Cryptomonas reflexa (Marsson) Skuja	400	0.27
MEL- 0305R	Recount	01-Sep-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0305R	Recount	01-Sep-17	Gymnodinium sp.	1600	16.49
MEL- 0305R	Recount	01-Sep-17	Peridinium pusillum (Penard) Lemmermann	1600	3.70
MEL- 0101		04-Sep-17	Sphaerocystis schroeteri Chodat	57472	0.53
MEL- 0101		04-Sep-17	Oocystis lacustris Chodat	21552	0.57
MEL- 0101		04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0101		04-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0101		04-Sep-17	Cosmarium sp.	200	0.94
MEL- 0101		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL- 0101		04-Sep-17	Botryococcus braunii Kutzing	800	0.42
MEL- 0101		04-Sep-17	Euglena acus Ehrenberg	200	1.19

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101		04-Sep-17	Small chrysophyceae	122128	1.72
MEL- 0101		04-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0101		04-Sep-17	Chrysochromulina parva Lackey	86208	5.64
MEL- 0101		04-Sep-17	Chrysococcus sp.	445408	22.72
MEL- 0101		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0101		04-Sep-17	Kephyrion sp.	7184	0.11
MEL- 0101		04-Sep-17	Dinobryon borgei Lemmermann	28736	1.39
MEL- 0101		04-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0101		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0101		04-Sep-17	Dinobryon sertularia Ehrenberg	50288	11.38
MEL- 0101		04-Sep-17	Dinobryon sertularia Ehrenberg	800	1.59
MEL- 0101		04-Sep-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0101		04-Sep-17	Stichogloea spp.	7184	0.36
MEL- 0101		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	431040	13.88
MEL- 0101		04-Sep-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0101		04-Sep-17	Rhizosolenia eriense H.L. Smith	50288	3.91
MEL- 0101		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	4600	3.73
MEL- 0101		04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	11000	18.06
MEL- 0101		04-Sep-17	Fragilaria crotonensis Kitton	4200	1.27
MEL- 0101		04-Sep-17	Synedra acus Kutzing	3800	0.38
MEL- 0101		04-Sep-17	Asterionella formosa Hassall	133200	13.81
MEL- 0101		04-Sep-17	Cyclotella michiganiana Skvortzow	28736	0.70
MEL- 0101		04-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0101		04-Sep-17	Rhodomonas minuta Skuja	158048	21.84
MEL- 0101		04-Sep-17	Cryptomonas erosa Ehrenberg	600	0.78
MEL- 0101		04-Sep-17	Katablepharis ovalis Skuja	14368	0.52
MEL- 0101		04-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0101		04-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0101		04-Sep-17	Gymnodinium sp.	200	2.83
MEL- 0101		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	800	2.83
MEL- 0101		04-Sep-17	Peridinium aciculiferum Lemmermann	400	3.62
MEL- 0101	Rep1	04-Sep-17	Carteria spp.	7184	2.65

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101	Rep1	04-Sep-17	Chlamydomonas spp.	7184	0.24
MEL- 0101	Rep1	04-Sep-17	Sphaerocystis schroeteri Chodat	50288	0.46
MEL- 0101	Rep1	04-Sep-17	Oocystis lacustris Chodat	50288	1.33
MEL- 0101	Rep1	04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0101	Rep1	04-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0101	Rep1	04-Sep-17	Cosmarium sp.	200	0.28
MEL- 0101	Rep1	04-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL- 0101	Rep1	04-Sep-17	Staurodesmus paradoxum Meyen	400	0.42
MEL- 0101	Rep1	04-Sep-17	Botryococcus braunii Kutzing	1400	0.73
MEL- 0101	Rep1	04-Sep-17	Small chrysophyceae	57472	0.81
MEL- 0101	Rep1	04-Sep-17	Large chrysophyceae	14368	2.58
MEL- 0101	Rep1	04-Sep-17	Chrysochromulina parva Lackey	50288	3.29
MEL- 0101	Rep1	04-Sep-17	Chrysococcus sp.	502880	25.65
MEL- 0101	Rep1	04-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	5.13
MEL- 0101	Rep1	04-Sep-17	Dinobryon borgei Lemmermann	7184	0.35
MEL- 0101	Rep1	04-Sep-17	Dinobryon bavaricum Imhof	43104	9.75
MEL- 0101	Rep1	04-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0101	Rep1	04-Sep-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.88
MEL- 0101	Rep1	04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0101	Rep1	04-Sep-17	Dinobryon sertularia Ehrenberg	1000	1.99
MEL- 0101	Rep1	04-Sep-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0101	Rep1	04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	229888	7.40
MEL- 0101	Rep1	04-Sep-17	Cyclotella stelligera Cleve and Grunow	2200	3.46
MEL- 0101	Rep1	04-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0101	Rep1	04-Sep-17	Rhizosolenia eriense H.L. Smith	28736	2.24
MEL- 0101	Rep1	04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	9400	7.62
MEL- 0101	Rep1	04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	7200	11.82
MEL- 0101	Rep1	04-Sep-17	Fragilaria crotonensis Kitton	2200	0.66
MEL- 0101	Rep1	04-Sep-17	Synedra acus Kutzing	3400	0.34
MEL- 0101	Rep1	04-Sep-17	Asterionella formosa Hassall	139800	14.50
MEL- 0101	Rep1	04-Sep-17	Cyclotella michiganiana Skvortzow	28736	0.70
MEL- 0101	Rep1	04-Sep-17	Rhodomonas minuta Skuja	43104	5.96

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101	Rep1	04-Sep-17	Cryptomonas erosa Ehrenberg	200	0.26
MEL- 0101	Rep1	04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0101	Rep1	04-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0101	Rep1	04-Sep-17	Gymnodinium sp.	200	2.83
MEL- 0101	Rep1	04-Sep-17	Peridinium pusillum (Penard) Lemmermann	1800	6.36
MEL- 0101	Rep1	04-Sep-17	Peridinium aciculiferum Lemmermann	600	5.43
MEL- 0101R	Rep1 Recount	04-Sep-17	Snowella sp	200	0.15
MEL- 0101R	Rep1 Recount	04-Sep-17	Chlamydomonas spp.	35920	1.19
MEL- 0101R	Rep1 Recount	04-Sep-17	Sphaerocystis schroeteri Chodat	28736	0.36
MEL- 0101R	Rep1 Recount	04-Sep-17	Oocystis lacustris Chodat	43104	1.14
MEL- 0101R	Rep1 Recount	04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0101R	Rep1 Recount	04-Sep-17	Planctonema lauterbornii Schmidle	64656	14.63
MEL- 0101R	Rep1 Recount	04-Sep-17	Staurodesmus paradoxum Meyen	200	0.21
MEL- 0101R	Rep1 Recount	04-Sep-17	Botryococcus braunii Kutzing	1800	0.94
MEL- 0101R	Rep1 Recount	04-Sep-17	Small chrysophyceae	28736	0.41
MEL- 0101R	Rep1 Recount	04-Sep-17	Large chrysophyceae	14368	2.58
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysochromulina parva Lackey	28736	1.88
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysococcus sp.	617824	31.51
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysostephanospaera globulifera Scherffel	21552	7.69
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon bavaricum Imhof	35920	8.13
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon bavaricum Imhof	1400	2.79
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0101R	Rep1 Recount	04-Sep-17	Dinobryon sertularia Ehrenberg	800	1.59
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.22
MEL- 0101R	Rep1 Recount	04-Sep-17	Uroglena volvox Ehrenberg	28736	3.25
MEL- 0101R	Rep1 Recount	04-Sep-17	Bitrichia chodatii (Reverdin) Chodat	14368	0.72
MEL- 0101R	Rep1 Recount	04-Sep-17	Chrysochromulina laurentiana Kling	28736	11.34
MEL- 0101R	Rep1 Recount	04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	186784	6.01
MEL- 0101R	Rep1 Recount	04-Sep-17	Cyclotella stelligera Cleve and Grunow	3000	4.71
MEL- 0101R	Rep1 Recount	04-Sep-17	Cyclotella ocellata Pant.	14368	1.56
MEL- 0101R	Rep1 Recount	04-Sep-17	Rhizosolenia eriense H.L. Smith	43104	3.35
MEL- 0101R	Rep1 Recount	04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	5200	4.21

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0101R	Rep1 Recount	04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	12200	20.03
MEL- 0101R	Rep1 Recount	04-Sep-17	Fragilaria crotonensis Kitton	1400	0.42
MEL- 0101R	Rep1 Recount	04-Sep-17	Synedra acus Kutzing	2200	0.22
MEL- 0101R	Rep1 Recount	04-Sep-17	Asterionella formosa Hassall	129600	13.02
MEL- 0101R	Rep1 Recount	04-Sep-17	Cyclotella michiganiana Skvortzow	21552	0.53
MEL- 0101R	Rep1 Recount	04-Sep-17	Rhodomonas minuta Skuja	71840	9.93
MEL- 0101R	Rep1 Recount	04-Sep-17	Cryptomonas erosa Ehrenberg	1200	1.57
MEL- 0101R	Rep1 Recount	04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.44
MEL- 0101R	Rep1 Recount	04-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0101R	Rep1 Recount	04-Sep-17	Gymnodinium sp.	400	5.65
MEL- 0101R	Rep1 Recount	04-Sep-17	Peridinium pusillum (Penard) Lemmermann	2000	7.07
MEL- 0101R	Rep1 Recount	04-Sep-17	Peridinium aciculiferum Lemmermann	400	3.62
MEL- 0102		04-Sep-17	Sphaerocystis schroeteri Chodat	100576	0.93
MEL- 0102		04-Sep-17	Oocystis lacustris Chodat	43104	1.14
MEL- 0102		04-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0102		04-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0102		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL- 0102		04-Sep-17	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling		
MEL- 0102		04-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0102		04-Sep-17	Small chrysophyceae	43104	0.61
MEL- 0102		04-Sep-17	Large chrysophyceae	21552	3.87
MEL- 0102		04-Sep-17	Chrysochromulina parva Lackey	43104	2.82
MEL- 0102		04-Sep-17	Chrysococcus sp.	495696	25.28
MEL- 0102		04-Sep-17	Chrysostephanospaera globulifera Scherffel	14368	4.15
MEL- 0102		04-Sep-17	Kephyrion boreale Skuja	7184	0.77
MEL- 0102		04-Sep-17	Kephyrion sp.	7184	0.11
MEL- 0102		04-Sep-17	Spiniferomonas sirrata**********	21552	1.98
MEL- 0102		04-Sep-17	Dinobryon borgei Lemmermann	7184	0.31
MEL- 0102		04-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0102		04-Sep-17	Dinobryon bavaricum Imhof	400	0.80
MEL- 0102		04-Sep-17	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	14368	5.75
MEL- 0102		04-Sep-17	Dinobryon sertularia Ehrenberg	28736	6.50

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0102		04-Sep-17	Dinobryon sertularia Ehrenberg	1000	1.99
MEL- 0102		04-Sep-17	Chrysochromulina laurentiana Kling	57472	22.68
MEL- 0102		04-Sep-17	Stichogloea spp.	35920	1.81
MEL- 0102		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	646560	20.82
MEL- 0102		04-Sep-17	Cyclotella stelligera Cleve and Grunow	1800	2.83
MEL- 0102		04-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0102		04-Sep-17	Rhizosolenia eriense H.L. Smith	35920	2.79
MEL- 0102		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	3600	2.92
MEL- 0102		04-Sep-17	Fragilaria crotonensis Kitton	6400	1.98
MEL- 0102		04-Sep-17	Synedra acus Kutzing	7200	0.72
MEL- 0102		04-Sep-17	Asterionella formosa Hassall	130400	13.52
MEL- 0102		04-Sep-17	Cyclotella michiganiana Skvortzow	35920	0.88
MEL- 0102		04-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0102		04-Sep-17	Rhodomonas minuta Skuja	71840	9.93
MEL- 0102		04-Sep-17	Cryptomonas erosa Ehrenberg	1200	1.57
MEL- 0102		04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.41
MEL- 0102		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0102		04-Sep-17	Gymnodinium helveticum Penard	200	4.81
MEL- 0102		04-Sep-17	Gymnodinium sp.	200	2.83
MEL- 0102		04-Sep-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0102		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	4200	14.85
MEL- 0102		04-Sep-17	Peridinium aciculiferum Lemmermann	400	3.62
MEL- 0103		04-Sep-17	Snowella sp	200	0.15
MEL- 0103		04-Sep-17	Sphaerocystis schroeteri Chodat	35920	0.33
MEL- 0103		04-Sep-17	Oocystis lacustris Chodat	79024	2.09
MEL- 0103		04-Sep-17	Elakatothrix gelatinosa Willen	14368	0.25
MEL- 0103		04-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0103		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	800	0.29
MEL- 0103		04-Sep-17	Small chrysophyceae	64656	0.91
MEL- 0103		04-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0103		04-Sep-17	Chrysochromulina parva Lackey	14368	0.94
MEL- 0103		04-Sep-17	Chrysococcus sp.	510064	26.01

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0103		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0103		04-Sep-17	Kephyrion sp.	7184	0.11
MEL- 0103		04-Sep-17	Kephyrion sp.	7184	0.81
MEL- 0103		04-Sep-17	Spiniferomonas sirrata**********	14368	1.32
MEL- 0103		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0103		04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0103		04-Sep-17	Dinobryon sertularia Ehrenberg	600	1.19
MEL- 0103		04-Sep-17	Epiphyxis sp.	43104	3.25
MEL- 0103		04-Sep-17	Chrysochromulina laurentiana Kling	28736	11.34
MEL- 0103		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	538800	17.35
MEL- 0103		04-Sep-17	Cyclotella stelligera Cleve and Grunow	2200	3.46
MEL- 0103		04-Sep-17	Cyclotella ocellata Pant.	7184	0.90
MEL- 0103		04-Sep-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0103		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	14600	11.83
MEL- 0103		04-Sep-17	Fragilaria crotonensis Kitton	3600	1.12
MEL- 0103		04-Sep-17	Synedra acus Kutzing	7400	0.74
MEL- 0103		04-Sep-17	Asterionella formosa Hassall	133600	13.85
MEL- 0103		04-Sep-17	Cyclotella michiganiana Skvortzow	14368	0.35
MEL- 0103		04-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0103		04-Sep-17	Rhodomonas minuta Skuja	79024	10.92
MEL- 0103		04-Sep-17	Cryptomonas erosa Ehrenberg	200	0.26
MEL- 0103		04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.41
MEL- 0103		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0103		04-Sep-17	Gymnodinium helveticum Penard	400	9.42
MEL- 0103		04-Sep-17	Gymnodinium sp.	1000	14.14
MEL- 0103		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	3800	13.43
MEL- 0103		04-Sep-17	Peridinium aciculiferum Lemmermann	200	1.81
MEL- 0104		04-Sep-17	Sphaerocystis schroeteri Chodat	193968	3.03
MEL- 0104		04-Sep-17	Oocystis lacustris Chodat	21552	0.61
MEL- 0104		04-Sep-17	Elakatothrix gelatinosa Willen	7184	0.12
MEL- 0104		04-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0104		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.09

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0104		04-Sep-17	Staurodesmus paradoxum Meyen	200	0.55
MEL- 0104		04-Sep-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0104		04-Sep-17	Small chrysophyceae	43104	0.61
MEL- 0104		04-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0104		04-Sep-17	Chrysochromulina parva Lackey	93392	6.11
MEL- 0104		04-Sep-17	Chrysococcus sp.	359200	18.32
MEL- 0104		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0104		04-Sep-17	Kephyrion boreale Skuja	14368	1.71
MEL- 0104		04-Sep-17	Kephyrion sp.	28736	0.45
MEL- 0104		04-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0104		04-Sep-17	Dinobryon bavaricum Imhof	35920	8.13
MEL- 0104		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0104		04-Sep-17	Dinobryon sertularia Ehrenberg	57472	13.00
MEL- 0104		04-Sep-17	Dinobryon sertularia Ehrenberg	400	0.80
MEL- 0104		04-Sep-17	Chrysochromulina laurentiana Kling	79024	31.18
MEL- 0104		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	768688	24.75
MEL- 0104		04-Sep-17	Pteridomonas sp.	7184	1.59
MEL- 0104		04-Sep-17	Cyclotella stelligera Cleve and Grunow	800	1.45
MEL- 0104		04-Sep-17	Rhizosolenia eriense H.L. Smith	21552	1.68
MEL- 0104		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	5200	4.21
MEL- 0104		04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	3200	4.93
MEL- 0104		04-Sep-17	Fragilaria crotonensis Kitton	3000	0.95
MEL- 0104		04-Sep-17	Synedra acus Kutzing	5400	0.54
MEL- 0104		04-Sep-17	Asterionella formosa Hassall	166400	17.26
MEL- 0104		04-Sep-17	Cyclotella michiganiana Skvortzow	43104	1.06
MEL- 0104		04-Sep-17	Rhodomonas minuta Skuja	107760	14.89
MEL- 0104		04-Sep-17	Cryptomonas erosa Ehrenberg	600	0.78
MEL- 0104		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0104		04-Sep-17	Gymnodinium helveticum Penard	600	14.14
MEL- 0104		04-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0104		04-Sep-17	Gymnodinium sp.	400	5.65
MEL- 0104		04-Sep-17	Peridinium willei Huitfeldt-Kaas	200	4.49

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0104		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	1600	5.66
MEL- 0104		04-Sep-17	Peridinium aciculiferum Lemmermann	200	1.81
MEL- 0105		04-Sep-17	Chlamydomonas spp.	43104	1.42
MEL- 0105		04-Sep-17	Sphaerocystis schroeteri Chodat	86208	0.79
MEL- 0105		04-Sep-17	Oocystis lacustris Chodat	107760	2.84
MEL- 0105		04-Sep-17	Crucigenia quadrata Morr.	28736	0.14
MEL- 0105		04-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0105		04-Sep-17	Cosmarium sp.	200	0.94
MEL- 0105		04-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL- 0105		04-Sep-17	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL- 0105		04-Sep-17	Mougeotia sp.	1200	3.00
MEL- 0105		04-Sep-17	Botryococcus braunii Kutzing	400	0.21
MEL- 0105		04-Sep-17	Small chrysophyceae	57472	0.81
MEL- 0105		04-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0105		04-Sep-17	Chrysochromulina parva Lackey	7184	0.47
MEL- 0105		04-Sep-17	Chrysococcus sp.	258624	13.19
MEL- 0105		04-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0105		04-Sep-17	Kephyrion sp.	7184	0.11
MEL- 0105		04-Sep-17	Dinobryon bavaricum Imhof	21552	4.88
MEL- 0105		04-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0105		04-Sep-17	Dinobryon sertularia Ehrenberg	35920	8.13
MEL- 0105		04-Sep-17	Dinobryon sertularia Ehrenberg	400	0.80
MEL- 0105		04-Sep-17	Chrysochromulina laurentiana Kling	43104	17.01
MEL- 0105		04-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	330464	10.64
MEL- 0105		04-Sep-17	Cyclotella ocellata Pant.	7184	0.78
MEL- 0105		04-Sep-17	Rhizosolenia eriense H.L. Smith	14368	1.12
MEL- 0105		04-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	8400	6.81
MEL- 0105		04-Sep-17	Tabellaria flocculsa (Roth) Kutzing	2400	3.94
MEL- 0105		04-Sep-17	Fragilaria crotonensis Kitton	4400	1.33
MEL- 0105		04-Sep-17	Synedra acus Kutzing	4000	0.40
MEL- 0105		04-Sep-17	Asterionella formosa Hassall	136000	14.10
MEL- 0105		04-Sep-17	Cyclotella michiganiana Skvortzow	7184	0.18

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0105		04-Sep-17	Rhodomonas minuta Skuja	35920	4.96
MEL- 0105		04-Sep-17	Cryptomonas erosa Ehrenberg	1400	1.83
MEL- 0105		04-Sep-17	Cryptomonas rostratiformis Skuja	200	0.41
MEL- 0105		04-Sep-17	Katablepharis ovalis Skuja	7184	0.26
MEL- 0105		04-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0105		04-Sep-17	Gymnodinium sp.	1600	22.62
MEL- 0105		04-Sep-17	Peridinium pusillum (Penard) Lemmermann	3000	10.61
MEL- 0201		05-Sep-17	Planktolyngbya limnetica	200	0.05
MEL- 0201		05-Sep-17	Chlamydomonas spp.	7184	0.36
MEL- 0201		05-Sep-17	Oocystis lacustris Chodat	50288	1.44
MEL- 0201		05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0201		05-Sep-17	Cosmarium sp.	600	0.84
MEL- 0201		05-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL- 0201		05-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0201		05-Sep-17	Oocystis gigas Archer	400	0.97
MEL- 0201		05-Sep-17	Small chrysophyceae	79024	1.11
MEL- 0201		05-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0201		05-Sep-17	Chrysochromulina parva Lackey	14368	0.94
MEL- 0201		05-Sep-17	Chrysococcus sp.	431040	21.98
MEL- 0201		05-Sep-17	Kephyrion sp.	14368	0.25
MEL- 0201		05-Sep-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0201		05-Sep-17	Dinobryon borgei Lemmermann	28736	1.23
MEL- 0201		05-Sep-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0201		05-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0201		05-Sep-17	Dinobryon sertularia Ehrenberg	50288	11.38
MEL- 0201		05-Sep-17	Dinobryon sertularia Ehrenberg	400	0.80
MEL- 0201		05-Sep-17	Epiphyxis sp.	7184	0.54
MEL- 0201		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	21552	0.60
MEL- 0201		05-Sep-17	Chrysochromulina laurentiana Kling	64656	25.51
MEL- 0201		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.39
MEL- 0201		05-Sep-17	Cyclotella stelligera Cleve and Grunow	6000	9.42
MEL- 0201		05-Sep-17	Cyclotella ocellata Pant.	21552	2.25

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0201		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.32
MEL- 0201		05-Sep-17	Fragilaria crotonensis Kitton	600	0.19
MEL- 0201		05-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0201		05-Sep-17	Asterionella formosa Hassall	19800	2.09
MEL- 0201		05-Sep-17	Cyclotella michiganiana Skvortzow	79024	1.94
MEL- 0201		05-Sep-17	Cyclotella bodanica Eulenst.	1400	10.80
MEL- 0201		05-Sep-17	Rhodomonas minuta Skuja	50288	6.95
MEL- 0201		05-Sep-17	Cryptomonas erosa Ehrenberg	1400	1.83
MEL- 0201		05-Sep-17	Gymnodinium sp.	600	6.18
MEL- 0201		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	2800	6.71
MEL- 0201		05-Sep-17	Peridinium wisconsiense Eddy	200	4.49
MEL- 0202		05-Sep-17	Oocystis lacustris Chodat	14368	0.38
MEL- 0202		05-Sep-17	Planctonema lauterbornii Schmidle	50288	11.38
MEL- 0202		05-Sep-17	Closterium sp.	200	0.30
MEL- 0202		05-Sep-17	Small chrysophyceae	136496	1.92
MEL- 0202		05-Sep-17	Large chrysophyceae	28736	5.16
MEL- 0202		05-Sep-17	Chrysochromulina parva Lackey	35920	2.35
MEL- 0202		05-Sep-17	Chrysococcus sp.	359200	18.32
MEL- 0202		05-Sep-17	Kephyrion sp.	28736	0.49
MEL- 0202		05-Sep-17	Mallomonas crassisquama (Asmund) Fott	200	0.20
MEL- 0202		05-Sep-17	Dinobryon bavaricum Imhof	43104	9.75
MEL- 0202		05-Sep-17	Dinobryon bavaricum Imhof	600	2.03
MEL- 0202		05-Sep-17	Dinobryon sertularia Ehrenberg	28736	6.50
MEL- 0202		05-Sep-17	Dinobryon sertularia Ehrenberg	1000	5.09
MEL- 0202		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	35920	0.94
MEL- 0202		05-Sep-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0202		05-Sep-17	Chrysochromulina laurentiana Kling	57472	22.68
MEL- 0202		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.69
MEL- 0202		05-Sep-17	Cyclotella stelligera Cleve and Grunow	3800	5.97
MEL- 0202		05-Sep-17	Cyclotella ocellata Pant.	43104	4.50
MEL- 0202		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.32
MEL- 0202		05-Sep-17	Synedra acus Kutzing	400	0.04

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0202		05-Sep-17	Asterionella formosa Hassall	14200	1.50
MEL- 0202		05-Sep-17	Cyclotella michiganiana Skvortzow	143680	3.12
MEL- 0202		05-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0202		05-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0202		05-Sep-17	Cryptomonas erosa Ehrenberg	800	1.05
MEL- 0202		05-Sep-17	Gymnodinium sp.	400	4.12
MEL- 0202		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	2200	5.27
MEL- 0203		05-Sep-17	Snowella sp	200	0.14
MEL- 0203		05-Sep-17	Sphaerocystis schroeteri Chodat	35920	0.56
MEL- 0203		05-Sep-17	Oocystis lacustris Chodat	21552	0.57
MEL- 0203		05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0203		05-Sep-17	Cosmarium sp.	800	1.12
MEL- 0203		05-Sep-17	Staurodesmus paradoxum Meyen	600	2.45
MEL- 0203		05-Sep-17	Botryococcus braunii Kutzing	800	0.42
MEL- 0203		05-Sep-17	Zygnema sp.	600	1.97
MEL- 0203		05-Sep-17	Small chrysophyceae	64656	0.91
MEL- 0203		05-Sep-17	Large chrysophyceae	21552	3.87
MEL- 0203		05-Sep-17	Chrysochromulina parva Lackey	57472	3.76
MEL- 0203		05-Sep-17	Chrysococcus sp.	510064	26.01
MEL- 0203		05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0203		05-Sep-17	Kephyrion sp.	28736	0.49
MEL- 0203		05-Sep-17	Mallomonas caudata Ivanov	400	2.14
MEL- 0203		05-Sep-17	Mallomonas crassisquama (Asmund) Fott	200	0.20
MEL- 0203		05-Sep-17	Dinobryon borgei Lemmermann	21552	0.95
MEL- 0203		05-Sep-17	Dinobryon mucronutom Nygaard	7184	0.86
MEL- 0203		05-Sep-17	Dinobryon bavaricum Imhof	71840	16.25
MEL- 0203		05-Sep-17	Dinobryon bavaricum Imhof	800	1.59
MEL- 0203		05-Sep-17	Dinobryon sertularia Ehrenberg	7184	1.63
MEL- 0203		05-Sep-17	Dinobryon sertularia Ehrenberg	2000	6.78
MEL- 0203		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	14368	0.39
MEL- 0203		05-Sep-17	Uroglena volvox Ehrenberg	28736	3.25
MEL- 0203		05-Sep-17	Chrysochromulina laurentiana Kling	35920	14.17

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0203		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.39
MEL- 0203		05-Sep-17	Cyclotella stelligera Cleve and Grunow	6600	10.37
MEL- 0203		05-Sep-17	Cyclotella ocellata Pant.	28736	3.00
MEL- 0203		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.65
MEL- 0203		05-Sep-17	Fragilaria crotonensis Kitton	1400	0.45
MEL- 0203		05-Sep-17	Synedra acus Kutzing	1200	0.12
MEL- 0203		05-Sep-17	Asterionella formosa Hassall	16000	1.69
MEL- 0203		05-Sep-17	Cyclotella michiganiana Skvortzow	79024	1.51
MEL- 0203		05-Sep-17	Cyclotella bodanica Eulenst.	1000	7.72
MEL- 0203		05-Sep-17	Rhodomonas minuta Skuja	50288	6.95
MEL- 0203		05-Sep-17	Cryptomonas erosa Ehrenberg	2000	2.61
MEL- 0203		05-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0203		05-Sep-17	Gymnodinium sp.	14368	5.30
MEL- 0203		05-Sep-17	Gymnodinium sp.	400	4.12
MEL- 0203		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	3400	8.14
MEL- 0204		05-Sep-17	Planktolyngbya limnetica	200	0.02
MEL- 0204		05-Sep-17	Chlamydomonas spp.	7184	0.85
MEL- 0204		05-Sep-17	Sphaerocystis schroeteri Chodat	21552	0.34
MEL- 0204		05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0204		05-Sep-17	Cosmarium sp.	600	0.84
MEL- 0204		05-Sep-17	Staurodesmus extensus (Andersson) Teiling	200	0.07
MEL- 0204		05-Sep-17	Staurodesmus paradoxum Meyen	200	0.37
MEL- 0204		05-Sep-17	Botryococcus braunii Kutzing	200	0.10
MEL- 0204		05-Sep-17	Small chrysophyceae	28736	0.41
MEL- 0204		05-Sep-17	Large chrysophyceae	14368	2.58
MEL- 0204		05-Sep-17	Chrysochromulina parva Lackey	7184	0.47
MEL- 0204		05-Sep-17	Chrysococcus sp.	524432	26.75
MEL- 0204		05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56
MEL- 0204		05-Sep-17	Kephyrion sp.	21552	0.37
MEL- 0204		05-Sep-17	Dinobryon borgei Lemmermann	7184	0.32
MEL- 0204		05-Sep-17	Dinobryon mucronutom Nygaard	7184	0.86
MEL- 0204		05-Sep-17	Dinobryon bavaricum Imhof	35920	8.13

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204		05-Sep-17	Dinobryon bavaricum Imhof	600	1.19
MEL- 0204		05-Sep-17	Dinobryon sertularia Ehrenberg	14368	3.25
MEL- 0204		05-Sep-17	Dinobryon sertularia Ehrenberg	1600	3.19
MEL- 0204		05-Sep-17	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL- 0204		05-Sep-17	Chrysochromulina laurentiana Kling	35920	14.17
MEL- 0204		05-Sep-17	Stichogloea spp.	21552	1.08
MEL- 0204		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.93
MEL- 0204		05-Sep-17	Cyclotella stelligera Cleve and Grunow	4400	6.91
MEL- 0204		05-Sep-17	Cyclotella ocellata Pant.	28736	2.89
MEL- 0204		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	2000	1.62
MEL- 0204		05-Sep-17	Fragilaria crotonensis Kitton	1400	0.45
MEL- 0204		05-Sep-17	Synedra acus Kutzing	1000	0.10
MEL- 0204		05-Sep-17	Asterionella formosa Hassall	28400	3.00
MEL- 0204		05-Sep-17	Cyclotella michiganiana Skvortzow	107760	2.06
MEL- 0204		05-Sep-17	Cyclotella bodanica Eulenst.	1000	7.72
MEL- 0204		05-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0204		05-Sep-17	Cryptomonas erosa Ehrenberg	1200	1.57
MEL- 0204		05-Sep-17	Katablepharis ovalis Skuja	7184	0.25
MEL- 0204		05-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0204		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	4400	10.54
MEL- 0204	Rep 2	05-Sep-17	Planktolyngbya limnetica	400	0.06
MEL- 0204	Rep 2	05-Sep-17	Chlamydomonas spp.	7184	0.85
MEL- 0204	Rep 2	05-Sep-17	Sphaerocystis schroeteri Chodat	64656	1.01
MEL- 0204	Rep 2	05-Sep-17	Oocystis lacustris Chodat	7184	0.19
MEL- 0204	Rep 2	05-Sep-17	Planctonema lauterbornii Schmidle	21552	4.88
MEL- 0204	Rep 2	05-Sep-17	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL- 0204	Rep 2	05-Sep-17	Oocystis gigas Archer	200	0.48
MEL- 0204	Rep 2	05-Sep-17	Small chrysophyceae	86208	1.22
MEL- 0204	Rep 2	05-Sep-17	Large chrysophyceae	43104	7.74
MEL- 0204	Rep 2	05-Sep-17	Chrysochromulina parva Lackey	14368	0.94
MEL- 0204	Rep 2	05-Sep-17	Chrysococcus sp.	416672	21.25
MEL- 0204	Rep 2	05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.56

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0204	Rep 2	05-Sep-17	Kephyrion sp.	43104	0.74
MEL- 0204	Rep 2	05-Sep-17	Mallomonas crassisquama (Asmund) Fott	400	0.40
MEL- 0204	Rep 2	05-Sep-17	Dinobryon borgei Lemmermann	21552	0.95
MEL- 0204	Rep 2	05-Sep-17	Dinobryon bavaricum Imhof	50288	11.38
MEL- 0204	Rep 2	05-Sep-17	Dinobryon bavaricum Imhof	200	0.40
MEL- 0204	Rep 2	05-Sep-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0204	Rep 2	05-Sep-17	Dinobryon sertularia Ehrenberg	600	1.19
MEL- 0204	Rep 2	05-Sep-17	Chrysochromulina laurentiana Kling	21552	8.50
MEL- 0204	Rep 2	05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.16
MEL- 0204	Rep 2	05-Sep-17	Cyclotella stelligera Cleve and Grunow	4200	6.60
MEL- 0204	Rep 2	05-Sep-17	Cyclotella ocellata Pant.	64656	6.50
MEL- 0204	Rep 2	05-Sep-17	Fragilaria crotonensis Kitton	2600	0.83
MEL- 0204	Rep 2	05-Sep-17	Synedra acus Kutzing	1600	0.16
MEL- 0204	Rep 2	05-Sep-17	Asterionella formosa Hassall	16200	1.71
MEL- 0204	Rep 2	05-Sep-17	Cyclotella michiganiana Skvortzow	57472	1.10
MEL- 0204	Rep 2	05-Sep-17	Cyclotella bodanica Eulenst.	200	1.54
MEL- 0204	Rep 2	05-Sep-17	Rhodomonas minuta Skuja	28736	3.97
MEL- 0204	Rep 2	05-Sep-17	Cryptomonas erosa Ehrenberg	1000	1.31
MEL- 0204	Rep 2	05-Sep-17	Gymnodinium helveticum Penard	200	4.71
MEL- 0204	Rep 2	05-Sep-17	Gymnodinium sp.	7184	2.65
MEL- 0204	Rep 2	05-Sep-17	Gymnodinium sp.	200	2.06
MEL- 0204	Rep 2	05-Sep-17	Peridinium pusillum (Penard) Lemmermann	3400	8.14
MEL- 0205		05-Sep-17	Chlamydomonas spp.	14368	2.17
MEL- 0205		05-Sep-17	Sphaerocystis schroeteri Chodat	64656	1.01
MEL- 0205		05-Sep-17	Crucigenia quadrata Morr.	28736	0.32
MEL- 0205		05-Sep-17	Planctonema lauterbornii Schmidle	43104	9.75
MEL- 0205		05-Sep-17	Closterium kuetzingii Brebisson	200	0.34
MEL- 0205		05-Sep-17	Cosmarium sp.	600	0.84
MEL- 0205		05-Sep-17	Botryococcus braunii Kutzing	800	0.42
MEL- 0205		05-Sep-17	Small chrysophyceae	122128	1.72
MEL- 0205		05-Sep-17	Large chrysophyceae	7184	1.29
MEL- 0205		05-Sep-17	Chrysochromulina parva Lackey	129312	8.46

Table 11D-5: Raw Phytoplankton Data, Meliadine Lake 2017

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL- 0205		05-Sep-17	Chrysococcus sp.	431040	21.98
MEL- 0205		05-Sep-17	Chrysostephanospaera globulifera Scherffel	7184	2.39
MEL- 0205		05-Sep-17	Kephyrion sp.	28736	0.49
MEL- 0205		05-Sep-17	Spiniferomonas sirrata**********	7184	0.66
MEL- 0205		05-Sep-17	Mallomonas caudata Ivanov	200	1.07
MEL- 0205		05-Sep-17	Mallomonas crassisquama (Asmund) Fott	200	0.20
MEL- 0205		05-Sep-17	Dinobryon bavaricum Imhof	14368	3.25
MEL- 0205		05-Sep-17	Dinobryon bavaricum Imhof	1000	1.99
MEL- 0205		05-Sep-17	Dinobryon sertularia Ehrenberg	21552	4.88
MEL- 0205		05-Sep-17	Dinobryon sertularia Ehrenberg	1200	2.39
MEL- 0205		05-Sep-17	Chrysolkos skuja (Nauwerck) Willen	7184	0.19
MEL- 0205		05-Sep-17	Uroglena volvox Ehrenberg	28736	3.25
MEL- 0205		05-Sep-17	Chrysochromulina laurentiana Kling	86208	34.02
MEL- 0205		05-Sep-17	Stichogloea spp.	7184	0.36
MEL- 0205		05-Sep-17	Salpingoeca frequentissima (Zach.) Lemmermann	79024	2.54
MEL- 0205		05-Sep-17	Cyclotella stelligera Cleve and Grunow	3800	5.97
MEL- 0205		05-Sep-17	Cyclotella ocellata Pant.	14368	1.50
MEL- 0205		05-Sep-17	Tabellaria fenestrata (Lyngbye) Kutzing	6000	4.86
MEL- 0205		05-Sep-17	Fragilaria crotonensis Kitton	1000	0.32
MEL- 0205		05-Sep-17	Synedra acus Kutzing	2000	0.20
MEL- 0205		05-Sep-17	Asterionella formosa Hassall	32800	3.47
MEL- 0205		05-Sep-17	Cyclotella michiganiana Skvortzow	64656	1.58
MEL- 0205		05-Sep-17	Cyclotella bodanica Eulenst.	800	6.17
MEL- 0205		05-Sep-17	Rhodomonas minuta Skuja	64656	8.94
MEL- 0205		05-Sep-17	Cryptomonas erosa Ehrenberg	1400	1.83
MEL- 0205		05-Sep-17	Cryptomonas rostratiformis Skuja	200	0.42
MEL- 0205		05-Sep-17	Gymnodinium sp.	400	4.12
MEL- 0205		05-Sep-17	Peridinium willei Huitfeldt-Kaas	200	4.49
MEL- 0205		05-Sep-17	Peridinium pusillum (Penard) Lemmermann	2800	6.71

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0101		22-Aug-18	Chroococcus limneticus Lemmermann	28736	1.04
MEL -0101		22-Aug-18	Snowella sp	600	0.45
MEL -0101		22-Aug-18	Sphaerocystis schroeteri Chodat	122128	2.52
MEL -0101		22-Aug-18	Oocystis lacustris Chodat	100576	2.85
MEL -0101		22-Aug-18	Crucigenia quadrata Morr.	28736	0.14
MEL -0101		22-Aug-18	Crucigeniella rectangularis (Nag.) Komarek	186784	4.69
MEL -0101		22-Aug-18	Elakatothrix gelatinosa Willen	165232	2.86
MEL -0101		22-Aug-18	Planctonema lauterbornii Schmidle	35920	12.69
MEL -0101		22-Aug-18	Cosmarium sp.	200	0.37
MEL -0101		22-Aug-18	Euastrum spp.	200	0.37
MEL -0101		22-Aug-18	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL -0101		22-Aug-18	Staurodesmus paradoxum Meyen	200	0.44
MEL -0101		22-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL -0101		22-Aug-18	Botryococcus braunii Kutzing	200	0.10
MEL -0101		22-Aug-18	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL -0101		22-Aug-18	Monomastix minuta Skuja	7184	0.14
MEL -0101		22-Aug-18	Small chrysophyceae	948288	12.14
MEL -0101		22-Aug-18	Large chrysophyceae	43104	7.74
MEL -0101		22-Aug-18	Chrysochromulina parva Lackey	35920	2.35
MEL -0101		22-Aug-18	Chrysococcus sp.	538800	35.24
MEL -0101		22-Aug-18	Kephyrion boreale Skuja	14368	1.71
MEL -0101		22-Aug-18	Kephyrion sp.	179600	3.38
MEL -0101		22-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0101		22-Aug-18	Dinobryon bavaricum Imhof	86208	19.50
MEL -0101		22-Aug-18	Dinobryon bavaricum Imhof	200	0.40
MEL -0101		22-Aug-18	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.93
MEL -0101		22-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0101		22-Aug-18	Chrysolykos skuja (Nauwerck) Willen	28736	0.87
MEL -0101		22-Aug-18	Uroglena volvox Ehrenberg	330464	37.38
MEL -0101		22-Aug-18	Uroglena volvox Ehrenberg	400	9.04
MEL -0101		22-Aug-18	Chrysochromulina laurentiana Kling	64656	29.95
MEL -0101		22-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.85

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0101		22-Aug-18	Cyclotella stelligera Cleve and Grunow	14000	33.01
MEL -0101		22-Aug-18	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL -0101		22-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	7400	5.97
MEL -0101		22-Aug-18	Tabellaria flocculosa (Roth) Kutzing	400	0.51
MEL -0101		22-Aug-18	Synedra acus Kutzing	5200	0.60
MEL -0101		22-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	400	2.41
MEL -0101		22-Aug-18	Asterionella formosa Hassall	54600	5.83
MEL -0101		22-Aug-18	Cyclotella michiganiana Skvortzow	352016	8.62
MEL -0101		22-Aug-18	Cyclotella bodanica Eulenst.	400	2.82
MEL -0101		22-Aug-18	Rhodomonas minuta Skuja	150864	20.85
MEL -0101		22-Aug-18	Cryptomonas erosa Ehrenberg	9600	16.35
MEL -0101		22-Aug-18	Cryptomonas reflexa (Marsson) Skuja	3400	2.53
MEL -0101		22-Aug-18	Cryptomonas rostratiformis Skuja	800	1.81
MEL -0101		22-Aug-18	Katablepharis ovalis Skuja	14368	0.85
MEL -0101		22-Aug-18	Gymnodinium sp.	1800	28.08
MEL -0101		22-Aug-18	Peridinium pusillum (Penard) Lemmermann	3000	12.57
MEL -0106		22-Aug-18	Snowella sp	800	0.60
MEL -0106		22-Aug-18	Chlamydomonas spp.	14368	0.34
MEL -0106		22-Aug-18	Sphaerocystis schroeteri Chodat	229888	4.74
MEL -0106		22-Aug-18	Pediastrum tetras (Ehrenberg) Ralfs	28736	0.32
MEL -0106		22-Aug-18	Oocystis lacustris Chodat	114944	3.25
MEL -0106		22-Aug-18	Crucigenia quadrata Morr.	57472	0.27
MEL -0106		22-Aug-18	Elakatothrix gelatinosa Willen	208336	3.60
MEL -0106		22-Aug-18	Planctonema lauterbornii Schmidle	28736	10.16
MEL -0106		22-Aug-18	Staurodesmus extensus (Andersson) Teiling	600	0.23
MEL -0106		22-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL -0106		22-Aug-18	Botryococcus braunii Kutzing	600	0.31
MEL -0106		22-Aug-18	Small chrysophyceae	977024	12.51
MEL -0106		22-Aug-18	Large chrysophyceae	71840	12.90
MEL -0106		22-Aug-18	Chrysochromulina parva Lackey	7184	0.47
MEL -0106		22-Aug-18	Chrysococcus sp.	589088	38.53
MEL -0106		22-Aug-18	Kephyrion sp.	237072	4.46

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0106		22-Aug-18	Spiniferomonas serrata	14368	1.71
MEL -0106		22-Aug-18	Dinobryon bavaricum Imhof	57472	13.00
MEL -0106		22-Aug-18	Dinobryon bavaricum Imhof	200	0.40
MEL -0106		22-Aug-18	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	400	1.71
MEL -0106		22-Aug-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0106		22-Aug-18	Dinobryon sertularia Ehrenberg	200	0.40
MEL -0106		22-Aug-18	Epiphyxis sp.	7184	0.55
MEL -0106		22-Aug-18	Chrysolykos skuja (Nauwerck) Willen	21552	0.65
MEL -0106		22-Aug-18	Uroglena volvox Ehrenberg	265808	30.06
MEL -0106		22-Aug-18	Uroglena volvox Ehrenberg	200	4.52
MEL -0106		22-Aug-18	Chrysochromulina laurentiana Kling	107760	49.91
MEL -0106		22-Aug-18	Stichogloea spp.	35920	1.81
MEL -0106		22-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.06
MEL -0106		22-Aug-18	Pteridomonas sp.	7184	1.71
MEL -0106		22-Aug-18	Cyclotella stelligera Cleve and Grunow	14800	34.90
MEL -0106		22-Aug-18	Cyclotella ocellata Pant.	7184	0.96
MEL -0106		22-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	1800	1.49
MEL -0106		22-Aug-18	Synedra acus Kutzing	400	0.04
MEL -0106		22-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	200	1.36
MEL -0106		22-Aug-18	Asterionella formosa Hassall	52800	5.64
MEL -0106		22-Aug-18	Cyclotella michiganiana Skvortzow	265808	6.51
MEL -0106		22-Aug-18	Cyclotella bodanica Eulenst.	800	4.68
MEL -0106		22-Aug-18	Rhodomonas minuta Skuja	237072	32.76
MEL -0106		22-Aug-18	Cryptomonas erosa Ehrenberg	10800	18.40
MEL -0106		22-Aug-18	Cryptomonas reflexa (Marsson) Skuja	3600	2.71
MEL -0106		22-Aug-18	Cryptomonas rostratiformis Skuja	1800	4.06
MEL -0106		22-Aug-18	Katablepharis ovalis Skuja	14368	0.87
MEL -0106		22-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0106		22-Aug-18	Gymnodinium sp.	1400	21.84
MEL -0106		22-Aug-18	Peridinium pusillum (Penard) Lemmermann	2800	11.73
MEL -0107		21-Aug-18	Snowella sp	800	0.60
MEL -0107		21-Aug-18	Planktothrix	200	6.69

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0107		21-Aug-18	Chlamydomonas spp.	14368	0.38
MEL -0107		21-Aug-18	Sphaerocystis schroeteri Chodat	114944	1.98
MEL -0107		21-Aug-18	Pediastrum duplex Meyen	200	0.44
MEL -0107		21-Aug-18	Pediastrum tetras (Ehrenberg) Ralfs	86208	0.97
MEL -0107		21-Aug-18	Oocystis lacustris Chodat	7184	0.20
MEL -0107		21-Aug-18	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.45
MEL -0107		21-Aug-18	Crucigenia quadrata Morr.	258624	1.22
MEL -0107		21-Aug-18	Elakatothrix gelatinosa Willen	143680	2.49
MEL -0107		21-Aug-18	Planctonema lauterbornii Schmidle	43104	15.23
MEL -0107		21-Aug-18	Cosmarium sp.	200	0.28
MEL -0107		21-Aug-18	Euastrum spp.	200	0.37
MEL -0107		21-Aug-18	Staurodesmus extensus (Andersson) Teiling	1000	0.39
MEL -0107		21-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL -0107		21-Aug-18	Botryococcus braunii Kutzing	400	0.28
MEL -0107		21-Aug-18	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL -0107		21-Aug-18	Monomastix minuta Skuja	7184	0.16
MEL -0107		21-Aug-18	Small chrysophyceae	804608	8.29
MEL -0107		21-Aug-18	Large chrysophyceae	79024	14.19
MEL -0107		21-Aug-18	Chrysochromulina parva Lackey	43104	2.82
MEL -0107		21-Aug-18	Chrysococcus sp.	617824	38.06
MEL -0107		21-Aug-18	Kephyrion boreale Skuja	7184	0.85
MEL -0107		21-Aug-18	Kephyrion sp.	186784	3.51
MEL -0107		21-Aug-18	Spiniferomonas serrata	21552	2.56
MEL -0107		21-Aug-18	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL -0107		21-Aug-18	Dinobryon bavaricum Imhof	57472	13.00
MEL -0107		21-Aug-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0107		21-Aug-18	Chrysolykos skuja (Nauwerck) Willen	14368	0.42
MEL -0107		21-Aug-18	Uroglena volvox Ehrenberg	308912	34.94
MEL -0107		21-Aug-18	Chrysochromulina laurentiana Kling	28736	13.31
MEL -0107		21-Aug-18	Stichogloea spp.	14368	0.72
MEL -0107		21-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.65
MEL -0107		21-Aug-18	Pteridomonas sp.	7184	1.71

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0107		21-Aug-18	Cyclotella stelligera Cleve and Grunow	16000	36.26
MEL -0107		21-Aug-18	Cyclotella ocellata Pant.	7184	0.78
MEL -0107		21-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	3200	2.65
MEL -0107		21-Aug-18	Synedra acus Kutzing	4600	0.51
MEL -0107		21-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	400	2.72
MEL -0107		21-Aug-18	Asterionella formosa Hassall	33400	3.57
MEL -0107		21-Aug-18	Cyclotella michiganiana Skvortzow	301728	7.39
MEL -0107		21-Aug-18	Cyclotella bodanica Eulenst.	1200	7.02
MEL -0107		21-Aug-18	Rhodomonas minuta Skuja	122128	16.88
MEL -0107		21-Aug-18	Cryptomonas erosa Ehrenberg	13200	23.39
MEL -0107		21-Aug-18	Cryptomonas reflexa (Marsson) Skuja	3200	2.41
MEL -0107		21-Aug-18	Cryptomonas rostratiformis Skuja	1600	3.28
MEL -0107		21-Aug-18	Katablepharis ovalis Skuja	7184	0.39
MEL -0107		21-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0107		21-Aug-18	Gymnodinium sp.	3000	42.41
MEL -0107		21-Aug-18	Peridinium pusillum (Penard) Lemmermann	2400	9.03
MEL -0107		21-Aug-18	Peridinium aciculiferum Lemmermann	200	1.81
MEL -0107R	Recount	21-Aug-18	Snowella sp	1400	1.05
MEL -0107R	Recount	21-Aug-18	Planktothrix	400	15.43
MEL -0107R	Recount	21-Aug-18	Chlamydomonas spp.	14368	0.34
MEL -0107R	Recount	21-Aug-18	Sphaerocystis schroeteri Chodat	114944	1.98
MEL -0107R	Recount	21-Aug-18	Pediastrum duplex Meyen	200	0.44
MEL -0107R	Recount	21-Aug-18	Pediastrum tetras (Ehrenberg) Ralfs	114944	1.29
MEL -0107R	Recount	21-Aug-18	Oocystis lacustris Chodat	28736	0.81
MEL -0107R	Recount	21-Aug-18	Monoraphidium minutum (Nag.) Komarkova-Legnerova	14368	0.90
MEL -0107R	Recount	21-Aug-18	Crucigenia quadrata Morr.	172416	0.81
MEL -0107R	Recount	21-Aug-18	Elakatothrix gelatinosa Willen	122128	2.11
MEL -0107R	Recount	21-Aug-18	Planctonema lauterbornii Schmidle	28736	10.16
MEL -0107R	Recount	21-Aug-18	Euastrum spp.	400	0.56
MEL -0107R	Recount	21-Aug-18	Staurodesmus extensus (Andersson) Teiling	800	0.31
MEL -0107R	Recount	21-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL -0107R	Recount	21-Aug-18	Botryococcus braunii Kutzing	200	0.14

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0107R	Recount	21-Aug-18	Small chrysophyceae	941104	9.69
MEL -0107R	Recount	21-Aug-18	Large chrysophyceae	50288	9.03
MEL -0107R	Recount	21-Aug-18	Chrysochromulina parva Lackey	71840	4.70
MEL -0107R	Recount	21-Aug-18	Chrysococcus sp.	603456	37.17
MEL -0107R	Recount	21-Aug-18	Kephyrion boreale Skuja	14368	1.71
MEL -0107R	Recount	21-Aug-18	Kephyrion sp.	172416	3.24
MEL -0107R	Recount	21-Aug-18	Spiniferomonas serrata	14368	1.71
MEL -0107R	Recount	21-Aug-18	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL -0107R	Recount	21-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0107R	Recount	21-Aug-18	Dinobryon bavaricum Imhof	86208	19.50
MEL -0107R	Recount	21-Aug-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0107R	Recount	21-Aug-18	Chrysolykos skuja (Nauwerck) Willen	21552	0.64
MEL -0107R	Recount	21-Aug-18	Uroglena volvox Ehrenberg	258624	29.25
MEL -0107R	Recount	21-Aug-18	Chrysochromulina laurentiana Kling	21552	9.98
MEL -0107R	Recount	21-Aug-18	Stichogloea spp.	28736	1.45
MEL -0107R	Recount	21-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43
MEL -0107R	Recount	21-Aug-18	Pteridomonas sp.	21552	5.13
MEL -0107R	Recount	21-Aug-18	Cyclotella stelligera Cleve and Grunow	16200	36.72
MEL -0107R	Recount	21-Aug-18	Cyclotella ocellata Pant.	21552	2.33
MEL -0107R	Recount	21-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	4800	3.98
MEL -0107R	Recount	21-Aug-18	Synedra acus Kutzing	3800	0.42
MEL -0107R	Recount	21-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	200	1.36
MEL -0107R	Recount	21-Aug-18	Asterionella formosa Hassall	34200	3.65
MEL -0107R	Recount	21-Aug-18	Cyclotella michiganiana Skvortzow	330464	8.10
MEL -0107R	Recount	21-Aug-18	Cyclotella bodanica Eulenst.	800	4.68
MEL -0107R	Recount	21-Aug-18	Rhodomonas minuta Skuja	150864	20.85
MEL -0107R	Recount	21-Aug-18	Cryptomonas erosa Ehrenberg	15400	27.29
MEL -0107R	Recount	21-Aug-18	Cryptomonas reflexa (Marsson) Skuja	2400	1.81
MEL -0107R	Recount	21-Aug-18	Cryptomonas rostratiformis Skuja	1800	3.69
MEL -0107R	Recount	21-Aug-18	Katablepharis ovalis Skuja	7184	0.39
MEL -0107R	Recount	21-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0107R	Recount	21-Aug-18	Gymnodinium sp.	2200	31.10

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0107R	Recount	21-Aug-18	Peridinium pusillum (Penard) Lemmermann	3000	11.29
MEL -0108		22-Aug-18	Snowella sp	600	0.45
MEL -0108		22-Aug-18	Pediastrum duplex Meyen	200	0.63
MEL -0108		22-Aug-18	Oocystis lacustris Chodat	14368	0.41
MEL -0108		22-Aug-18	Crucigenia quadrata Morr.	143680	0.68
MEL -0108		22-Aug-18	Elakatothrix gelatinosa Willen	122128	2.11
MEL -0108		22-Aug-18	Planctonema lauterbornii Schmidle	43104	15.23
MEL -0108		22-Aug-18	Cosmarium sp.	200	0.28
MEL -0108		22-Aug-18	Staurodesmus extensus (Andersson) Teiling	800	0.30
MEL -0108		22-Aug-18	Staurodesmus paradoxum Meyen	200	0.55
MEL -0108		22-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL -0108		22-Aug-18	Botryococcus braunii Kutzing	400	0.28
MEL -0108		22-Aug-18	Ankistrodesmus spiralis Lemmermann	7184	0.48
MEL -0108		22-Aug-18	Small chrysophyceae	797424	10.21
MEL -0108		22-Aug-18	Large chrysophyceae	21552	3.87
MEL -0108		22-Aug-18	Chrysochromulina parva Lackey	35920	2.35
MEL -0108		22-Aug-18	Chrysococcus sp.	481328	31.48
MEL -0108		22-Aug-18	Kephyrion boreale Skuja	35920	4.27
MEL -0108		22-Aug-18	Kephyrion sp.	122128	2.30
MEL -0108		22-Aug-18	Spiniferomonas serrata	7184	0.85
MEL -0108		22-Aug-18	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL -0108		22-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0108		22-Aug-18	Dinobryon bavaricum Imhof	86208	19.50
MEL -0108		22-Aug-18	Dinobryon bavaricum Imhof	200	0.40
MEL -0108		22-Aug-18	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.86
MEL -0108		22-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0108		22-Aug-18	Chrysolykos skuja (Nauwerck) Willen	14368	0.40
MEL -0108		22-Aug-18	Uroglena volvox Ehrenberg	186784	21.13
MEL -0108		22-Aug-18	Chrysochromulina laurentiana Kling	57472	26.62
MEL -0108		22-Aug-18	Stichogloea spp.	258624	13.01
MEL -0108		22-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.39
MEL -0108		22-Aug-18	Cyclotella stelligera Cleve and Grunow	14400	32.64

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0108		22-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	25600	21.23
MEL -0108		22-Aug-18	Synedra acus Kutzing	5200	0.54
MEL -0108		22-Aug-18	Asterionella formosa Hassall	51200	5.47
MEL -0108		22-Aug-18	Cyclotella michiganiana Skvortzow	222704	5.46
MEL -0108		22-Aug-18	Cyclotella bodanica Eulenst.	800	4.68
MEL -0108		22-Aug-18	Rhodomonas minuta Skuja	143680	19.86
MEL -0108		22-Aug-18	Cryptomonas erosa Ehrenberg	11000	19.49
MEL -0108		22-Aug-18	Cryptomonas reflexa (Marsson) Skuja	5600	4.22
MEL -0108		22-Aug-18	Cryptomonas rostratiformis Skuja	600	1.23
MEL -0108		22-Aug-18	Katablepharis ovalis Skuja	7184	0.39
MEL -0108		22-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0108		22-Aug-18	Gymnodinium sp.	400	6.24
MEL -0108		22-Aug-18	Peridinium pusillum (Penard) Lemmermann	2000	7.89
MEL -0109		21-Aug-18	Snowella sp	1000	0.75
MEL -0109		21-Aug-18	Chlamydomonas spp.	14368	0.60
MEL -0109		21-Aug-18	Sphaerocystis schroeteri Chodat	150864	2.84
MEL -0109		21-Aug-18	Oocystis lacustris Chodat	43104	1.22
MEL -0109		21-Aug-18	Dictyosphaerium simplex Sukja	28736	0.12
MEL -0109		21-Aug-18	Elakatothrix gelatinosa Willen	265808	4.60
MEL -0109		21-Aug-18	Planctonema lauterbornii Schmidle	79024	27.93
MEL -0109		21-Aug-18	Cosmarium sp.	600	0.84
MEL -0109		21-Aug-18	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL -0109		21-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL -0109		21-Aug-18	Botryococcus braunii Kutzing	800	0.56
MEL -0109		21-Aug-18	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL -0109		21-Aug-18	Small chrysophyceae	725584	10.23
MEL -0109		21-Aug-18	Large chrysophyceae	28736	5.16
MEL -0109		21-Aug-18	Chrysochromulina parva Lackey	14368	0.94
MEL -0109		21-Aug-18	Chrysococcus sp.	610640	37.62
MEL -0109		21-Aug-18	Kephyrion boreale Skuja	21552	2.56
MEL -0109		21-Aug-18	Kephyrion sp.	201152	3.14
MEL -0109		21-Aug-18	Spiniferomonas serrata	7184	0.90

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0109		21-Aug-18	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL -0109		21-Aug-18	Dinobryon borgei Lemmermann	14368	0.65
MEL -0109		21-Aug-18	Dinobryon bavaricum Imhof	64656	14.63
MEL -0109		21-Aug-18	Dinobryon sertularia Ehrenberg	21552	4.88
MEL -0109		21-Aug-18	Chrysolykos skuja (Nauwerck) Willen	28736	0.98
MEL -0109		21-Aug-18	Uroglena volvox Ehrenberg	344832	39.00
MEL -0109		21-Aug-18	Uroglena volvox Ehrenberg	200	2.32
MEL -0109		21-Aug-18	Chrysochromulina laurentiana Kling	71840	33.28
MEL -0109		21-Aug-18	Stichogloea spp.	79024	3.97
MEL -0109		21-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	143680	3.98
MEL -0109		21-Aug-18	Pteridomonas sp.	7184	1.71
MEL -0109		21-Aug-18	Cyclotella stelligera Cleve and Grunow	13200	27.98
MEL -0109		21-Aug-18	Cyclotella ocellata Pant.	28736	3.84
MEL -0109		21-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	7800	6.47
MEL -0109		21-Aug-18	Tabellaria flocculosa (Roth) Kutzing	400	0.51
MEL -0109		21-Aug-18	Synedra acus Kutzing	5200	0.54
MEL -0109		21-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	1000	6.41
MEL -0109		21-Aug-18	Asterionella formosa Hassall	58600	6.26
MEL -0109		21-Aug-18	Cyclotella michiganiana Skvortzow	308912	7.57
MEL -0109		21-Aug-18	Cyclotella bodanica Eulenst.	600	3.51
MEL -0109		21-Aug-18	Rhodomonas minuta Skuja	179600	24.82
MEL -0109		21-Aug-18	Cryptomonas erosa Ehrenberg	14800	25.92
MEL -0109		21-Aug-18	Cryptomonas reflexa (Marsson) Skuja	2600	1.95
MEL -0109		21-Aug-18	Cryptomonas rostratiformis Skuja	2200	4.67
MEL -0109		21-Aug-18	Katablepharis ovalis Skuja	14368	0.78
MEL -0109		21-Aug-18	Gymnodinium helveticum Penard	600	14.14
MEL -0109		21-Aug-18	Gymnodinium sp.	800	12.48
MEL -0109		21-Aug-18	Peridinium pusillum (Penard) Lemmermann	2800	11.73
MEL -0202	Rep1	31-Aug-18	Sphaerocystis schroeteri Chodat	28736	0.37
MEL -0202	Rep1	31-Aug-18	Pediastrum tetras (Ehrenberg) Ralfs	28736	0.32
MEL -0202	Rep1	31-Aug-18	Oocystis lacustris Chodat	21552	0.56
MEL -0202	Rep1	31-Aug-18	Crucigenia quadrata Morr.	114944	0.54

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0202	Rep1	31-Aug-18	Elakatothrix gelatinosa Willen	14368	0.25
MEL -0202	Rep1	31-Aug-18	Planctonema lauterbornii Schmidle	14368	4.51
MEL -0202	Rep1	31-Aug-18	Cosmarium sp.	400	0.56
MEL -0202	Rep1	31-Aug-18	Staurodesmus extensus (Andersson) Teiling	400	0.15
MEL -0202	Rep1	31-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL -0202	Rep1	31-Aug-18	Small chrysophyceae	136496	1.75
MEL -0202	Rep1	31-Aug-18	Large chrysophyceae	14368	2.58
MEL -0202	Rep1	31-Aug-18	Chrysococcus sp.	258624	14.97
MEL -0202	Rep1	31-Aug-18	Kephyrion sp.	43104	0.89
MEL -0202	Rep1	31-Aug-18	Dinobryon mucronatom Nygaard	21552	4.88
MEL -0202	Rep1	31-Aug-18	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	7184	2.76
MEL -0202	Rep1	31-Aug-18	Uroglena volvox Ehrenberg	43104	4.88
MEL -0202	Rep1	31-Aug-18	Chrysochromulina laurentiana Kling	7184	2.83
MEL -0202	Rep1	31-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.23
MEL -0202	Rep1	31-Aug-18	Cyclotella stelligera Cleve and Grunow	11800	23.35
MEL -0202	Rep1	31-Aug-18	Cyclotella ocellata Pant.	14368	1.24
MEL -0202	Rep1	31-Aug-18	Synedra acus Kutzing	800	0.08
MEL -0202	Rep1	31-Aug-18	Asterionella formosa Hassall	8200	0.86
MEL -0202	Rep1	31-Aug-18	Cyclotella michiganiana Skvortzow	330464	6.74
MEL -0202	Rep1	31-Aug-18	Cyclotella bodanica Eulenst.	400	2.82
MEL -0202	Rep1	31-Aug-18	Cryptomonas erosa Ehrenberg	3200	5.47
MEL -0202	Rep1	31-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0202	Rep1	31-Aug-18	Gymnodinium sp.	600	9.36
MEL -0202	Rep1	31-Aug-18	Peridinium pusillum (Penard) Lemmermann	1800	6.57
MEL -0202	Rep2	31-Aug-18	Sphaerocystis schroeteri Chodat	35920	0.46
MEL -0202	Rep2	31-Aug-18	Pediastrum tetras (Ehrenberg) Ralfs	57472	0.64
MEL -0202	Rep2	31-Aug-18	Oocystis lacustris Chodat	7184	0.19
MEL -0202	Rep2	31-Aug-18	Planctonema lauterbornii Schmidle	14368	4.51
MEL -0202	Rep2	31-Aug-18	Cosmarium sp.	600	0.84
MEL -0202	Rep2	31-Aug-18	Staurodesmus extensus (Andersson) Teiling	600	0.23
MEL -0202	Rep2	31-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL -0202	Rep2	31-Aug-18	Small chrysophyceae	201152	2.57

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0202	Rep2	31-Aug-18	Large chrysophyceae	50288	9.03
MEL -0202	Rep2	31-Aug-18	Chrysococcus sp.	222704	12.89
MEL -0202	Rep2	31-Aug-18	Kephyrion sp.	71840	1.48
MEL -0202	Rep2	31-Aug-18	Dinobryon bavaricum Imhof	35920	8.13
MEL -0202	Rep2	31-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0202	Rep2	31-Aug-18	Dinobryon sertularia Ehrenberg	200	0.25
MEL -0202	Rep2	31-Aug-18	Uroglena volvox Ehrenberg	28736	3.25
MEL -0202	Rep2	31-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL -0202	Rep2	31-Aug-18	Cyclotella stelligera Cleve and Grunow	14600	28.89
MEL -0202	Rep2	31-Aug-18	Cyclotella ocellata Pant.	21552	1.86
MEL -0202	Rep2	31-Aug-18	Synedra acus Kutzing	1400	0.15
MEL -0202	Rep2	31-Aug-18	Asterionella formosa Hassall	13000	1.36
MEL -0202	Rep2	31-Aug-18	Cyclotella michiganiana Skvortzow	244256	4.98
MEL -0202	Rep2	31-Aug-18	Cyclotella bodanica Eulenst.	200	1.41
MEL -0202	Rep2	31-Aug-18	Rhodomonas minuta Skuja	7184	0.99
MEL -0202	Rep2	31-Aug-18	Cryptomonas erosa Ehrenberg	1000	1.71
MEL -0202	Rep2	31-Aug-18	Gymnodinium sp.	200	3.12
MEL -0202	Rep2	31-Aug-18	Peridinium pusillum (Penard) Lemmermann	1200	4.38
MEL -0203		18-Aug-18	Sphaerocystis schroeteri Chodat	64656	1.33
MEL -0203		18-Aug-18	Oocystis lacustris Chodat	28736	0.81
MEL -0203		18-Aug-18	Dictyosphaerium simplex Sukja	28736	0.12
MEL -0203		18-Aug-18	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.45
MEL -0203		18-Aug-18	Quadrigula closterioides (Bohl.) Printz	179600	5.46
MEL -0203		18-Aug-18	Elakatothrix gelatinosa Willen	215520	3.73
MEL -0203		18-Aug-18	Planctonema lauterbornii Schmidle	50288	17.77
MEL -0203		18-Aug-18	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL -0203		18-Aug-18	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	400	2.50
MEL -0203		18-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL -0203		18-Aug-18	Botryococcus braunii Kutzing	400	0.21
MEL -0203		18-Aug-18	Small chrysophyceae	589088	6.07
MEL -0203		18-Aug-18	Large chrysophyceae	35920	6.45
MEL -0203		18-Aug-18	Chrysochromulina parva Lackey	28736	1.88

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0203		18-Aug-18	Chrysococcus sp.	603456	39.47
MEL -0203		18-Aug-18	Kephyrion sp.	158048	2.02
MEL -0203		18-Aug-18	Spiniferomonas serrata	7184	0.85
MEL -0203		18-Aug-18	Mallomonas caudata Ivanov	200	1.07
MEL -0203		18-Aug-18	Mallomonas crassisquama (Asmund) Fott	600	0.60
MEL -0203		18-Aug-18	Dinobryon borgei Lemmermann	21552	1.11
MEL -0203		18-Aug-18	Dinobryon bavaricum Imhof	143680	32.50
MEL -0203		18-Aug-18	Dinobryon bavaricum v vanhoeffenii (Bachmann) Krieger	200	0.86
MEL -0203		18-Aug-18	Dinobryon sertularia Ehrenberg	35920	8.13
MEL -0203		18-Aug-18	Dinobryon sertularia Ehrenberg	200	0.40
MEL -0203		18-Aug-18	Chrysolykos skuja (Nauwerck) Willen	21552	0.64
MEL -0203		18-Aug-18	Uroglena volvox Ehrenberg	215520	24.38
MEL -0203		18-Aug-18	Chrysochromulina laurentiana Kling	57472	22.68
MEL -0203		18-Aug-18	Stichogloea spp.	7184	0.36
MEL -0203		18-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	50288	1.62
MEL -0203		18-Aug-18	Pteridomonas sp.	21552	4.78
MEL -0203		18-Aug-18	Cyclotella stelligera Cleve and Grunow	6400	15.09
MEL -0203		18-Aug-18	Cyclotella ocellata Pant.	28736	2.11
MEL -0203		18-Aug-18	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL -0203		18-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.17
MEL -0203		18-Aug-18	Tabellaria flocculosa (Roth) Kutzing	400	0.53
MEL -0203		18-Aug-18	Synedra acus Kutzing	3200	0.34
MEL -0203		18-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	400	2.57
MEL -0203		18-Aug-18	Asterionella formosa Hassall	3000	0.31
MEL -0203		18-Aug-18	Cyclotella michiganiana Skvortzow	165232	4.05
MEL -0203		18-Aug-18	Cyclotella bodanica Eulenst.	600	3.51
MEL -0203		18-Aug-18	Rhodomonas minuta Skuja	215520	29.78
MEL -0203		18-Aug-18	Cryptomonas erosa Ehrenberg	8600	14.83
MEL -0203		18-Aug-18	Cryptomonas reflexa (Marsson) Skuja	3600	2.64
MEL -0203		18-Aug-18	Cryptomonas rostratiformis Skuja	1600	3.39
MEL -0203		18-Aug-18	Gymnodinium helveticum Penard	400	9.61
MEL -0203		18-Aug-18	Gymnodinium sp.	1800	28.08

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0203		18-Aug-18	Peridinium pusillum (Penard) Lemmermann	4800	20.11
MEL -0203		18-Aug-18	Peridinium aciculiferum Lemmermann	200	1.81
MEL -0205		18-Aug-18	Snowella sp	200	0.15
MEL -0205		18-Aug-18	Oocystis lacustris Chodat	43104	1.22
MEL -0205		18-Aug-18	Crucigenia quadrata Morr.	143680	1.61
MEL -0205		18-Aug-18	Elakatothrix gelatinosa Willen	100576	1.74
MEL -0205		18-Aug-18	Planctonema lauterbornii Schmidle	57472	20.31
MEL -0205		18-Aug-18	Cosmarium sp.	200	0.28
MEL -0205		18-Aug-18	Euastrum spp.	200	0.37
MEL -0205		18-Aug-18	Staurodesmus extensus (Andersson) Teiling	800	0.29
MEL -0205		18-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL -0205		18-Aug-18	Small chrysophyceae	833344	7.67
MEL -0205		18-Aug-18	Large chrysophyceae	43104	7.74
MEL -0205		18-Aug-18	Chrysochromulina parva Lackey	43104	2.82
MEL -0205		18-Aug-18	Chrysococcus sp.	589088	28.10
MEL -0205		18-Aug-18	Kephyrion boreale Skuja	7184	0.90
MEL -0205		18-Aug-18	Kephyrion sp.	107760	1.52
MEL -0205		18-Aug-18	Spiniferomonas serrata	28736	3.41
MEL -0205		18-Aug-18	Dinobryon borgei Lemmermann	21552	1.06
MEL -0205		18-Aug-18	Dinobryon mucronatom Nygaard	28736	3.61
MEL -0205		18-Aug-18	Dinobryon bavaricum Imhof	114944	26.00
MEL -0205		18-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0205		18-Aug-18	Chrysolykos skuja (Nauwerck) Willen	28736	0.85
MEL -0205		18-Aug-18	Uroglena volvox Ehrenberg	50288	5.69
MEL -0205		18-Aug-18	Chrysochromulina laurentiana Kling	57472	26.62
MEL -0205		18-Aug-18	Stichogloea spp.	28736	1.45
MEL -0205		18-Aug-18	Pteridomonas sp.	14368	0.98
MEL -0205		18-Aug-18	Cyclotella stelligera Cleve and Grunow	7400	16.77
MEL -0205		18-Aug-18	Cyclotella ocellata Pant.	43104	6.17
MEL -0205		18-Aug-18	Rhizosolenia eriense H.L. Smith	7184	0.61
MEL -0205		18-Aug-18	Synedra acus Kutzing	600	0.06
MEL -0205		18-Aug-18	Asterionella formosa Hassall	4800	0.52

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0205		18-Aug-18	Cyclotella michiganiana Skvortzow	208336	3.48
MEL -0205		18-Aug-18	Cyclotella bodanica Eulenst.	600	3.51
MEL -0205		18-Aug-18	Rhodomonas minuta Skuja	158048	21.84
MEL -0205		18-Aug-18	Cryptomonas erosa Ehrenberg	4600	7.96
MEL -0205		18-Aug-18	Cryptomonas reflexa (Marsson) Skuja	1200	0.88
MEL -0205		18-Aug-18	Cryptomonas rostratiformis Skuja	400	0.85
MEL -0205		18-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0205		18-Aug-18	Gymnodinium sp.	7184	2.43
MEL -0205		18-Aug-18	Gymnodinium sp.	1200	18.72
MEL -0205		18-Aug-18	Peridinium pusillum (Penard) Lemmermann	2800	11.73
MEL -0206		31-Aug-18	Chroococcus limneticus Lemmermann	28736	1.28
MEL -0206		31-Aug-18	Chlamydomonas spp.	7184	0.16
MEL -0206		31-Aug-18	Oocystis lacustris Chodat	43104	2.17
MEL -0206		31-Aug-18	Crucigenia quadrata Morr.	143680	0.68
MEL -0206		31-Aug-18	Elakatothrix gelatinosa Willen	28736	0.50
MEL -0206		31-Aug-18	Planctonema lauterbornii Schmidle	35920	12.69
MEL -0206		31-Aug-18	Cosmarium sp.	400	0.56
MEL -0206		31-Aug-18	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL -0206		31-Aug-18	Botryococcus braunii Kutzing	400	0.28
MEL -0206		31-Aug-18	Small chrysophyceae	129312	1.66
MEL -0206		31-Aug-18	Large chrysophyceae	35920	6.45
MEL -0206		31-Aug-18	Chrysochromulina parva Lackey	7184	0.47
MEL -0206		31-Aug-18	Chrysococcus sp.	366384	23.96
MEL -0206		31-Aug-18	Kephyrion sp.	100576	1.57
MEL -0206		31-Aug-18	Mallomonas crassisquama (Asmund) Fott	1000	1.04
MEL -0206		31-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0206		31-Aug-18	Dinobryon bavaricum Imhof	50288	11.38
MEL -0206		31-Aug-18	Dinobryon bavaricum Imhof	200	0.40
MEL -0206		31-Aug-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0206		31-Aug-18	Dinobryon sertularia Ehrenberg	400	0.80
MEL -0206		31-Aug-18	Chrysolykos skuja (Nauwerck) Willen	7184	0.22
MEL -0206		31-Aug-18	Uroglena volvox Ehrenberg	28736	3.25

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0206		31-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	71840	2.16
MEL -0206		31-Aug-18	Cyclotella stelligera Cleve and Grunow	6400	14.51
MEL -0206		31-Aug-18	Cyclotella ocellata Pant.	43104	5.38
MEL -0206		31-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	5600	4.64
MEL -0206		31-Aug-18	Synedra acus Kutzing	1400	0.15
MEL -0206		31-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	400	2.41
MEL -0206		31-Aug-18	Asterionella formosa Hassall	20400	2.18
MEL -0206		31-Aug-18	Cyclotella michiganiana Skvortzow	201152	4.93
MEL -0206		31-Aug-18	Cyclotella bodanica Eulenst.	1000	5.85
MEL -0206		31-Aug-18	Rhodomonas minuta Skuja	86208	11.91
MEL -0206		31-Aug-18	Cryptomonas erosa Ehrenberg	1600	2.80
MEL -0206		31-Aug-18	Cryptomonas rostratiformis Skuja	200	0.42
MEL -0206		31-Aug-18	Gymnodinium sp.	400	6.24
MEL -0206		31-Aug-18	Peridinium pusillum (Penard) Lemmermann	1400	5.52
MEL -0208		15-Aug-18	Pediastrum duplex Meyen	400	1.10
MEL -0208		15-Aug-18	Oocystis lacustris Chodat	64656	3.25
MEL -0208		15-Aug-18	Dictyosphaerium simplex Sukja	28736	0.12
MEL -0208		15-Aug-18	Crucigenia quadrata Morr.	28736	0.32
MEL -0208		15-Aug-18	Elakatothrix gelatinosa Willen	50288	0.87
MEL -0208		15-Aug-18	Planctonema lauterbornii Schmidle	14368	5.08
MEL -0208		15-Aug-18	Cosmarium sp.	400	0.56
MEL -0208		15-Aug-18	Euastrum spp.	200	0.37
MEL -0208		15-Aug-18	Staurodesmus extensus (Andersson) Teiling	1000	0.39
MEL -0208		15-Aug-18	Staurodesmus paradoxum Meyen	200	0.54
MEL -0208		15-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL -0208		15-Aug-18	Small chrysophyceae	316096	2.59
MEL -0208		15-Aug-18	Large chrysophyceae	50288	9.03
MEL -0208		15-Aug-18	Chrysococcus sp.	589088	36.29
MEL -0208		15-Aug-18	Kephyrion sp.	107760	2.03
MEL -0208		15-Aug-18	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL -0208		15-Aug-18	Dinobryon borgei Lemmermann	50288	2.55
MEL -0208		15-Aug-18	Dinobryon mucronatom Nygaard	21552	2.79

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0208		15-Aug-18	Dinobryon bavaricum Imhof	143680	32.50
MEL -0208		15-Aug-18	Dinobryon bavaricum Imhof	400	0.50
MEL -0208		15-Aug-18	Dinobryon sertularia Ehrenberg	43104	9.75
MEL -0208		15-Aug-18	Uroglena volvox Ehrenberg	21552	2.44
MEL -0208		15-Aug-18	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL -0208		15-Aug-18	Chrysochromulina laurentiana Kling	14368	6.66
MEL -0208		15-Aug-18	Bicosoeca lacustris Clark	7184	0.37
MEL -0208		15-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.76
MEL -0208		15-Aug-18	Cyclotella stelligera Cleve and Grunow	5800	11.48
MEL -0208		15-Aug-18	Cyclotella ocellata Pant.	14368	1.39
MEL -0208		15-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	13200	10.43
MEL -0208		15-Aug-18	Synedra acus Kutzing	1000	0.10
MEL -0208		15-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	400	2.57
MEL -0208		15-Aug-18	Asterionella formosa Hassall	9800	1.03
MEL -0208		15-Aug-18	Cyclotella michiganiana Skvortzow	215520	4.98
MEL -0208		15-Aug-18	Cyclotella bodanica Eulenst.	1000	5.85
MEL -0208		15-Aug-18	Rhodomonas minuta Skuja	129312	17.87
MEL -0208		15-Aug-18	Cryptomonas erosa Ehrenberg	5200	8.97
MEL -0208		15-Aug-18	Cryptomonas rostratiformis Skuja	200	0.41
MEL -0208		15-Aug-18	Glenodinium spp.	600	9.36
MEL -0208		15-Aug-18	Peridinium pusillum (Penard) Lemmermann	3000	12.57
MEL -0301		20-Aug-18	Chlamydomonas spp.	7184	0.31
MEL -0301		20-Aug-18	Elakatothrix gelatinosa Willen	107760	1.86
MEL -0301		20-Aug-18	Planctonema lauterbornii Schmidle	71840	25.39
MEL -0301		20-Aug-18	Cosmarium sp.	200	0.28
MEL -0301		20-Aug-18	Staurodesmus extensus (Andersson) Teiling	200	0.08
MEL -0301		20-Aug-18	Botryococcus braunii Kutzing	1000	0.52
MEL -0301		20-Aug-18	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL -0301		20-Aug-18	Small chrysophyceae	1206912	5.79
MEL -0301		20-Aug-18	Large chrysophyceae	57472	10.32
MEL -0301		20-Aug-18	Chrysochromulina parva Lackey	43104	2.82
MEL -0301		20-Aug-18	Chrysococcus sp.	510064	31.42

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0301		20-Aug-18	Kephyrion sp.	280176	5.77
MEL -0301		20-Aug-18	Mallomonas crassisquama (Asmund) Fott	2200	1.15
MEL -0301		20-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0301		20-Aug-18	Dinobryon mucronatom Nygaard	21552	2.65
MEL -0301		20-Aug-18	Dinobryon bavaricum Imhof	359200	81.25
MEL -0301		20-Aug-18	Dinobryon sertularia Ehrenberg	21552	4.88
MEL -0301		20-Aug-18	Epiphyxis sp.	7184	0.58
MEL -0301		20-Aug-18	Chrysolykos skuja (Nauwerck) Willen	43104	1.29
MEL -0301		20-Aug-18	Uroglena volvox Ehrenberg	57472	6.50
MEL -0301		20-Aug-18	Chrysochromulina laurentiana Kling	64656	29.95
MEL -0301		20-Aug-18	Bicosoeca lacustris Clark	7184	0.44
MEL -0301		20-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.93
MEL -0301		20-Aug-18	Pteridomonas sp.	28736	6.84
MEL -0301		20-Aug-18	Cyclotella stelligera Cleve and Grunow	1800	3.56
MEL -0301		20-Aug-18	Cyclotella ocellata Pant.	50288	4.33
MEL -0301		20-Aug-18	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL -0301		20-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	1800	1.49
MEL -0301		20-Aug-18	Synedra acus Kutzing	4000	0.42
MEL -0301		20-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	400	2.41
MEL -0301		20-Aug-18	Asterionella formosa Hassall	1000	0.11
MEL -0301		20-Aug-18	Cyclotella michiganiana Skvortzow	79024	1.94
MEL -0301		20-Aug-18	Cyclotella bodanica Eulenst.	400	2.82
MEL -0301		20-Aug-18	Rhodomonas minuta Skuja	179600	24.82
MEL -0301		20-Aug-18	Cryptomonas erosa Ehrenberg	4400	7.50
MEL -0301		20-Aug-18	Cryptomonas reflexa (Marsson) Skuja	800	0.59
MEL -0301		20-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0301		20-Aug-18	Gymnodinium sp.	1000	18.82
MEL -0301		20-Aug-18	Peridinium pusillum (Penard) Lemmermann	2000	7.89
MEL -0301		20-Aug-18	Peridinium aciculiferum Lemmermann	200	1.81
MEL -0302		26-Aug-18	Snowella sp	200	0.15
MEL -0302		26-Aug-18	Oocystis lacustris Chodat	14368	0.72
MEL -0302		26-Aug-18	Dictyosphaerium simplex Sukja	57472	0.24

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0302		26-Aug-18	Elakatothrix gelatinosa Willen	79024	1.37
MEL -0302		26-Aug-18	Planctonema lauterbornii Schmidle	28736	10.16
MEL -0302		26-Aug-18	Cosmarium sp.	800	1.12
MEL -0302		26-Aug-18	Staurodesmus extensus (Andersson) Teiling	1000	0.36
MEL -0302		26-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	50288	1.90
MEL -0302		26-Aug-18	Botryococcus braunii Kutzing	400	0.21
MEL -0302		26-Aug-18	Ankistrodesmus spiralis Lemmermann	7184	0.39
MEL -0302		26-Aug-18	Small chrysophyceae	560352	2.69
MEL -0302		26-Aug-18	Large chrysophyceae	79024	14.19
MEL -0302		26-Aug-18	Chrysochromulina parva Lackey	28736	1.88
MEL -0302		26-Aug-18	Chrysococcus sp.	653744	33.34
MEL -0302		26-Aug-18	Kephyrion boreale Skuja	28736	3.41
MEL -0302		26-Aug-18	Kephyrion sp.	143680	2.70
MEL -0302		26-Aug-18	Spiniferomonas serrata	21552	1.98
MEL -0302		26-Aug-18	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL -0302		26-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0302		26-Aug-18	Dinobryon bavaricum Imhof	93392	21.13
MEL -0302		26-Aug-18	Dinobryon bavaricum Imhof	200	0.25
MEL -0302		26-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0302		26-Aug-18	Dinobryon sertularia Ehrenberg	600	1.19
MEL -0302		26-Aug-18	Chrysolykos skuja (Nauwerck) Willen	50288	1.42
MEL -0302		26-Aug-18	Uroglena volvox Ehrenberg	143680	16.25
MEL -0302		26-Aug-18	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL -0302		26-Aug-18	Chrysochromulina laurentiana Kling	86208	37.49
MEL -0302		26-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.21
MEL -0302		26-Aug-18	Pteridomonas sp.	14368	3.42
MEL -0302		26-Aug-18	Cyclotella stelligera Cleve and Grunow	2800	5.54
MEL -0302		26-Aug-18	Cyclotella ocellata Pant.	7184	0.53
MEL -0302		26-Aug-18	Rhizosolenia eriense H.L. Smith	7184	0.56
MEL -0302		26-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	2200	1.82
MEL -0302		26-Aug-18	Synedra acus Kutzing	1800	0.19
MEL -0302		26-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	200	1.15

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0302		26-Aug-18	Asterionella formosa Hassall	3000	0.31
MEL -0302		26-Aug-18	Cyclotella michiganiana Skvortzow	114944	2.82
MEL -0302		26-Aug-18	Cyclotella bodanica Eulenst.	600	4.23
MEL -0302		26-Aug-18	Rhodomonas minuta Skuja	229888	31.77
MEL -0302		26-Aug-18	Cryptomonas erosa Ehrenberg	6000	10.51
MEL -0302		26-Aug-18	Cryptomonas reflexa (Marsson) Skuja	1200	0.88
MEL -0302		26-Aug-18	Cryptomonas rostratiformis Skuja	200	0.41
MEL -0302		26-Aug-18	Katablepharis ovalis Skuja	14368	0.80
MEL -0302		26-Aug-18	Gymnodinium sp.	1200	20.59
MEL -0302		26-Aug-18	Peridinium pusillum (Penard) Lemmermann	2800	11.04
MEL -0302R	Recount	26-Aug-18	Chlamydomonas spp.	7184	0.30
MEL -0302R	Recount	26-Aug-18	Oocystis lacustris Chodat	28736	1.45
MEL -0302R	Recount	26-Aug-18	Dictyosphaerium simplex Sukja	28736	0.12
MEL -0302R	Recount	26-Aug-18	Elakatothrix gelatinosa Willen	107760	1.86
MEL -0302R	Recount	26-Aug-18	Planctonema lauterbornii Schmidle	21552	7.62
MEL -0302R	Recount	26-Aug-18	Cosmarium sp.	400	0.56
MEL -0302R	Recount	26-Aug-18	Staurodesmus extensus (Andersson) Teiling	800	0.29
MEL -0302R	Recount	26-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	43104	1.63
MEL -0302R	Recount	26-Aug-18	Botryococcus braunii Kutzing	400	0.21
MEL -0302R	Recount	26-Aug-18	Ankistrodesmus spiralis Lemmermann	28736	1.54
MEL -0302R	Recount	26-Aug-18	Small chrysophyceae	402304	1.93
MEL -0302R	Recount	26-Aug-18	Large chrysophyceae	64656	11.61
MEL -0302R	Recount	26-Aug-18	Chrysochromulina parva Lackey	14368	0.94
MEL -0302R	Recount	26-Aug-18	Chrysococcus sp.	725584	37.00
MEL -0302R	Recount	26-Aug-18	Kephyrion boreale Skuja	14368	1.71
MEL -0302R	Recount	26-Aug-18	Kephyrion sp.	222704	4.19
MEL -0302R	Recount	26-Aug-18	Spiniferomonas serrata	7184	0.66
MEL -0302R	Recount	26-Aug-18	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL -0302R	Recount	26-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0302R	Recount	26-Aug-18	Dinobryon bavaricum Imhof	79024	17.88
MEL -0302R	Recount	26-Aug-18	Dinobryon bavaricum Imhof	600	0.75
MEL -0302R	Recount	26-Aug-18	Dinobryon sertularia Ehrenberg	200	0.40

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0302R	Recount	26-Aug-18	Chrysolykos skuja (Nauwerck) Willen	57472	1.62
MEL -0302R	Recount	26-Aug-18	Uroglena volvox Ehrenberg	193968	21.94
MEL -0302R	Recount	26-Aug-18	Chrysochromulina laurentiana Kling	100576	43.74
MEL -0302R	Recount	26-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	21552	0.65
MEL -0302R	Recount	26-Aug-18	Pteridomonas sp.	7184	1.71
MEL -0302R	Recount	26-Aug-18	Cyclotella stelligera Cleve and Grunow	3800	7.52
MEL -0302R	Recount	26-Aug-18	Cyclotella ocellata Pant.	14368	1.05
MEL -0302R	Recount	26-Aug-18	Rhizosolenia eriense H.L. Smith	14368	0.91
MEL -0302R	Recount	26-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	2400	1.99
MEL -0302R	Recount	26-Aug-18	Synedra acus Kutzing	800	0.08
MEL -0302R	Recount	26-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	200	1.15
MEL -0302R	Recount	26-Aug-18	Asterionella formosa Hassall	5200	0.54
MEL -0302R	Recount	26-Aug-18	Cyclotella michiganiana Skvortzow	107760	2.64
MEL -0302R	Recount	26-Aug-18	Cyclotella bodanica Eulenst.	400	2.82
MEL -0302R	Recount	26-Aug-18	Rhodomonas minuta Skuja	280176	38.72
MEL -0302R	Recount	26-Aug-18	Cryptomonas erosa Ehrenberg	4800	8.41
MEL -0302R	Recount	26-Aug-18	Cryptomonas reflexa (Marsson) Skuja	800	0.59
MEL -0302R	Recount	26-Aug-18	Cryptomonas rostratiformis Skuja	800	1.64
MEL -0302R	Recount	26-Aug-18	Katablepharis ovalis Skuja	7184	0.40
MEL -0302R	Recount	26-Aug-18	Gymnodinium helveticum Penard	200	4.71
MEL -0302R	Recount	26-Aug-18	Gymnodinium sp.	1200	20.59
MEL -0302R	Recount	26-Aug-18	Peridinium pusillum (Penard) Lemmermann	3800	14.98
MEL -0303		20-Aug-18	Pediastrum duplex Meyen	400	0.68
MEL -0303		20-Aug-18	Oocystis lacustris Chodat	14368	0.72
MEL -0303		20-Aug-18	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.41
MEL -0303		20-Aug-18	Crucigenia quadrata Morr.	57472	0.27
MEL -0303		20-Aug-18	Elakatothrix gelatinosa Willen	28736	0.50
MEL -0303		20-Aug-18	Planctonema lauterbornii Schmidle	14368	5.08
MEL -0303		20-Aug-18	Cosmarium sp.	600	0.84
MEL -0303		20-Aug-18	Staurodesmus extensus (Andersson) Teiling	1000	0.40
MEL -0303		20-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL -0303		20-Aug-18	Botryococcus braunii Kutzing	200	0.14

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0303		20-Aug-18	Small chrysophyceae	510064	7.19
MEL -0303		20-Aug-18	Large chrysophyceae	64656	11.61
MEL -0303		20-Aug-18	Chrysochromulina parva Lackey	21552	1.41
MEL -0303		20-Aug-18	Chrysococcus sp.	603456	30.78
MEL -0303		20-Aug-18	Chrysostephanosphaera globulifera Scherffel	7184	2.65
MEL -0303		20-Aug-18	Kephyrion boreale Skuja	14368	1.71
MEL -0303		20-Aug-18	Kephyrion sp.	1587664	29.85
MEL -0303		20-Aug-18	Spiniferomonas serrata	14368	1.71
MEL -0303		20-Aug-18	Mallomonas crassisquama (Asmund) Fott	1600	1.68
MEL -0303		20-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0303		20-Aug-18	Dinobryon bavaricum Imhof	122128	27.63
MEL -0303		20-Aug-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0303		20-Aug-18	Chrysolykos skuja (Nauwerck) Willen	7184	0.21
MEL -0303		20-Aug-18	Uroglena volvox Ehrenberg	179600	20.31
MEL -0303		20-Aug-18	Chrysochromulina laurentiana Kling	93392	36.85
MEL -0303		20-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.98
MEL -0303		20-Aug-18	Pteridomonas sp.	35920	8.55
MEL -0303		20-Aug-18	Cyclotella stelligera Cleve and Grunow	3400	8.02
MEL -0303		20-Aug-18	Cyclotella ocellata Pant.	7184	0.75
MEL -0303		20-Aug-18	Rhizosolenia eriense H.L. Smith	14368	1.22
MEL -0303		20-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	2200	1.82
MEL -0303		20-Aug-18	Synedra acus Kutzing	3200	0.30
MEL -0303		20-Aug-18	Asterionella formosa Hassall	1600	0.17
MEL -0303		20-Aug-18	Cyclotella michiganiana Skvortzow	86208	2.11
MEL -0303		20-Aug-18	Cyclotella bodanica Eulenst.	600	3.51
MEL -0303		20-Aug-18	Rhodomonas minuta Skuja	172416	23.83
MEL -0303		20-Aug-18	Cryptomonas erosa Ehrenberg	3000	5.13
MEL -0303		20-Aug-18	Cryptomonas reflexa (Marsson) Skuja	1000	0.68
MEL -0303		20-Aug-18	Cryptomonas rostratiformis Skuja	600	1.27
MEL -0303		20-Aug-18	Katablepharis ovalis Skuja	14368	0.83
MEL -0303		20-Aug-18	Gymnodinium helveticum Penard	400	5.65
MEL -0303		20-Aug-18	Gymnodinium sp.	1800	33.87

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0303		20-Aug-18	Peridinium pusillum (Penard) Lemmermann	3200	13.40
MEL -0303		20-Aug-18	Peridinium aciculiferum Lemmermann	200	1.81
MEL -0304		26-Aug-18	Chroococcus limneticus Lemmermann	28736	0.89
MEL -0304		26-Aug-18	Chlamydomonas spp.	14368	0.61
MEL -0304		26-Aug-18	Oocystis lacustris Chodat	14368	0.41
MEL -0304		26-Aug-18	Elakatothrix gelatinosa Willen	93392	1.62
MEL -0304		26-Aug-18	Planctonema lauterbornii Schmidle	21552	7.62
MEL -0304		26-Aug-18	Closterium kuetzingii Brebisson	200	0.23
MEL -0304		26-Aug-18	Cosmarium sp.	200	0.28
MEL -0304		26-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL -0304		26-Aug-18	Mougeotia sp.	1200	2.29
MEL -0304		26-Aug-18	Small chrysophyceae	689664	4.41
MEL -0304		26-Aug-18	Large chrysophyceae	28736	5.16
MEL -0304		26-Aug-18	Chrysochromulina parva Lackey	43104	2.82
MEL -0304		26-Aug-18	Chrysococcus sp.	545984	35.71
MEL -0304		26-Aug-18	Kephyrion sp.	122128	1.72
MEL -0304		26-Aug-18	Spiniferomonas serrata	21552	2.32
MEL -0304		26-Aug-18	Mallomonas crassisquama (Asmund) Fott	1200	1.23
MEL -0304		26-Aug-18	Dinobryon borgei Lemmermann	14368	0.65
MEL -0304		26-Aug-18	Dinobryon bavaricum Imhof	114944	26.00
MEL -0304		26-Aug-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0304		26-Aug-18	Dinobryon sertularia Ehrenberg	200	0.40
MEL -0304		26-Aug-18	Chrysolykos skuja (Nauwerck) Willen	28736	0.86
MEL -0304		26-Aug-18	Uroglena volvox Ehrenberg	416672	47.13
MEL -0304		26-Aug-18	Chrysochromulina laurentiana Kling	93392	40.62
MEL -0304		26-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL -0304		26-Aug-18	Pteridomonas sp.	1000	0.22
MEL -0304		26-Aug-18	Cyclotella stelligera Cleve and Grunow	3600	8.60
MEL -0304		26-Aug-18	Cyclotella ocellata Pant.	14368	1.50
MEL -0304		26-Aug-18	Rhizosolenia eriense H.L. Smith	7184	0.61
MEL -0304		26-Aug-18	Tabellaria flocculosa (Roth) Kutzing	400	0.51
MEL -0304		26-Aug-18	Synedra acus Kutzing	4800	0.55

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0304		26-Aug-18	Cyclotella michiganiana Skvortzow	43104	1.06
MEL -0304		26-Aug-18	Cyclotella bodanica Eulenst.	400	2.34
MEL -0304		26-Aug-18	Rhodomonas minuta Skuja	344832	47.66
MEL -0304		26-Aug-18	Cryptomonas erosa Ehrenberg	5400	8.98
MEL -0304		26-Aug-18	Cryptomonas reflexa (Marsson) Skuja	1000	0.70
MEL -0304		26-Aug-18	Cryptomonas rostratiformis Skuja	1000	2.33
MEL -0304		26-Aug-18	Katablepharis ovalis Skuja	7184	0.34
MEL -0304		26-Aug-18	Peridinium pusillum (Penard) Lemmermann	1600	5.84
MEL -0305		26-Aug-18	Anabaena solitaria Klebs	200	0.44
MEL -0305		26-Aug-18	Chlamydomonas spp.	14368	0.34
MEL -0305		26-Aug-18	Oocystis lacustris Chodat	14368	0.72
MEL -0305		26-Aug-18	Dictyosphaerium simplex Sukja	28736	0.12
MEL -0305		26-Aug-18	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.45
MEL -0305		26-Aug-18	Elakatothrix gelatinosa Willen	50288	0.87
MEL -0305		26-Aug-18	Planctonema lauterbornii Schmidle	50288	17.77
MEL -0305		26-Aug-18	Cosmarium sp.	400	0.56
MEL -0305		26-Aug-18	Staurodesmus extensus (Andersson) Teiling	2000	0.81
MEL -0305		26-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL -0305		26-Aug-18	Botryococcus braunii Kutzing	800	0.42
MEL -0305		26-Aug-18	Small chrysophyceae	840528	10.76
MEL -0305		26-Aug-18	Large chrysophyceae	57472	10.32
MEL -0305		26-Aug-18	Chrysochromulina parva Lackey	21552	1.41
MEL -0305		26-Aug-18	Chrysococcus sp.	653744	42.75
MEL -0305		26-Aug-18	Chrysostephanosphaera globulifera Scherffel	7184	2.83
MEL -0305		26-Aug-18	Kephyrion boreale Skuja	7184	0.85
MEL -0305		26-Aug-18	Kephyrion sp.	308912	5.81
MEL -0305		26-Aug-18	Spiniferomonas serrata	14368	1.71
MEL -0305		26-Aug-18	Mallomonas caudata Ivanov	200	1.07
MEL -0305		26-Aug-18	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL -0305		26-Aug-18	Dinobryon borgei Lemmermann	21552	1.04
MEL -0305		26-Aug-18	Dinobryon bavaricum Imhof	114944	26.00
MEL -0305		26-Aug-18	Dinobryon bavaricum Imhof	200	0.25

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0305		26-Aug-18	Dinobryon sertularia Ehrenberg	21552	4.88
MEL -0305		26-Aug-18	Dinobryon sertularia Ehrenberg	200	0.40
MEL -0305		26-Aug-18	Chrysolykos skuja (Nauwerck) Willen	79024	2.37
MEL -0305		26-Aug-18	Uroglena volvox Ehrenberg	93392	10.56
MEL -0305		26-Aug-18	Chrysochromulina laurentiana Kling	71840	31.24
MEL -0305		26-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	43104	1.29
MEL -0305		26-Aug-18	Pteridomonas sp.	7184	1.59
MEL -0305		26-Aug-18	Cyclotella stelligera Cleve and Grunow	3000	6.19
MEL -0305		26-Aug-18	Cyclotella ocellata Pant.	14368	1.92
MEL -0305		26-Aug-18	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL -0305		26-Aug-18	Synedra acus Kutzing	1800	0.19
MEL -0305		26-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	1200	8.17
MEL -0305		26-Aug-18	Asterionella formosa Hassall	600	0.06
MEL -0305		26-Aug-18	Cyclotella michiganiana Skvortzow	100576	2.46
MEL -0305		26-Aug-18	Cyclotella bodanica Eulenst.	200	1.29
MEL -0305		26-Aug-18	Nitzschia linearis W. Smith	200	0.45
MEL -0305		26-Aug-18	Rhodomonas minuta Skuja	201152	27.80
MEL -0305		26-Aug-18	Cryptomonas erosa Ehrenberg	3000	5.13
MEL -0305		26-Aug-18	Cryptomonas reflexa (Marsson) Skuja	1000	0.73
MEL -0305		26-Aug-18	Cryptomonas rostratiformis Skuja	800	1.78
MEL -0305		26-Aug-18	Gymnodinium sp.	400	6.24
MEL -0305		26-Aug-18	Peridinium pusillum (Penard) Lemmermann	2200	8.41
MEL -0401		02-Sep-18	Oocystis lacustris Chodat	7184	0.20
MEL -0401		02-Sep-18	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.50
MEL -0401		02-Sep-18	Elakatothrix gelatinosa Willen	93392	1.47
MEL -0401		02-Sep-18	Planctonema lauterbornii Schmidle	21552	7.62
MEL -0401		02-Sep-18	Cosmarium sp.	200	0.28
MEL -0401		02-Sep-18	Euastrum spp.	200	0.37
MEL -0401		02-Sep-18	Staurodesmus extensus (Andersson) Teiling	1800	0.73
MEL -0401		02-Sep-18	Staurodesmus bullardii G.M. Smith	200	1.14
MEL -0401		02-Sep-18	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL -0401		02-Sep-18	Bambusina brebissonii Kutzing	4200	19.24

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0401		02-Sep-18	Small chrysophyceae	718400	5.89
MEL -0401		02-Sep-18	Large chrysophyceae	28736	5.16
MEL -0401		02-Sep-18	Chrysochromulina parva Lackey	28736	1.88
MEL -0401		02-Sep-18	Chrysococcus sp.	560352	28.58
MEL -0401		02-Sep-18	Chrysostephanosphaera globulifera Scherffel	14368	4.78
MEL -0401		02-Sep-18	Kephyrion boreale Skuja	7184	0.77
MEL -0401		02-Sep-18	Kephyrion sp.	158048	2.02
MEL -0401		02-Sep-18	Spiniferomonas serrata	14368	1.71
MEL -0401		02-Sep-18	Mallomonas crassisquama (Asmund) Fott	600	0.61
MEL -0401		02-Sep-18	Dinobryon borgei Lemmermann	14368	0.64
MEL -0401		02-Sep-18	Dinobryon borgei Lemmermann	21552	1.12
MEL -0401		02-Sep-18	Dinobryon bavaricum Imhof	93392	21.13
MEL -0401		02-Sep-18	Dinobryon bavaricum Imhof	400	0.50
MEL -0401		02-Sep-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0401		02-Sep-18	Dinobryon sertularia Ehrenberg	200	0.25
MEL -0401		02-Sep-18	Chrysolykos skuja (Nauwerck) Willen	35920	1.08
MEL -0401		02-Sep-18	Uroglena volvox Ehrenberg	71840	8.13
MEL -0401		02-Sep-18	Bitrichia chodatii (Reverdin) Chodat	21552	1.08
MEL -0401		02-Sep-18	Chrysochromulina laurentiana Kling	50288	23.29
MEL -0401		02-Sep-18	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.42
MEL -0401		02-Sep-18	Pteridomonas sp.	43104	8.92
MEL -0401		02-Sep-18	Cyclotella stelligera Cleve and Grunow	3200	6.60
MEL -0401		02-Sep-18	Cyclotella ocellata Pant.	35920	3.75
MEL -0401		02-Sep-18	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.62
MEL -0401		02-Sep-18	Synedra acus Kutzing	1600	0.17
MEL -0401		02-Sep-18	Synedra ulna (Nitzsch) Ehrenberg	200	1.28
MEL -0401		02-Sep-18	Asterionella formosa Hassall	1600	0.17
MEL -0401		02-Sep-18	Cyclotella michiganiana Skvortzow	86208	2.11
MEL -0401		02-Sep-18	Cyclotella bodanica Eulenst.	800	6.17
MEL -0401		02-Sep-18	Rhodomonas minuta Skuja	201152	27.80
MEL -0401		02-Sep-18	Cryptomonas erosa Ehrenberg	2000	3.50
MEL -0401		02-Sep-18	Cryptomonas reflexa (Marsson) Skuja	400	0.29

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0401		02-Sep-18	Gymnodinium helveticum Penard	200	4.71
MEL -0401		02-Sep-18	Gymnodinium sp.	1000	16.52
MEL -0401		02-Sep-18	Peridinium pusillum (Penard) Lemmermann	800	3.35
MEL -0402		02-Sep-18	Pediastrum duplex Meyen	200	0.55
MEL -0402		02-Sep-18	Oocystis lacustris Chodat	71840	1.90
MEL -0402		02-Sep-18	Elakatothrix gelatinosa Willen	93392	1.62
MEL -0402		02-Sep-18	Planctonema lauterbornii Schmidle	71840	25.39
MEL -0402		02-Sep-18	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL -0402		02-Sep-18	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL -0402		02-Sep-18	Botryococcus braunii Kutzing	400	0.21
MEL -0402		02-Sep-18	Small chrysophyceae	653744	6.73
MEL -0402		02-Sep-18	Large chrysophyceae	21552	3.87
MEL -0402		02-Sep-18	Chrysochromulina parva Lackey	50288	3.29
MEL -0402		02-Sep-18	Chrysococcus sp.	524432	34.30
MEL -0402		02-Sep-18	Kephyrion sp.	179600	2.80
MEL -0402		02-Sep-18	Spiniferomonas serrata	35920	3.30
MEL -0402		02-Sep-18	Mallomonas crassisquama (Asmund) Fott	600	0.62
MEL -0402		02-Sep-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0402		02-Sep-18	Dinobryon mucronatom Nygaard	28736	3.76
MEL -0402		02-Sep-18	Dinobryon bavaricum Imhof	100576	22.75
MEL -0402		02-Sep-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0402		02-Sep-18	Dinobryon sertularia Ehrenberg	200	0.25
MEL -0402		02-Sep-18	Chrysolykos skuja (Nauwerck) Willen	14368	0.43
MEL -0402		02-Sep-18	Uroglena volvox Ehrenberg	50288	5.69
MEL -0402		02-Sep-18	Chrysochromulina laurentiana Kling	71840	33.28
MEL -0402		02-Sep-18	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.13
MEL -0402		02-Sep-18	Pteridomonas sp.	28736	6.38
MEL -0402		02-Sep-18	Cyclotella stelligera Cleve and Grunow	3800	8.96
MEL -0402		02-Sep-18	Cyclotella ocellata Pant.	7184	0.62
MEL -0402		02-Sep-18	Tabellaria fenestrata (Lyngbye) Kutzing	2400	1.99
MEL -0402		02-Sep-18	Synedra acus Kutzing	1200	0.12
MEL -0402		02-Sep-18	Synedra ulna (Nitzsch) Ehrenberg	1200	8.17

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0402		02-Sep-18	Asterionella formosa Hassall	400	0.04
MEL -0402		02-Sep-18	Cyclotella michiganiana Skvortzow	64656	1.08
MEL -0402		02-Sep-18	Cyclotella bodanica Eulenst.	800	5.64
MEL -0402		02-Sep-18	Rhodomonas minuta Skuja	316096	43.68
MEL -0402		02-Sep-18	Cryptomonas erosa Ehrenberg	1800	3.19
MEL -0402		02-Sep-18	Cryptomonas reflexa (Marsson) Skuja	600	0.44
MEL -0402		02-Sep-18	Cryptomonas rostratiformis Skuja	400	0.92
MEL -0402		02-Sep-18	Katablepharis ovalis Skuja	7184	0.35
MEL -0402		02-Sep-18	Gymnodinium helveticum Penard	200	4.71
MEL -0402		02-Sep-18	Gymnodinium sp.	400	6.24
MEL -0402		02-Sep-18	Peridinium pusillum (Penard) Lemmermann	600	2.51
MEL -0403		02-Sep-18	Anabaena solitaria Klebs	1400	4.92
MEL -0403		02-Sep-18	Elakatothrix gelatinosa Willen	143680	2.49
MEL -0403		02-Sep-18	Planctonema lauterbornii Schmidle	7184	2.54
MEL -0403		02-Sep-18	Cosmarium sp.	200	0.28
MEL -0403		02-Sep-18	Euastrum spp.	200	0.37
MEL -0403		02-Sep-18	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL -0403		02-Sep-18	Staurodesmus cuspidatus (Brebisson and Ralfs) Teiling	200	0.55
MEL -0403		02-Sep-18	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL -0403		02-Sep-18	Small chrysophyceae	725584	4.06
MEL -0403		02-Sep-18	Large chrysophyceae	35920	6.45
MEL -0403		02-Sep-18	Chrysochromulina parva Lackey	21552	1.41
MEL -0403		02-Sep-18	Chrysococcus sp.	316096	20.67
MEL -0403		02-Sep-18	Kephyrion sp.	229888	3.59
MEL -0403		02-Sep-18	Spiniferomonas serrata	14368	1.54
MEL -0403		02-Sep-18	Mallomonas crassisquama (Asmund) Fott	400	0.42
MEL -0403		02-Sep-18	Dinobryon borgei Lemmermann	7184	0.31
MEL -0403		02-Sep-18	Dinobryon mucronatom Nygaard	21552	2.71
MEL -0403		02-Sep-18	Dinobryon bavaricum Imhof	86208	19.50
MEL -0403		02-Sep-18	Dinobryon sertularia Ehrenberg	28736	6.50
MEL -0403		02-Sep-18	Chrysolykos skuja (Nauwerck) Willen	14368	0.46
MEL -0403		02-Sep-18	Uroglena volvox Ehrenberg	107760	12.19

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0403		02-Sep-18	Chrysochromulina laurentiana Kling	79024	34.37
MEL -0403		02-Sep-18	Stichogloea spp.	57472	2.89
MEL -0403		02-Sep-18	Salpingoeca frequentissima (Zach.) Lemmermann	35920	1.15
MEL -0403		02-Sep-18	Pteridomonas sp.	28736	6.84
MEL -0403		02-Sep-18	Cyclotella stelligera Cleve and Grunow	2800	6.35
MEL -0403		02-Sep-18	Cyclotella ocellata Pant.	35920	2.53
MEL -0403		02-Sep-18	Synedra acus Kutzing	1400	0.14
MEL -0403		02-Sep-18	Cyclotella michiganiana Skvortzow	122128	2.99
MEL -0403		02-Sep-18	Cyclotella bodanica Eulenst.	400	2.82
MEL -0403		02-Sep-18	Rhodomonas minuta Skuja	423856	58.58
MEL -0403		02-Sep-18	Cryptomonas erosa Ehrenberg	2200	3.91
MEL -0403		02-Sep-18	Cryptomonas reflexa (Marsson) Skuja	200	0.14
MEL -0403		02-Sep-18	Cryptomonas rostratiformis Skuja	200	0.41
MEL -0403		02-Sep-18	Gymnodinium helveticum Penard	200	4.71
MEL -0403		02-Sep-18	Gymnodinium sp.	400	6.24
MEL -0403		02-Sep-18	Peridinium pusillum (Penard) Lemmermann	200	0.75
MEL -0405	Rep1	02-Sep-18	Sphaerocystis schroeteri Chodat	57472	0.81
MEL -0405	Rep1	02-Sep-18	Oocystis lacustris Chodat	14368	0.41
MEL -0405	Rep1	02-Sep-18	Dictyosphaerium simplex Sukja	28736	0.12
MEL -0405	Rep1	02-Sep-18	Elakatothrix gelatinosa Willen	122128	1.92
MEL -0405	Rep1	02-Sep-18	Planctonema lauterbornii Schmidle	43104	15.23
MEL -0405	Rep1	02-Sep-18	Cosmarium sp.	200	0.28
MEL -0405	Rep1	02-Sep-18	Staurodesmus extensus (Andersson) Teiling	800	0.31
MEL -0405	Rep1	02-Sep-18	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL -0405	Rep1	02-Sep-18	Botryococcus braunii Kutzing	600	0.54
MEL -0405	Rep1	02-Sep-18	Small chrysophyceae	754320	6.94
MEL -0405	Rep1	02-Sep-18	Large chrysophyceae	43104	7.74
MEL -0405	Rep1	02-Sep-18	Chrysochromulina parva Lackey	64656	4.23
MEL -0405	Rep1	02-Sep-18	Chrysococcus sp.	502880	32.89
MEL -0405	Rep1	02-Sep-18	Kephyrion boreale Skuja	7184	0.85
MEL -0405	Rep1	02-Sep-18	Kephyrion sp.	208336	2.67
MEL -0405	Rep1	02-Sep-18	Mallomonas crassisquama (Asmund) Fott	200	0.21

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0405	Rep1	02-Sep-18	Dinobryon borgei Lemmermann	14368	0.74
MEL -0405	Rep1	02-Sep-18	Dinobryon mucronatom Nygaard	35920	4.52
MEL -0405	Rep1	02-Sep-18	Dinobryon bavaricum Imhof	86208	19.50
MEL -0405	Rep1	02-Sep-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0405	Rep1	02-Sep-18	Chrysolykos skuja (Nauwerck) Willen	50288	1.42
MEL -0405	Rep1	02-Sep-18	Uroglena volvox Ehrenberg	114944	13.00
MEL -0405	Rep1	02-Sep-18	Chrysochromulina laurentiana Kling	57472	24.99
MEL -0405	Rep1	02-Sep-18	Stichogloea spp.	71840	3.61
MEL -0405	Rep1	02-Sep-18	Pteridomonas sp.	28736	5.74
MEL -0405	Rep1	02-Sep-18	Cyclotella stelligera Cleve and Grunow	3800	8.61
MEL -0405	Rep1	02-Sep-18	Cyclotella ocellata Pant.	14368	2.13
MEL -0405	Rep1	02-Sep-18	Tabellaria fenestrata (Lyngbye) Kutzing	800	0.61
MEL -0405	Rep1	02-Sep-18	Synedra acus Kutzing	800	0.08
MEL -0405	Rep1	02-Sep-18	Synedra ulna (Nitzsch) Ehrenberg	200	1.13
MEL -0405	Rep1	02-Sep-18	Cyclotella michiganiana Skvortzow	114944	2.82
MEL -0405	Rep1	02-Sep-18	Cyclotella bodanica Eulenst.	400	2.82
MEL -0405	Rep1	02-Sep-18	Rhodomonas minuta Skuja	380752	52.62
MEL -0405	Rep1	02-Sep-18	Cryptomonas erosa Ehrenberg	1600	2.79
MEL -0405	Rep1	02-Sep-18	Cryptomonas reflexa (Marsson) Skuja	200	0.15
MEL -0405	Rep1	02-Sep-18	Cryptomonas rostratiformis Skuja	600	1.34
MEL -0405	Rep1	02-Sep-18	Katablepharis ovalis Skuja	7184	0.34
MEL -0405	Rep1	02-Sep-18	Gymnodinium helveticum Penard	200	4.71
MEL -0405	Rep1	02-Sep-18	Gymnodinium sp.	1200	18.72
MEL -0405	Rep1	02-Sep-18	Peridinium pusillum (Penard) Lemmermann	1200	4.52
MEL -0405	Rep2	02-Sep-18	Oocystis lacustris Chodat	7184	0.20
MEL -0405	Rep2	02-Sep-18	Elakatothrix gelatinosa Willen	100576	1.58
MEL -0405	Rep2	02-Sep-18	Planctonema lauterbornii Schmidle	28736	10.16
MEL -0405	Rep2	02-Sep-18	Cosmarium sp.	600	0.84
MEL -0405	Rep2	02-Sep-18	Staurodesmus extensus (Andersson) Teiling	1200	0.46
MEL -0405	Rep2	02-Sep-18	Spondylosium planum (Wolle) W. and G.S. West	35920	1.35
MEL -0405	Rep2	02-Sep-18	Botryococcus braunii Kutzing	600	0.54
MEL -0405	Rep2	02-Sep-18	Small chrysophyceae	589088	5.42

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0405	Rep2	02-Sep-18	Large chrysophyceae	43104	7.74
MEL -0405	Rep2	02-Sep-18	Chrysochromulina parva Lackey	50288	3.29
MEL -0405	Rep2	02-Sep-18	Chrysococcus sp.	452592	29.60
MEL -0405	Rep2	02-Sep-18	Kephyrion sp.	222704	2.85
MEL -0405	Rep2	02-Sep-18	Dinobryon borgei Lemmermann	14368	0.74
MEL -0405	Rep2	02-Sep-18	Dinobryon mucronatom Nygaard	14368	1.81
MEL -0405	Rep2	02-Sep-18	Dinobryon bavaricum Imhof	57472	13.00
MEL -0405	Rep2	02-Sep-18	Dinobryon bavaricum Imhof	200	0.25
MEL -0405	Rep2	02-Sep-18	Dinobryon sertularia Ehrenberg	28736	6.50
MEL -0405	Rep2	02-Sep-18	Chrysolykos skuja (Nauwerck) Willen	35920	1.01
MEL -0405	Rep2	02-Sep-18	Uroglena volvox Ehrenberg	86208	9.75
MEL -0405	Rep2	02-Sep-18	Bitrichia chodatii (Reverdin) Chodat	7184	0.36
MEL -0405	Rep2	02-Sep-18	Chrysochromulina laurentiana Kling	43104	18.75
MEL -0405	Rep2	02-Sep-18	Stichogloea spp.	35920	1.81
MEL -0405	Rep2	02-Sep-18	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.46
MEL -0405	Rep2	02-Sep-18	Pteridomonas sp.	21552	4.30
MEL -0405	Rep2	02-Sep-18	Cyclotella stelligera Cleve and Grunow	2800	6.35
MEL -0405	Rep2	02-Sep-18	Cyclotella ocellata Pant.	28736	4.25
MEL -0405	Rep2	02-Sep-18	Synedra acus Kutzing	1600	0.17
MEL -0405	Rep2	02-Sep-18	Synedra ulna (Nitzsch) Ehrenberg	600	3.38
MEL -0405	Rep2	02-Sep-18	Asterionella formosa Hassall	800	0.09
MEL -0405	Rep2	02-Sep-18	Cyclotella michiganiana Skvortzow	93392	2.29
MEL -0405	Rep2	02-Sep-18	Cyclotella bodanica Eulenst.	600	6.99
MEL -0405	Rep2	02-Sep-18	Rhodomonas minuta Skuja	387936	53.61
MEL -0405	Rep2	02-Sep-18	Cryptomonas erosa Ehrenberg	1800	3.14
MEL -0405	Rep2	02-Sep-18	Cryptomonas reflexa (Marsson) Skuja	400	0.29
MEL -0405	Rep2	02-Sep-18	Cryptomonas rostratiformis Skuja	400	0.89
MEL -0405	Rep2	02-Sep-18	Gymnodinium sp.	600	9.36
MEL -0405	Rep2	02-Sep-18	Peridinium pusillum (Penard) Lemmermann	800	3.01
MEL -0501	Rep1	01-Sep-18	Chlamydomonas spp.	7184	0.19
MEL -0501	Rep1	01-Sep-18	Oocystis lacustris Chodat	28736	0.81
MEL -0501	Rep1	01-Sep-18	Elakatothrix gelatinosa Willen	28736	0.50

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0501	Rep1	01-Sep-18	Planctonema lauterbornii Schmidle	35920	12.69
MEL -0501	Rep1	01-Sep-18	Cosmarium sp.	200	0.28
MEL -0501	Rep1	01-Sep-18	Staurodesmus extensus (Andersson) Teiling	1200	0.49
MEL -0501	Rep1	01-Sep-18	Spondylosium planum (Wolle) W. and G.S. West	43104	1.63
MEL -0501	Rep1	01-Sep-18	Botryococcus braunii Kutzing	200	0.10
MEL -0501	Rep1	01-Sep-18	Small chrysophyceae	926736	9.55
MEL -0501	Rep1	01-Sep-18	Large chrysophyceae	43104	7.74
MEL -0501	Rep1	01-Sep-18	Chrysochromulina parva Lackey	43104	2.82
MEL -0501	Rep1	01-Sep-18	Chrysococcus sp.	840528	42.87
MEL -0501	Rep1	01-Sep-18	Chrysostephanosphaera globulifera Scherffel	7184	2.00
MEL -0501	Rep1	01-Sep-18	Kephyrion boreale Skuja	14368	1.71
MEL -0501	Rep1	01-Sep-18	Kephyrion sp.	107760	1.68
MEL -0501	Rep1	01-Sep-18	Spiniferomonas serrata	21552	2.69
MEL -0501	Rep1	01-Sep-18	Mallomonas crassisquama (Asmund) Fott	600	0.63
MEL -0501	Rep1	01-Sep-18	Dinobryon borgei Lemmermann	14368	0.74
MEL -0501	Rep1	01-Sep-18	Dinobryon bavaricum Imhof	64656	14.63
MEL -0501	Rep1	01-Sep-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0501	Rep1	01-Sep-18	Chrysolykos skuja (Nauwerck) Willen	28736	0.85
MEL -0501	Rep1	01-Sep-18	Uroglena volvox Ehrenberg	143680	16.25
MEL -0501	Rep1	01-Sep-18	Chrysochromulina laurentiana Kling	28736	13.31
MEL -0501	Rep1	01-Sep-18	Stichogloea spp.	57472	2.89
MEL -0501	Rep1	01-Sep-18	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.43
MEL -0501	Rep1	01-Sep-18	Pteridomonas sp.	28736	6.84
MEL -0501	Rep1	01-Sep-18	Cyclotella stelligera Cleve and Grunow	3600	8.16
MEL -0501	Rep1	01-Sep-18	Cyclotella ocellata Pant.	28736	4.11
MEL -0501	Rep1	01-Sep-18	Tabellaria flocculosa (Roth) Kutzing	400	0.51
MEL -0501	Rep1	01-Sep-18	Synedra acus Kutzing	1000	0.10
MEL -0501	Rep1	01-Sep-18	Asterionella formosa Hassall	2600	0.28
MEL -0501	Rep1	01-Sep-18	Cyclotella michiganiana Skvortzow	71840	1.56
MEL -0501	Rep1	01-Sep-18	Cyclotella bodanica Eulenst.	200	1.54
MEL -0501	Rep1	01-Sep-18	Rhodomonas minuta Skuja	172416	23.83
MEL -0501	Rep1	01-Sep-18	Cryptomonas erosa Ehrenberg	1400	2.44

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0501	Rep1	01-Sep-18	Cryptomonas rostratiformis Skuja	200	0.41
MEL -0501	Rep1	01-Sep-18	Gymnodinium helveticum Penard	200	4.71
MEL -0501	Rep1	01-Sep-18	Gymnodinium sp.	1000	14.14
MEL -0501	Rep2	01-Sep-18	Carteria spp.	7184	0.34
MEL -0501	Rep2	01-Sep-18	Oocystis lacustris Chodat	28736	0.81
MEL -0501	Rep2	01-Sep-18	Monoraphidium minutum (Nag.) Komarkova-Legnerova	7184	0.45
MEL -0501	Rep2	01-Sep-18	Elakatothrix gelatinosa Willen	57472	0.99
MEL -0501	Rep2	01-Sep-18	Planctonema lauterbornii Schmidle	35920	12.69
MEL -0501	Rep2	01-Sep-18	Cosmarium sp.	200	0.28
MEL -0501	Rep2	01-Sep-18	Cosmarium sp.	200	1.50
MEL -0501	Rep2	01-Sep-18	Euastrum spp.	200	0.37
MEL -0501	Rep2	01-Sep-18	Staurodesmus extensus (Andersson) Teiling	400	0.16
MEL -0501	Rep2	01-Sep-18	Spondylosium planum (Wolle) W. and G.S. West	28736	1.08
MEL -0501	Rep2	01-Sep-18	Mougeotia sp.	1200	5.18
MEL -0501	Rep2	01-Sep-18	Botryococcus braunii Kutzing	200	0.10
MEL -0501	Rep2	01-Sep-18	Small chrysophyceae	1048864	10.80
MEL -0501	Rep2	01-Sep-18	Large chrysophyceae	28736	5.16
MEL -0501	Rep2	01-Sep-18	Chrysochromulina parva Lackey	14368	0.94
MEL -0501	Rep2	01-Sep-18	Chrysococcus sp.	739952	37.74
MEL -0501	Rep2	01-Sep-18	Chrysostephanosphaera globulifera Scherffel	7184	2.00
MEL -0501	Rep2	01-Sep-18	Kephyrion sp.	122128	1.91
MEL -0501	Rep2	01-Sep-18	Spiniferomonas serrata	14368	1.79
MEL -0501	Rep2	01-Sep-18	Mallomonas akrokomos Asmund and Kristiansen	7184	1.72
MEL -0501	Rep2	01-Sep-18	Dinobryon borgei Lemmermann	21552	1.11
MEL -0501	Rep2	01-Sep-18	Dinobryon bavaricum Imhof	79024	17.88
MEL -0501	Rep2	01-Sep-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0501	Rep2	01-Sep-18	Chrysolykos skuja (Nauwerck) Willen	21552	0.64
MEL -0501	Rep2	01-Sep-18	Uroglena volvox Ehrenberg	172416	19.50
MEL -0501	Rep2	01-Sep-18	Chrysochromulina laurentiana Kling	28736	13.31
MEL -0501	Rep2	01-Sep-18	Stichogloea spp.	14368	0.72
MEL -0501	Rep2	01-Sep-18	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.23
MEL -0501	Rep2	01-Sep-18	Pteridomonas sp.	14368	3.42

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0501	Rep2	01-Sep-18	Cyclotella stelligera Cleve and Grunow	2400	5.44
MEL -0501	Rep2	01-Sep-18	Cyclotella ocellata Pant.	21552	3.08
MEL -0501	Rep2	01-Sep-18	Synedra acus Kutzing	400	0.04
MEL -0501	Rep2	01-Sep-18	Asterionella formosa Hassall	3600	0.38
MEL -0501	Rep2	01-Sep-18	Cyclotella michiganiana Skvortzow	100576	2.18
MEL -0501	Rep2	01-Sep-18	Cyclotella bodanica Eulenst.	600	4.63
MEL -0501	Rep2	01-Sep-18	Rhodomonas minuta Skuja	208336	28.79
MEL -0501	Rep2	01-Sep-18	Cryptomonas erosa Ehrenberg	3400	5.93
MEL -0501	Rep2	01-Sep-18	Gymnodinium sp.	400	5.65
MEL -0501	Rep2	01-Sep-18	Peridinium aciculiferum Lemmermann	400	3.62
MEL -0502		30-Aug-18	Elakatothrix gelatinosa Willen	71840	1.24
MEL -0502		30-Aug-18	Planctonema lauterbornii Schmidle	21552	7.62
MEL -0502		30-Aug-18	Cosmarium sp.	200	0.28
MEL -0502		30-Aug-18	Staurodesmus extensus (Andersson) Teiling	3600	1.39
MEL -0502		30-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL -0502		30-Aug-18	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL -0502		30-Aug-18	Small chrysophyceae	395120	5.06
MEL -0502		30-Aug-18	Large chrysophyceae	100576	18.06
MEL -0502		30-Aug-18	Chrysochromulina parva Lackey	7184	0.47
MEL -0502		30-Aug-18	Chrysococcus sp.	280176	18.32
MEL -0502		30-Aug-18	Kephyrion sp.	122128	2.30
MEL -0502		30-Aug-18	Mallomonas crassisquama (Asmund) Fott	1000	1.05
MEL -0502		30-Aug-18	Dinobryon bavaricum Imhof	57472	13.00
MEL -0502		30-Aug-18	Dinobryon bavaricum Imhof	200	0.25
MEL -0502		30-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0502		30-Aug-18	Chrysolykos skuja (Nauwerck) Willen	21552	0.65
MEL -0502		30-Aug-18	Uroglena volvox Ehrenberg	79024	8.94
MEL -0502		30-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.19
MEL -0502		30-Aug-18	Cyclotella stelligera Cleve and Grunow	5600	12.69
MEL -0502		30-Aug-18	Cyclotella ocellata Pant.	50288	5.05
MEL -0502		30-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	200	0.15
MEL -0502		30-Aug-18	Synedra acus Kutzing	2000	0.22

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0502		30-Aug-18	Asterionella formosa Hassall	3200	0.34
MEL -0502		30-Aug-18	Cyclotella michiganiana Skvortzow	143680	3.52
MEL -0502		30-Aug-18	Cyclotella bodanica Eulenst.	1800	13.89
MEL -0502		30-Aug-18	Rhodomonas minuta Skuja	71840	9.93
MEL -0502		30-Aug-18	Cryptomonas erosa Ehrenberg	3400	5.84
MEL -0502		30-Aug-18	Gymnodinium sp.	1200	22.58
MEL -0503		29-Aug-18	Oocystis lacustris Chodat	57472	1.68
MEL -0503		29-Aug-18	Elakatothrix gelatinosa Willen	64656	1.12
MEL -0503		29-Aug-18	Planctonema lauterbornii Schmidle	35920	12.69
MEL -0503		29-Aug-18	Cosmarium sp.	1000	1.40
MEL -0503		29-Aug-18	Staurodesmus extensus (Andersson) Teiling	2400	0.97
MEL -0503		29-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	7184	0.27
MEL -0503		29-Aug-18	Botryococcus braunii Kutzing	400	0.36
MEL -0503		29-Aug-18	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL -0503		29-Aug-18	Small chrysophyceae	222704	2.85
MEL -0503		29-Aug-18	Large chrysophyceae	57472	10.32
MEL -0503		29-Aug-18	Chrysococcus sp.	344832	22.55
MEL -0503		29-Aug-18	Kephyrion boreale Skuja	14368	1.71
MEL -0503		29-Aug-18	Kephyrion sp.	86208	1.22
MEL -0503		29-Aug-18	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL -0503		29-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0503		29-Aug-18	Dinobryon bavaricum Imhof	71840	16.25
MEL -0503		29-Aug-18	Dinobryon sertularia Ehrenberg	21552	4.88
MEL -0503		29-Aug-18	Chrysolykos skuja (Nauwerck) Willen	28736	0.86
MEL -0503		29-Aug-18	Uroglena volvox Ehrenberg	172416	19.50
MEL -0503		29-Aug-18	Chrysochromulina laurentiana Kling	7184	2.83
MEL -0503		29-Aug-18	Stichogloea spp.	14368	0.72
MEL -0503		29-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	7184	0.23
MEL -0503		29-Aug-18	Cyclotella stelligera Cleve and Grunow	5200	11.17
MEL -0503		29-Aug-18	Cyclotella ocellata Pant.	43104	3.03
MEL -0503		29-Aug-18	Synedra acus Kutzing	1200	0.14
MEL -0503		29-Aug-18	Cyclotella michiganiana Skvortzow	179600	3.00

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0503		29-Aug-18	Cyclotella bodanica Eulenst.	600	4.63
MEL -0503		29-Aug-18	Rhodomonas minuta Skuja	179600	24.82
MEL -0503		29-Aug-18	Cryptomonas erosa Ehrenberg	2600	4.61
MEL -0503		29-Aug-18	Gymnodinium sp.	400	6.24
MEL -0503		29-Aug-18	Peridinium pusillum (Penard) Lemmermann	400	1.68
MEL -0503R	Recount	29-Aug-18	Oocystis lacustris Chodat	86208	2.52
MEL -0503R	Recount	29-Aug-18	Elakatothrix gelatinosa Willen	50288	0.87
MEL -0503R	Recount	29-Aug-18	Planctonema lauterbornii Schmidle	35920	12.69
MEL -0503R	Recount	29-Aug-18	Cosmarium sp.	600	0.84
MEL -0503R	Recount	29-Aug-18	Euastrum spp.	200	0.37
MEL -0503R	Recount	29-Aug-18	Staurodesmus extensus (Andersson) Teiling	1600	0.65
MEL -0503R	Recount	29-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL -0503R	Recount	29-Aug-18	Botryococcus braunii Kutzing	800	0.72
MEL -0503R	Recount	29-Aug-18	Small chrysophyceae	186784	2.39
MEL -0503R	Recount	29-Aug-18	Large chrysophyceae	35920	6.45
MEL -0503R	Recount	29-Aug-18	Chrysochromulina parva Lackey	14368	0.94
MEL -0503R	Recount	29-Aug-18	Chrysococcus sp.	287360	18.79
MEL -0503R	Recount	29-Aug-18	Kephyrion boreale Skuja	28736	3.41
MEL -0503R	Recount	29-Aug-18	Kephyrion sp.	71840	1.01
MEL -0503R	Recount	29-Aug-18	Spiniferomonas serrata	7184	0.73
MEL -0503R	Recount	29-Aug-18	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL -0503R	Recount	29-Aug-18	Dinobryon borgei Lemmermann	7184	0.37
MEL -0503R	Recount	29-Aug-18	Dinobryon bavaricum Imhof	79024	17.88
MEL -0503R	Recount	29-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0503R	Recount	29-Aug-18	Dinobryon sertularia Ehrenberg	200	0.25
MEL -0503R	Recount	29-Aug-18	Chrysolykos skuja (Nauwerck) Willen	14368	0.43
MEL -0503R	Recount	29-Aug-18	Uroglena volvox Ehrenberg	143680	16.25
MEL -0503R	Recount	29-Aug-18	Chrysochromulina laurentiana Kling	7184	2.83
MEL -0503R	Recount	29-Aug-18	Stichogloea spp.	28736	1.45
MEL -0503R	Recount	29-Aug-18	Cyclotella stelligera Cleve and Grunow	4000	8.59
MEL -0503R	Recount	29-Aug-18	Cyclotella ocellata Pant.	28736	2.02
MEL -0503R	Recount	29-Aug-18	Synedra acus Kutzing	1200	0.13

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0503R	Recount	29-Aug-18	Synedra acus Kutzing	800	0.09
MEL -0503R	Recount	29-Aug-18	Cyclotella michiganiana Skvortzow	179600	3.00
MEL -0503R	Recount	29-Aug-18	Cyclotella bodanica Eulenst.	800	6.17
MEL -0503R	Recount	29-Aug-18	Rhodomonas minuta Skuja	222704	30.78
MEL -0503R	Recount	29-Aug-18	Cryptomonas erosa Ehrenberg	3200	5.67
MEL -0503R	Recount	29-Aug-18	Gymnodinium sp.	400	6.24
MEL -0503R	Recount	29-Aug-18	Peridinium pusillum (Penard) Lemmermann	200	0.84
MEL -0504		30-Aug-18	Snowella sp	800	0.60
MEL -0504		30-Aug-18	Elakatothrix gelatinosa Willen	143680	2.49
MEL -0504		30-Aug-18	Planctonema lauterbornii Schmidle	57472	20.31
MEL -0504		30-Aug-18	Cosmarium sp.	400	0.56
MEL -0504		30-Aug-18	Staurodesmus extensus (Andersson) Teiling	1800	0.65
MEL -0504		30-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	21552	0.81
MEL -0504		30-Aug-18	Tetraedron caudatum (Corda) Hansgrig	7184	0.03
MEL -0504		30-Aug-18	Small chrysophyceae	423856	2.37
MEL -0504		30-Aug-18	Large chrysophyceae	50288	9.03
MEL -0504		30-Aug-18	Chrysococcus sp.	222704	9.26
MEL -0504		30-Aug-18	Kephyrion boreale Skuja	7184	0.85
MEL -0504		30-Aug-18	Kephyrion sp.	100576	1.89
MEL -0504		30-Aug-18	Mallomonas crassisquama (Asmund) Fott	200	0.21
MEL -0504		30-Aug-18	Dinobryon borgei Lemmermann	14368	0.65
MEL -0504		30-Aug-18	Dinobryon bavaricum Imhof	129312	29.25
MEL -0504		30-Aug-18	Dinobryon sertularia Ehrenberg	14368	3.25
MEL -0504		30-Aug-18	Dinobryon sertularia Ehrenberg	200	0.40
MEL -0504		30-Aug-18	Chrysolykos skuja (Nauwerck) Willen	35920	1.15
MEL -0504		30-Aug-18	Uroglena volvox Ehrenberg	50288	5.69
MEL -0504		30-Aug-18	Chrysochromulina laurentiana Kling	7184	3.33
MEL -0504		30-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	14368	0.45
MEL -0504		30-Aug-18	Cyclotella stelligera Cleve and Grunow	3400	8.02
MEL -0504		30-Aug-18	Cyclotella ocellata Pant.	28736	2.89
MEL -0504		30-Aug-18	Rhizosolenia eriense H.L. Smith	7184	0.46
MEL -0504		30-Aug-18	Tabellaria fenestrata (Lyngbye) Kutzing	400	0.31

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0504		30-Aug-18	Synedra acus Kutzing	2000	0.23
MEL -0504		30-Aug-18	Synedra ulna (Nitzsch) Ehrenberg	400	2.72
MEL -0504		30-Aug-18	Asterionella formosa Hassall	2000	0.21
MEL -0504		30-Aug-18	Cyclotella michiganiana Skvortzow	122128	2.99
MEL -0504		30-Aug-18	Cyclotella bodanica Eulenst.	1200	7.02
MEL -0504		30-Aug-18	Rhodomonas minuta Skuja	71840	9.93
MEL -0504		30-Aug-18	Cryptomonas erosa Ehrenberg	2200	3.70
MEL -0504		30-Aug-18	Gymnodinium sp.	600	8.48
MEL -0505		29-Aug-18	Chroococcus limneticus Lemmermann	14368	1.71
MEL -0505		29-Aug-18	Snowella sp	800	0.60
MEL -0505		29-Aug-18	Oocystis lacustris Chodat	14368	0.41
MEL -0505		29-Aug-18	Elakatothrix gelatinosa Willen	114944	1.99
MEL -0505		29-Aug-18	Planctonema lauterbornii Schmidle	14368	5.08
MEL -0505		29-Aug-18	Cosmarium sp.	400	0.56
MEL -0505		29-Aug-18	Staurodesmus extensus (Andersson) Teiling	1400	0.57
MEL -0505		29-Aug-18	Spondylosium planum (Wolle) W. and G.S. West	14368	0.54
MEL -0505		29-Aug-18	Small chrysophyceae	265808	2.45
MEL -0505		29-Aug-18	Large chrysophyceae	57472	10.32
MEL -0505		29-Aug-18	Chrysococcus sp.	373568	24.43
MEL -0505		29-Aug-18	Kephyrion boreale Skuja	7184	0.90
MEL -0505		29-Aug-18	Kephyrion sp.	100576	2.07
MEL -0505		29-Aug-18	Spiniferomonas serrata	7184	0.63
MEL -0505		29-Aug-18	Dinobryon borgei Lemmermann	7184	0.35
MEL -0505		29-Aug-18	Dinobryon mucronatom Nygaard	7184	0.88
MEL -0505		29-Aug-18	Dinobryon bavaricum Imhof	93392	21.13
MEL -0505		29-Aug-18	Dinobryon sertularia Ehrenberg	7184	1.63
MEL -0505		29-Aug-18	Chrysolykos skuja (Nauwerck) Willen	7184	0.23
MEL -0505		29-Aug-18	Uroglena volvox Ehrenberg	57472	6.50
MEL -0505		29-Aug-18	Salpingoeca frequentissima (Zach.) Lemmermann	28736	0.93
MEL -0505		29-Aug-18	Cyclotella stelligera Cleve and Grunow	4200	10.17
MEL -0505		29-Aug-18	Cyclotella ocellata Pant.	35920	2.53
MEL -0505		29-Aug-18	Tabellaria flocculosa (Roth) Kutzing	200	0.27

Table 11D-6: Raw Phytoplankton Data, Meliadine Lake 2018

Station	Replicate	Date	Species Name	Abundance	Biomass
				cells/L	mg/m^3
MEL -0505		29-Aug-18	Synedra acus Kutzing	1600	0.16
MEL -0505		29-Aug-18	Synedra acus Kutzing	2600	0.27
MEL -0505		29-Aug-18	Cyclotella michiganiana Skvortzow	186784	4.58
MEL -0505		29-Aug-18	Cyclotella bodanica Eulenst.	1200	7.43
MEL -0505		29-Aug-18	Rhodomonas minuta Skuja	86208	11.91
MEL -0505		29-Aug-18	Cryptomonas erosa Ehrenberg	2400	4.27
MEL -0505		29-Aug-18	Gymnodinium sp.	400	6.24