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Kami Geochemical Characterization Report – Phase I Static Testing

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April 24, 2024

CHAMPION IRON

okane

Integrated Mine Closure and Relinquishment Solutions

Kami Geochemical Characterization Report – Phase I Static Testing

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Prepared for:

Champion Iron Mines Ltd.

Prepared by:

Katherine Raymond
Intermediate Geochemist
kraymond@okaneconsultants.com

M.A. O'Kane Consultants Inc.

112 - 112 Research Drive
Saskatoon, SK S7N 3R3
Canada

Telephone: (306) 955 0702
Facsimile: (306) 955 1596
Web: www.okc-sk.com

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EXECUTIVE SUMMARY

Okane Consultants (Okane) was retained by Champion Iron Mine Ltd. (Champion) to characterize metal leaching/acid rock drainage (ML/ARD) risk of units identified as future mine rock during the mining operations of the Kamistiatusset Iron Ore Mine Project (Kami Project). To meet updated best practice guidelines for this stage of the project, Okane (2023a) recommended additional samples be collected and analyzed for static and kinetic testing. In this report, Okane uses previous work characterizing ML/ARD risk by Stantec (2013) and provides a comparison based on interpretations of initial static test results (i.e. acid-base accounting (ABA) and whole rock analysis) received to date. Additional samples have been submitted by Okane for humidity cell testing, shake-flask extraction, and x-ray diffraction analysis, however, results from these analyses were not available at the time of drafting this report.

Results from the current characterization program are generally consistent with previous analyses. ABA indicate that potentially acid generating (PAG) material is present in all mine rock units except for the Denault, although most of the PAG samples were concentrated in the Menihek Formation (particularly the graphitic schist lithology). However, more samples were identified as PAG within the Sokoman and Wishart Formations within the new sample set, which may be related to different block models used between the two studies or naturally occurring heterogeneities. Statistical comparisons of static testing results from the Stantec and Okane datasets indicate that no statistically significant variation was observed for key metal(loid)s of concern and for ABA parameters, except for in Sokoman Formation samples. ANOVA testing completed on PAG classification results from each dataset indicated that no statistically significant differences existed in the PAG and Uncertain samples. However, statistically significant differences between the distribution of non potentially acid generating (NPAG) samples in Kami mine rock was observed, indicating potential differences in total carbon measurements and carbonate buffering potential between datasets. This report explored the availability of sufficient neutralization potential (NP) to neutralize potential acidity generated given the latest static test results and updated mine rock volumes planned for the Tailings Management Facility (TMF) dam embankment. Following guidelines from Price (2009), a neutralization potential ratio (NPR) >2 indicates that there is sufficient NP to classify mine rock as NPAG. After removing an estimated 82.4 Mt of NPAG mine rock required for the TMF dam embankment, the total average and median NPR values were 5.0 and 7.2 respectively for the remaining rock in the Mine Rock Stockpile (MRS), indicating that there is sufficient NP available to neutralize potential acidity generated from sulfide oxidation.

Whole rock analysis results indicate that several potential contaminants of concern (including Ag, Bi, Cd, S, Se, Te, and U) were high relative to global crustal abundances. However, high relative crustal abundance is not indicative of their release. Additional ongoing test work will be used to investigate implications for metal release.

Cross sections of the Kami Project deposit were developed showing sample locations and their respective neutralization potential ratios (NPR). Interpretation of these results show that zones of PAG mine rock may be present at relatively shallow depths in the Kami deposit. While sufficient neutralization

NP is available within the deposit to buffer acid potential (AP) generated, this assumes mine rock will be sufficiently blended over the life of mine to prevent development of acidic zones or initial sulfide oxidation at the surface during early years of mine life. Consideration for the extraction or deposition schedule of these zones may be required to ensure a well mixed MRS and TMF embankments to avoid high-risk pockets. To address this, Champion should manage PAG extracted during the construction phase (likely through temporary stockpiling) and during the operations phase to ensure sufficient NP is available to neutralize acidity through blending of crushed rock placed the MRS. Details of PAG management will be addressed in the waste management plan.

This report acts as an initial interpretation of the overall geochemical characterization program planned for the Kami Project and further refines the understanding of ML/ARD risk for mine rock units at the Kami Project. The interpretation of on-going static and kinetic analyses anticipated for later versions of this report will provide further refinement to the findings communicated here.

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1 INTRODUCTION

Okane Consultants (Okane) was retained by Champion Iron Mines Ltd. (Champion) to complete a geochemical characterization program for the Kamistiatusset Iron Ore Mine Project (Kami Project). To appropriately plan for closure and rehabilitation of the proposed developments at the Kami Project, a full understanding of the geochemical nature of anticipated mine rock, overburden, and tailings materials from the Rose Pit are required. Geochemical characterization studies were recommended (Okane, 2023a) to meet commitments from the 2014 ministerial release (Shea, J., 2014) to better inform the potential for metal leaching/acid rock drainage (ML/ARD) and environmental risks resulting from mined materials. These studies will inform operational waste management practices as well as mine closure strategies and landform designs in the future.

Champion requested this work to be released in a phased approach to support Champion's ongoing deliverables towards the Pre-feasibility Study and to receive updates as results are obtained from the acquired laboratory services. In this preliminary Phase I report, an analysis of static test results received to date for mine rock geochemistry are compared to results from material characterization work previously undertaken by Alderon Iron Ore (WorleyParsons, 2014).

In addition, Okane is currently developing geochemical source terms for a parallel project to be used in a site-wide water quality water balance model (WQWBM) led by Lorax Environmental Inc. Current source terms use results from previous geochemical characterization work completed by Stantec (2013). To support confidence in using the Stantec dataset in terms of result quality and representativeness, comparison between the Stantec and Okane datasets are provided herein.

1.1 Project Objectives and Scope

An overarching objective of this project is to complete a geochemical characterization program that will address conditions from the 2014 release which may be used to inform on waste management strategies. The current geochemical characterization program (Okane, 2023a) includes sample recommendations to build upon previous characterization work, using existing core samples for geochemical analysis of representative samples for mine rock and tailings materials currently undergoing testing with Soutex Inc. The scope of this Phase I report includes comparison of previous sample analysis from Stantec (2012, 2013 - herein referred to as "Stantec" samples) to the most recently analyzed static samples (referred to in this report as "Okane" samples). The current draft report only includes static test results from mine rock received to date.

The purpose of this Phase I report includes:

1) Summarize static test results received to date (Acid Base Accounting (ABA) and whole rock).

2) Confirm static test results by Stantec are in alignment with the static test results received to date by Okane (ABA and whole rock).

3) Confirm previous ABA classification.

    a. Confirmation of ABA characterization will support parallel work conducted by Okane to develop the source terms for the water quality water balance model being developed by Lorax.

1.2 Report Organization

For convenient reference, this report has been subdivided into the following sections:

- Section 2 – Background information including the geology, previous geochemical characterization study findings, and planned mine rock tonnages referenced throughout this report;
- Section 3 – Methods for sample section used in Okane's geochemical characterization program and laboratory analysis methods selected;
- Section 4 – Results of ABA and whole rock analysis from Okane samples received to date and Stantec datasets, and results from statistical tests that compare these datasets; and
- Section 5 – Discussion of the results and implications.

2 BACKGROUND

Previous ML/ARD characterization of the mine rock, overburden, ore, and tailings materials were conducted in three phases by Stantec Consulting Ltd. (Stantec) (2012; 2013) and WorleyParsons Ltd. (WorleyParsons) (2014). Phase III (WorleyParsons, 2014) involved reclassification of ABA and interpretation of the analyses and sampling program completed in Phases I and II by Stantec (2012, 2013). Okane completed background review of this work in the Geochemical Characterization Program Memorandum (Okane, 2023a) to support the geochemical sampling and analysis recommendations.

2.1 Site Description

The Kami Project is a high-grade iron ore project located in the Labrador Trough geological belt in southwestern Newfoundland along the Québec border, near the town of Fermont. The deposit is currently planned to be mined over a 26 year period. Mine rock excavated from the Rose Pit is planned to be blasted and crushed using an in-pit crusher, then moved via a conveyor towards the Mine Rock Stockpile (MRS) to be deposited (Figure 2.1). Overburden will be shoveled and taken to the Overburden Stockpile (OVBS).

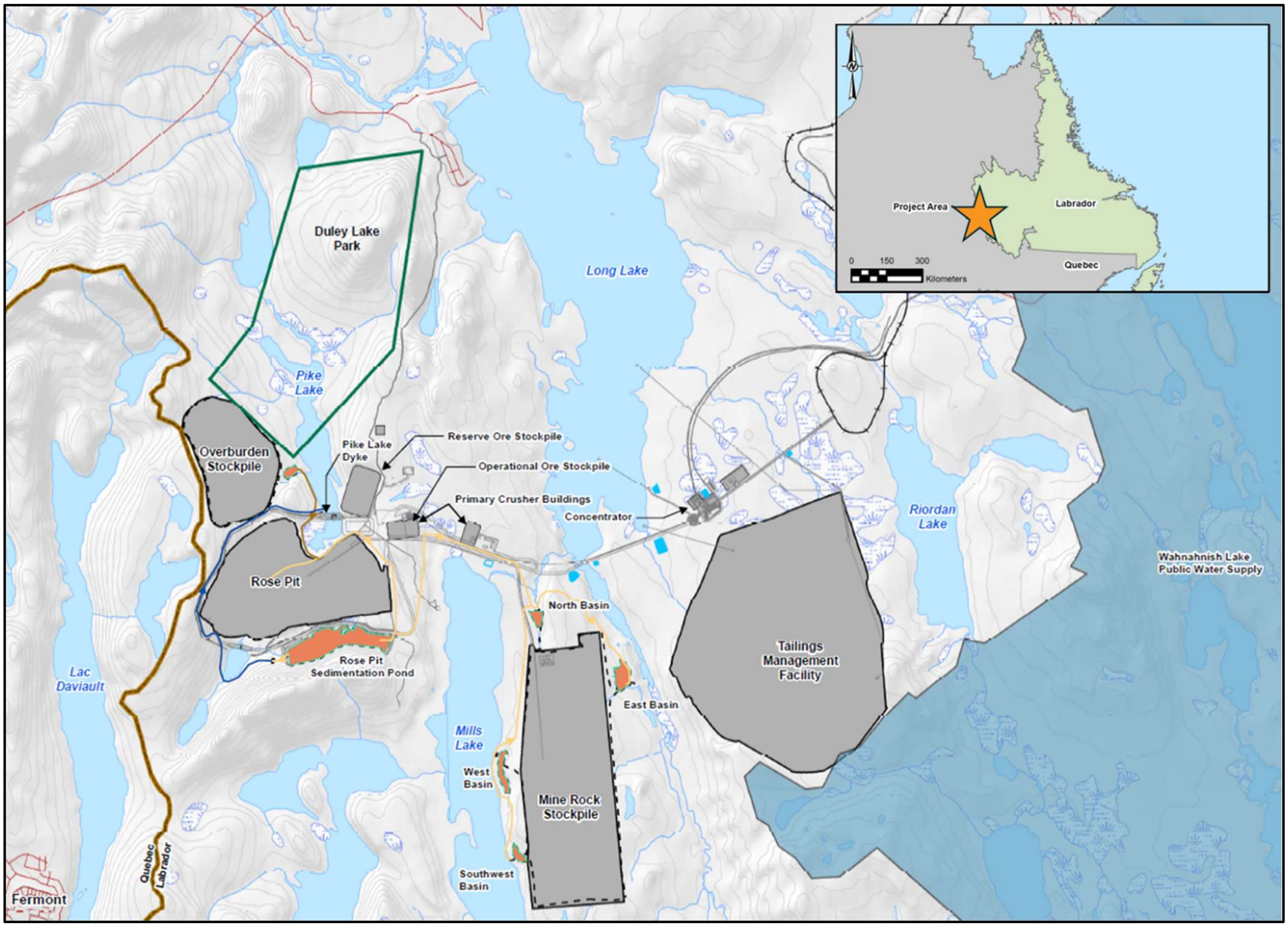

Figure 2.1: Layout and footprints of major mine material storage facilities for the Kami Project.

Modified from WSP 2023.

2.2 Geology

The Project is situated in the metamorphosed and deformed metasedimentary sequence of the Grenville Province, Gagnon Terrane of the Labrador Trough. Metamorphism is responsible for recrystallization of both iron oxides and silica in primary iron formation, producing coarse-grained sugary quartz, magnetite, and specular hematite schist or gneiss (Stantec, 2012). There are five major formations identified in the planned Rose Pit to be mined over the proposed Kami Project:

1) The Denault Formation consists of dolomitic marble with interlocking grains and generally is a competent unit. Bands of quartzite are common.

2) The Katsao Formation is represented by coarse leuco- and melanocratic banded gneiss with potassium and plagioclase feldspars, various micas, and quartz. It is typically free of sulfides, graphite, and carbonates.

3) The Menihek Formation consists of fine mica schist (variable muscovite and biotite with low quartz) and graphitic mica schist with traces of pyrrhotite (sulfide) mostly developed as irregular lenses in the basal 50 m. The formation often contains amphibole-biotite-garnet gneiss. The Menihek Formation, which has been identified as a risk of long-term acidity generating and previously classified as PAG, demonstrates complex geology and includes banded lithologies. Previous core logging work has identified interbedding of Sokoman and Menihek formations (WorleyParsons, 2014).

4) The Sokoman Iron Formation consists of metataconite (ore) and associated ankeritic marble-quartz-Fe-silicate gneiss. Mineral grains are generally medium- to coarse-grained and interlocking, making the rock coherent. Sokoman footwall in the Rose Central Pit between the Wishart formation and the ore zone consists of mostly quartz and Fe-silicates. Sokoman non-ore formation in contact with the Menihek formation contains an undefined mix of silicates and carbonates.

5) The Wishart Formation is represented by granular quartzite and mica-quartz schist with disseminated calcite near the top.

2.3 Material Tonnages

Champion advised to use previous tonnages to develop a percentage breakdown of each formation, which was applied to more recent tonnages of expected mine rock removal from the pit (Table 2.1). 82.5 Mt of crushed non-potentially-acid generating (NPAG) material will be used to construct the Tailings Management Facility (TMF) Dam Embankment (A. Ghirian, personal communication, November 29, 2023), which is assumed to be equally divided between Sokoman and Wishart Formation mine rock. The MRS will be constructed of 105.6 Mt of overburden material.

Table 2.1: Tonnages of mine rock placed in storage facilities by formation.

Formation	MRS	TMF Dam Embankment (Mine Rock)	Overburden Stockpile	Percentage of MRS	Percentage of Total Material from Rose Pit
Denault	21,969,349			3%	2%
Katsao	53,903,758			6%	5%
Menihek	288,509,265			34%	28%
Overburden			105,600,000	0%	10%
Sokoman	264,367,614	41,234,712		31%	29%
Wishart	224,714,039	41,234,712		26%	26%
Total	853,428,428	82,469,424	105,600,000		100%

2.4 Previous Geochemical Characterization Work

Okane (2023a) completed a background review of previous geochemical characterization performed on the Kami Project. A phased approach was taken by Stantec and intended to screen materials produced during the project for ML/ARD risk (Stantec, 2012; 2013). Following this, WorleyParsons (2014) completed an ABA assessment of mine rock lithologies, which included some reassessment of ABA classification. Conclusions from the previous geochemical characterization work (Stantec, 2013; WorleyParsons, 2014) are summarized below:

- Ore, concentrate, and tailings are considered NPAG, with low metal-leaching potential based on static tests.
- Overburden contains 8.1% of PAG materials with some shake-flask extraction (SFE) samples exceeding Metal Mining Effluent Regulation (MMER) guidelines for Cu, Ni, and Zn.
- Most formations extracted from the Rose South Pit will contain some amount of PAG, the stockpile overall will have a positive Net Neutralization Potential (NNP). This suggests that if mine rock is well-mixed, the stockpile will not generate significant downstream acidic runoff.
    - NPAG units include the Sokoman, Wishart, and Denault Formations.
    - The Katsao Formation was classified as uncertain acid generating potential.
    - PAG risk is highest in the Menihek Formation which was generally associated with the graphitic mica schists, although non-graphitic mica schist was classified as uncertain in acid generating potential. Previous kinetic studies showed that acidity can be generated immediately or delayed up to an estimated 19 years in shallow graphitic mica schist samples. Current geochemical characterization aims to increase certainty around ML/ARD risk from the Menihek formation and total volumes of PAG material.
- Estimates of total PAG mine rock ranged from 76 Mt to 316 Mt; however ongoing kinetic testing and rock cuttings sampling for ABA in the first year of mining will allow updated classification of mine rock and narrowing of PAG rock tonnage estimates.
- WorleyParsons (2014) highlighted several potential metals of concern from mine rock leaching including Ag, Al, As, Cd, Cr, Co, Cu, Fe, Hg, Mo, Ni, Se, and U.

3 METHODS

The process for sample selection and geochemical analysis methods are provided below. Additional details on the methods applied to Stantec and Okane samples are provided in Appendix A.

3.1 Sample Selection

Drill core samples for the most recent testing (Okane, 2023b) from overburden and mine rock were selected from the same core samples used in the previous geochemical characterization program (Stantec 2012, 2013). Okane was informed by Champion that drill cores were stored where they have been protected against the elements and undergone minimal weathering. A full list of samples collected are provided below (Table 3.1).

Using the block model provided from Champion, mine rock samples (excluding ore) were randomly selected by Okane for each formation type relative to anticipated tonnages. Samples by borehole ID, depth, and formation were provided on a sample collection sheet to geologists on-site for sample collection, with additional “backup” samples suggested for each formation type. Three hundred and nineteen (319) static tests were recommended based on an anticipated 913.9 Mt of mine rock in and 105.6 Mt of overburden (Price, 1997). However, it was noted that many of the samples provided from the list were not available, therefore only 263 new samples were collected.

Table 3.1: Total number of samples for analysis by formation.

Formation	Stantec	Okane	Total
Denault	8	4	12
Katsao	37	14	51
Overburden	62	9	71
Menihek	128	83	211
Sokoman	118	90	208
Wishart	86	63	149
Total	439	263	702

3.1.1 Block Model

Champion provided Okane with a Leapfrog file which contained the pit shell and major formation types in order to support the sample selection process for the geochemical characterization program (Okane, 2023a). The updated block model used for identifying samples by formation for Okane samples was a different block model than what was used by Stantec (2013). Champion noted that there were some uncertainties related to the lithology types carried over into the new block model. However, as Stantec (2013) noted that the highest risk PAG material comes from the graphitic schist material (associated with the Menihek formation), an attempt was made to connect lithology codes to the formations in order to determine if there was an obvious trend for some higher risk lithology types (particularly, the graphitic schist). When linking lithology types to the newer block model for Okane samples, some of the Sokoman Formation samples were identified as graphitic schist. Both Champion and WorleyParsons (2014) highlighted the complex interbedding associated with the Menihek and Sokoman formations. This will be considered in the interpretation of results below when comparing the Okane and Stantec datasets but is also noted here as a possible source of discrepancy and complexity associated with the geology of this deposit.

3.2 Geochemical Analysis Methods

Samples were analyzed following the geochemical characterization program recommendations (Okane, 2023a). At the time of drafting this report, only ABA and whole rock analysis data was available for review and inclusion. A summary of methods used in the are listed below.

- ABA analysis. Materials were classified as non NPAG if the neutralization potential ratio (NPR) > 2, "uncertain" where 2 > NPR > 1, or PAG where NPR < 1 (Price, 2009).
    - When considering neutralization potential (NP) of these materials, presence of graphite, siderite, and ankerite previously identified through mineralogical analyses were considered in measurements (where Carbonate NP was determined using $HClO_4$ digestion and CO_2 coulometer).
- Metals from solid samples for 48 elements were analyzed using four-acid digests with ICP-MS in both rounds of sample analysis. Analyzed metals include:
    - Ag, Al, As, Ba, Be, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, FE, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn, and Zr.
- SFE were previously performed – testing on the latest round of samples is currently ongoing and will be reported on in future report phases.

Some difference exists between the analytical methods used by Stantec (2013) and the methods used in the current dataset. A comparison of analytical methods used in both studies is shown in Appendix A.

4 RESULTS

4.1 Laboratory Test Results

4.1.1 Acid Base Accounting

A summary of ABA parameter statistics by mine rock unit for the Okane dataset and all samples (Okane and Stantec) are provided below (Table 4.1 and Table 4.2, respectively). Results for Stantec's data only are provided in Stantec (2013). In addition to listing the results by formation, graphitic schist lithology ABA statistics are included below (Table 4.1 and Table 4.2). As mentioned, this lithology was previously identified as the highest risk material, which is consistent with Okane samples. However, it was noted that 5 of the Okane samples labeled as part of the Sokoman Formation during sample collection fell within the graphitic schist classification in the borehole model. This may be an error in linking classifications between using the old and new block models.

Average total sulfur content was highest in the Menihek Formation samples (1.6 wt.%), specifically the graphitic schist lithology (2.3 wt.%). Several samples from the Sokoman Formation also had elevated total sulfur content relative to the other mine rock units. Acid potential (AP) (calculated using total S) was generally highest in the Menihek Formation – especially related to the graphitic schist lithology type – ranging from the limit of detection to 219 kg $CaCO_3$/t. The Denault Formation had AP and total S below detection limit for all samples. Sulfate-sulfur was generally low in all mine rock units, suggesting most of total sulfur is associated with sulfide minerals and minimal sulfide oxidation had occurred during sample collection, transport, and processing. Sobek NP was generally highest in Denault unit and lowest in the Katsao unit. Several samples with low Sobek NP (<10 kg $CaCO_3$/tonne) were observed in all units, except the Denault. Average NNP was >20 kg $CaCO_3$/tonne in all mine rock units excluding the Katsao and the Menihek Formations.

Figures showing distribution of ABA results from all 702 mine rock samples grouped by formation are also given below (Figure 4.1 to Figure 4.3). In general, findings were consistent with previous studies in that the majority of PAG risk is associated with the Menihek and Katsao Formations (Stantec, 2013). However, samples from all formations (except the Denault Formation) had samples classified as PAG or Uncertain (Figure 4.1). Paste pH values were mostly neutral to slightly basic (Table 4.2, Figure 4.2, and Figure 4.3), though several samples with paste pH below 5 and relatively high sulfate-S may indicate weathering and generated stored acidity due to the oxidation of sulfides. Consistent with the ABA classification, sulphide was measured in all samples except for the Denault (Table 4.2, Figure 4.1), though in analyzing the data it was difficult to discern any notable trends in sulphide or Total S content and ABA-risk parameters (such as NPR, NNP, paste pH). While it is not recommended to use NNP to classify ABA risk, the visual distribution of NNP in all samples (Figure 4.3) highlights the high NP content previously noted by Stantec (2013) that should be sufficient quantity for neutralizing the acidity produced assuming mine rock is well blended.

Table 4.1: Summary of ABA parameter statistics grouped by Formation for Okane samples.

Mine Rock Unit	Analyte	AP	NP	NNP	NPR	Paste pH	Total S	Sulfide-S	S as SO_4	Total Inorganic C (as CO_3)
	Units	kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO_3$/t	-	pH Unit	wt. %	wt. %	wt. %	wt. %
Denault (n=4)	Min	0.3*	840	840	5,376	9.2	0.01*	0.01*	0.01*	51
	P05	0.3*	849	849	5,432	9.2	0.01*	0.01*	0.01*	52
	P50	0.3*	908	908	5,808	9.4	0.01*	0.01*	0.01*	60
	Average	0.3*	919	919	5,880	9.4	0.01*	0.01*	0.01*	58
	P75	0.3*	943	943	6,034	9.4	0.01*	0.01*	0.01*	62
	P95	0.3*	1,005	1,005	6,429	9.4	0.01*	0.01*	0.01*	62
	Max	0.3*	1,020	1,020	6,528	9.4	0.01*	0.01*	0.01*	62
Katsao (n=14)	Min	0.3*	1.0	-54.0	0.1	6.0	0.01*	0.01*	0.01*	0.25*
	P05	0.3*	2.3	-20.9	0.48	6.3	0.01*	0.01*	0.01*	0.25*
	P50	3.8	7.0	1.5	2.7	8.6	0.12	0.09	0.01*	0.25*
	Average	8.3	7.0	-1.2	3.5	8.5	0.27	0.25	0.018	0.26
	P75	8.4	8.8	5.0	4.6	9.5	0.27	0.27	0.018	0.25*
	P95	28	12	8.7	11	9.7	0.9	0.88	0.054	0.3
	Max	60	13	10	13	9.7	1.9	1.9	0.06	0.3
Menihek (n=83)	Min	0.3*	0	-199.0	0	4.0	0.01*	0.01*	0.01*	0.25*
	P05	0.9	2.0	-123.7	0.04	4.7	0.03	0.011	0.01*	0.25*
	P50	20	13	-1.0	0.88	8.2	0.65	0.65	0.01*	1.3
	Average	36	47	11	18	7.7	1.2	1.1	0.035	3.9
	P75	44	56	40	6.1	8.6	1.4	1.3	0.02	6.1
	P95	131	162	161	125	9.1	4.2	4.2	0.14	13

Mine Rock Unit	Analyte	AP	NP	NNP	NPR	Paste pH	Total S	Sulfide-S	S as SO_4	Total Inorganic C (as CO_3)
	Max	219	424	397	293	9.5	7.0	6.7	0.61	31
Overburden (n=9)	Min	0.3*	2.0	-21.0	0.45	7.2	0.01*	0.01*	0.010*	0.25*
	P05	0.3*	2.8	-11.8	2.0	7.3	0.01*	0.01*	0.010*	0.25*
	P50	0.9	13	6.0	13	8.4	0.03	0.01*	0.010*	0.25*
	Average	5.0	30	25	30	8.4	0.16	0.15	0.017	2.3
	P75	1.9	17	13	42	9.2	0.06	0.06	0.010*	0.7
	P95	23	111	110	96	9.6	0.75	0.71	0.044	9.3
	Max	38	138	137	110	9.6	1.2	1.1	0.060	10
Sokoman (n=90)	Min	0.3*	0	-116.0	0	6.2	0.01	0.01	0.010*	0.25*
	P05	0.3*	1.0	-57.5	0.11	6.4	0.01	0.01	0.010*	0.25*
	P50	1.6	39	28	8.5	8.4	0.05	0.04	0.010*	5.2
	Average	15	87	72	125	8.1	0.48	0.47	0.017	7.8
	P75	9.1	141	140	113	8.7	0.29	0.28	0.020	13
	P95	104	270	268	722	8.9	3.3	3.3	0.040	25
	Max	175	650	641	1,158	9.3	5.6	5.6	0.140	39
Wishart (n=63)	Min	0.3*	0	-61.0	0	5.2	0.01*	0.01*	0.010*	0.25*
	P05	0.3*	1.0	-12.6	0.27	6.5	0.01*	0.01*	0.010*	0.25*
	P50	0.3*	3.0	2.0	6.4	7.9	0.01*	0.01*	0.010*	0.25*
	Average	8.3	31	23	69	7.8	0.27	0.26	0.014	2.8
	P75	3.8	38	21	11	8.6	0.12	0.11	0.010*	2.9
	P95	39	160	151	500	9.4	1.2	1.2	0.030	13
	Max	122	215	215	1,030	9.6	3.9	3.9	0.060	22
	Min	2.5	2.0	-199	0.03	4.7	0.08	0.07	0.01*	0.25*

Mine Rock Unit	Analyte	AP	NP	NNP	NPR	Paste pH	Total S	Sulfide-S	S as SO_4	Total Inorganic C (as CO_3)
Graphitic Schist Lithology (n=27)	P05	4.5	4.0	-133.8	0.053	6.8	0.14	0.088	0.01*	0.25*
	P50	66	10	-52	0.23	8.2	2.1	2.1	0.01*	0.66
	Average	73	23	-50	0.9	8.0	2.3	2.3	0.03	2.1
	P75	126	18	-8.0	0.62	8.6	4.0	4.0	0.02	1.9
	P95	168	97	44	4.9	8.8	5.4	5.4	0.11	8.8
	Max	219	147	121	7.0	9.1	7.0	6.7	0.28	12

* Value reported at detection limit

Table 4.2: Summary of ABA parameter statistics grouped by Formation for Okane and Stantec samples.

Mine Rock Unit	Analyte	AP	NP	NNP	NPR	Paste pH	Total S	Sulfide-S	S as SO_4	Total Inorganic C (as CO_3)
Units		kg $CaCO_3$/t	kg $CaCO_3$/t	kg $CaCO_3$/t	-	pH Unit	wt. %	wt. %	wt. %	wt. %
Denault (n=12)	Min	0.16*	483	483	2,240	9.2	0.0025*	0.005*	0.005*	29
	P05	0.16*	484	484	2,723	9.3	0.0025*	0.005*	0.005*	29
	P50	0.16*	802	802	5,150	9.4	0.0025*	0.005*	0.005*	48
	Average	0.22*	763	763	4,717	9.4	0.005*	0.0071*	0.0067*	47
	P75	0.3*	907	907	5,838	9.5	0.01*	0.01*	0.01*	57
	P95	0.31	984	984	6,326	9.6	0.01*	0.01*	0.01*	62
	Max	0.31	1,020	1,020	6,528	9.6	0.01*	0.01*	0.01*	62
Katsao (n=51)	Min	0.16*	0	-54.0	0	6.0	0.0025*	0.005*	0.005*	0.0025
	P05	0.16*	0.15	-8.4	0	7.1	0.0085	0.005*	0.005*	0.0063
	P50	2.5	1.6	0.2	1.4	9.3	0.08	0.07	0.02	0.11*
	Average	4.4	3.5	-0.9	3.6	9.0	0.18	0.14	0.04	0.2*
	P75	5.5	6.3	1.9	4.2	9.7	0.24	0.18	0.045	0.25*
	P95	11	12	7.2	14	10.0	0.48	0.35	0.13	0.62
	Max	60	14	10	42	10	1.9	1.9	0.28	2.2
Menihek (n=211)	Min	0.16*	0	-199.0	0	4.0	0.01*	0.005*	0.005*	0.03*
	P05	0.62	3.0	-119.6	0.07	4.9	0.03	0.01*	0.01*	0.25*
	P50	19	11	-3.6	0.8	8.4	0.78	0.62	0.07	6.6
	Average	33	40	6.7	18	8.1	1.3	1.1	0.22	12
	P75	38	33	18	3.1	9.1	1.6	1.2	0.25	13
	P95	130	175	164	95	9.7	4.5	4.2	0.87	40
	Max	219	462	451	1,265	10	8.5	6.7	5.8	106

Mine Rock Unit	Analyte	AP	NP	NNP	NPR	Paste pH	Total S	Sulfide-S	S as SO_4	Total Inorganic C (as CO_3)
Overburden (n=71)	Min	0.16*	-16.0	-31.6	-1.3	3.9	0.0025*	0.005*	0.005*	0.04*
	P05	0.16*	1.0	-11.5	0.43	5.3	0.0055	0.005*	0.005*	0.066*
	P50	0.31	6.8	5.3	13	9.0	0.024	0.01*	0.02	0.39
	Average	2.5	11	8.1	21	8.5	0.1	0.08	0.025	1.2
	P75	0.77	9.7	8.6	27	9.4	0.041	0.02	0.02	0.64
	P95	17	40	38	53	9.7	0.65	0.55	0.065	8.6
	Max	39	138	137	110	10	1.5	1.3	0.24	11
Sokoman (n=208)	Min	0.16*	0	-191.9	0	5.2	0.0025*	0.005*	0.005*	0.019
	P05	0.16*	1.0	-29.0	0.21	7.0	0.009*	0.005*	0.005*	0.2*
	P50	1.3	71	67	34	8.5	0.054	0.03	0.02	7.3
	Average	11	111	100	246	8.3	0.43	0.35	0.075	9.5
	P75	6.6	162	161	247	8.8	0.29	0.2	0.04	14
	P95	52	373	360	1,148	9.2	1.7	1.6	0.39	28
	Max	196	650	641	3,265	10.0	8.1	6.3	2.2	43
Wishart (n=149)	Min	0.16*	0	-61.0	0	5.2	0.0025*	0.005*	0.005*	0.025*
	P05	0.16*	0.8	-10.0	0.39	6.6	0.0025*	0.005*	0.005*	0.05*
	P50	0.3*	6.0	3.4	8.0	8.6	0.011*	0.01*	0.01*	0.32
	Average	5.0	38	33	139	8.4	0.19	0.16	0.035	2.8
	P75	1.3	36	27	47	9.2	0.067	0.03	0.02	3.0
	P95	29	167	165	884	9.6	0.96	1.2	0.16	13
	Max	122	360	360	2,323	9.8	3.9	3.9	0.98	22
Graphitic Schist Lithology (n=65)	Min	0.31	2.0	-199	0.0	4.5	0.08	0.01*	0.005*	0.25*
	P05	2.3	4.0	-173	0.052	5.1	0.037	0.07	0.01*	0.25*
	P50	37	9.1	-30	0.2	8.3	0.11	1.2	0.09	14

Mine Rock Unit	Analyte	AP	NP	NNP	NPR	Paste pH	Total S	Sulfide-S	S as SO_4	Total Inorganic C (as CO_3)
	Average	64	22	-42	4.1	7.9	1.9	2.0	0.34	94
	P75	87	15	-8.5	0.59	8.7	2.4	2.8	0.28	162
	P95	184	61	23	6.9	9.5	3.3	5.9	1.5	383
	Max	219	328	326	150	10.0	6.7	6.7	5.8	539

* Value reported at or below detection limit. Detection limits from both Okane and Stantec datasets were merged; Stantec may have used only half the detection limit in their reporting in some instances.

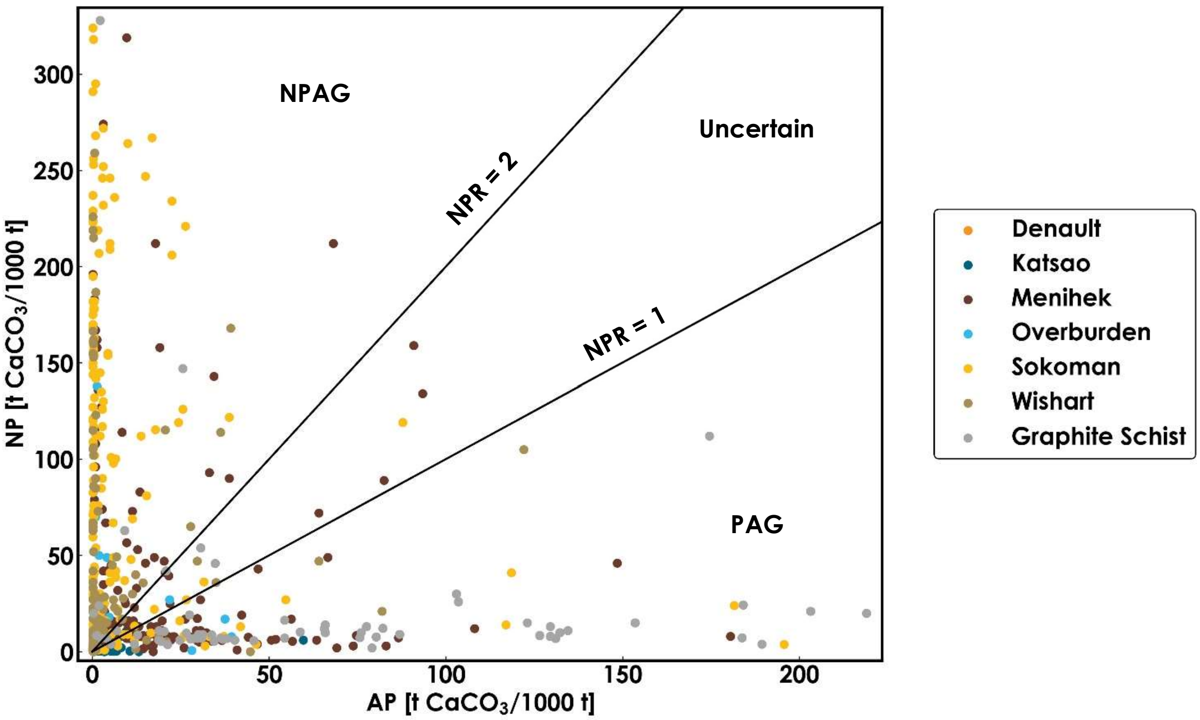

Figure 4.1: Distribution of NPR in Kami mine rock units for Okane and Stantec samples.

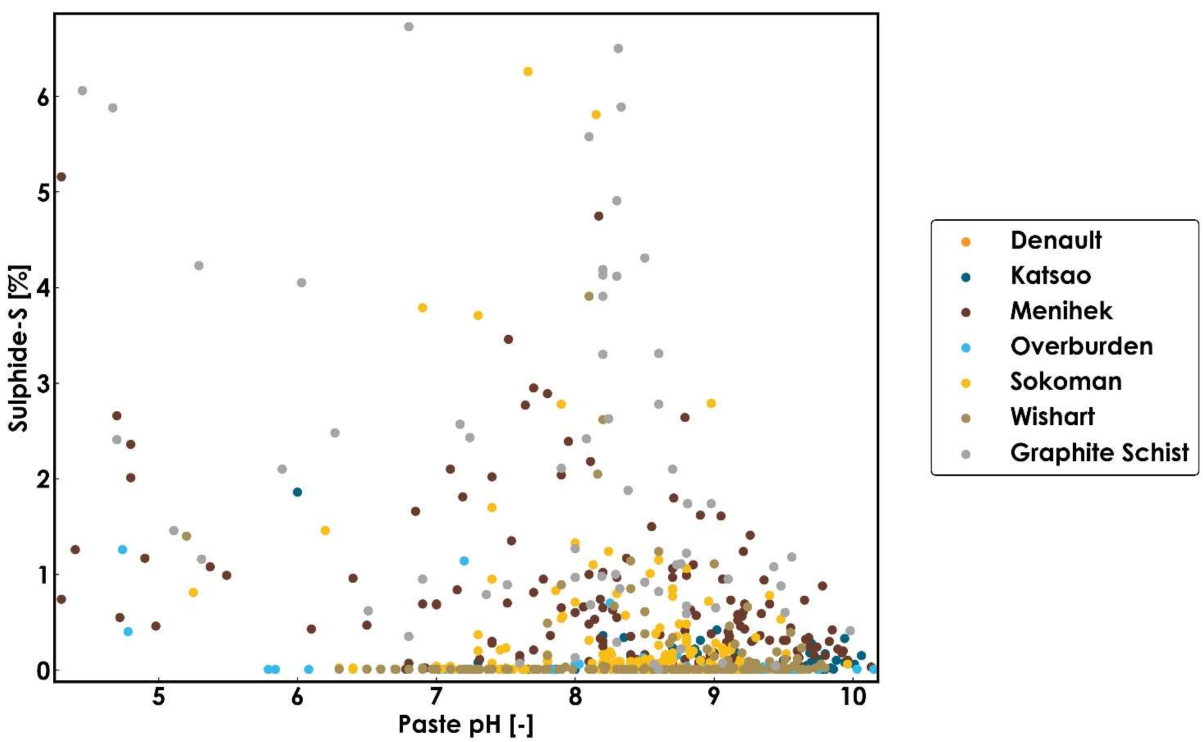

Figure 4.2: Paste pH and sulphide-S in Kami mine rock units for Okane and Stantec samples.

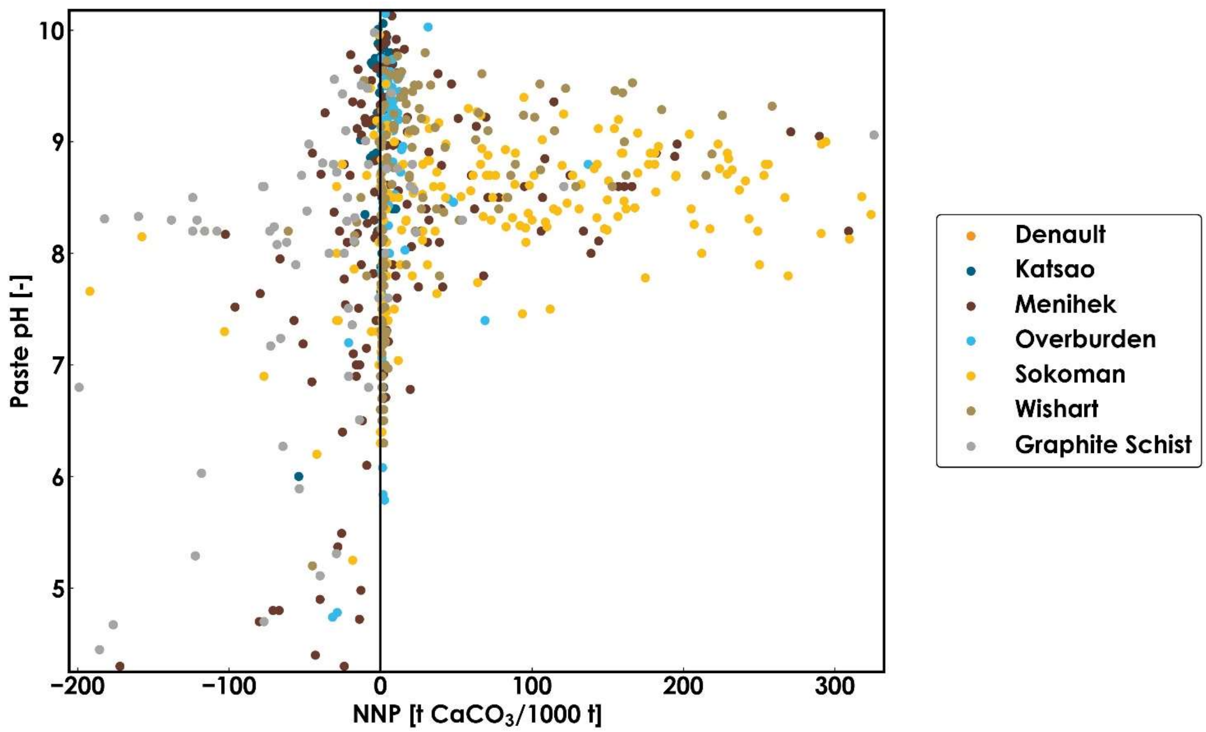

Figure 4.3: NNP and paste pH in Kami mine rock units for Okane and Stantec samples.

4.1.1.1 Spatial Distribution of NPR in Planned Kami Pit

Selected cross sections showing sample locations and their respective NPR were developed to illustrate the special distribution of NPR in the various Kami mine rock units. Previous pit geology map with boreholes sampled for ML/ARD by Stantec (2013) were used to develop cross sections for comparison (Appendix C). Samples were classified into one of three categories based on NPR:

- Red for PAG if NPR ≤ 1
- Yellow for Uncertain if 1 < NPR ≤ 2
- Green for NPAG if NPR > 2

Additional cross sections with NPR distributions throughout the pit shell are found in Appendix C.

In general, samples with the lowest NPRs were observed to be concentrated in the Menihek formation and its margins. An important observation is the concentration of low NPR samples at a relatively shallow depth above the ore body (Figure 4.4). Several samples with low NPR (≤ 1) were also observed in the Katsao and Sokoman formations (Figure 4.5).

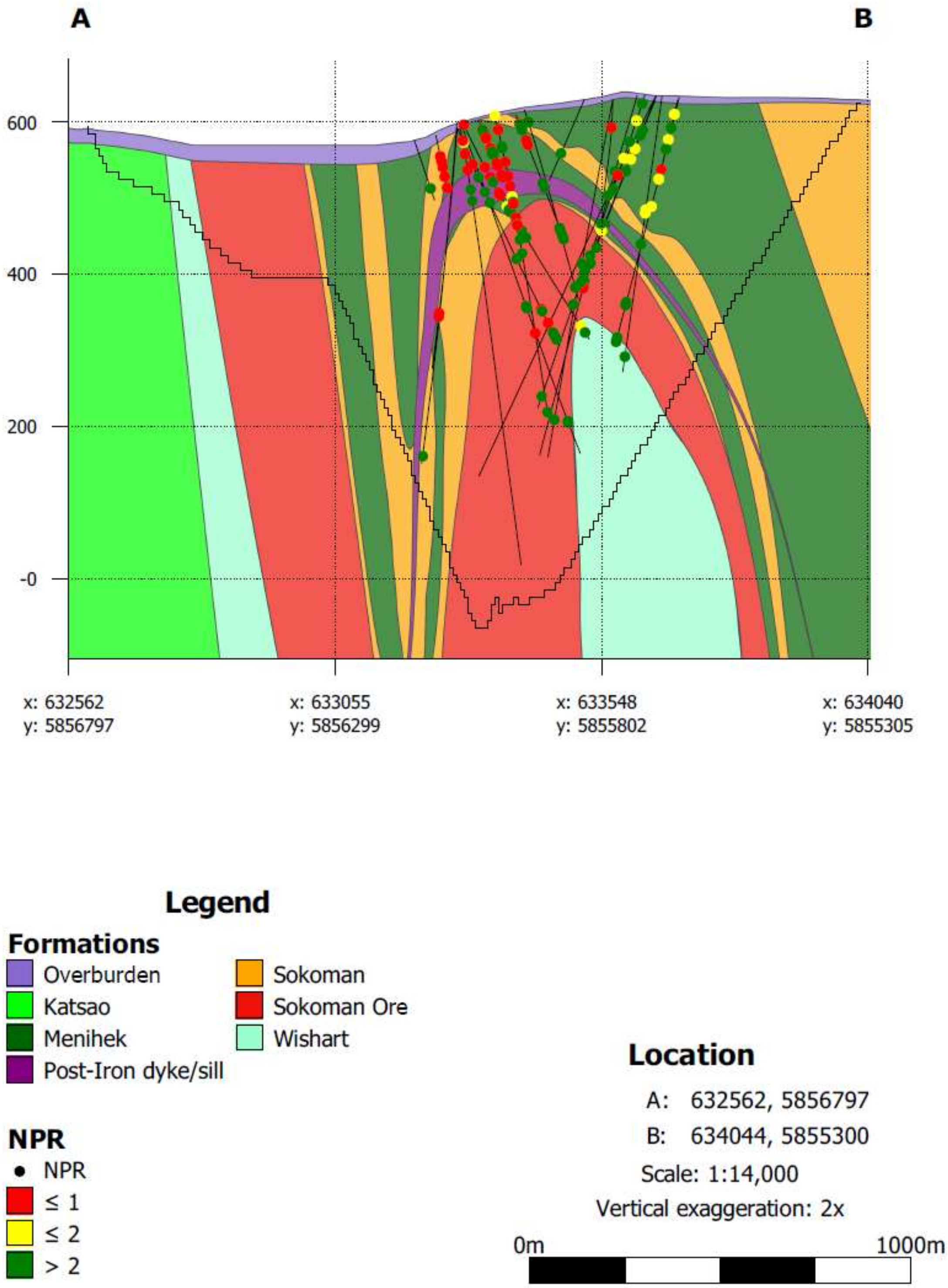

Figure 4.4: L18 cross section showing spatial distribution of NPR in Kami pit shell.

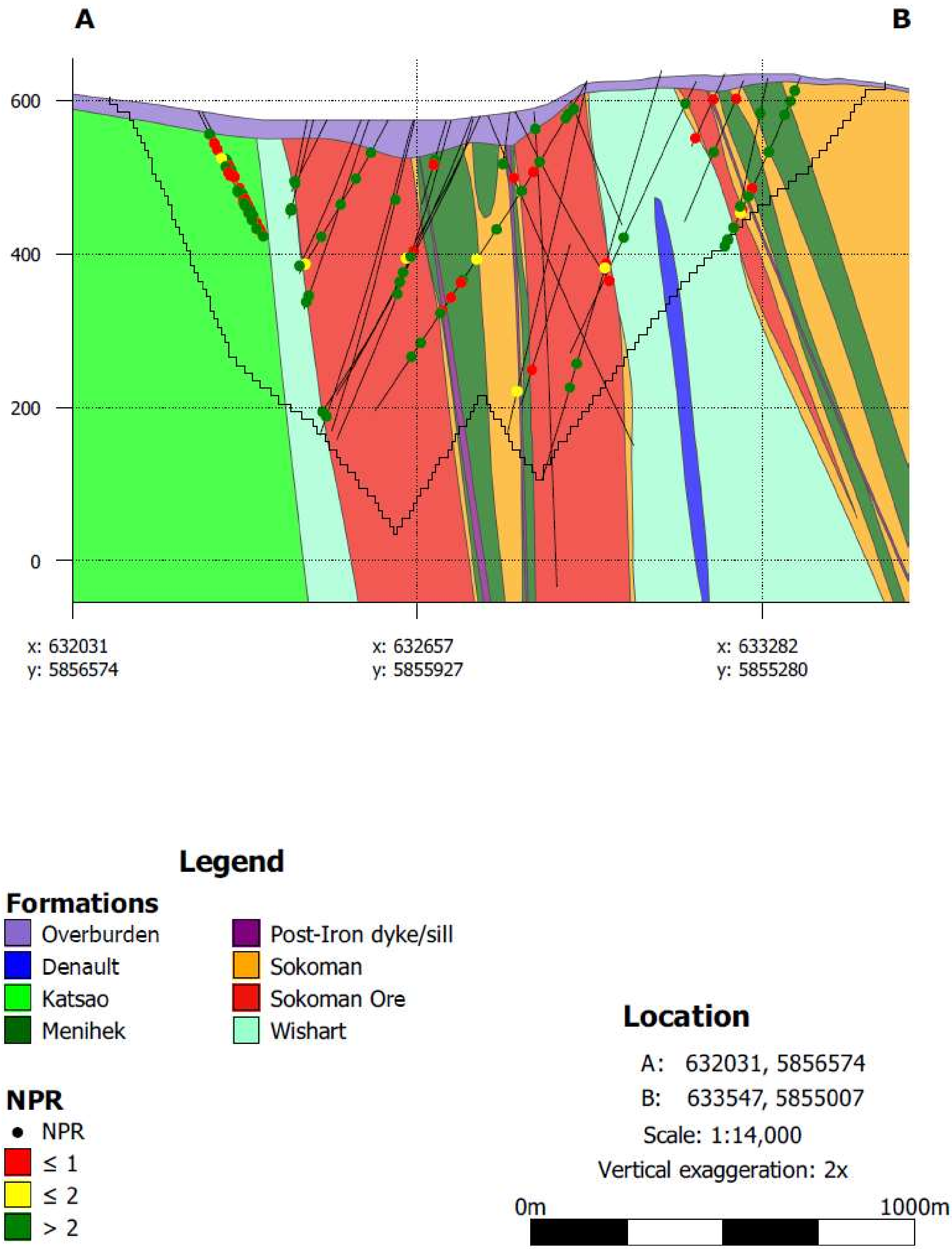

Figure 4.5: L12 cross section showing spatial distribution of NPR in Kami pit shell.

4.1.2 Whole Rock Analysis

Whole rock analysis data can be used to provide a preliminary understanding of potential contaminants of concern from mine rock by identifying elements that are elevated relative to crustal abundances. However, elevated crustal abundance does not necessarily indicate these metals will be mobilized. Interpretations of potential contaminants using whole rock analysis should be verified using SFE tests and kinetic studies.

Metal(loid) concentrations obtained via four-acid digest were compared relative to global crustal abundances as a pre-liminary assessment of potential environmental risks (Price, 1997). Parameters which are elevated relative to 5x crustal abundance and may be potential environmental concerns are highlighted in Table 4.3.

Key contaminants of concern (As, Cu, Ni, and Zn) previously identified by Stantec (2013) were all below the 5x crustal abundance threshold in Kami Project mine rock solids. However, this does not eliminate the possibility of potential associated water quality issues. Findings should be further assessed with SFE and kinetic study data. In general, the highest concentrations of metals were associated with the Menihek Formation followed by the Sokoman Formation.

Table 4.3: Average whole rock analysis results by rock unit.

Parameter (unit)	Unit	5x Crustal Abundance	Denault	Katsao	Menihek	Overburden	Sokoman	Wishart
Ag	ppm	0.38	0.01	0.2	**0.48**	0.05	0.2	0.10
Al	%	41.8	0.02	6.6	4.3	4.8	1.9	2.0
As	ppm	9	0.2	0.7	7.4	0.6	3.9	1.6
Ba	ppm	1950	10	450	350	360	250	250
Be	ppm	10	0.07	1.7	2.2	0.8	1.3	1.2
Bi	ppm	0.041	0.02	**0.09**	**0.3**	0.02	**0.08**	**0.05**
Ca	%	23.3	19	1.4	1.7	1.0	2.7	0.9
Cd	ppm	0.8	0.1	0.07	**1.3**	0.05	**0.8**	0.2
Ce	ppm	332	0.8	38	54	24	23	31
Co	ppm	145	2.4	12	16	6.1	12	9.8
Cr	ppm	610	0.7	50	39	51	31	24
Cs	ppm	15	0.05	2.6	3.5	0.7	1.7	1.2
Cu	ppm	340	1.5	59	87	7.0	27	14
Fe	%	31.1	1.0	3.0	15	7.7	17	9.4
Ga	ppm	95	0.1	17	12	10	5.5	5.0
Ge	ppm	7.5	0.05	0.1	0.2	0.09	0.2	0.2
Hf	ppm	14	0.1	2.2	2.4	1.0	0.9	1.5
In	ppm	1.2	0.005	0.03	0.05	0.02	0.02	0.01
K	ppm	9.2	0.01	2.6	1.6	2.3	0.7	1.3
La	ppm	173	0.5	17	27	11	12	15

Parameter (unit)	Unit	5x Crustal Abundance	Denault	Katsao	Menihek	Overburden	Sokoman	Wishart
Li	ppm	90	0.6	20	20	7.9	9.5	7.2
Mg	%	13.8	12	1.3	1.4	0.5	2.1	0.9
Mn	ppm	5300	920	480	2800	690	5380	6700
Mo	ppm	6	0.1	1.4	22	0.6	8.0	2.6
Na	ppm	11.4	0.01	2.5	0.7	1.7	0.3	0.05
Nb	ppm	100	0.1	4.7	8.1	2.5	4.3	4.5
Ni	ppm	495	1.6	37	61	11	22	15
P	ppm	5600	240	720	860	330	500	450
Pb	ppm	65	0.6	22	15	26	6.6	4.6
Rb	ppm	390	0.3	86	66	63	28	37
Re	ppm	0.0035	0.002	0.002	0.01	0.002	0.004	0.002
S	%	0.17	0.01	**0.4**	**1.3**	0.02	**0.5**	**0.2**
Sb	ppm	1	0.05	0.05	0.18	0.06	0.09	0.06
Sc	ppm	100	0.2	8.3	9.1	4.7	4.4	2.6
Se	ppm	0.25	**1.0**	**1.6**	**2.8**	**1.0**	**1.3**	**1.0**
Sn	ppm	10.5	0.2	1.3	1.4	0.5	0.6	0.4
Sr	ppm	1920	55	360	72	200	56	25
Ta	ppm	8.5	0.05	0.4	0.5	0.2	0.2	0.3
Te	ppm	0.025	**0.05**	**0.05**	**0.1**	**0.05**	**0.1**	**0.1**
Th	ppm	40.5	0.03	5.6	7.4	7.2	2.6	4.5
Ti	ppm	3.2	0.01	0.2	0.3	0.1	0.2	0.1
Tl	ppm	3.6	0.02	0.6	0.8	0.4	0.3	0.4
U	ppm	11.5	0.2	9.6	**11.6**	9.9	3.0	1.6
V	ppm	680	1.0	56	220	25	81	39
W	ppm	6	0.1	0.5	3.0	0.3	1.4	0.8
Y	ppm	155	1.3	15	25	10	11	8.0
Zn	ppm	380	4.0	44	230	26	110	29
Zr	ppm	810	0.5	61	93	33	34	57

Crustal Abundance after Price (1997)

4.2 Dataset Comparisons and Statistical Test Results

4.2.1 Comparison of Okane and Stantec Results

Results from the Okane ABA analysis were compared to previous analyses completed by Stantec to ensure consistency. In general, distributions of NPAG and PAG material by mine rock unit were comparable between the two datasets (Table 4.4 to Table 4.6). However, an increase of ~5 % PAG samples were observed in the Okane dataset, mainly associated with increased PAG samples observed in the Sokoman and Wishart units. However, 1.6% more PAG samples in the Menihek unit were observed in the Stantec dataset relative to Okane. A visual comparison of NP-Sobek versus AP between datasets by formation is shown in Figure 4.6. Table 4.4 shows the total number of samples analyzed that correspond to the ABA classification. In order to consider how these numbers apply to the total mine rock and MRS, the percentage of NPAG, PAG, and Uncertain samples are applied to the total tonnage of mine rock (Table 4.5) and to MRS (Table 4.6) (considering NPAG tonnages removed for TMF dam embankment construction). If applying the percentage of PAG samples by formation to each of the units, 27.3% of the overall planned MRS may consist of PAG rock, with an additional 6.7% of the mine rock being Uncertain (Table 4.6). Using ABA classification from Okane and Stantec datasets (Table 4.5), the total PAG mine rock is estimated between 249 Mt to 312 Mt (which falls within the range provided by WorleyParsons (2014) estimating total PAG mine rock ranged from 76 Mt to 316 Mt).

Additionally, weighted ABA parameters were calculated using all data and Okane samples only (Table 4.7) based on planned contributions of each formation to the MRS (Table 2.1). Even when removing NPAG mine rock for the TMF embankment, there should be sufficient NP available to neutralize acidity from sulfide minerals assuming a well-blended MRS, as both median and average NPR values are > 2. This finding is consistent with Stantec (2013). The OVBS which is planned to contain only overburden material, would have average and median NPR values of 30 and 13 respectively, with the 5th percentile of data still being an NPR of 2. Therefore, it can be assumed that the OVBS is not a risk for acidic drainage, consistent with conclusions by WorleyParsons (2014).

Table 4.4: Number of samples under each ABA classification based on NPR.

Company	Formation	Total Samples	Number of NPAG Samples	Number of PAG Samples	Number of Uncertain Samples
Stantec	Denault	8	8	0	0
	Katsao	37	17	17	3
	Menihek	128	42	72	14
	Overburden	62	57	4	1
	Sokoman	118	104	9	5
	Wishart	86	80	4	2
	Total	**439**	**308**	**106**	**25**
Okane	Denault	4	4	0	0
	Katsao	14	8	6	0
	Menihek	83	30	42	11
	Overburden	9	8	1	0
	Sokoman	90	67	18	5
	Wishart	63	52	8	3
	Total	**263**	**169**	**75**	**19**
Total	Denault	12	12	0	0
	Katsao	51	25	23	3
	Menihek	211	72	114	25

Company	Formation	Total Samples	Number of NPAG Samples	Number of PAG Samples	Number of Uncertain Samples
	Overburden	71	65	5	1
	Sokoman	208	171	27	10
	Wishart	149	132	12	5
	Total	**702**	**477**	**181**	**44**

NPAG – NPR >=2; PAG – NPR <=1; Uncertain = 1 > NPR > 2.

Table 4.5: ABA classifications weighted percentages based on total final formation tonnages.

Company	Formation	Number of Samples	NPAG Contribution	PAG Contribution	Uncertain Contribution
Stantec	Denault	8	2.0%	0.0%	0.0%
	Katsao	37	2.3%	2.3%	0.4%
	Menihek	128	9.2%	15.8%	3.1%
	Overburden	62	9.2%	0.6%	0.2%
	Sokoman	118	25.6%	2.2%	1.2%
	Wishart	86	24.2%	1.2%	0.6%
	Total	**439**	**72.4%**	**22.1%**	**5.5%**
Okane	Denault	4	2.0%	0.0%	0.0%
	Katsao	14	2.9%	2.1%	0.0%
	Menihek	83	10.1%	14.2%	3.7%
	Overburden	9	8.9%	1.1%	0.0%
	Sokoman	90	21.6%	5.8%	1.6%
	Wishart	63	21.5%	3.3%	1.2%
	Total	**263**	**66.9%**	**26.5%**	**6.6%**
Total	Denault	12	2.0%	0.0%	0.0%
	Katsao	51	2.5%	2.3%	0.3%
	Menihek	211	9.6%	15.1%	3.3%
	Overburden	71	9.2%	0.7%	0.1%
	Sokoman	208	23.8%	3.8%	1.4%
	Wishart	149	23.0%	2.1%	0.9%
	Total	**702**	**70.0%**	**23.9%**	**6.0%**

Table 4.6: ABA classifications weighted percentages based on of MRS formation tonnages.

Company	Formation	Number of Samples	NPAG Contribution	PAG Contribution	Uncertain Contribution
Stantec	Denault	8	2.6%	0.0%	0.0%
	Katsao	37	2.9%	2.9%	0.5%
	Menihek	128	11.1%	19.0%	3.7%
	Sokoman	118	27.3%	2.4%	1.3%

Company	Formation	Number of Samples	NPAG Contribution	PAG Contribution	Uncertain Contribution
	Wishart	86	24.5%	1.2%	0.6%
	Total	**439**	**68.4%**	**25.5%**	**6.1%**
Okane	Denault	4	2.6%	0.0%	0.0%
	Katsao	14	3.6%	2.7%	0.0%
	Menihek	83	12.2%	17.1%	4.5%
	Sokoman	90	23.1%	6.2%	1.7%
	Wishart	63	21.7%	3.3%	1.3%
	Total	**263**	**63.2%**	**29.4%**	**7.5%**
Total	Denault	12	2.6%	0.0%	0.0%
	Katsao	51	3.1%	2.8%	0.4%
	Menihek	211	11.5%	18.3%	4.0%
	Sokoman	208	25.5%	4.0%	1.5%
	Wishart	149	23.3%	2.1%	0.9%
	Total	**702**	**66.0%**	**27.3%**	**6.7%**

Table 4.7: Weighted ABA Values Based on MRS Tonnages.

Weighted By Tonnage	AP	NP	NPR	Total S (wt. %)	Sulfide-S (wt. %)	Total Inorganic C (as CO_3 wt. %)
Okane Dataset						
Median	7.7	45	5.8	0.25	0.24	3.9
Average	20	79	4.0	0.63	0.61	6.2
All Data						
Median	7.2	51	7.2	0.29	0.23	6.0
Average	16	81	5.0	0.62	0.52	9.1

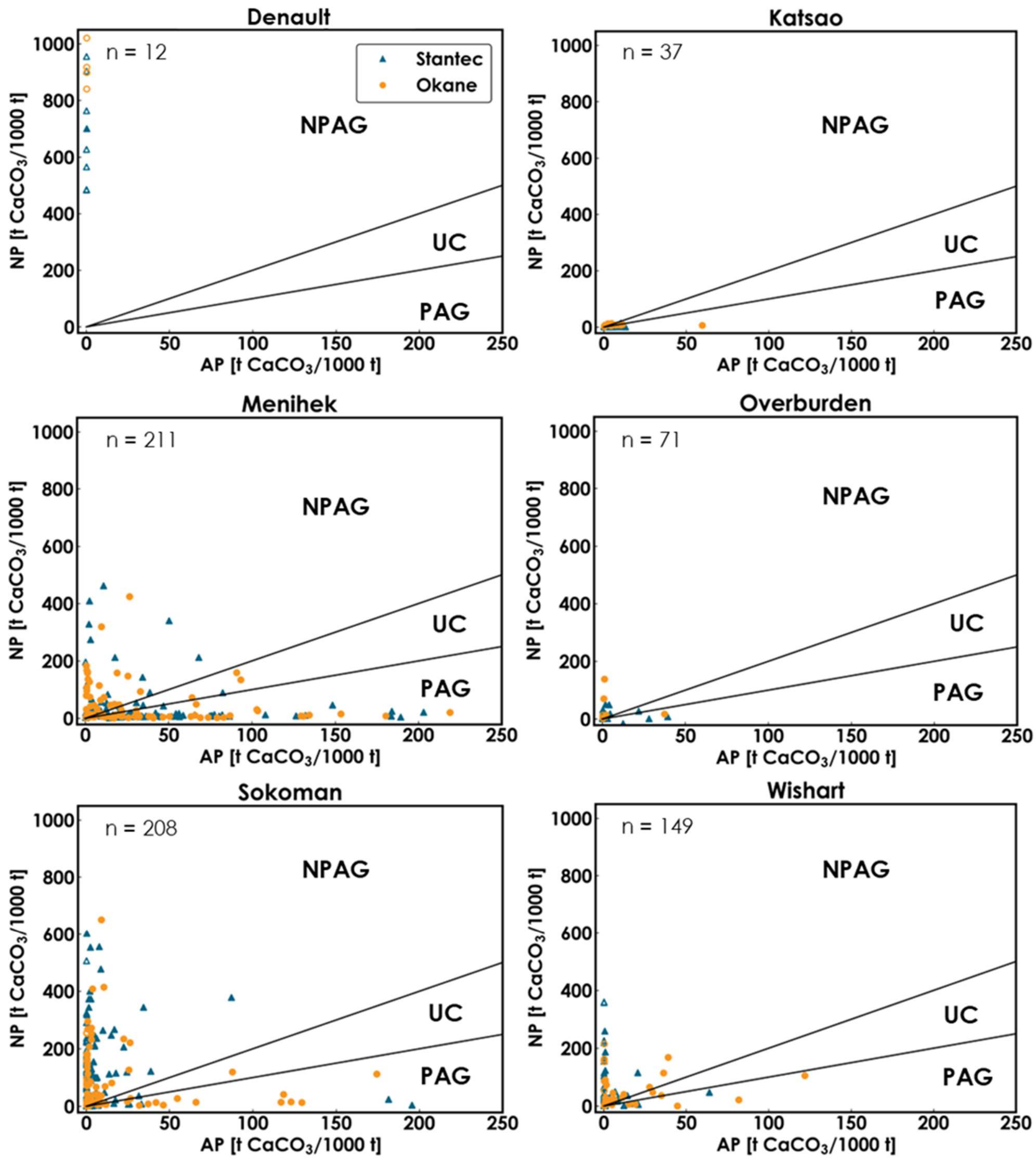

Figure 4.6: Comparison of NP Sobek vs. AP for the Stantec (2013) and Okane datasets.

Open symbols represent samples with total sulphur values below detection limit.

The graphitic schist lithology, which has previously been highlighted as a lithology of concern, was assessed in all datasets. Consistent with previous results, most (82%) of graphitic schist samples were classified as PAG (Table 4.8). Stantec (2013) previously classified this lithology as associated solely with the Menihek Formation. However, in the current Okane dataset, several graphitic schist samples were also associated with the Sokoman Formation. This could be due to inconsistencies between the lithology codes and updated formation types in the most recent block model previously identified.

Stantec (2013) previously estimated 76 Mt of graphitic mica schist in the Rose Pit, representing about 7% of the total mine rock. While the graphitic mica schist lithology is highlighted as the highest risk material, it does not account for all the PAG mine rock (Table 4.5).

Table 4.8: Summary of Graphitic Schist lithology ABA results.

Company	Number of Samples	NPAG		PAG		Uncertain	
		Number	Percentage	Number	Percentage	Number	Percentage
Stantec	38	4	10.5%	31	81.6%	3	7.9%
Okane	27	4	14.8%	22	81.5%	1	3.7%
All	65	8	12.3%	53	81.5%	4	6.2%

4.2.2 Statistical Tests

To identify any inconsistencies between the Stantec and Okane datasets, a comparison of basic statistics for ABA parameters (Table 4.9) and metals of concern (As, Cu, Ni, Zn) highlighted by Stantec (2013) in solids (Table 4.10) was undertaken. Although the metals noted here were not highlighted in the whole rock metals as being over 5x the global crustal abundance, these metals were highlighted from SFE and kinetic tests.

To determine whether there are statistically significant differences between the Stantec data and the Okane datasets, Student's t-tests were performed at a 0.05 level of significance assuming unequal variances for these two datasets. If the p-value is smaller than the level of significance in the t-tests, there is a statistically significant difference between the two tested data; if the p-value is greater than the level of significance, no statistically significant difference exists in the two tested data. Results of Student's t-test results are shown in Appendix B.

The t-test results for NPR data from the Stantec and the Okane data showed consistencies for all tested lithologies and formations between the two datasets, except in the Sokoman Formation, that displayed statistically significant differences between the NPR data. T-test results on whole metals for As, Cu, Ni, and Zn data found no statistically significant differences between the Stantec and the Okane datasets. Therefore, the data obtained by Okane is statistically consistent with the previous Stantec's assessment, with the exception the NPR data in the Sokoman Formation.

Table 4.9: Statistics of ABA data by formation and for graphitic schist lithology.

Data Groups	Lithology	No.	NPR					Total Sulfur (%)					Paste pH				
			Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max
Stantec	Denault	8	4136	1388	34%	2240	6161	0.003	0.000	0%	0.0025	0.0025	9.48	0.09	1%	9.34	9.63
	Katsao	37	4	7	204%	0	42	0.141	0.160	114%	0.0025	0.587	9.14	0.88	10%	7.01	10.24
	Menihek	128	18	114	632%	0	1265	1.360	1.594	117%	0.014	8.51	8.38	1.30	16%	4.45	10.13
	Graphite Schist	38	6	26	405%	0	150	2.386	2.226	93%	0.037	8.51	7.85	1.50	19%	4.45	9.98
	Overburden	62	19	17	88%	-1.3	101	0.093	0.248	267%	0.0025	1.49	8.53	1.42	17%	3.93	10.15
	Sokoman	118	338	556	165%	0	3265	0.386	1.067	276%	0.0025	8.05	8.50	0.65	8%	5.25	9.96
	Wishart	86	190	440	232%	0.1	2323	0.128	0.375	292%	0.0025	3.03	8.77	0.78	9%	6.71	9.8
Okane	Denault	4	5880	480	8%	5376	6528	0.010	0.000	0%	0.01	0.01	9.35	0.10	1%	9.2	9.4
	Katsao	14	3	4	105%	0.1	13	0.266	0.488	184%	0.01	1.91	8.48	1.17	14%	6	9.7
	Menihek	83	18	47	265%	0	293	1.155	1.418	123%	0.01	7.01	7.72	1.32	17%	4	9.5
	Graphite Schist	27	1	2	191%	0.03	7	2.330	1.925	83%	0.08	7.01	8.02	0.89	11%	4.7	9.1
	Overburden	9	30	38	128%	0.45	110	0.160	0.391	244%	0.01	1.2	8.40	0.93	11%	7.2	9.6
	Sokoman	90	125	243	194%	0	1158	0.478	1.050	220%	0.01	5.58	8.13	0.77	9%	6.2	9.3
	Wishart	63	69	207	299%	0	1030	0.266	0.656	246%	0.01	3.91	7.80	0.99	13%	5.2	9.6
Total (Okane and Stantec)	Denault	12	4717	1423	30%	2240	6528	0.005	0.004	74%	0.0025	0.01	9.44	0.11	1%	9.2	9.63
	Katsao	51	4	7	183%	0	42	0.175	0.289	165%	0.0025	1.91	8.96	1.00	11%	6	10.24
	Menihek	211	18	94	522%	0	1265	1.279	1.527	119%	0.01	8.51	8.12	1.35	17%	4	10.13
	Graphite Schist	65	4	20	484%	0	150	2.362	2.090	88%	0.037	8.51	7.92	1.28	16%	4.45	9.98
	Overburden	71	21	21	100%	-1.3	110	0.101	0.267	264%	0.0025	1.49	8.51	1.36	16%	3.93	10.15
	Sokoman	208	246	460	187%	0	3265	0.426	1.058	248%	0.0025	8.05	8.34	0.72	9%	5.25	9.96
	Wishart	149	139	364	263%	0	2323	0.187	0.515	276%	0.0025	3.91	8.36	1.00	12%	5.2	9.8

Data Groups	Lithology	No.	NP (kg $CaCO_3$/t)					AP (kg $CaCO_3$/t)					NNP (kg $CaCO_3$/t)				
			Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max
Stantec	Denault	8	8	685	179	26%	483.3	955	0.18	0.05	30%	0.16	0.31	685.0	179.4	0.3	483.2
	Katsao	37	37	2	3	158%	0	14.3	2.97	3.62	122%	0.16	13.13	-0.8	3.9	-4.8	-13.1
	Menihek	128	128	36	76	214%	1.5	462	31.75	40.19	127%	0.16	203.13	4.0	89.3	22.4	-185.4
	Graphite Schist	38	38	21	52	252%	3.8	328	57.04	55.67	98%	0.31	203.13	-36.3	82.3	-2.3	-185.4
	Overburden	62	62	8	10	131%	-16	50	2.16	6.72	311%	0.16	39.38	5.6	11.9	2.1	-31.6
	Sokoman	118	118	130	134	103%	0.3	601.7	8.38	26.22	313%	0.16	195.63	121.3	137.7	1.1	-191.9
	Wishart	86	86	43	76	177%	0.4	360	2.54	8.00	314%	0.16	64.06	40.2	76.1	1.9	-17.1
Okane	Denault	4	4	919	75	8%	840	1020	0.30	0.00	0%	0.3	0.3	918.8	75.0	0.1	840.0
	Katsao	14	14	7	3	48%	1	13	8.31	15.26	184%	0.3	59.7	-1.2	15.7	-12.9	-54.0
	Menihek	83	83	47	72	154%	0	424	36.11	44.32	123%	0.3	219	10.9	91.3	8.4	-199.0
	Graphite Schist	27	27	23	34	149%	2	147	72.81	60.16	83%	2.5	219	-50.0	66.9	-1.3	-199.0
	Overburden	9	9	30	46	152%	2	138	5.00	12.21	244%	0.3	37.5	25.1	48.3	1.9	-21.0
	Sokoman	90	90	87	113	130%	0	650	14.94	32.82	220%	0.3	174.5	72.3	121.5	1.7	-116.0
	Wishart	63	63	31	51	163%	0	215	8.31	20.48	246%	0.3	122	23.0	49.9	2.2	-61.0
Total (Okane and Stantec)	Denault	12	12	763	188	25%	483.3	1020	0.22	0.07	33%	0.16	0.31	762.9	187.8	0.2	483.2
	Katsao	51	51	3	4	115%	0	14.3	4.43	8.70	196%	0.16	59.7	-0.9	8.7	-9.3	-54.0
	Menihek	211	211	40	75	186%	0	462	33.46	41.82	125%	0.16	219	6.7	89.9	13.4	-199.0
	Graphite Schist	65	65	22	45	210%	2	328	63.59	57.65	91%	0.31	219	-42.0	76.0	-1.8	-199.0
	Overburden	71	71	11	20	184%	-16	138	2.52	7.57	300%	0.16	39.38	8.1	20.8	2.6	-31.6
	Sokoman	208	208	111	127	114%	0	650	11.22	29.36	262%	0.16	195.63	100.1	132.9	1.3	-191.9
	Wishart	149	149	38	66	175%	0	360	4.98	14.85	298%	0.16	122	32.9	66.6	2.0	-61.0

Data Groups	Lithology	No.	Sulfate-S (%)					Sulfide-S (%)					CO_3 (%)				
			Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max
Stantec	Denault	8	0.005	0.000	0%	0.005	0.005	0.006	0.002	31%	0.005	0.01	41.11	10.77	26%	29	57.3
	Katsao	37	0.048	0.060	126%	0.005	0.28	0.095	0.116	122%	0.005	0.42	0.18	0.40	226%	0.0025	2.2
	Menihek	128	0.345	0.599	174%	0.005	5.75	1.016	1.286	127%	0.005	6.5	16.85	19.16	114%	0.03	106
	Graphite Schist	38	0.563	1.002	178%	0.005	5.75	1.825	1.781	98%	0.01	6.5	31.21	27.59	88%	0.54	106
	Overburden	62	0.026	0.044	170%	0.005	0.24	0.069	0.215	311%	0.005	1.26	1.05	2.24	213%	0.04	11.4
	Sokoman	118	0.120	0.267	223%	0.005	2.24	0.268	0.839	313%	0.005	6.26	10.73	9.29	87%	0.019	43.1
	Wishart	86	0.051	0.124	246%	0.005	0.98	0.081	0.256	315%	0.005	2.05	2.74	4.71	172%	0.025	22.1
Okane	Denault	4	0.010	0.000	0%	0.01	0.01	0.010	0.000	0%	0.01	0.01	58.19	5.34	9%	51	62.25
	Katsao	14	0.018	0.016	91%	0.01	0.06	0.254	0.477	188%	0.01	1.86	0.26	0.02	7%	0.25	0.3
	Menihek	83	0.035	0.079	226%	0.01	0.61	1.124	1.381	123%	0.01	6.73	3.89	5.55	143%	0.25	30.85
	Graphite Schist	27	0.030	0.057	191%	0.01	0.28	2.305	1.905	83%	0.07	6.73	2.08	3.11	150%	0.25	11.7
	Overburden	9	0.017	0.017	99%	0.01	0.06	0.151	0.372	246%	0.01	1.14	2.27	3.88	171%	0.25	10.35
	Sokoman	90	0.017	0.017	101%	0.01	0.14	0.467	1.047	224%	0.01	5.58	7.78	8.67	111%	0.25	38.6
	Wishart	63	0.014	0.009	67%	0.01	0.06	0.260	0.653	251%	0.01	3.91	2.84	4.72	166%	0.25	21.55
Total (Okane and Stantec)	Denault	12	0.007	0.002	37%	0.005	0.01	0.007	0.003	36%	0.005	0.01	46.80	12.34	26%	29	62.25
	Katsao	51	0.040	0.053	135%	0.005	0.28	0.139	0.272	196%	0.005	1.86	0.20	0.34	172%	0.0025	2.2
	Menihek	211	0.223	0.493	221%	0.005	5.75	1.058	1.322	125%	0.005	6.73	11.75	16.56	141%	0.03	106
	Graphite Schist	65	0.341	0.807	236%	0.005	5.75	2.025	1.834	91%	0.01	6.73	19.11	25.56	134%	0.25	106
	Overburden	71	0.025	0.041	168%	0.005	0.24	0.080	0.238	300%	0.005	1.26	1.21	2.50	207%	0.04	11.4
	Sokoman	208	0.075	0.207	275%	0.005	2.24	0.354	0.937	265%	0.005	6.26	9.45	9.12	97%	0.019	43.1
	Wishart	149	0.035	0.096	275%	0.005	0.98	0.157	0.473	302%	0.005	3.91	2.78	4.70	169%	0.025	22.1

Table 4.10: Statistics of whole rock metal data by formation.

Data Groups	Lithology	No.	As (mg/kg)					Cu (mg/kg)				
			Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max
Stantec	Denault	5	0.92	0.32	35%	0.70	1.4	2.92	1.50	51%	1.2	4.4
	Katsao	16	0.57	0.88	154%	0.25	3.1	27.09	20.63	76%	1.5	59.0
	Menihek	78	5.16	14.38	279%	0.25	110.0	98.88	68.44	69%	1.7	320.0
	Overburden	27	1.12	1.45	129%	0.25	6.1	12.97	5.15	40%	6.6	34.0
	Sokoman	70	7.36	18.92	257%	0.25	120.0	13.45	32.08	239%	0.3	230.0
	Wishart	37	1.48	2.86	193%	0.25	14.0	9.44	12.50	133%	0.9	60.0
Okane	Denault	2	0.20	0.00	0%	0.20	0.2	1.45	0.49	34%	1.1	1.8
	Katsao	7	0.67	0.22	33%	0.40	1.0	58.80	64.82	110%	5.9	183.0
	Menihek	42	7.36	16.97	231%	0.20	80.3	86.80	94.15	108%	1.0	514.0
	Overburden	5	0.62	0.51	83%	0.20	1.5	7.04	5.74	82%	2.9	17.0
	Sokoman	46	3.88	4.64	120%	0.20	25.2	27.40	46.43	169%	0.8	245.0
	Wishart	32	1.59	2.10	132%	0.20	7.3	14.47	19.73	136%	0.9	86.4
Total (Okane and Stantec)	Denault	7	0.71	0.44	61%	0.20	1.4	2.50	1.43	57%	1.1	4.4
	Katsao	23	0.60	0.74	123%	0.25	3.1	36.74	40.72	111%	1.5	183.0
	Menihek	120	5.93	15.30	258%	0.20	110.0	94.65	78.22	83%	1.0	514.0
	Overburden	32	1.05	1.36	130%	0.20	6.1	12.04	5.60	46%	2.9	34.0
	Sokoman	116	5.98	15.04	251%	0.20	120.0	18.98	38.83	205%	0.3	245.0
	Wishart	69	1.53	2.52	165%	0.20	14.0	11.77	16.33	139%	0.9	86.4

Data Groups	Lithology	No.	Ni (mg/kg)					Zn (mg/kg)				
			Mean	stdev	CV	Min	Max	Mean	stdev	CV	Min	Max
Stantec	Denault	5	3.06	0.97	32%	2.0	4.2	13.14	9.69	74%	4.70	29
	Katsao	16	41.33	31.18	75%	1.8	110.0	48.16	33.32	69%	5.70	110
	Menihek	78	84.22	69.94	83%	5.5	380.0	293.72	303.92	103%	11.00	1900
	Overburden	27	21.15	6.48	31%	11.0	49.0	34.48	16.81	49%	20.00	110
	Sokoman	70	9.55	16.35	171%	1.5	97.0	34.96	63.40	181%	2.10	410
	Wishart	37	13.46	10.94	81%	2.5	51.0	23.20	17.53	76%	0.35	75
Okane	Denault	2	1.55	1.20	78%	0.7	2.4	4.00	1.41	35%	3.00	5
	Katsao	7	36.93	33.22	90%	1.4	97.6	44.00	26.19	60%	8.00	72
	Menihek	42	60.61	49.95	82%	0.9	215.0	230.21	189.80	82%	15.00	927
	Overburden	5	11.42	18.61	163%	1.0	44.5	26.40	26.42	100%	9.00	73
	Sokoman	46	21.79	42.34	194%	0.8	258.0	108.67	359.47	331%	4.00	2420
	Wishart	32	15.12	20.21	134%	1.3	93.1	29.00	43.67	151%	2.00	202
Total (Okane and Stantec)	Denault	7	2.63	1.19	45%	0.7	4.2	10.53	9.10	86%	3.00	29
	Katsao	23	39.99	31.11	78%	1.4	110.0	46.90	30.79	66%	5.70	110
	Menihek	120	75.96	64.44	85%	0.9	380.0	271.49	270.38	100%	11.00	1900
	Overburden	32	19.63	9.64	49%	1.0	49.0	33.22	18.32	55%	9.00	110
	Sokoman	116	14.41	29.97	208%	0.8	258.0	64.19	232.99	363%	2.10	2420
	Wishart	69	14.23	15.82	111%	1.3	93.1	25.89	32.25	125%	0.35	202

Additionally, Q-Q plots were developed with log-transformed NPR data from both Stantec and Okane datasets to illustrate data distribution (Figure 4.7). Both datasets follow a normal distribution, suggesting that the two datasets are statistically similar.

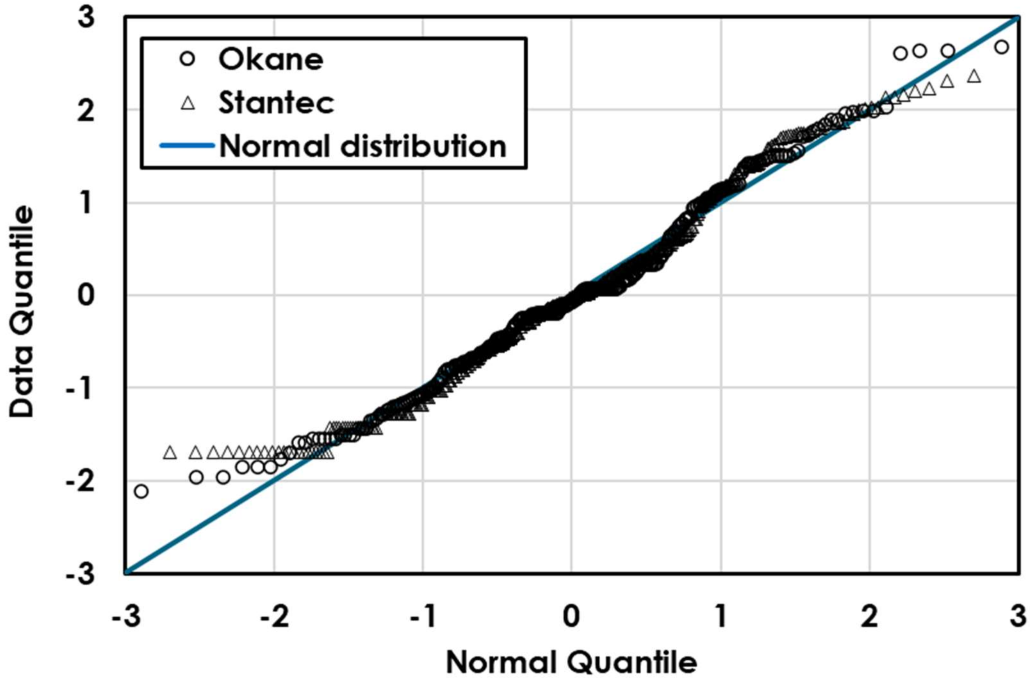

Figure 4.7: Q-Q plot of log transformed NPR data for both Stantec and Okane datasets.

4.2.3 Additional Geochemical Considerations from Statistical Measurements

Looking at the Stantec dataset, significant positive correlation is observed between total carbon (TC) and NP as presented in Figure 4.8. An important observation is that TC > 12 wt.% was observed in many samples, while the theoretical TC for calcite ($CaCO_3$) is around 12 wt.%. Those samples with TC > 12 wt.% are mainly from Menihek where graphite is likely disseminated in samples, besides one from Sokoman and one overburden sample. Additionally, a positive correlation is observed between NP and TC, which is not explained by the increasing graphite-carbon observed in these samples when carbonate-carbon must be less than 12 wt.%. After removing the samples with TC > 12 wt.%, the correlation became improved with correlation coefficient increasing from 0.92 to 0.95 (Figure 4.9). TC can thus be used as a reasonable indicator for NP from the Stantec dataset. In the Okane dataset, carbonate NP was directly calculated from the carbonate content of the samples, which was calculated to consider the effects of graphite and non-buffering carbonates (Appendix A).

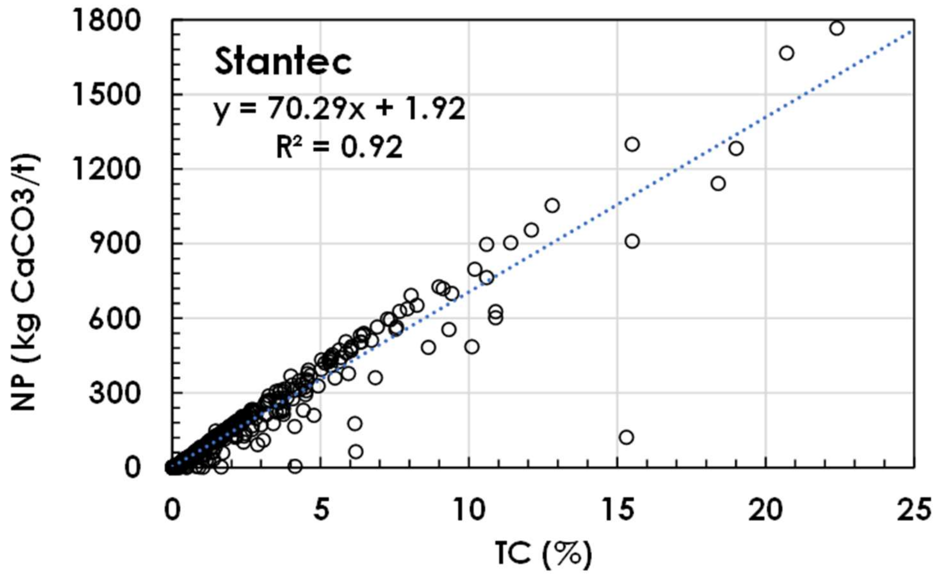

Figure 4.8: Positive correlation between TC and NP for Stantec data, in which samples with TC > 12 wt. % included.

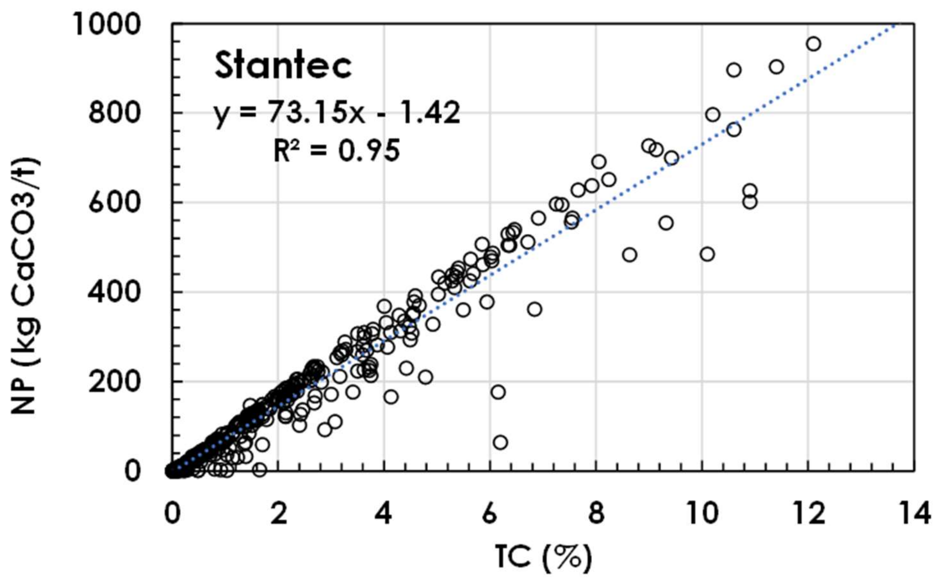

Figure 4.9: Positive correlation between TC and NP for Stantec (2013) data, in which samples with TC > 12 wt. % excluded.

ANOVA testing was completed to provide insight into statistically significant differences between the ARD risk classification results from the Stantec, Okane, and total data groups. Testing was completed on each ARD category (NPAG, PAG, Uncertain). When the p-value (probability) is less than significance level, the null hypothesis is rejected, therefore it is assumed that there is no statistically significant difference between the groups tested.

When comparing the number of samples classified as NPAG in each dataset, p-values were less than the significance level for both datasets and between formations (Table 4.11), meaning that there are statistically significant differences between NPAG distribution for both the Stantec and Okane datasets and between formation groups. It is possible that the statistically significant difference between datasets here related to methods used to measure carbon content and related NP between Stantec and Okane samples, related to the fact that within some formations (such as the Menihek and Sokoman) the presence of graphite influenced these measurements (Appendix A).

However, when comparing the PAG and Uncertain ARD risk categories, p-values were less than the significance level for formation and greater than significance levels for datasets (Table 4.12 and Table 4.13). These results suggest that is no statistically significant difference between the classification of PAG and Uncertain ARD mine risk between the Stantec and Okane datasets, but there are statistically significant differences between the formation groupings. The statistically significant difference between different rock units is expected based on previous results that there are naturally occurring differences in the geology between formations.

Table 4.11: ANOVA test results for number of NPAG samples from each dataset.

Source of Variation	SS	df	MS	F	P-value	F crit
Formation	25229	5	5046	12.80	0.0004	3.33
Datasets	7930	2	3965	10.06	0.004	4.10
Error	3941	10	394			
Total	37100	17				

Significance of level α = 0.05

Table 4.12: ANOVA test results for the number of PAG samples from each dataset.

Source of Variation	SS	df	MS	F	P-value	F crit
Formation	11950	5	2390	12.09	0.0006	3.33
Datasets	990	2	495	2.50	0.13	4.10
Error	1977	10	198			
Total	14918	17				

Significance of level α = 0.05

Table 4.13: ANOVA test results for the number of Uncertain samples from each dataset.

Source of Variation	SS	df	MS	F	P-value	F crit
Formation	583	5	116.6	14.60	0.0003	3.33
Datasets	57	2	28.4	3.55	0.07	4.10
Error	80	10	8.0			
Total	720	17				

Significance of level α = 0.05

5 DISCUSSION

The purpose of the Geochemical Characterization Phase I Report is to provide an update on laboratory results from the geochemical characterization program (Okane, 2023a) to date, and determine whether results received thus far are consistent with the Stantec dataset. Discussion of these objectives based on the results in previous sections are summarized below.

5.1 Classification and Interpretation of Laboratory Results

Consistent with previous findings (Stantec 2013; WorleyParsons, 2014), overburden material is classified as NPAG, with average and median NPRs of 30 and 13, respectively. At the 5th percentile, NPR was 2. It can be concluded that the OVBS which is planned to consist of overburden material is not a concern for acidic drainage. Findings from ABA results for mine rock also support the idea that there is sufficient NP in the MRS to neutralize acid generation if the stockpile is well mixed, even considering removal of NPAG rock for the TMF dam embankment construction. However, there is still potential risk for metals to be released from sulfide oxidation, though maintaining high pH from available buffering carbonate minerals could potentially attenuate some of these metals released from sulfide oxidation before seeing their release into the environment.

Previous work (Stantec, 2013; WorleyParsons, 2014) emphasized the risk from graphitic mica schist lithology associated with the Menihek Formation. While additional samples in this report support the risk associated with graphitic schist (i.e. 80% PAG), previous estimates by tonnage were that the graphitic schist rock accounts for 7% of the whole deposit material. As the total PAG tonnage of the deposit may fall between 22.1 to 26.5%, it is important to consider other rock types or formations that may contain PAG materials. However, even after removing an estimated 82.4 Mt of NPAG mine rock required for the TMF dam embankment, the total average and median NPR values were 5.0 and 7.2 respectively for the remaining rock in the MRS, indicating that there is sufficient NP available to neutralize potential acidity generated from sulfide oxidation through management.

When analyzing the spatial distribution of NPR in the Rose Pit from cross sections, most PAG samples (i.e. NPR < 1) are related to the Menihek unit and its margins. However, some PAG samples are also observed in the Katsao, Wishart, and Sokoman Formations. Cross sections (Appendix C) showed that PAG samples are observed at relatively shallow depths within the pit shell. Okane understands that Champion will construct the MRS using an in-pit crusher and conveyor, which will allow for even distribution of higher NP materials to mitigate the risk of generating acidity. During the construction and operations phases of mine life, NPAG mine rock is planned to be used for construction of the TMF dam embankment. To balance the needs for NPAG material for construction and sufficient blending of NP in the MRS during earlier years of mine life, Champion should manage PAG placement and/or extraction scedules (likely through temporary stockpiling). Details for the PAG management plan will be addressed in the waste management plan.

Results from the whole metal analysis identified several metals over the 5x global crustal abundance including (Ag, Bi, Cd, S, Se, Te, U), however these were different than some of the metals highlighted as concern in previous works (As, Cu, Ni, Zn). Static testing data can raise a concern of contaminants that may become a potential risk when their abundances are beyond the Canadian Interim sediment quality guidelines (ISQG), but the static data cannot be used to provide evidence for the evolution of these contaminants in seepage from mine during weathering. Results of SFE, XRD, and kinetic testing is expected to provide additional insight once data becomes available for review. The additional test results as part of the geochemical characterization program will provide insight into the potential risks associated of metal leaching.

5.2 Statistical Comparisons of Datasets and Formations

ABA risk in previous work (WorleyParsons, 2014) was highlighted mainly in the Menihek Formation, though it was noted that all samples contained some PAG samples. However, the statistical tests reveal some differences by formation type between the two datasets, suggesting that it's possible to have more acid generation or metal release risk in other formation types, such as Sokoman and Wishart Formations. It was noted that some inconsistences may have developed between the old and new block models.

The Student's t-test results revealed that Stantec ABA and metal data are both consistent with Okane data, with the exception of ABA data from the Sokoman Formation. Findings from ANOVA testing conducted on ARD risk classification for both the Stantec and Okane datasets suggest that there may be some statistically significant differences in materials classified as NPAG between the Okane and Stantec datasets, and between formations. It was also noted that abnormally high TC (over the theoretical limit) was measured from the Stantec dataset, which may also contribute to statistical differences. This means the NP of samples from the Menihek formation and from other graphite-containing samples could be overestimated in previous data based on total carbon in the Stantec datasets. When looking at the PAG and Uncertain classification groups, statistically significant differences were also noted between formation type, but not between Okane and Stantec datasets. It has been previously noted that differences exist by formation in terms of PAG risk, therefore the ANOVA tests suggest consistency in the methods for classification of PAG and Uncertain rock types between Stantec and Okane datasets.

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7 CLOSURE

We trust information provided is satisfactory for your requirements. Please do not hesitate to contact the undersigned at 437-684-4071 for further information or questions.

Prepared by:

Katherine Raymond Intermediate Geochemist Geochemistry	Gillian Allen Project Coordinator Senior Engineer 50810
Joshua Paulsen Junior Geochemist Geochemistry	Hailin Deng Senior Technical Advisor Senior Geochemistry [Professional Member number]

Appendix A

Summary of Stantec and Okane Static Methods

Stantec Methods

ABA tests were undertaken in the previous work completed for Alderon using the following methods:

- AP in Phase III of previous material characterization (WorleyParsons, 2014) of all materials was calculated from the total sulphur content, where:
    - Total S (wt. %) was determined by LECO furnace;
    - Sulphate S (wt. %), determined by colourimetry following dilute hydrochloric acid digestion); and
    - Sulphide S (wt. %) was determined by difference between total S and sulphate S.
- Carbonate NP was calculated from the carbonate content of the samples (determined by pyrolysis followed by quantification by LECO furnace) (i.e. Carbonate NP = (Total C – Graphite C) x 83.3).
- Sobek NP was calculated analytical determination of the modified Sobek NP.
- In previous ABA characterization work, neutralization potential ratio (NP/AP = NPR) was calculated using both carbonate NP and Sobek NP, where the lowest NPR of the two values were used for all formations except for Menihek (which only used Sobek NP due to the presence of graphite).

Okane Methods

ABA tests were undertaken in the previous work completed for Alderon using the following methods:

- AP of all materials was calculated from the total Sulphur content, where:
    - Total S (wt. %) was determined by LECO furnace and IR spectroscopy;
    - Sulphate S (wt. %) determined as barium sulphate precipitation and gravimetric finish following dilute (15%) hydrochloric acid digestion; and
    - Sulphide S (wt%) was calculated as the difference between total S and sulphate S.
- Carbonate NP was calculated from the carbonate content of the samples (determined using $HClO_4$ digestion and CO_2 coulometer).

Appendix B

Student T-test Results

Table B.1: T-test for NPR data for the graphitic schist lithology.

NNP	Okane	Stantec
Mean	-47	-35
Variance	4444	6932
Observations	26	37
Hypothesized Mean Difference	0	
Degree of freedom (df)	60	
t Stat	-0.62838	
P(T<=t) one-tail	0.266071	
t Critical one-tail	1.670649	
P(T<=t) two-tail	0.532142	
t Critical two-tail	2.000298	
	P > 0.05	

Table B.2: T-test for NPR data of mine rock in the Menihek Formation.

NNP	Okane	Stantec
Mean	11.7	3.9
Variance	8375	8034
Observations	82	127
Hypothesized Mean Difference	0	
Degree of freedom (df)	170	
t Stat	0.611581	
P(T<=t) one-tail	0.270816	
t Critical one-tail	1.653866	
P(T<=t) two-tail	0.541632	
t Critical two-tail	1.974017	
	P > 0.05	

Table B.3: T-test for NPR data of mine rock in the Sokoman Formation.

NPR	Okane	Stantec
Mean	127	341
Variance	59642	311127
Observations	89	117
Hypothesized Mean Difference	0	
Degree of freedom (df)	168	
t Stat	-3.7050275	
P(T<=t) two-tail	0.00028656	
t Critical two-tail	1.97418519	
	P > 0.05	

Table B.4: T-test for NPR data of mine rock in the Katsao Formation.

NPR	Okane	Stantec
Mean	4	4
Variance	14	58
Observations	13	36
Hypothesized Mean Difference	0	
Degree of freedom (df)	42	
t Stat	-0.017037	
P(T<=t) two-tail	0.9864876	
t Critical two-tail	2.0180817	
	P > 0.05	

Table B.5: T-test for NPR data of mine rock in the Wishart Formation.

NPR	Okane	Stantec
Mean	59	40
Variance	37371	5853
Observations	62	85
Hypothesized Mean Difference	0	
Degree of freedom (df)	75	
t Stat	0.75528	
P(T<=t) two-tail	0.452447	
t Critical two-tail	1.992102	
	P > 0.05	

Table B.6: T-test for NPR data of Overburden.

NPR	Okane	Stantec
Mean	29	19
Variance	1669	290
Observations	8	61
Hypothesized Mean Difference	0	
Degree of freedom (df)	7	
t Stat	0.637607	
P(T<=t) two-tail	0.544013	
t Critical two-tail	2.364624	
	P > 0.05	

Table B.7: T-test for As data for all mine rock formations.

As	Okane	Stantec
Mean	4.1	4.4
Variance	104.0	184.1
Observations	133	232
Hypothesized Mean Difference	0	
Degree of freedom (df)	337	
t Stat	-0.21492	
P(T<=t) two-tail	0.829963	
t Critical two-tail	1.967028	
	P > 0.05	

Table B.8: T-test for Cu data for all mine rock formations.

Cu	Okane	Stantec
Mean	44	42
Variance	4739	3573
Observations	133	232
Hypothesized Mean Difference	0	
Degree of freedom (df)	245	
t Stat	0.20923	
P(T<=t) two-tail	0.834443	
t Critical two-tail	1.969694	
	P > 0.05	

Table B.9: T-test for Ni data for all mine rock formations.

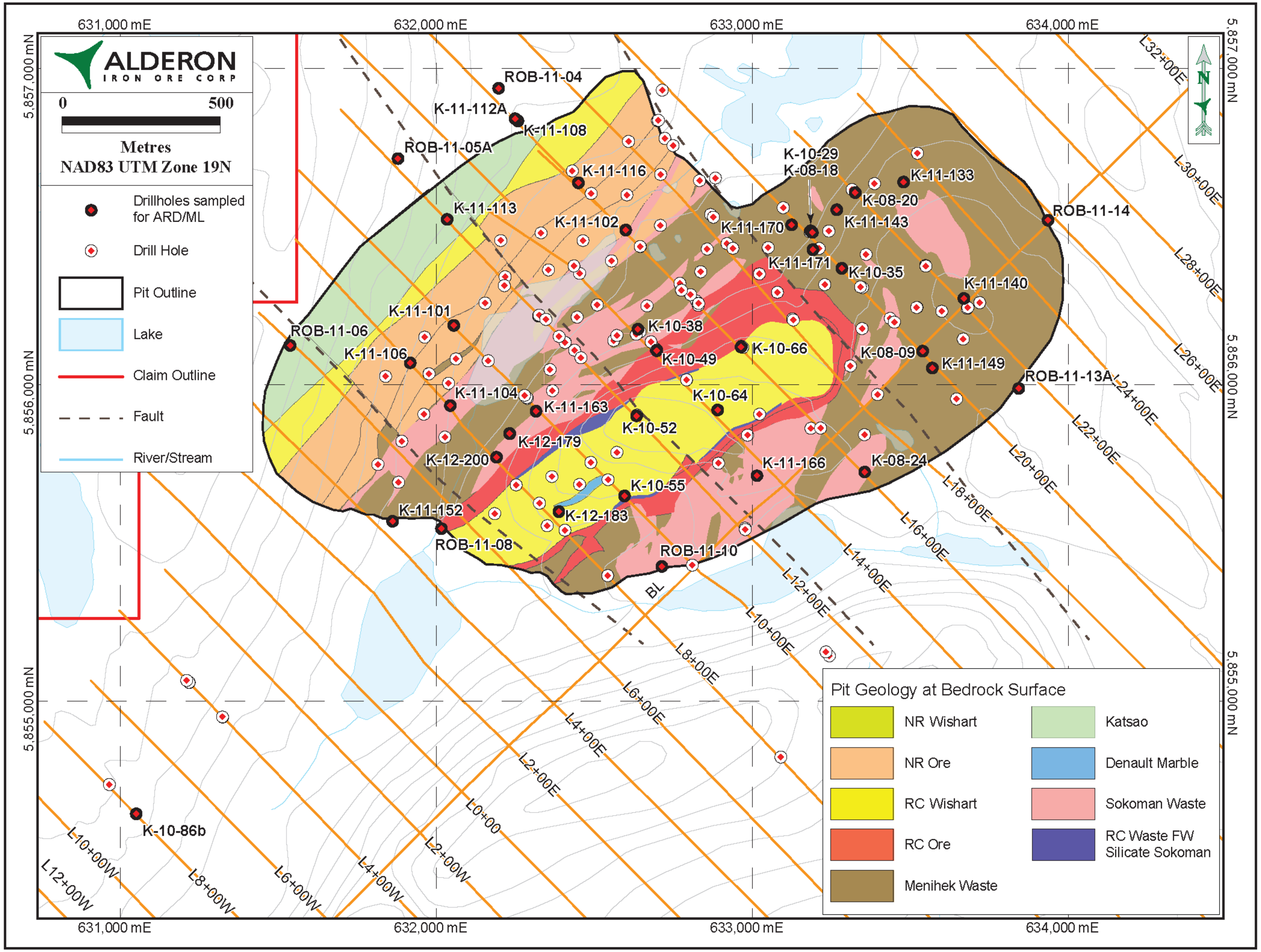
Ni	Okane	Stantec
Mean	33	39
Variance	1933	2914
Observations	133	232
Hypothesized Mean Difference	0	
Degree of freedom (df)	322	
t Stat	-1.15703	
P(T<=t) two-tail	0.248117	
t Critical two-tail	1.967359	
	P > 0.05	

Table B.10: T-test for Zn data for all mine rock formations.

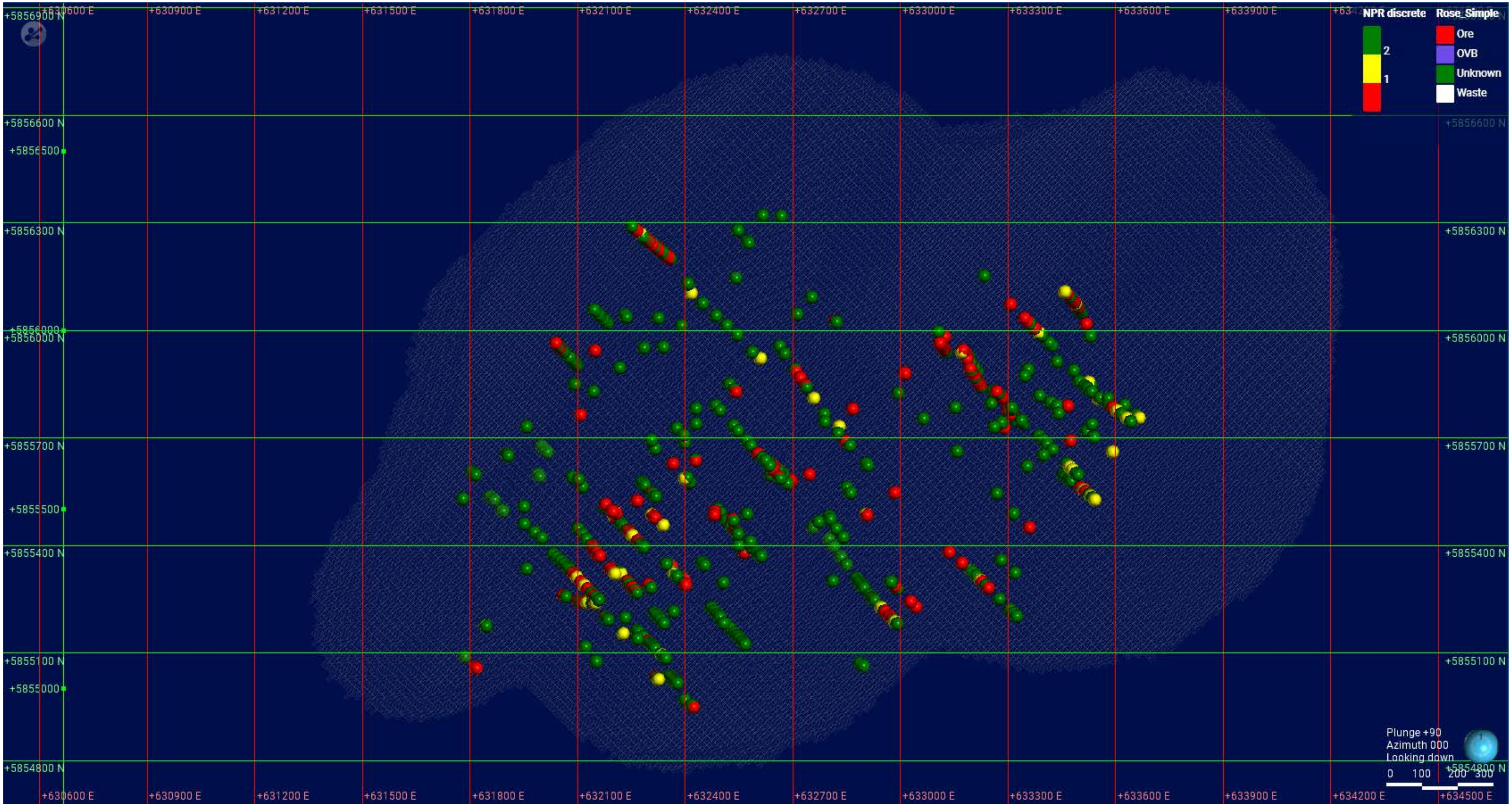
Zn	Okane	Stantec
Mean	121	121
Variance	62399	47427
Observations	133	232
Hypothesized Mean Difference	0	
Degree of freedom (df)	245	
t Stat	-0.00012	
P(T<=t) two-tail	0.999908	
t Critical two-tail	1.969694	
	P > 0.05	

Appendix C

Geologic Cross Sections and NPR

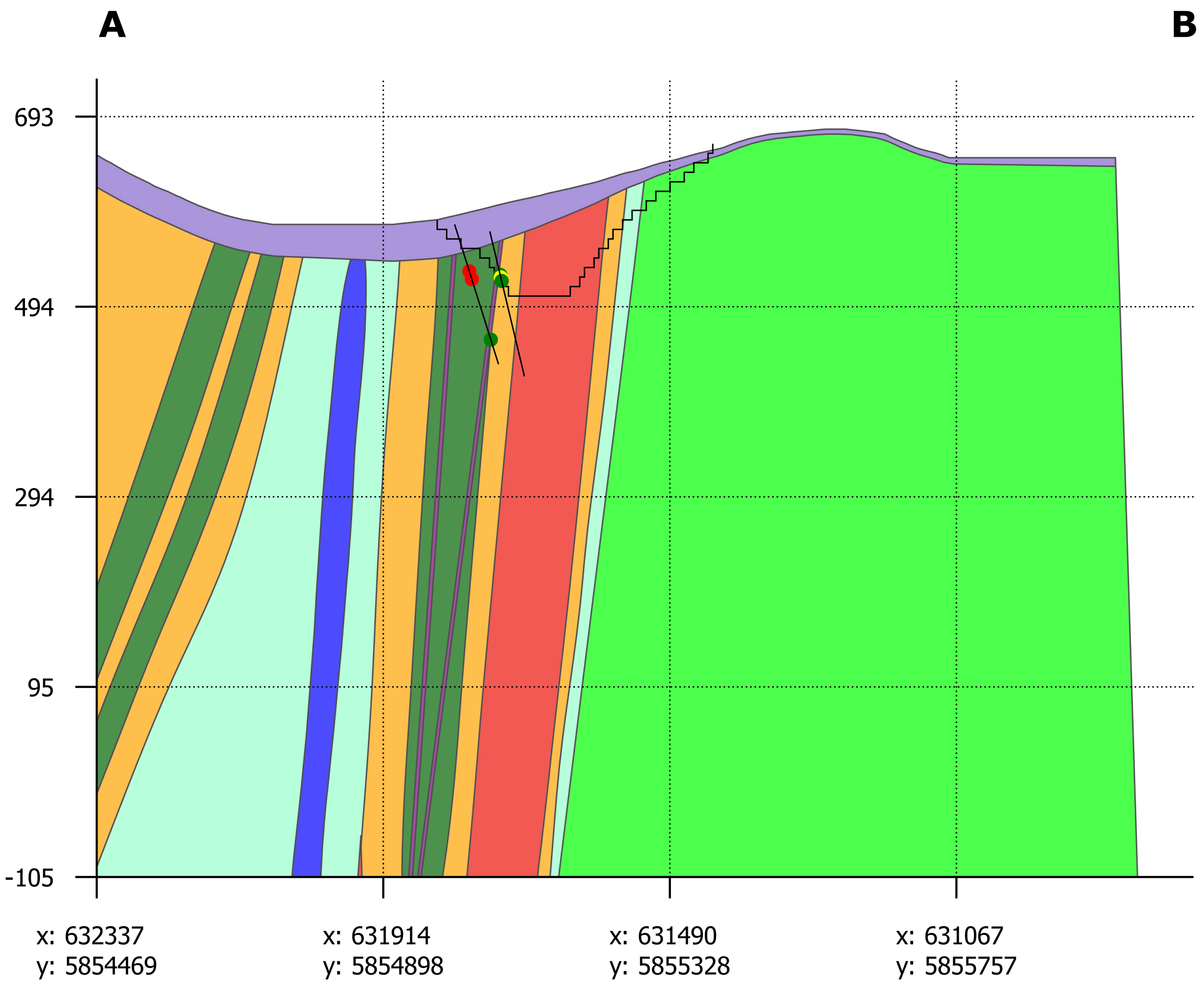


Previous pit geology map with boreholes sampled for ARD/ML by Stantec and cross section lines used in new pit shell model



NPR looking down in pit shell

L0+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 632301, 5854433

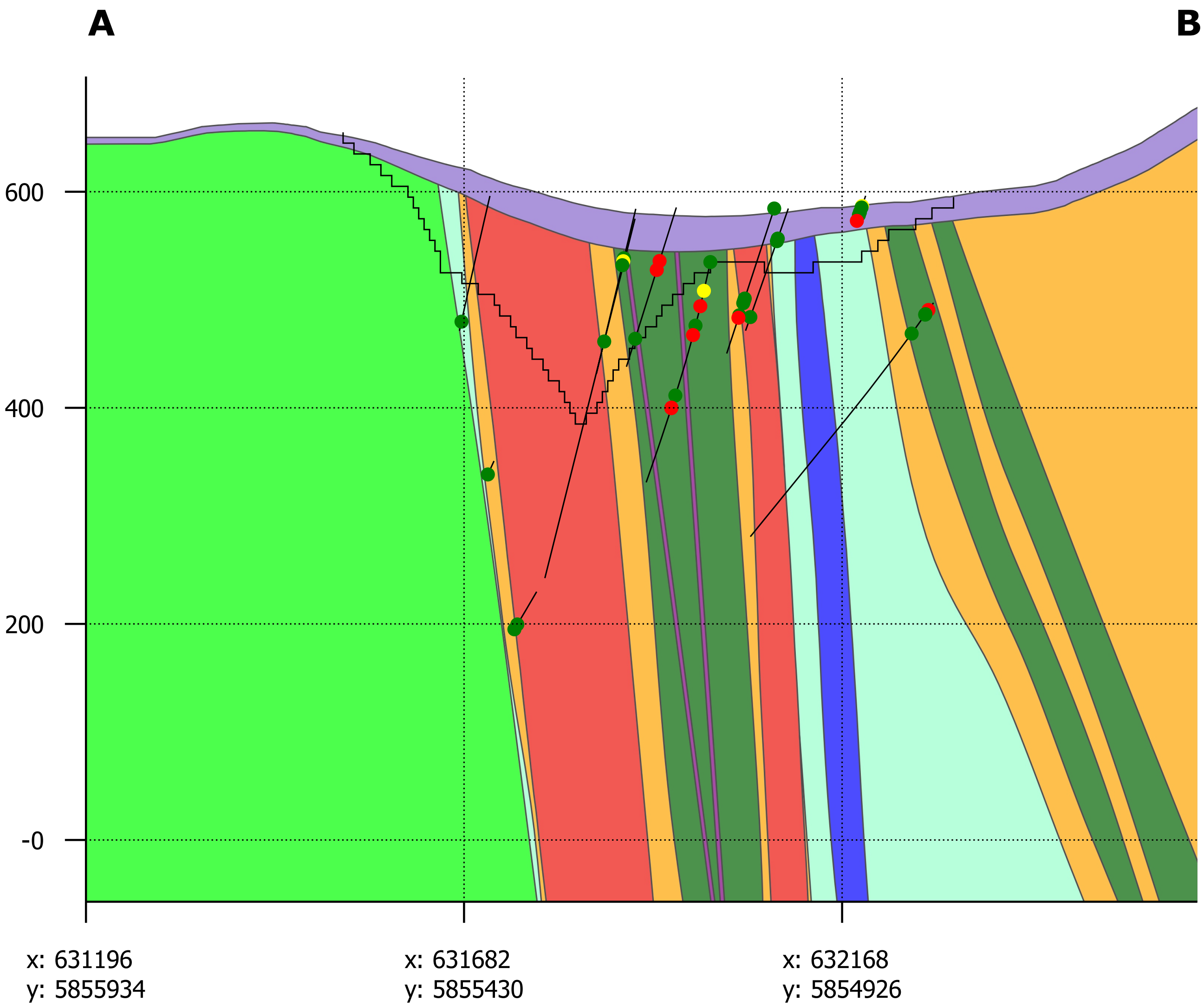
B: 630681, 5856076

Scale: 1:15,000

Vertical exaggeration: 2x

0m 1000m

L2+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- ● NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 631196, 5855934

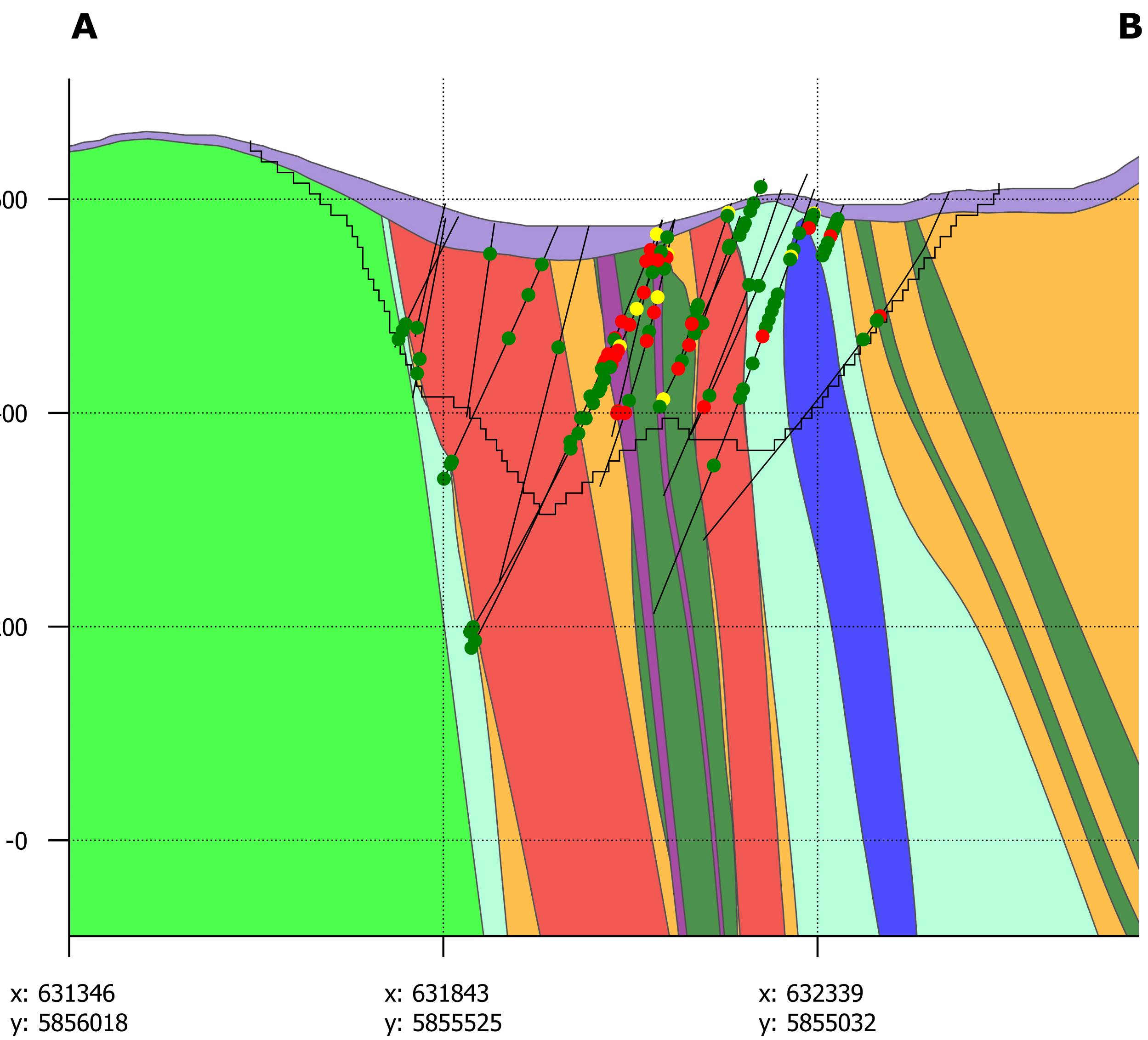
B: 632625, 5854453

Scale: 1:13,000

Vertical exaggeration: 2x

0m 1000m

L4+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- ● NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 631346, 5856018

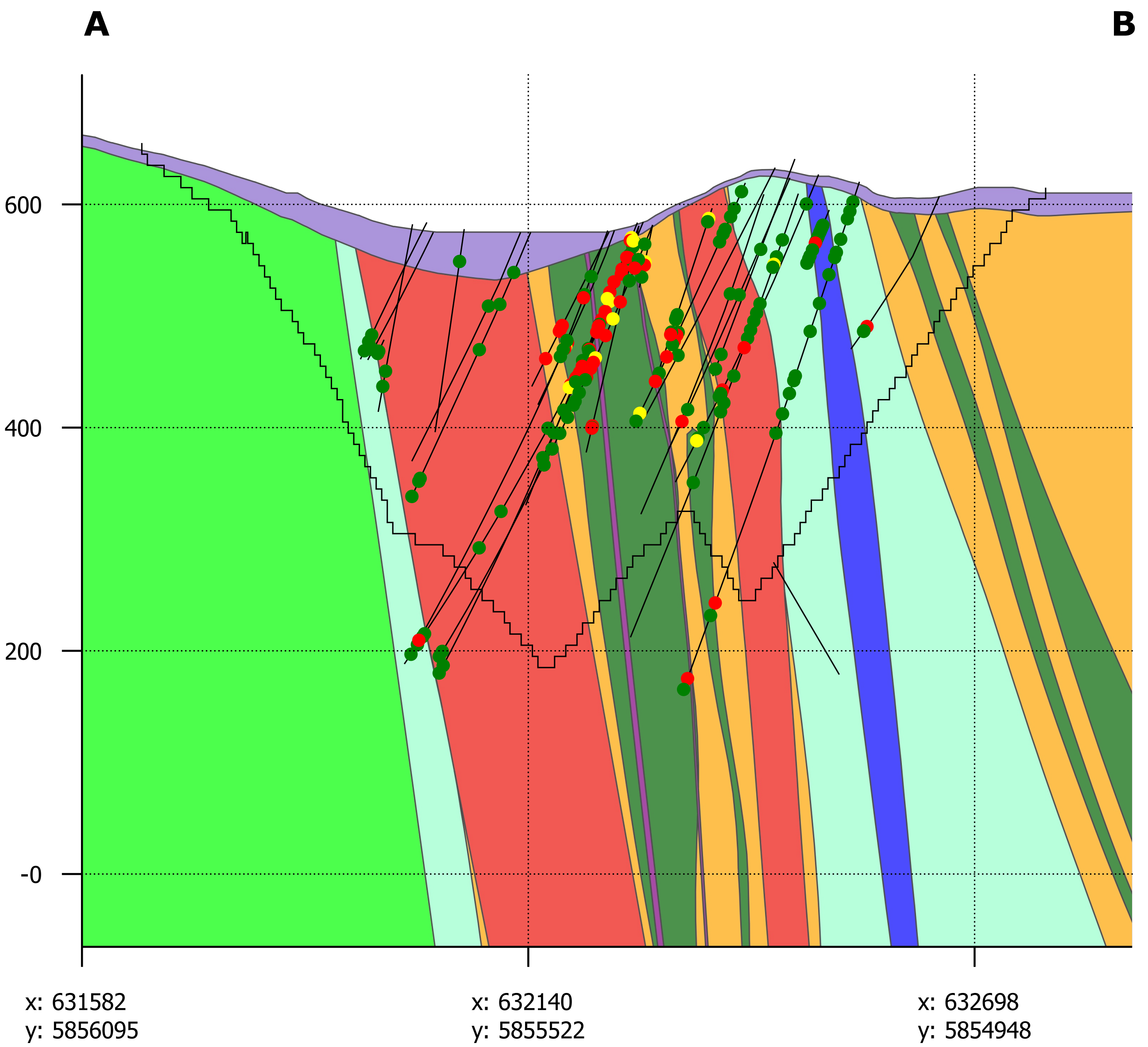
B: 632766, 5854608

Scale: 1:13,000

Vertical exaggeration: 2x

0m 1000m

L6+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 631582, 5856095

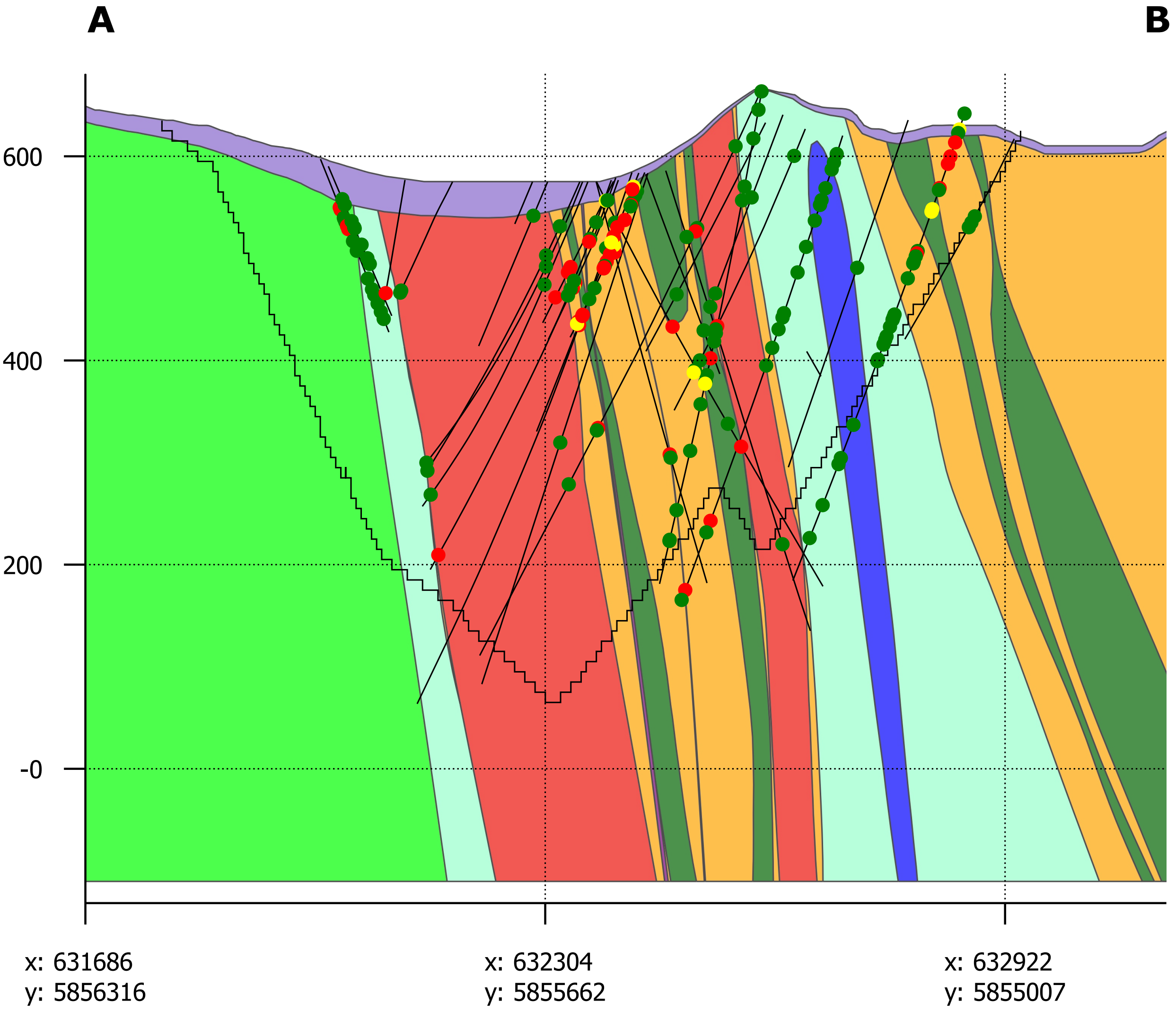
B: 632895, 5854746

Scale: 1:12,000

Vertical exaggeration: 2x

0m 940m

L8+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- ● NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 631686, 5856316

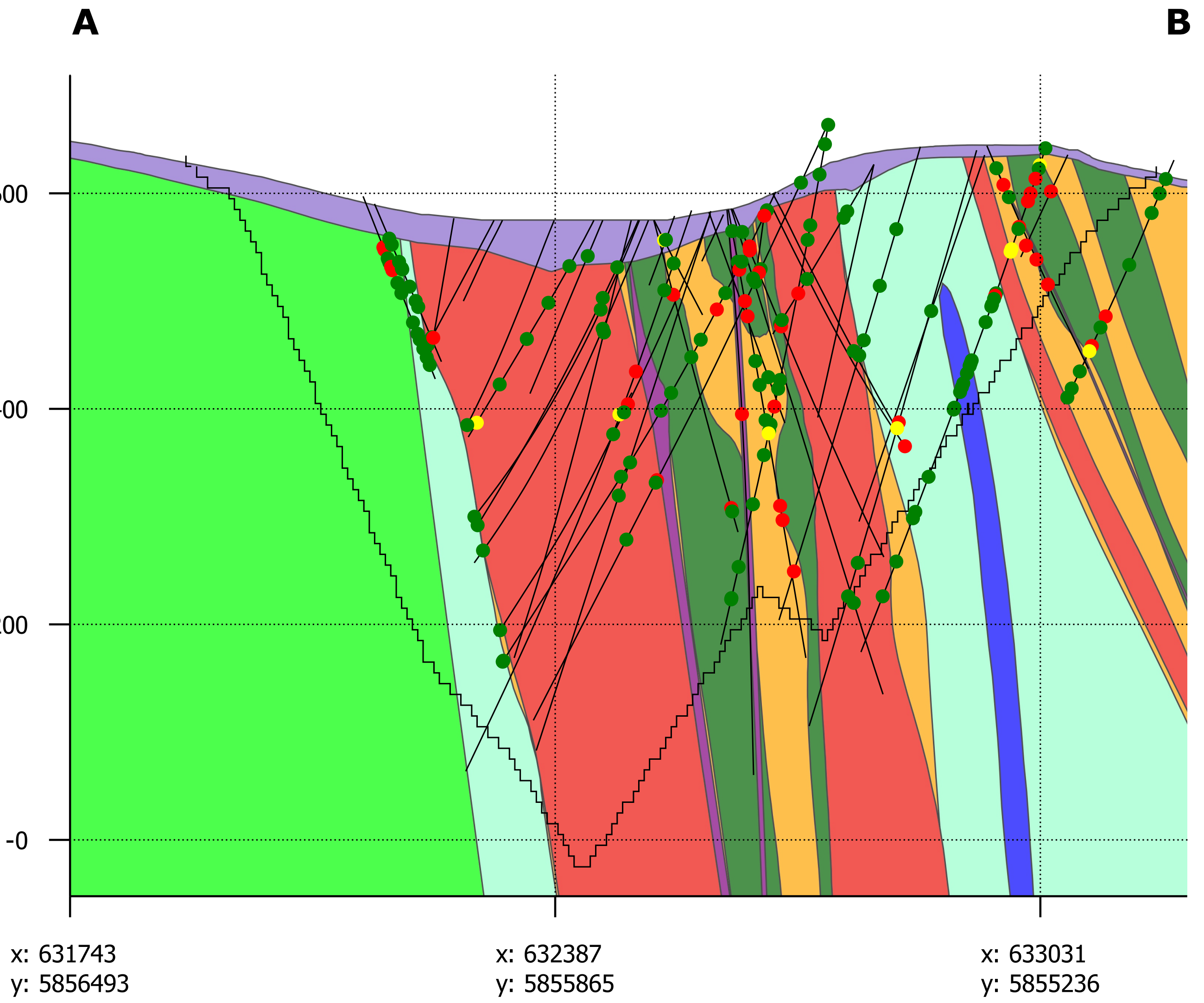
B: 633138, 5854778

Scale: 1:14,000

Vertical exaggeration: 2x

0m 1000m

L10+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 631743, 5856493

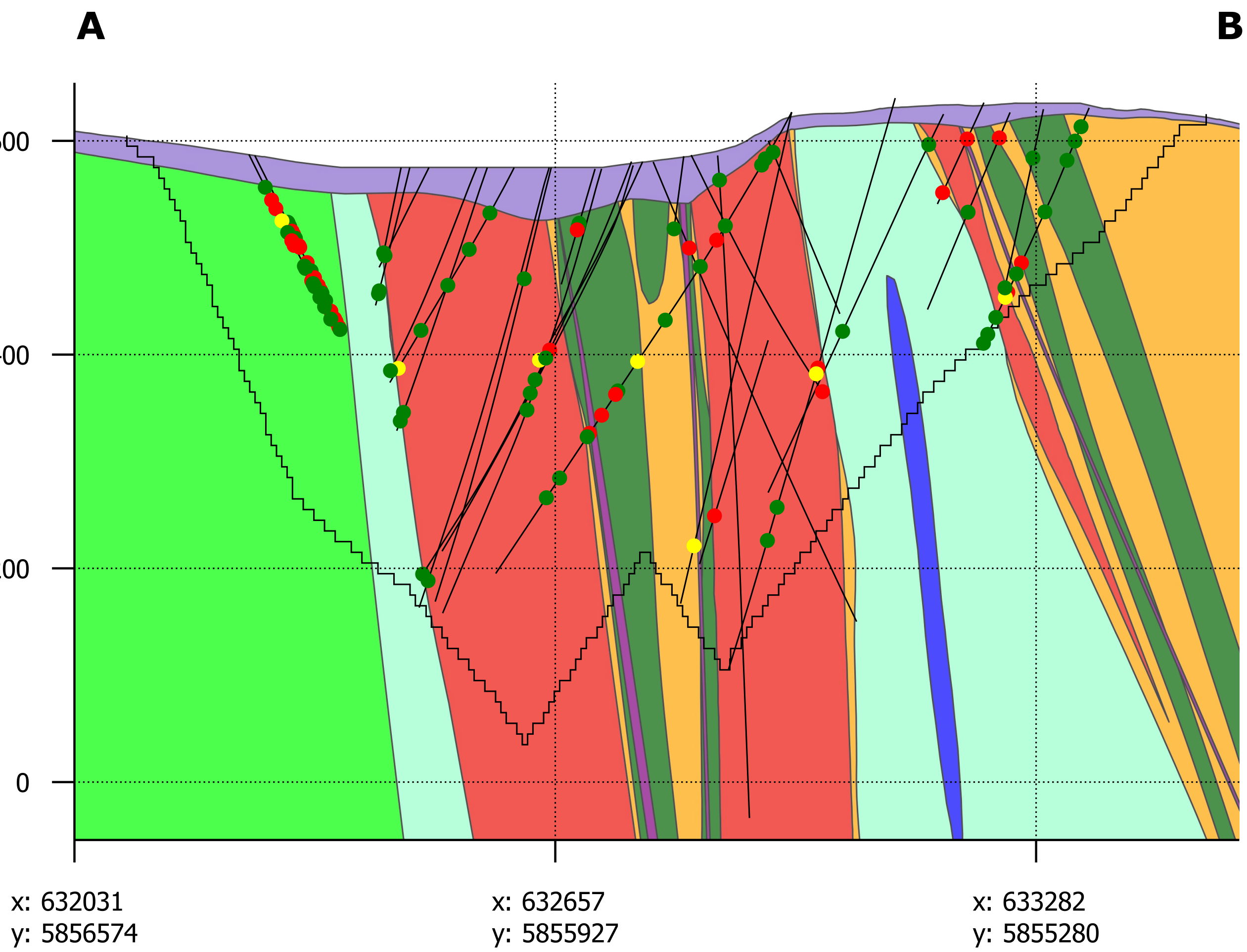
B: 633226, 5855046

Scale: 1:13,000

Vertical exaggeration: 2x

0m 1000m

L12+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- ● NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 632031, 5856574

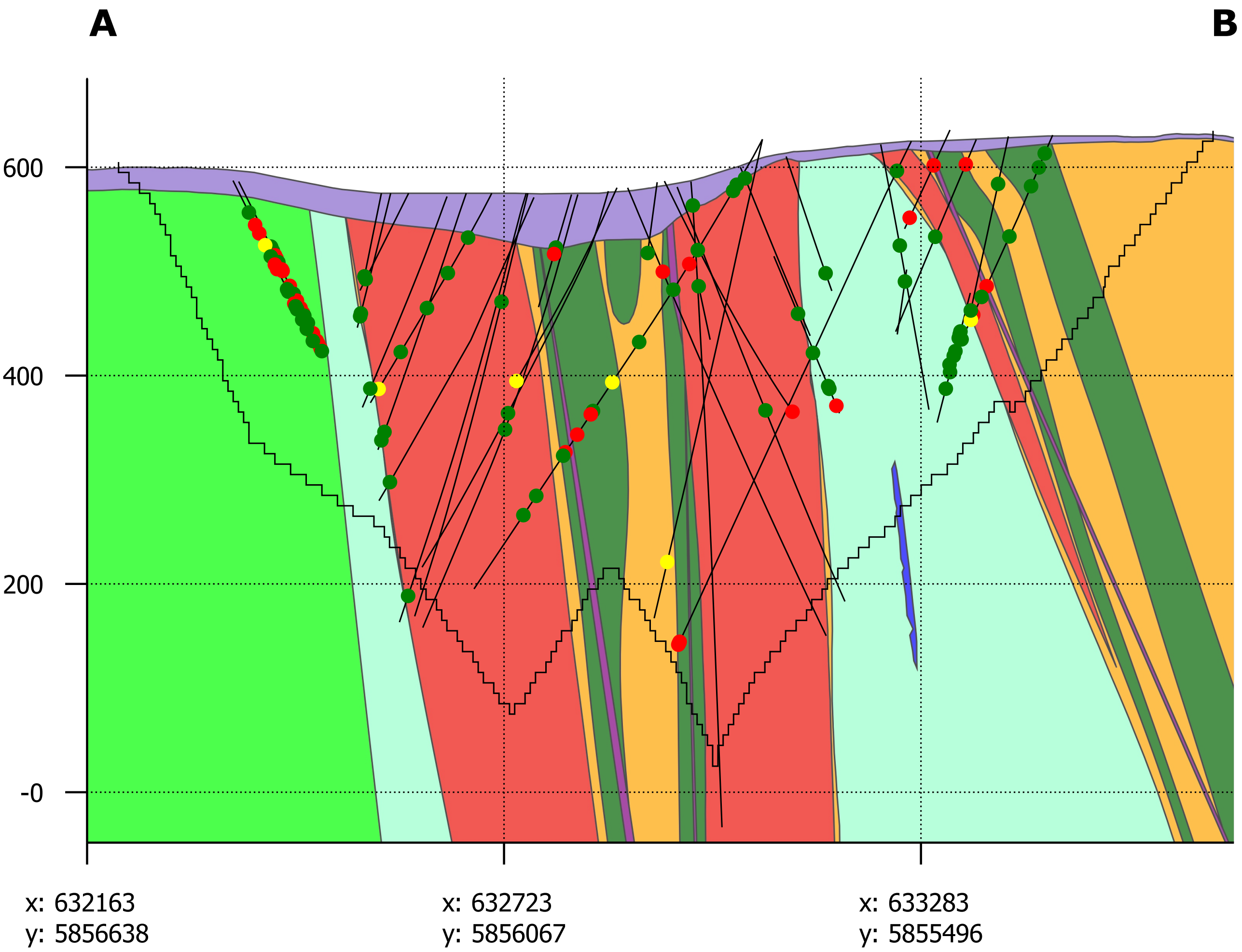
B: 633547, 5855007

Scale: 1:14,000

Vertical exaggeration: 2x

0m 1000m

L14+00E



Legend

Formations

- Overburden
- Denault
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 632163, 5856638

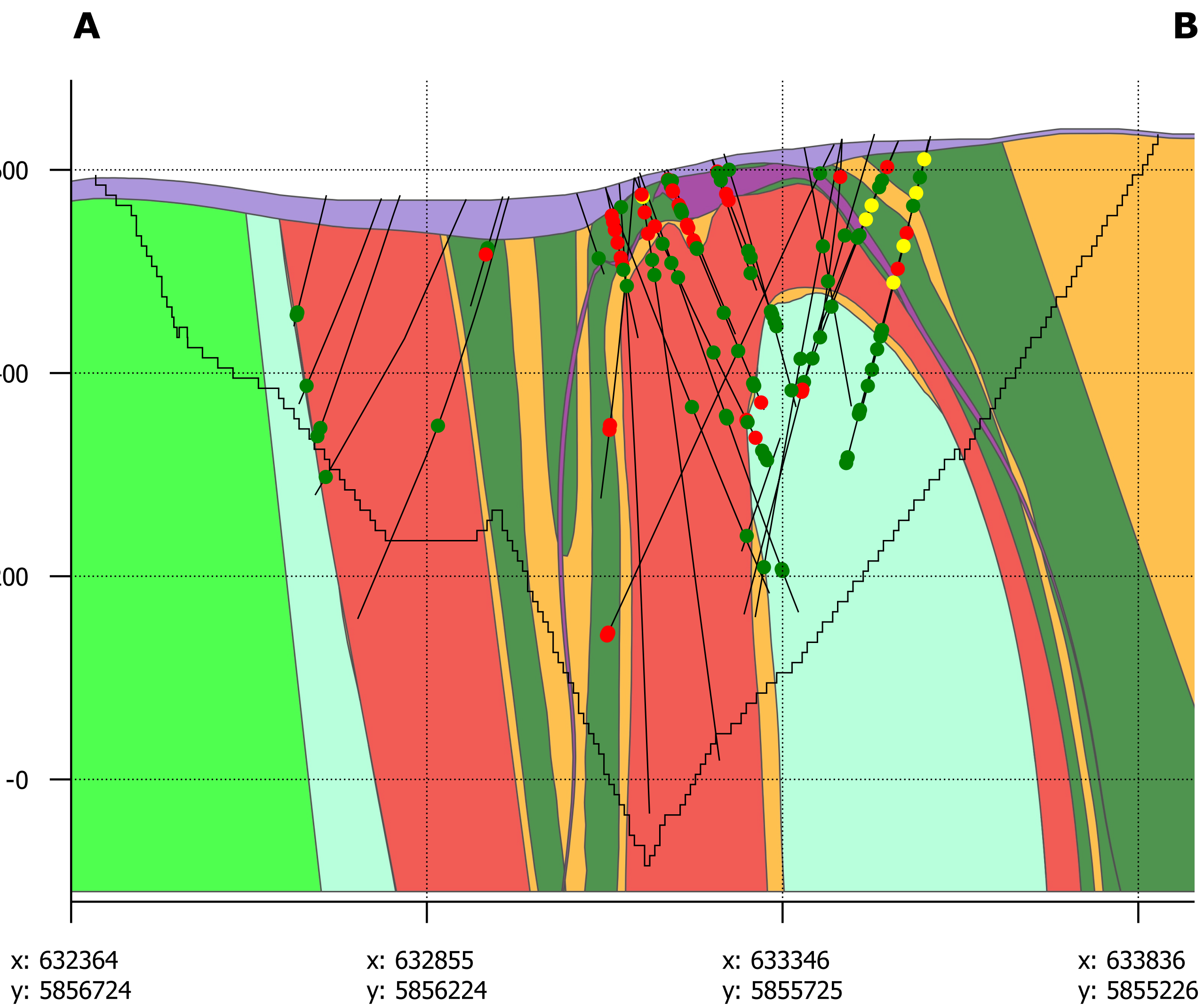
B: 633704, 5855067

Scale: 1:14,000

Vertical exaggeration: 2x

0m 1000m

L16+00E



Legend

Formations

- Overburden
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- ● NPR
- ≤ 1
- ≤ 2
- > 2

Location

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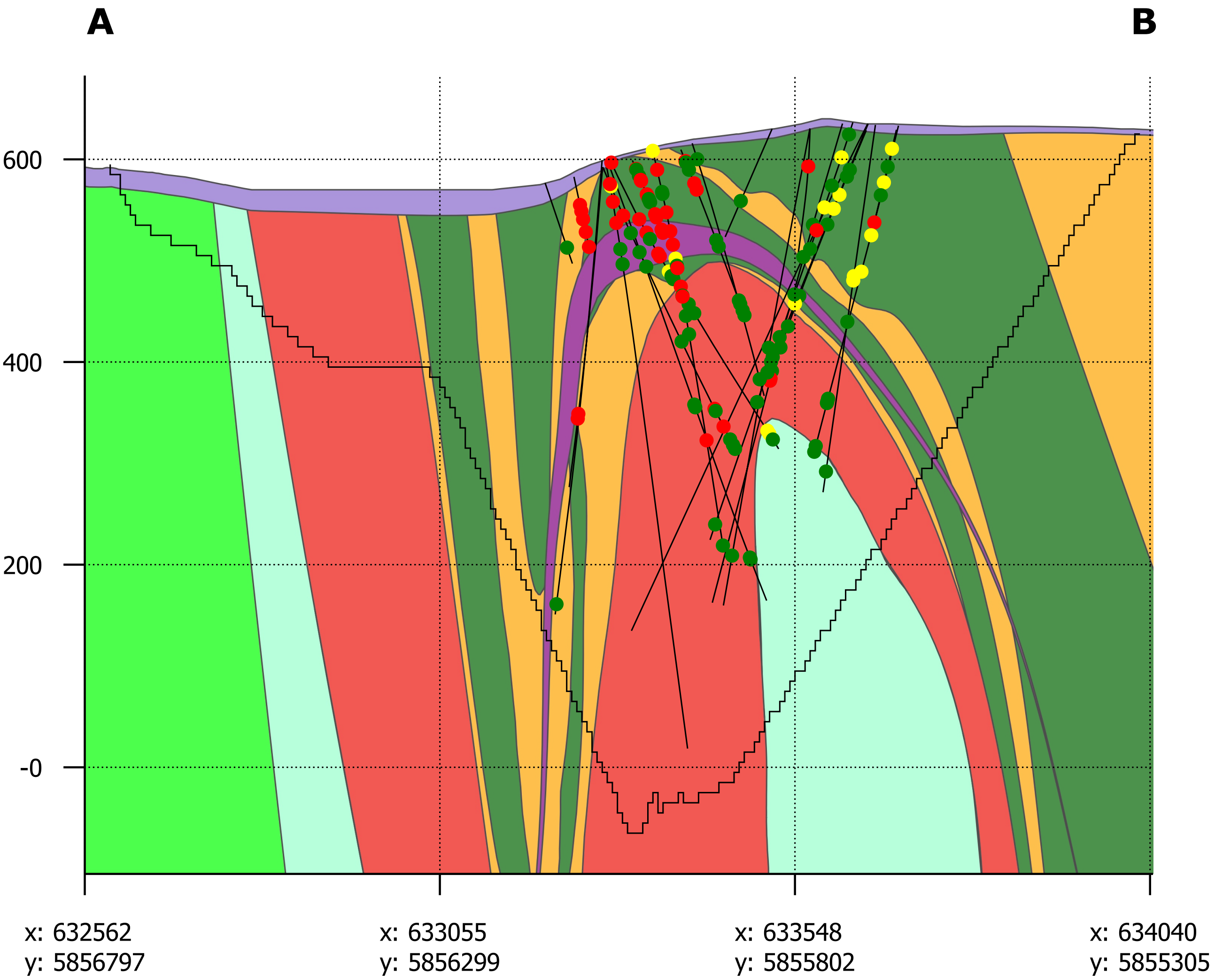
B: 633914, 5855147

Scale: 1:14,000

Vertical exaggeration: 2x

0m 1000m

L18+00E



Legend

Formations

- Overburden
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- ● NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 632562, 5856797

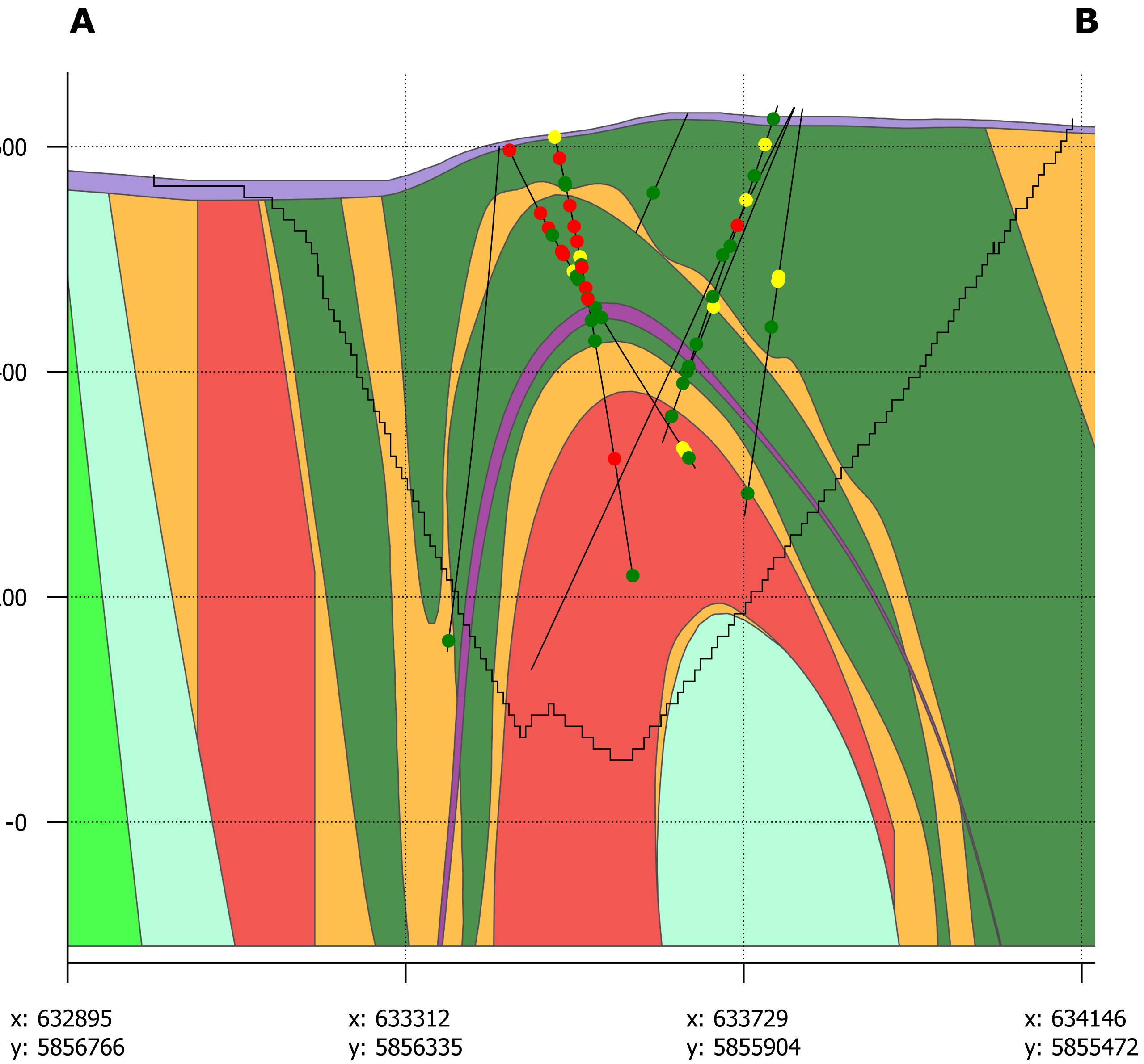
B: 634044, 5855300

Scale: 1:14,000

Vertical exaggeration: 2x

0m 1000m

L20+00E



Legend

Formations

- Overburden
- Katsao
- Menihek
- Post-Iron dyke/sill
- Sokoman
- Sokoman Ore
- Wishart

NPR

- ● NPR
- ≤ 1
- ≤ 2
- > 2

Location

A: 632895, 5856766

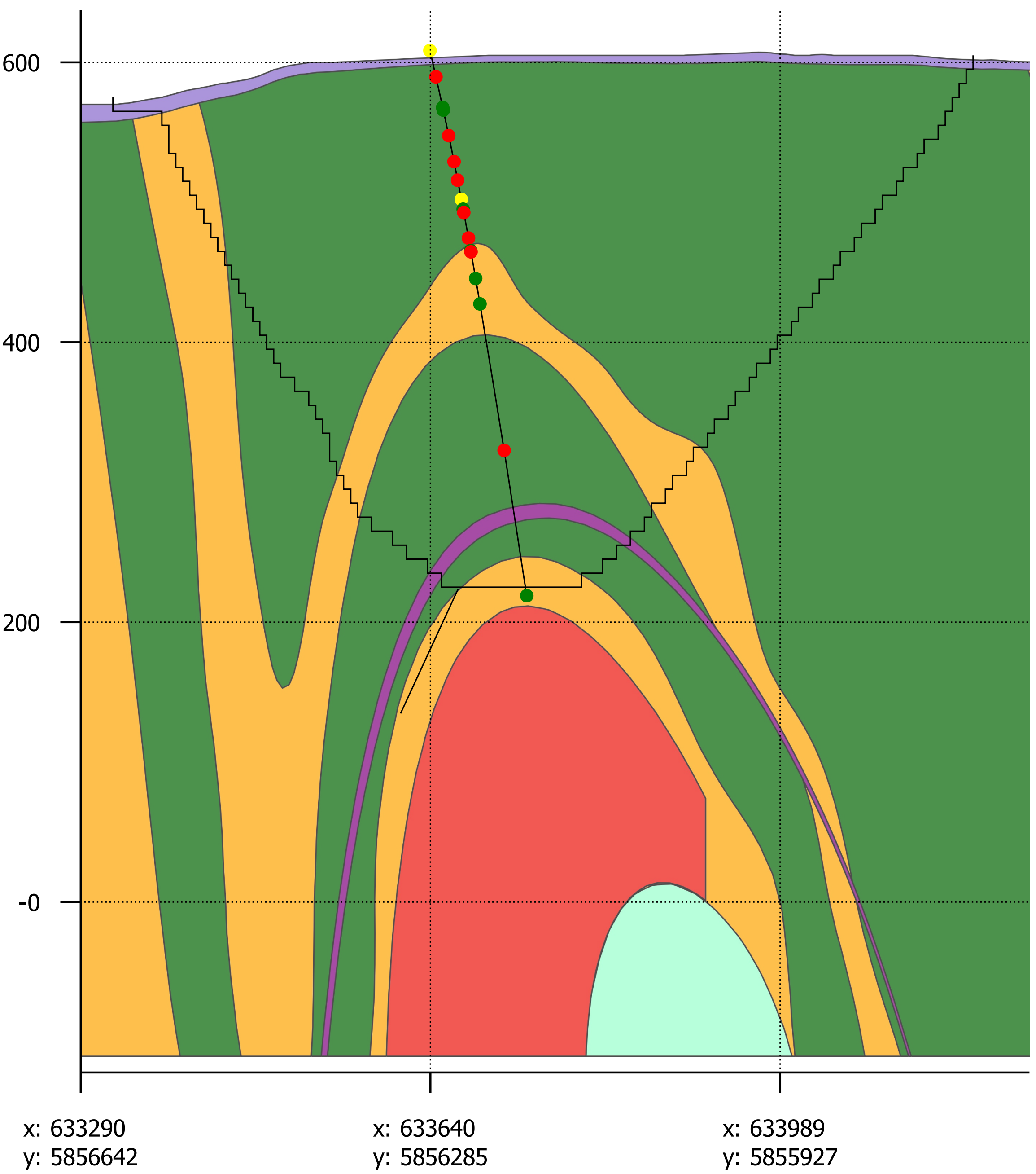
B: 634163, 5855455

Scale: 1:12,000

Vertical exaggeration: 2x

0m 700m

L22+00E



Legend

Formations

Overburden
Katsao
Menihek
Post-Iron dyke/sill
Sokoman
Sokoman Ore
Wishart

NPR

● NPR
≤ 1
≤ 2
> 2

Location

A: 633290, 5856642
B: 634239, 5855672

Scale: 1:9,700
Vertical exaggeration: 2x

0m 600m

For further information contact:

Katherine Raymond
Intermediate Geochemist
kraymond@okaneconsultants.com

M.A. O'Kane Consultants Inc.

112 - 112 Research Drive
Saskatoon, SK S7N 3R3
Canada

Telephone: (306) 955 0702
Facsimile: (306) 955 1596
Web: www.okc-sk.com

APPENDIX D

Kami TMF Feasibility Study - Multiple Accounts Analysis - Tailings Management Facility

REPORT

Kami TMF Feasibility Study

Multiple Account Analysis – Tailings Management Facility

Submitted to:

Minerai de Fer Quebec Inc.

1100 René-Lévesque Ouest
Bureau 610
Montréal, Québec H3B 4N4

Submitted by:

WSP Canada Inc.

6925 Century Avenue, Suite #600, Mississauga, Ontario, L5N 7K2, Canada

+1 905 567 4444

Project No. 22538752

December 5, 2023

Distribution List

E-copy: Minerai de Fer Quebec Inc.

E-copy: WSP Canada Inc.

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FIGURES

APPENDICES

1.0 INTRODUCTION

WSP Canada Inc. (WSP) has been retained by Minerai de Fer Québec (MFQ), to support the feasibility study of Kami Project located in Labrador West, Newfoundland, Canada. The feasibility study also consisted of leading an alternatives assessment for the development of Tailings Management Facility (TMF) for the Kami Project.

The objective of the alternatives assessment was to identify the most appropriate alternative for the management of tailings, as part of the Kami Project. A Multiple Accounts Analysis (MAA) approach was used for the alternatives assessment considering Environmental, Technical, Socio-economic, and Project Economics evaluation criteria, in general accordance with the Environment Canada Guidelines for the Assessment of Alternatives for Mine Waste Disposal (EC, 2016) and to meet the requirements of the Global Industry Standard on Tailings Management (GTR, 2020). A MAA approach is a well-accepted, transparent decision-making tool for completing an alternatives assessment for mine waste management.

This report provides a summary of the MAA alternatives assessment completed for the selection of the preferred alternative for the TMF.

2.0 PROJECT BACKGROUND

The location of Kami Project site is in Western Labrador at approximately 52°49’ N latitude and 66°59’ W longitude. The project site is adjacent to the Quebec border and is approximately 6 km southwest of the Wabush Mine site, approximately 10 km southwest of the town of Wabush in Newfoundland and Labrador, and east of the town of Fermont in Quebec.

The proposed mine, when in operation, will consist of the mining of iron by open pit mining method. The planned open pit will generate a total of 646.6 million tons (Mt) of ore over a Life of Mine (LOM) of about 25.4 years (MFQ, 2022). A total of 420.4 Mt of tailings waste will be produced during the operations. The potential to use two (2) tailings streams, consisting of coarse tailings (Coarse Low-Intensity Magnetic Separation, Coarse LIMS) and fine tailings (Fine LIMS), is being assessed as part of the updated Feasibility Design. The MAA, however, was completed considering a single tailings stream for deposition.

A site selection was completed as part of the 2012 studies to locate the preferred site for an impoundment to store tailings slurry (Golder, 2012a). Key criteria in this site selection were utilizing topographic reliefs to minimize dam construction, proximity to the mill, and avoiding large lakes that could trigger Schedule II of the Metal Mining Effluent Regulations (MMER). From the four (4) sites identified in 2012 for consideration, Site 1 was the closest to the mill and had the lowest elevation difference from the mill, minimizing the pumping demands (Figure 1). Sites 1 and 4 had the smallest collecting watershed areas, respectively. Considering Sites 3 and 4 were outside the min claim boundaries, the study concluded Site 1 as the preferred option for the feasibility study.

The proposed design of the tailings dam during the 2012 feasibility study included a till core starter dam and upstream raise with coarse tailings and is illustrated in Figure 2 (Golder, 2012b).

An update to the feasibility study was carried out in 2018 by Golder (Golder, 2018). Key modification to the design in 2018 included implementing multiple internal cells to allow progressive closure and reduce dusting potential (Figure 3), switching starter dam to lined rockfill and allowing for compacted tailings beach (Figure 4).

In consideration of various changes to project constraints, MFQ requested WSP to complete an MAA study to confirm the selected site and disposal strategy is aligned with current industry practices (Golder, 2022). Some of the key gaps/changed identified include:

- Permitting scrutiny and geotechnical risks associated with upstream raises.
- The terminology of the Wabush protected watershed changed during the Environmental Assessment (EA) process to include the Wahnahnish Lake watershed.
- Previous site-selection focused on technical/financial aspects and did not include environmental, social-economical evaluation criteria.
- Previous feasibility studies only considered slurry impoundments.

3.0 BASIS OF DESIGN

Design Basis and Design Criteria were established early in the Alternatives evaluation to guide the study and selection of preferred alternative. While the Design Basis was frozen early in the evaluation, the Design Criteria were updated throughout the study as the Project definition was refined and as ongoing data review identified information useful in guiding or supporting the study.

3.1 Design Basis

The Design Basis are the defining principles, rationale, technical guidance documents, and pertinent regulations used to guide the evaluation and conceptual designs. They set the minimum levels of study and performance for the evaluation, including the following:

- the Global Industry Standard on Tailings Management (GTR, 2020), notably Requirement 3.2 which identifies the need to complete a "multi-criteria alternatives assessment for new tailings facilities that evaluates all feasible sites, technologies, and strategies for tailings management with the intent to minimize risk to people and environment and to minimize the volume of tailings and water placed in external tailings facilities."
- The Environment Canada Guidelines for the Assessment of Alternatives for Mine Waste Disposal (EC, 2016), considered a best practice for completing an MAA for mine waste storage evaluation.
- While the MAA does not need to provide all Schedule II requirements (environmental assessment is outside this scope of work), it will provide technical information required for future Schedule II application.

3.2 Design Criteria

A credible alternatives analysis relies on evaluation of Alternatives that meet specific Design Criteria so that Alternatives can be compared on an equal basis. The design was developed based on Design Criteria, properties, and background data used as input for all the Alternatives, including the following:

- the mine waste production schedule, expressed on an annual basis.
- the overall LOM storage volume requirement for tailings of 263 Mm^3 (47,321 tpd), preferably with the capacity to expand by 40% to accommodate potential additional reserves.
- design of a Starter Facility that provides three (3) years of tailings storage.

- A freeboard of 2.2 m was allowed for water management control, in determining crest elevation above struck capacity level.
- 3H:1V upstream slope and 2H:1V slopes were assumed for external slopes.
- Starter dam lined with High Density Polyethylene (HDPE) geosynthetic liner.
- requirements for geotechnical stability of earth structures.
- requirements for geochemical stability of mine waste storage facilities.

4.0 MULTIPLE ACCOUNT ANALYSIS PROCESS

4.1 Selected Procedure

An alternative assessment was completed for the selection of the TMF alternative for Kami Project in alignment with the expectations of the Global Industry Standard on Tailings Management (GISTM) and following best practice for the development of new TMF (GTR, 2020). A Multiple Account Analysis (MAA) format was used, which provides a comprehensive assessment process that considers all aspects of developing a new mine waste facility. The 2016 Environment Canada (EC) Guidelines for the Assessment of Alternatives for Mine Waste Disposal is considered a best practice for completing an MAA for mine waste management facilities and therefore the MAA for Kami TMF was completed in general accordance with these guidelines.

4.2 Multiple Accounts Analysis Steps Followed

The following were the main steps in the process:

- identification of potential TMF locations.
- pre-screening assessment of TMF Alternatives.
- characterization of Alternatives.
- development of evaluation criteria.
- preparation of a MAA ledger.
- MAA of TMF Alternatives.
- sensitivity analysis.

The process was completed with a team of subject matter experts that included MFQ staff, who have knowledge of the project and similar operations in the area, and other consultants (BBA and Stantec). Three (3) meetings were held with the subject matter expert team to facilitate the MAA process, as follows:

Meeting #1 – 30 September 2022

- review the MAA process.
- review and discuss potential TMF locations.
- initial discussion of TMF Alternatives.
- initial presentation of pre-screening criteria.

Meeting #2 – 17 November 2022

- review the updated list of potential TMF locations (updated based on Meeting #1 discussion and follow-up input and assessment).
- review and finalize the pre-screening process.
- identify the short list of TMF Alternatives that will be advanced through the MAA.
- initial presentation of evaluation criteria.

Workshop #3 – 13 December 2022

- fill in and review the MAA ledger (scores and weightings).

Regular calls were also held with the team, in addition to the workshops, to discuss and coordinate development and assessment of the Alternatives. The MAA process steps are described in the following subsections and details of the MAA process for the preferred TMF are summarized in Section 4.0.

4.3 Identification of Alternatives

The first step in the Alternatives assessment was to identify possible locations for the TMF and consider options for alternative tailings dewatering technologies and mine waste co-disposal options. Initial layouts were developed for each location to assess maximum reasonable capacities for each location.

4.4 Pre-screening Assessment

A pre-screening assessment was completed to eliminate TMF site locations and tailings disposal technologies that had fatal flaws prior to completing the more detailed Alternative's evaluation in the MAA process. Pre-screening assessments were completed separately for facility locations and tailings disposal technologies, and the Alternatives that passed the pre-screening were combined to develop a short list of TMF Alternatives to carry through to the MAA. Details of these steps are provided in Sections 5.2.1 and 5.2.2.

4.5 Development of Evaluation Criteria and Mine Waste Storage Facility Alternatives

A series of evaluation criteria (called sub-accounts) were developed and grouped into four (4) categories:

- Environmental
- Socio-Economic
- Technical
- Project Economics

The sub-accounts required further refinement in some cases to allow for measurement and evaluation. These sub-accounts were broken down into measurement criteria called "indicators".

Conceptual-level designs were developed in parallel with the development of evaluation criteria that were applied to the short list of TMF Alternatives identified from the pre-screening assessment.

4.6 Development of the Multiple Accounts Analysis Ledger

The MAA ledger was developed based on the conceptual designs for the Alternatives and the initial data compilation and review was complete. The evaluation criteria were reviewed and refined to remove non-differentiating criteria or criteria where there were insufficient data to complete an assessment.

4.6.1 Scoring Criteria

A five-point scoring criteria scale was developed for each sub-account and indicator. The scores provide a relative ranking between the Alternatives with the “best” (most preferred) option receiving a score of 5 and the “worst” (least preferred) a score of 1. This scoring measure was used for both quantitative and qualitative indicators. Quantitative methods were used where possible to develop scoring criteria and assign relative scores; however, some sub-accounts and indicators required that the subject matter experts use qualitative judgement to develop scoring criteria and assign scores.

For sub-accounts and indicators that could be quantitatively measured, the highest and lowest scoring criteria were defined based on the maximum and minimum measurements. The remaining measurements were scored using a linear interpolation between the maximum and minimum values. For sub-accounts and indicators that required qualitative evaluation, the scoring criteria were developed using the judgement of subject matter experts.

Although a five-point scoring scale was used for each sub-account or indicator, descriptions for all five points were not always defined. In some cases, it was not practical to define qualitative descriptions for all five points. In these cases, definitions were always defined for the highest and lowest scores (1 and 5).

4.6.2 Weightings

Accounts, sub-accounts, and indicators were assigned a relative weighting (W) to introduce a value bias between the individual categories, sub-accounts, and indicators. The weighting factors were assigned using percentages so that the combined weightings at each level of the assessment equal one hundred percent (Table 6). The value bias is based on the relative subjective importance of one category, sub-account, or indicator versus another. A higher weighting factor indicates a perceived greater relative value or importance.
The weightings assigned in the MAA process are summarized along with the rationale for the weightings in Table 7 to Table 10.

4.6.3 Multiple Accounts Analysis Calculations

The calculations for the MAA assessment involved taking individual scores and weightings for each indicator and sub-account within the four accounts and converting them to a single score for each Alternative. Alternative scores were calculated using the following steps:

a) Calculate weighted indicator scores by multiplying the indicator score (S_I) by the weighting (W_I) for each indicator ($S_I \times W_I$).

b) Calculate the sub-account scores (S_s) by summing the weighted indicator scores for each sub-account ($S_s=S\{S_I \times W_I\}$).

c) Calculate weighted sub-account scores by multiplying the sub-account score (S_s) by the weighting (W_s) for each sub-account ($S_s \times W_s$).

d) Calculate category scores (S_c) by summing the weighted sub-account scores ($S_c=S\{S_s \times W_s\}$).

e) Calculate weighted category scores by multiplying the category score (S_c) by the weightings (W_c) for each category ($S_c \times W_c$).

f) Calculate the overall Alternative score (S_A) by adding the four weighted category scores (Environment, Socio-Economics, Technical, and Project Economics) for each Alternative.

The resulting overall Alternative score is a value between 1 and 5 and provides a means to evaluate the relative rankings of the Alternatives considering all aspects of the facility. The category scores can also be used to compare the Alternatives within the four categories. This method is considered transparent and allows stakeholders the opportunity to assess the relative weightings and scorings.

4.6.4 Sensitivity and Identification of Preferred Alternative

The judgement and perception of the individuals conducting an MAA analysis is inevitably part of any such decision-making system, both in the assignment of qualitative scores and of weighting factors. A sensitivity analysis was conducted to evaluate the robustness of the baseline results. The sensitivity analysis involved varying the category weightings to assess how the changes influenced the relative rankings of the Alternatives.

The most suitable (preferred) Alternative(s) was identified from the review of the base case results and the sensitivity analysis.

5.0 TAILINGS MANAGEMENT FACILITY ASSESSMENT

5.1 Identification of Potential Facility Locations

The first step in the alternatives assessment was to identify possible locations for the TMF. The locations were selected utilizing topographic information for the area that identified the mine site location. Dam layouts were established utilizing the topography to identity efficient alignments to maximise storage potential while minimizing embankment fill materials. Constraints were not used in the selection of the locations to avoid influencing dam placement and alignments except for 5 km and 10 km radial distances from the mine site.

Initial layouts were prepared for disposal of tailings behind embankment dams to assess maximum reasonable capacities for each location. A total of 17 sites were identified with the first step of the assessment. The TMF sites included locations that were previously identified in the Golder 2012a (four (4) locations) siting study and included potential locations suitable for alternate tailings dewatering technologies consisting of paste (two (2) locations) and dry stack (one (1) location) tailings disposal. These potential sites are listed in Table 1 and are also shown in plan view on Figure 6.

Table 1: TMF Alternative Sites – General Location

Location ID	Dewatering Technology	Disposal Methodology	Location Description
C1	Conventional Slurry	In-pit disposal	Local Pit - Mined Out
C2			Local Open Pit - Third Party
C3		Impoundment Embankments	Southeast of Long Lake
C4			South Extent of 10 km radius
C5			Southwest Extent of 10 km Radius
C6			Northwest Extent of 10 km Radius
C7			East Extent of 10 km Radius
C8			Southwest Extent of 10 km Radius - Alternative Layout
C9			Northwest Extent of 10 km Radius over Pike Lake
C10			Close to Plant Site
C10'			Close to Plant with Extension to Southeast
C11			South of Rose Pit
C12			Southwest Extent of 10 km Radius - Avoids Lakes
C13			Northwest of Upper Loon Lake
P1	High-Density Thickened Tailings		Low Topographic Relief - SW Extent of 10 km Radius
P2			Low Topographic Relief - SW Extent of 10 km Radius
D1	Filtered Tailings	Stacked Tailings	Close to the plant - Within Base Case Footprint

5.2 Pre-screening Assessment

The pre-screening assessment was completed to eliminate TMF site locations and tailings disposal technologies that have fatal flaws prior to completing a more detailed MAA evaluation. The pre-screening assessment was completed in two phases. The first phase evaluated tailings management technologies, followed by facility site locations in the second phase. The results of the pre-screening assessment phases were combined to develop a short list of mine waste facility Alternatives to carry through to the MAA.

5.2.1 Tailings Technologies Pre-screening Assessment

The following criteria were used to screen the mine waste management alternative technologies:

- Has the technology been proven in similar projects?
- Will the technology have features that differentiate it significantly from the base case (slurry disposal) such that it should be considered as a separate Alternative?
- Does the technology provide significant benefit to be considered as a separate Alternative?
- Is the technology technically “feasible” for the production schedule and setting of Kami Mine, considering the mill throughput and precipitation levels?

Table 2 presents the findings of the tailings technology screening study.

Table 2: TMF Summary of Tailings Technology Pre-screening Assessment

Technology	Pre-Screening Assessment	Discussion	Advanced to an Alternative
Conventional Slurry	Advantages: ▪ Technology is available and proven. ▪ Local water available to provide slurry transport. Disadvantages: ▪ Requires large volume of water for transport. ▪ Lower in situ tailings solids density requires increased storage capacity.	Site has suitable topography and area. Technology is proven and available. Water management is feasible.	Yes
Separation of coarse and fine tailings	Advantages: ▪ Technology is available. ▪ Facilities compaction of beach. Disadvantages: ▪ Additional process cost. ▪ Requiring two TMF basins.	Considering upstream construction, due to challenging permit application is not favourable, and additional CAPEX/OPEX associated with segregation of tailings and disposal in separate facilities, there are no advantages to adopt this methodology for the project.	No

Table 2: TMF Summary of Tailings Technology Pre-screening Assessment

Technology	Pre-Screening Assessment	Discussion	Advanced to an Alternative
In-pit tailings storage	Advantages: ▪ Does not require dam construction and therefore reduces risk of dam failure (stability, piping and overtopping). ▪ Increased water management capacity until end of pit capacity. Disadvantages: ▪ Use of local pit not available until pit has been mined out and therefore not suitable for Startup. ▪ Use of adjacent third-party open pit can be problematic related to ownership, schedule, distance from plant, etc. ▪ Potential to sterilize a resource. Tacora made a previous decision to not utilize existing open pit for tailings disposal (NFLD).	Exclude at start of project due to no available open pit for use in tailings disposal. Consider option for future tailings disposal if expended open pit becomes available.	No
High-density tailings placed as a slurry in a TMF	Advantages: ▪ Steeper beach, providing additional storage. ▪ Lower water reclaim demand. Disadvantages: ▪ Additional process cost.	Attributes of using high-density tailings are not sufficiently different from conventional slurry tailings to differentiate from a conventional slurry tailings TMF; high-density tailings would still require placement as a slurry in a hydraulically contained site behind a dam and would have higher capital and operating costs; tailings management would be more complex as the tailings beach slope would be more variable, steeper, and difficult to control.	No

Table 2: TMF Summary of Tailings Technology Pre-screening Assessment

Technology	Pre-Screening Assessment	Discussion	Advanced to an Alternative
Paste tailings placed as a slurry in a TMF	Advantages: ▪ Steeper beach, providing additional storage. ▪ Smaller berms required. ▪ Lower water reclaim demand. Disadvantages: ▪ Additional process cost.	Attributes of paste tailings are not sufficiently different from conventional slurry tailings to differentiate from a conventional slurry tailings TMF; paste tailings would still require placement as a slurry in a hydraulically contained basin behind a dam, and tailings and reclaim pool management in the TMF would be operationally more complex than for a conventional slurry TMF.	No
Comingling (complete blending) of tailings and waste rock in a TMF	Advantages: ▪ Can stack tailings Disadvantages: ▪ Increases footprint ▪ Additional process cost.	Engineered blends of rock with tailings do not sufficiently accommodate the high variability of the waste streams expected during the LOM, allowing the use of only part of tailings stream. This would require that a comingled facility be coupled with a conventional slurry TMF; it does not eliminate the need for a large slurry TMF.	No
Filtered tailings placed as a compacted fill (filter stack)	Advantages: ▪ Technology is available and proven. ▪ Suitable topography is present. ▪ Reduction in requirements for water reclaim. Disadvantages: ▪ High tailings throughput would require large processing operations. ▪ High number of trucks or conveyor infrastructure to accommodate throughput.	Processing is not feasible (high CAPEX and OPEX) based on the expected processing infrastructure required to accommodate the tailings throughput.	No

In 2017, MEND commissioned a study to evaluate the state of practice for tailings dewatering technologies across mining in Canada (KCB, 2017). Combination of surveys and project information was used to solicitate input from various Canadian and International operation. One of the objectives of this study was to evaluate practical dewatering technologies as function of climate (net precipitation) for various production rates (Figure 5). Kami project has a net precipitation of 490 mm and the mill is planned to be producing tailings at 45,000 tonne/day. As shown in this figure majority of operations at these precipitation level and production rate are disposing slurry/conventional tailings.

The result of the pre-screening assessment for tailings technologies and disposal, presented above, identified that conventional slurry tailings will be the preferred method for tailings disposal. The option to use separated coarse and fine tailings streams may still be considered for the project if deemed economical by producing an embankment fill material that will be assessed with the updated FS. Use of in-pit disposal of tailings, utilizing a mined-out pit, was not identified for advancement through the MAA as a suitable option was not available and not expected to be available for the anticipated mine start-up. However, utilizing a mined-out open pit can be considered for future tailings disposal if available.

5.2.2 Facility Site Locations Pre-screening Assessment

Table 3: Pre-screening Assessment Criteria

Identified Constraint for Pre-Screening Criterial	Rational
Large Fish Bearing Lake	Assume all water bodies are fish bearing. Eliminate Alternatives that impede on 10 ha of lake area.
Sterilizes a Potential Future Resource	Alternative cannot be considered in areas where there is a potential resource.
Impedes Rail Line	Alternatives cannot impede on the planned rail alignment for the operations.
Impedes on Powerline	Alternatives cannot impede on existing or planned power distribution due to high relocation costs and schedule implications.
Impedes Major Highway	Alternatives to avoid Federal and Provincial Road networks as relocation will have high project costs and schedule implications.
Within Township Border	Sites that are located immediately upstream of a significant population centre (which cannot reasonably be relocated) present too high a risk and should not be considered.
Located within Provincial Park boundary	Mine infrastructure and facilities should not be planned within protected areas as they present an unacceptable risk to key environmental resources and are highly unlikely to be permitted by the authorities.
Location Exceeds Established Radial Distance from Plant	Establish maximum radial distance from plant new dam construction (10 km). The further the Alternative is from the Plant site the higher the costs are for transporting mine waste materials (tailings and waste rock) and the greater the potential environmental and social impacts along the transport route.
Insufficient Capacity for Tailings Storage	Alternatives that cannot provide the required storage capacity with operational and stormwater management are not desired.
Impedes on Planned or Existing Resource	Alternative sites cannot be considered in areas where there is existing or planned mine infrastructure that cannot be moved.
Crosses Provincial Border	Alternative sites cannot cross provincial boundaries as prevent additional provincial permitting

Table 3: Pre-screening Assessment Criteria

Identified Constraint for Pre-Screening Criterial	Rational
Impedes on Wabush Protected Water Supply	Alternatives cannot impede on the Wahnahnish Lake watershed that has been classified as protected watershed.
Construction Methodology - Utilizes a potentially unstable method of tailings disposal	Alternatives that utilize upstream method for embankment raises may be less stable than centreline or downstream method.

The unprotected watershed was treated as a protected watershed with an amendment to the Environmental Permit application in “Kami Iron Ore Project – Responses to Provincial, Aboriginal and Public Comments on the Amendment to the Environmental Impact Statement” by Alderon Iron Ore Corp, June 2013. For the pre-screening and MAA assessment, Alternatives that were within the protected watershed were eliminated while Alternatives that were within or impeded on the unprotected watershed were advanced to the MAA, if Alternative was not eliminated based on other pre-screening criteria. The MAA process considered potential impacts and mitigations is the scoring considering that the unprotected watershed may be treated as protected.

A summary of the pre-screening assessment completed on the Alternative locations applying the criterial summarized above is provided in Table 4.

Table 4: Pre-screening Assessment Results

Criteria No.	Pre-Screening Criteria	Category	Candidate Alternative Identifier																
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C10'	C11	C12	C13	P1	P2	D1
1	Large Fish Bearing Lake	Environment	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	No	No	No	No	No
2	Sterilizes a Potential Resource	Operations	Yes	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
3	Impedes Rail Line	Socio-Economic	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No
4	Impedes on Powerline	Socio-Economic	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
5	Impedes Major Highway	Socio-Economic	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
6	Within Township Border	Socio-Economic	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
7	Located within Provincial Park boundary	Socio-Economic	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No	No	No	No	No
8	Location Exceeds Established Radial Distance from Plant	Operations	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	Yes	No
9	Insufficient Capacity for Tailings Storage	Operations	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
10	Impedes on Planned or Existing Resource	Operations	Yes	Yes	No	No	No	No	Yes	No	Yes	No	No	No	No	No	No	No	No
11	Crosses Provincial Border	Socio-Economic	No	No	No	No	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	Yes	No
12	Impedes on Wabush Protected Water Supply	Environment	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
13	Unsuitable Deposition Technology	Technical	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
14	Construction Methodology	Technical	No	No	No	No	No	No	No	No	No	Yes	No	No	No	No	No	No	No
Conclusion – Exclude from Further Consideration			Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes

The construction methodology for embankment raises assessed at the pre-screening stage consisted of the upstream, centreline and downstream raise. Each Alternative included a starter dam, established at the mine sites pre-production stage, utilizing an upstream low-permeable liner, graded soil filters and downstream shell constructed of Non-Acid Generating (NAG) mine waste rock. The following provides a description of the methods of embankment raises that was considered in the pre-screening assessment of the alternatives.

Upstream Raise

The upstream method of construction consists of a starter dam established for the initial 3+ years of operations, with subsequent embankment raising by the upstream method. Fill material for the starter dam will need to be sourced at the site and is expected to include Non-Acid Generating (NAG) mine waste rock for the downstream shell. Geotechnical graded filters will be included to provide a suitable bed and cover for the HDPE liner and to control seepage. A riprap erosion protection layer will be placed on the upstream slope to provide protection from wave and ice damage and erosional forces from deposited tailings from the perimeter spigots. Fill materials for the embankment raises will include use of coarse tailings produced from separation of coarse and fine tailings into separate streams. Separation of the tailings requires strategic deposition of each stream that uses internal cells. The upstream tailings beach requires compaction to provide a stable foundation for the embankment raises. Coarse tailings are excavated from the beach and placed on the compacted tailings foundation.

Centreline Raise

The centreline method of construction consists of establishing a starter dam at pre-production stage that will provide tailings storage for the initial 3+ years of operations. The starter dam will be constructed similar to the Upstream Raise, as described above, with subsequent embankment raises by the centreline method. Fill material placed in the dams upstream shell will be placed within the basin with the foundation on the tailings beach. Liner placed on the upstream slope of the starter dam is not extended with this method of embankment raising and containment is provided with fine till that requires sourcing at the site. The geotechnical graded filters are extended vertically to provide seepage control and embankment stability. The downstream shell of the dam is constructed of NAG mine waste rock provided from the ongoing mining operations.

Downstream Raise

The downstream method of construction consists of establishing a starter dam that provides 3+ years of tailings storage capacity, after the plant site start-up, with the upstream slope lined with HDPE, internal graded filters and downstream shell of the dam consisting of NAG waste rock from the mining operations. Embankment raises consisted of downstream method that allows the HDPE liner to be extended along the upstream slope with each embankment raise. The internal graded filters are also extended in parallel to the upstream slope and the downstream shell of the dam consists of NAG mine waste rock from the mining operations. The downstream raise provides increased embankment stability and reduces requirements for water management within the basin area as the upstream slope of the dam is lined. Significant increase in embankment fill material is required with a downstream raise and Alternative C10’ DS requires the largest amount of fill for the final dam arrangement. Sufficient area downstream is also required to facilitate the footprint area for the embankment shell.

The following provides a summary of the Alternative locations that did not pass pre-screening and were eliminated from advancement thought the MAA.

- Alternative C1 (Local Pit – Mined Out) – Eliminated due to potential to serialize a potential resource, impedes no planned or existing resource, and has insufficient capacity for tailings storage as a local pit is not available.
- Alternative C2 (Local Open Pit – Third Party) – Eliminated as Alternative would sterilize a potential resource (third party open pit has reserve remaining) and therefore would impede on the existing resource.
- Alternative C3 (SE of Long Lake) – fails as it impedes on large fish bearing lakes and a rail line.
- Alternative C4 (South Extent of 10 km radius) – Eliminated as Alternative impedes on lake fish bearing lakes and footprint required extending past the 10 km radius limit.
- Alternative C5 (Southwest Extent of 10 km radius – Eliminated as Alternative impedes on lake fish bearing lakes, footprint required extending past the 10 km radius limit and as a result crosses the Provincial boundary.
- Alternative C6 (NW Extent of 10 km radius) – Eliminated as Alternative impedes on lake fish bearing lakes, was located within a Provincial Park and required layout crossed a Provincial boundary and exceeded the 10 km radial allowance from the plant.
- Alternative C7 (East Extent of 10 km radius) – Eliminated as Alternative impedes on large fish bearing lakes, sterilizes a potential resource and planned infrastructure and required layout crosses a Provincial boundary.
- Alternative C9 (NW Extent of 10 km radius over Pike Lake) – Eliminated as Alternative impedes on large fish bearing lakes, sterilizes a local potential resource, located within the Provincial boundary impedes on existing resource and alignment crosses a Provincial Boundary.
- Alternative C10 (Close to Plant) – Eliminated as this Alternative utilizes an upstream method of embankment construction, after establishing a lined starter dam, with raises constructed with compacted coarse tailings, due to potential lower stability under the undrained loading condition, compared to centreline and downstream construction methods.
- Alternative C11 (South of Rose Pit) – Eliminated as Alternative impedes on large fish bearing lakes and sterilize a potential local resource.

Locations were identified for Alternatives P1 and P2, identified as suitable for thickened tailings disposal, and Alternative D1, identified as suitable for dry stack method of tailings disposal. These methods of tailings disposal were eliminated as part of the tailings technology pre-screening, discussed above in Section 5.2.1, and therefore the locations will not be carried forward through the MAA process. Note that Alternative locations P1 and D1 were not eliminated based on location criteria and could be considered as part of future tailings disposal alternatives if these technologies become feasible in future disposal alternatives.

5.2.3 Summary of Alternatives Advanced to MAA

The pre-screening assessment of the Alternate locations identified the following locations that are suitable for tailings storage.

- Alternative C8 – SW Extent of 10 km Radius – Alternate Layout (Centreline Raise)
- Alternative C10' – Close to Plant with SE Extension (Centreline and Downstream Raise)
- Alternative C12 – SW Extent of 10 km Radius – Avoids Lakes
- Alternative C13 – NW of Upper Loon Lake

The pre-screening assessment of tailings disposal technologies identified use of conventional tailings for the project. Therefore, the MAA assessment was completed utilizing conventional slurry tailings for all Alternative sites.

Alternative C10' represents the Base Case as this Alternative is in the same location previously identified as the preferred alternative in the 2012 and 2018 feasibility studies. The Base Case will also utilize a starter dam and will utilize the coarse tailings in the upstream shell with graded soil internal filters and mine waste rock for the embankment centerline raises. Alternative C8, C12 and C13 will also consist of a starter dam with centreline raise, similar to the Base Case. Alternative C10' Base Case (location of facility) was also assessed with a starter dam and downstream method for embankment raising. The inclusion of the downstream method of dam raising for Alternative C10' resulted in five (5) dam arrangements being advanced through the MAA.

5.3 Description of Alternatives

Conceptual-level designs were developed for the short list of Alternatives developed from the pre-screening assessment to allow evaluation and comparison of the Alternatives through the MAA process. The conceptual designs developed consisted of three (3) methods for dam raising for tailings containment consisting of upstream, centreline and downstream. The following provides a summary of design criteria utilized for all Alternatives, description of each method of embankment raising and descriptions of each Alternative.

Typical Design Criteria:

- Starter Dam – utilized for all Alternatives
  - Lined with HDPE Liner
  - Zoned earthfill with graded filters
  - Dam crest width - 20 m
  - Upstream Slope 3H:1V
  - Downstream Slope 2H:1V
- Starter dam for 3+ years of operations followed by embankment raising.
- Crest height established to contain struck level tailings and 2.2 m allowance for operational and stormwater management.
- Emergency spillways provided for each raise.
- Tailings deposition consisted of single stream.

- Internal berms not included in preliminary assessment.
- Tailings deposition system consisting of a delivery and deposition pipeline with deposition spigots.
- Access roads established to each alternative.
- Water management consisting of runoff collection ditches established along downstream toe.
- Water reclaimed by barge and pipeline system.

A description of the construction methods for embankment raises is provided above in Section 5.2.2.

The following provides a summary of the characteristics of the Alternatives assessed with the Centreline Raise.

Alternative C8:

Alternative C8 is located Southeast of the mine site and Base Case C10 Alternative and is generally East of the planned Rose South Waste Dump. Embankment layouts utilize the local topography to provide tailings containment with dams alignment between bedrock outcrops resulting in the shortest embankment lengths for the starter dam and final dam arrangements. Initial years of containment requires the starter dam to be aligned on the Eastern extent of the facility with shorter saddle dams established in the topographic low areas around the perimeter as the embankment is raised. Utilizing the local topography for tailings containment results in a reduction in embankment fill materials, however the resultant tailings basin, tailings surface and catchment area are larger than other Alternatives. Tailings deposition will require establishing the deposition pipeline on sections of natural ground that will require establishing vehicular access to these areas for spigot manipulation.

Alternative C10' US:

Alternative C10' US is closest to the plant with the layout expanded to the south and utilizes an upstream raise to provide tailings containment over the life of the facility. This Alternatives location is closest to the mine site with the plant site located directly north of the facility. The embankment layout utilizes topographic relief in the southern extend of the facility, similar to Alternative C8 discussed above, and requires embankments along the North, West and Eastern extents of the facility with a saddle dam at the Southern extend as the facility is raised. The deposition pipeline will generally be aligned on the dam crest to provide easy access for spigot manipulation.

Alternative C12:

Alternative C12 is located South of the plant site, Southeast of the proposed Rose South Waste Dump and West of Alternative C18. The location is the farthest from the plant site requiring the longest permanent access road. The embankment layout utilizes a bedrock outcrop at the northern extent as facility and earthfill embankments on the West, East and Southern extents. The embankment alignments have been established to avoid large lakes located on the Eastern extent of the facility and has the longest embankment length at the final dam arrangement. The deposition pipeline will generally be aligned on the dam crest to provide easy access for spigot manipulation; however, the basin is generally long and narrow that can result in challenges to tailings deposition and pond management for water reclaim.

Alternative C13:

Alternative C13 is located Southeast of the plant site, East of Alternative C8 and is on the West shore of Upper Loon Lake that has several private cabins present. Perimeter embankments are required along most of the alignment to form a paddock impoundment for tailings containment that results in the larges fill volume required for the centreline raise Alternatives. This results in a high volume of fill materteral required for embankment construction. The deposition pipeline will be established on the embankment crest to provide good access for to deposition spigots.

The following provides a summary of the Alternative assessment with the downstream method of construction for embankment raises.

Alternative C10’ DS

Alternative C10’ DS was assessed with a downstream embankment raise and utilized the same location as C10’ US, discussed above. The starter dam alignment was consistent with C10’ US that provides 3+ years of tailings storage capacity, after the plant site start-up, with the upstream slope lined with HDPE, internal graded filters and downstream shell of the dam consisting of NAG waste rock from the mining operations. Embankment raises consisted of downstream method that allows the HDPE liner to be extended along the upstream slope with each embankment raise. The internal graded filters are also extended in parallel to the upstream slope and the downstream shell of the dam consists of NAG mine waste rock from the mining operations. The downstream raise provides increased embankment stability and reduces requirements for water management within the basin area as the upstream slope of the dam is lined. Significant increase in embankment fill material is required with a downstream raise and Alternative C10’ DS requires the largest amount of fill for the final dam arrangement. Sufficient area downstream is also required to facilitate the footprint area for the embankment shell.

A summary of the conceptual-level design characteristics of the Alternatives embankments, basin and catchments areas that were used in the Multiple Account Analysis is provided as Table 5.

Table 5: Alternative Characteristics

Alternative ID	Distance From Plant to End of TSF	Elevation Difference - Plant to Final Dam Crest	Area of Final Facility	Highest Section	Average Height	Ratio - Tailings Storage to Embankment Fill	TSF Footprint Area	Embankment Footprint Area		Embankment Length		Embankment Fill Volume		Total Facility Perimeter Length		Permanent Access Road	Tailings Surface Area		Catchment Area
								Starter Dam	Final Dam	Starter Dam	Final Dam	Starter Dam	Final Dam	Starter Dam	Final Dam	Final Dam	Starter Dam	Final Dam	Final Dam
Unit	km	m	Mm^2	m	m	m^3/m^3	Mm^2	Mm^2	Mm^2	m	m	Mm^3	Mm^3	km	km	km	Mm^2	Mm^2	Mm^2
C10' CL – Base Case	4.3	58	9.1	78	25.4	8.3	9.1	0.618	1.22	5,120	8,230	9.1	31.5	10.6	12.7	2.1	3.5	8.2	10.3
C10' DS	4.3	57	10.1	77	29.0	4.3	10.1	0.618	2.13	5,120	8,500	9.1	61.8	10.6	13.8	2.1	3.5	9.0	11.3
C8	9.9	43	11	43	15.0	35.5	11	0.126	0.489	1,950	7,860	0.8	7.4	9.0	18.9	7.6	4.5	10.6	15.3
C12	10.5	82	7.3	74.7	25.9	8.3	7.3	0.386	1.218	4,330	10,300	3.8	31.6	7.3	12.2	9.1	3.1	6.3	7.4
C13	9.4	51	7.1	71	28.9	5.9	7.1	0.735	1.56	7,500	9,210	8.2	44.4	10.3	9.9	6.3	4.0	5.9	6.4

5.4 Evaluation Criteria Weightings

The following sections summarize the evaluation criteria and weightings developed within each of the four categories (Environmental, Socio-economic, Technical, and Project Economics). Additional details about the evaluation criteria and the method used to score the Alternatives against the criteria are provided in Section 5.5.

Table 6 provides a summary of the weightings assigned to the four categories and the rationale used to develop the weightings.

Table 6: Category Weightings and Rationale

Category	Weighting (%)	Rationale
Environment	30	Utilized weightings recommended in the ECCC Guidelines for Alternative Assessments to prevent bias. Assigned weightings were presented to MAA team and agreed.
Socio-economic	30	
Technical	20	
Project Economics	20	
Total	**100**	

5.4.1 Environmental Criteria and Weightings

The Environment category carries an overall base case weighting of 30% within the MAA.

Table 7 summarizes the evaluation criteria and weightings that were developed to evaluate the Alternatives for tailings storage with respect to environmental considerations. Additional details about the environmental criteria and how they were scored is provided in Section 5.5.1.

Table 7: Environmental Evaluation Criteria Weightings and Rationales

Sub-account	Sub-account Weighting	Rational for Sub-account Weighting	Indicator	Indicator Weighting	Rational for Indicator Weighting
E1: Potential to generate greenhouse gas emissions	15%	The potential to generate greenhouse gas emissions was given a moderate weighting because it is an important issue to MFQ but is limited to periods of construction unlike others that are persistent during the life of the facility	N/A		
Potential Impact to Aquatic habitat	75%	Impact to Aquatic habitat was given the higher weighting due to the large presence of sport and food fish bearing lakes and rivers in the area.	E2: Direct loss of habitat within TSF footprint (area for lakes, length of streams/rivers assuming 2 m width)	70%	Direct loss was assigned the highest weighting as permanent loss will occur within the footprint of the TSF.
			E3: Potential affects to downstream habitat (area for lakes, length of streams/rivers assuming 2 m width) with 1 km of dam (hectares)	30%	Downstream loss was assigned a lower rating as mitigation can be implemented with design, infrastructure and monitoring.
E4: Potential Impact to Terrestrial habitat	10%	The potential to impact terrestrial habitat was given the lowest rating as the impacts will be isolated to the TSF area, and in habitats seem to have similar and quality/biodiversity that are common in the area.	N/A		

Note: Some sub-accounts were not broken down into indicators.

TSF = tailings storage facility; N/A = not applicable (sub-account not broken down into indicators).

5.4.2 Socio-economic Sub-accounts and Indicators

The Socio-economic category carries an overall base case weighting of 30% within the MAA.

Table 8 summarizes the evaluation criteria and weightings that were developed to evaluate the Alternatives for tailings storage with respect to environmental considerations.

Table 8: Socio-economic Evaluation Criteria Weightings and Rationales

Sub-account	Sub-account Weighting	Rational for Sub-account Weighting
SE1: Relocation of cabins downstream of facility.	30%	Assigned a moderate weighting as negotiations on compensation will need to be completed with cabin owners; however, the previous owner was able to successfully reach purchase agreements with several property owners.
SE2: Potential to impact to water sources used for drinking, or economic purposes	50%	Given the highest weighting due to the concerns with potential impacts to the protected drinking water supply area raised by community and government officials during the environmental assessment.
SE3: Proximity to communities (nuisance from dust and noise, visual impact, etc.)	10%	Assigned a low weighting as noise, dust and visual impacts can be mitigated with design and technology application and there is a long history of application of such mitigations in the communities.
SE4: Ability to obtain land tenure	10%	Land identified within the project footprint is owned by either MFQ or the Crown and it is assumed that agreements on land tenure can be reached with the NL government.

5.4.3 Technical Sub-accounts and Indicators

The Technical category carries an overall base case weighting of 20% within the MAA.

To help with framing the assessment, the organization of the Technical category included grouping the evaluation criteria into three (3) sub-categories defined based on the stages of the Mine life cycle. The three (3) Technical sub-categories identified for the MAA are listed below:

- **Design –** Risk and Complexity (ability to design a reliable facility)
- **Project Development –** Schedule Risk and Complexity (ability to meet project start-up schedule)
- **Expansion Potential –** Suitable for expansion past the operating mine life identified for the MAA

The Categories were further divided into five (5) sub-accounts with further division to eight (8) indicators to allow for measurement and scoring.

Table 9 summarizes the sub-accounts and indicators for the Technical category, which are organized based on the three (3) sub-categories, along with the weightings assigned to each evaluation criteria and supporting rationales.

Table 9: Technical Evaluation Criteria Weightings and Rationales

Sub-account	Sub-account Weighting	Rational for Sub-account Weighting	Indicator	Indicator Weighting	Rational for Indicator Weighting
Risk of dam/structure failure	40%	This sub-account was weighted the highest it has the highest consequences and impacts on the project.	T1: Average Embankment Height	10%	Average embankment height was identified to have a lower weighting as is can be mitigated in design.
			T2: Embankment Length	10%	Embankment Length was deemed to have similar level of risk as embankment height (T1) and risks can be mitigated with design and construction supervision quality control.
			T3: Method of Dam Construction	80%	Method of dam construction was given the highest weighing as it will have the largest impact on embankment stability.
Mine waste/water management complexity	30%	Mine waste and water management were assigned a moderate weighting as it can be dynamic with design intents that require implementation by field staff.	T4: Tailings and water management within facility	80%	Tailings and water management were weighted high as it occurs within the facility with high consequences of mismanagement.
			T5: Downstream Water Management	20%	Weighted lower then T4 as risks can be mitigated with design and water management infrastructure.
T6: Adaptability to changes in hydrology/climate	5%	Adaptability to hydrological changes were judged to be lower risk as the design and ongoing monitoring can be used as mitigation.	N/A		
T7: Project Development Schedule Risk and Complexity. (Ability to meet Project Start up Schedule)	20%	Ability to meet project schedule was given a moderately low weighting as judged to have less risk than design or construction aspects.	N/A		
T8: Expansion Flexibility	5%	Expansion flexibility was assigned a low weighting because there is only a possibility that it may be required and additional storage capacity can be provided by other mitigative actions, such as the use of additional site(s).	N/A		

5.4.4 Project Economics Sub-accounts and Indicators

The Project Economics category carries an overall weighting of 20% (base case) within the MAA.

The costs for the Alternatives were assessed over the life cycle of the facility to allow a proper comparison and ranking of Alternatives. The Project Economics category was divided into the following four sub-accounts (equivalent to project phases):

- Initial Capital Expenditure (CAPEX) – Starter Dam
- Sustaining Capital Expenditure – Embankment Raise
- Closure Costs (closure) – End of Operations

A high-level cost estimate was prepared for each Alternative to an equivalent level of a Scoping Study. Material tables were developed for each Alternative and dam cross section. Quantities were developed based on the high-level design work that was completed for each Alternative to identify embankment, basin and catchment characteristics provided in Table 5 . Construction unit rates were provided by MFQ that had recently been developed for similar work in the area. Cost estimated included the following for each of the Alternatives:

- Mobilization and Demobilization
- Tailings Basin Preparation
- Surface Water Management
- Tailings Distribution System
- Excess Water Removal System
- Reclamation
- Detailed Engineering and Construction Supervision

Estimates were prepared for each Alternatives starter dam, representing the initial 3+ years of operations, the final dam configuration and for closure. Closure costs were prepared assuming a geotechnical cover placed over all exposed tailings and a closure spillway.

The costs were normalized for the MAA to allow scoring based on the highest cost. The total cost for each sub-account was divided by the highest cost to normalize the estimates for direct comparison and the MAA scoring. Weightings for each of the sub-accounts were calculated from the normalized estimate as described below:

- Maximum and minimum values were noted from the normalized estimate for each sub-account, with a maximum being 1.0.
- The range of values was calculated (i.e., the difference between the maximum and minimum values).
- The range was divided by five (5) (5-point scoring system), resulting in the equivalent cost value of 1 scoring point for each sub-account.

The results of the weighting calculation for each sub-account are shown in Table 10.

Table 10: Project Economics Weighing and Rationales

Sub-account	Sub-account Weighting	Rational for Sub-account Weighting
PE1: Capital Expenditure (CAPEX)	20%	The CAPEX cost were provided a low weighing as the most Alternatives has similar costs and were generally undifferentiating.
PE2: Sustaining Capital	60%	Sustaining capital was assigned the highest weighting as it represented the highest expenditure over the life cycle of the facility and there was a wide rage of required expenditure for the Alternatives.
PE3: Closure Costs	20%	Closure costs were assigned a low weighting as concepts are conceptual and may change in the future with technological advancements.

5.5 Evaluation and Scoring Criteria

The following subsections provide details of the scoring criteria developed for evaluation criteria within each category. The number of scores defined varied for different criterion. All five (5) scores were defined (i.e., 1 to 5) in some cases but in other cases, where the assessment was binary or based on a linear quantitative scale, scores of 1 and 5 were defined or scores of 1, 3, and 5 were defined with scores of 2 and 4 available where conditions were considered between the definitions.

5.5.1 Environmental Criteria

A total of four (4) sub-account and indicator criteria were assessed within the Environmental category. Table 11 provides a summary of the sub-account and indicators for the Environmental Criteria and the rational applied to the scoring criteria to assess the Alternatives.

Table 11: Environmental Evaluation Criteria

Criteria No.	Sub-accounts	Indicators	Rationale
E1	Potential to generate greenhouse gas emissions	Distance from mill X embankment fill volume – more emissions with greater volume and distance	▪ Emissions released to the atmosphere due to the transport of earth and rock materials for construction and closure of the facility. ▪ Alternatives that have lower total material movement requirements and therefore consume less fuel will generate less GHG and are preferred. ▪ Measurement was completed on basis of volume of material, haul distance. Volume of material to be moved (M m^3) multiplied by the haul distance (km) = M m^3.km.
E2	Potential Impact to Aquatic habitat	Direct loss of habitat within TSF footprint (area for lakes, length of streams/rivers assuming 2 m width)	▪ Alternatives that result in less direct aquatic habitat loss are preferred ▪ (Assumed that all lakes and streams have similar quality/biodiversity, presence of species of concerns)
E3		Potential affects to downstream habitat (area for lakes, length of streams/rivers assuming 2 m width) with 1 km of dam (hectares)	▪ Alternatives that have less potential to impact aquatic habitat downstream of the facility from dam breach are preferred
E4	Potential Impact to Terrestrial habitat	Loss of habitat within TSF footprint. Area of habitat (hectares).	▪ Alternatives that result in less habitat loss are preferred. ▪ Assumed that all habitats have similar quality/biodiversity, presence of species of concerns

Scoring criteria developed for the Environmental sub-accounts and indicators are summarised in Table 12 below.

Table 12: Environmental Scoring Criteria

Criteria No.	Scoring Criteria				
	1	2	3	4	5
E1	▪ Total material movement quantity >200 Mm^3.km	▪ Total material movement quantity between 200 and 100 Mm^3.km	▪ Total material movement quantity between 100 and 50 Mm^3.km	▪ Total material movement quantity between 50 and 25 Mm^3.km	▪ Total material movement quantity <25 Mm^3.km
E2	▪ Larger area of streams and water bodies habitat lost due to the impoundment ▪ >50 ha of riparian habitat	▪ 20 to 50 ha of riparian habitat lost	▪ 10 to 20 ha of riparian habitat lost	▪ 5 to 10 ha of riparian habitat lost	▪ Smaller area (water bodies habitat) impacted by TSF footprint ▪ <5 ha of riparian habitat lost
E3	▪ Larger area impacted. >200 ha	▪ >150 and <200 ha	▪ >100 and <150 ha	▪ >60 and <100 ha	▪ Aquatic habitat impacted: <or equal to 60 ha
E4	▪ Largest TSF footprint >1100 ha	▪ TSF footprint: 1000 to 1100 ha	▪ TSF footprint: 900 to 1000 ha	▪ footprint: 800 to 900 ha	▪ Smallest footprint <800 ha

5.5.2 Socio-economic Criteria

A total of four (4) sub-account with indicator criteria were assessed within the Socio-economic category. The following sections provide a summary of the socio-economic evaluation criteria and scoring criteria. Table 13 provides a summary of the sub-account with indicators and rational applied to the scoring criteria to assess the Alternatives for the Socio-economic Criteria.

Table 13: Socio-economic Evaluation Criteria

Criteria No.	Sub-accounts	Indicators	Rationale
SE1	Relocation of cabins downstream of facility.	Number of cabins immediately adjacent to and within 2 km of TSF footprint	Alternatives with fewer people, communities and infrastructure within a potential failure inundation zone have less risk to assets and loss of life
SE2	Potential to impact to water sources used for drinking, or economic purposes	Potential to impact community water supply	Alternatives that have a lower potential to impact water used for domestic or commercial purposes downstream of the facility are preferred
SE3	Proximity to communities (nuisance from dust and noise, visual impact, etc.)	Potential impacts to community health due to dust and noise and visual concerns with seeing mine - distance from community	Alternatives that are further way from the communities are preferred presumably because they will be less affected
SE4	Ability to obtain land tenure	Alternative land tenure	Land tenured is needed to proceed with development

Scoring criteria developed for the Socio-Economic sub-accounts with indicators are summarised in Table 14 below.

Table 14: Socio-economic Scoring Criteria

Criteria No.	Scoring Criteria				
	1	2	3	4	5
SE1	20 cabins	15 - 20 cabins	5 - 15 cabins	1 - 5 cabins	No cabins
SE2	Alternative is within protected watershed, adjacent to water supply lake, with high impact to the community water supply	Alternative is within protected watershed, upstream of water supply lake, with high impact to the community water supply	Alternative is partially within protected watershed or is immediately adjacent to protected watershed. Topography makes water management to maintain protected watershed difficult	Alternative is partially within protected watershed, topography allows for downstream water management to maintain protected drinking water catchment	Alternative is outside of protected watershed. No impact to the community water supply.
SE3	<9 km from closest community	9 to 10 km from closest community	10 to 11 km from closest community	11 to 12 km from closest community	>12 km from closest community
SE4	Asserted Claim	Multiple Private Owners	One Private Owner	Crown	MFQ

5.5.3 Technical Criteria

A total of eight (8) sub-account and indicator criteria were assessed within the Technical category. Table 15 provides a summary of the sub-account, indicators and rational applied to the scoring criteria to assess the Alternatives for the Technical Criteria.

Table 15: Technical Evaluation Criteria

Criteria No.	Sub-accounts	Indicators	Rationale
T1	Risk of dam/structure failure	Average Embankment height	▪ Dams that have higher embankments can have risk related to stability and hydraulic pressure on the dam.
T2		Embankment Length	▪ Longer dams can have higher risk and consequence of failure
T3		Method of dam construction	▪ Upstream Raise: Higher risk of instability from static liquefaction. Potential issues with seasonal compaction of tailings. Water management is important to maintaining stability. ▪ Centreline Raise: Upstream foundation consists of coarse tailings. More stable than Upstream Construction. ▪ Downstream Raise: Dam is fully founded on original ground foundation, no tailings. Considered most stable dam geometry.
T4	Mine waste/water management complexity	Tailings and water management within facility	▪ Alternatives that do not require mechanical assistance with placement and/or minimal manipulation to manage the tailings beach and supernatant pond are preferred.
T5		Downstream Water Management	▪ Alternatives that require a shorter length of downstream surface water management to protect water courses and protected water sheds immediately downstream are preferred. ▪ Estimated cumulative length of runoff collection and diversion ditches.
T6		Catchment Area of Final Embankment	▪ Alternatives that are expected to perform well for increasingly severe and intense storms associated with potential climate change are preferred. Smaller catchments with lower runoff are expected to weather high intensity storms than larger catchments.
T7	Ability to meet project schedule. Additional Study requirements	Available background data and studies	▪ Alternatives that require additional studies (site characterization, engineering, field trials, environmental, social, etc.) require more time to complete and may not meet start up schedule.
T8	Expansion Flexibility	Downstream area available	▪ Options that are not impeded downstream by infrastructure, water bodies or protected water sheds or areas downstream that can be mitigated are preferred.

Scoring criteria developed for the Technical sub-accounts and indicators are summarised in Table 16, below.

Table 16: Technical Scoring Criteria

Criteria No.	Scoring Criteria				
	1	2	3	4	5
T1 (Average Embankment Height)	30 m - 27 m	26 m - 24 m	23 m - 21 m	20 m - 18 m	17 m - 15 m
T2 (Embankment Length)	10,300 m to 9,811 m	9,812 m to 9,324 m	9,323 m to 8,836 m	8,835 m to 8,348 m	8,347 m – 7,860 m
T3 (Embankment Raise)	-	-	Centreline Raise	-	Downstream Raise
T4 (Tailings and Water Management)	-	-	Moderate deposition manipulation by operations to manage tailings beach and ponded water with unfavorable containment geometry.	-	Minimal deposition manipulation by operations to manage tailings beach and ponded water with favorable containment geometry.
T5 (Length of runoff collection and diversion ditches downstream)	19,029 to 16,781 (lin. m)	16,780 - 14,534 (lin. m)	14,533 to 12,286 (lin. m)	12,285 - 10,039 (lin. m)	10,038 - 7,791 (lin. m)
T6 (Catchment Area)	Catchment area (facility + tributary) >1,500 ha	Catchment area (facility + tributary) 1,167 to 1,500 ha	Catchment area (facility + tributary) 834 to 1,166 ha	Catchment area (facility + tributary) 500 to 833 ha	Catchment area (facility + tributary) <500 ha,
T7 (Available background data)	Would require extensive additional studies and design to develop Alternative.	-	Would require moderate level of studies and design to develop Alternative.	-	Would require lowest level of studies and design to develop Alternative. Access permission for in-situ studies has been obtained.
T8 (Expansion potential)	Limited downstream area available due to presence of infrastructure, water bodies or protected water sheds.	-	-	-	Sufficient downstream area available.

5.5.4 Project Economics Criteria

Three (3) sub-accounts were assessed within the Project Economics category. Scoping Level cost estimates were prepared as the basis for scoring the Alternatives against the Project Economics criteria in the MAA. The costs for each sub-account were normalized to the largest cost to allow comparison for scoring.

The cost estimate was prepared solely for the purpose of relative comparison of the Alternatives under the MAA process. It must be acknowledged that limited site-specific engineering development has been carried out at this level of study and no foundation investigations have been completed at the Alternative sites except for the Base Case (Alternative C10) and therefore quantities and costs were based on conceptual designs.

The cost estimate for each Alternative includes allowances for all major facilities as outlined above in Section 5.4.4. Mobilization and demobilization costs were applied as 2.5% and 1.0%, respectively, of the total construction costs. Detailed Engineering and construction supervision was applied as 2% of the overall construction costs. Blended rates were used for embankment fill and applied to the total fill as volume estimates of each embankment zone were not completed as part of the conceptual design.

Unit rates for construction were provided by MFQ for use in preparation of the cost estimates. Fill placement unit rates there were provided were based on a specific haul distance and therefore the rates were prorated based on haul distance variations for each Alternative.

A summary of the project economic evaluation criteria and scoring criteria is provided in Table 17 below.

Table 17: Project Economics Evaluation and Scoring Criteria

Criteria No.	Sub-accounts	Indicators	Rationale	Scoring Criteria				
				1	2	3	4	5
PE1	Capital Expenditure (CAPEX)	Capital Costs – Starter Dam	Alternatives with lower CAPEX costs are preferred. Normalized to highest cost.	1.00 - 0.844	0.843 - 0.688	0.687 - 0.532	0.531 - 0.376	0.375 - 0.220
PE2	Sustaining Capital	Embankment Raise Costs	Alternatives with lower Sustaining Capital costs are preferred. Alternatives with lower Closure costs are preferred. Normalized to highest cost.	1.00 - 0.819	0.818 - 0.638	0.637 - 0.458	0.457 - 0.277	0.276 - 0.096
PE3	Closure Costs	Closure Construction Cost	Alternatives with lower Closure costs are preferred. Normalized to highest cost.	1.00 - 0.909	0.908 - 0.818	0.817 - 0.727	0.726 - 0.636	0.635 - 0.545

6.0 MULTIPLE ACCOUNT ANALYSIS RESULTS

The results of the MAA calculations are summarized in the following subsection. The analysis was split in to two phases: base case assessment and sensitivity assessment. The detailed MAA tables are provided in Appendix A.

6.1 Base Case Assessment

The base case results incorporate the category weightings presented in Table 6. Results of the base case MAA calculations are presented in Table 18, Figure 7, and Figure 8 and are summarized below.

Table 18 presents the results as rankings from 1st (best score) to 5th (worst score). Figure 7 presents the results of the base case weighted category scores plotted by Alternative on a four-point radar graph, with each point on the graph representing one of the MAA categories. The maximum weighted scores for the Environment and Socio-economic categories are 1.5 (30% of 5) and the maximum weighted scores for the Technical and Project Economics categories are 1.0 (20% of 5). The plot allows for a comparison of how the Alternatives scored relative to each other in each category. The closer to the outside of the graph on the Alternative plots, the higher (more desirable) category score that Alternative received. Figure 8 presents the results of the base case weighted scores plotted by MAA category on a radar graph with five (5) points, one for each Alternative. Similar to the graph in Figure 7, the closer to the outside of the graph a plot is, the higher (more desirable) the category score the Alternative received.

Alternative C10' Centreline (Base Case) and Alternative C12 ranked 1st and 2nd overall. However, these two (2) Alternatives had variability in the category scores, as summarized below:

- **Alternative C10' Centreline** – Technical, Project Economics and Socio-Economics scored high while Environment returned average scores.
  - The high Technical category score is attributed to use of the method of dam construction with the use of a centreline raise and the resultant reduction in complexity of tailings deposition but was lower than Alternative C12 that is attributed to a reduction in embankments associated with C10'.
  - The high Project Economics category score is due to the average capital cost associated with the larger starter dam and sustaining capital cost associated with the larger final dam geometry compared to Alternative C12 and lower closure costs.
  - The average Environment category score reflects a combination of increases in greenhouse gas emissions and potential impacts to aquatic and terrestrial habitat, due to the high in fill placement requirements.
  - The high Socio-economic category score reflects a combination of high score for land tenure, as the site is located within the MFQ property boundary, low score for proximity to communities, and average score for relocation of cabins.
- **Alternative C12 Centreline –** Environment, Socio-Economic and Economic categories scored high while Technical scored low.
  - The high Environment score is attributed to smaller footprint compared to other alternatives related to loss of habitat and potential downstream effects on aquatic habitat.
  - The highest score for Socio-economic score is attributed to lowest impact on existing cabins, long distance from surrounding communities and ability to obtain land tenure.

- This Alternative had the lower Technical score than Alternative C10’, and was the lowest of the Alternatives assessed, that was attributed to having long and high embankments, required additional studies to meet project deadline and had limited expansion flexibility due to proximity to water bodies.
- The Project Economics for this alternative scored high but had a lower score compared to Alternative C10’ that is attributed to the higher closer costs associated with a larger basin at the end of the mine life.

The following is a summary of some of the other key findings from the MAA for the remaining Alternatives:

- **Alternative C8 Centreline** - Ranked 5th overall and was the lowest ranked Alternative. This alternative scored highest for the CAPEX with relatively short and low dams initially required for tailings storage. Sustaining capital costs scored average, however, the large basin area resulted in high closure costs which resulted in an average score for Project Economics. This Alternative had the lowest score for Environment that was primarily attributed to a lake present within the basin area.
- **Alternative 10’ Downstream** - Ranked 3rd overall. This Alternative had the largest Technical score that is attributed to the method of dam construction, consisting of a downstream raise, and the corresponding reduction in complexity of tailings deposition and water management. Project Economics had the lowest score resulting from the high Sustaining Capital costs associated with the large fill volume associated with a downstream style embankment raise.
- **Alternative 13 Centreline** - Ranked 4th overall. This Alternative had large variation in the scoring with 1st for Environment, 3rd for Technical and 4th for Project Economics. The Alternative had the lowest score for Socio-Economics that resulted from close proximity to communities, lakes with several cabins present and proximity to the protected watershed.

Table 18: Multiple Accounts Analysis Category and Overall Ranking Results for the Base Case Weightings

	Alternative C8 (Centerline)	Alternative C10’ – Base Case (Centerline)	Alternative C10’ – (Base Case with Downstream)	Alternative C12 (Centerline)	Alternative C13 (Centerline)
Environment	5	3	4	2	1
Socio-Economics	4	2	2	1	5
Technical	4	2	1	5	3
Project Economics	2	1	5	2	4
Overall Ranking	**5**	**1**	**3**	**2**	**4**
Weighted Score	2.60	3.28	2.85	3.05	2.79
% Difference (from highest)	21%	0%	13%	7%	15%

Note: 1 = best ranking; 5 = worst ranking.

6.2 Sensitivity Analyses

A sensitivity analysis was conducted by varying the relative weightings of the four categories (i.e., Environment, Socio-economic, Technical, and Project Economics). This was done to assess how varying the emphasis of the assessment influenced the relative rankings of the Alternatives. Table 19 provides a summary of the category weightings for each sensitivity case and the rankings of the Alternatives for each case.

Alternatives C10’ Centreline ranked the best for all the sensitivity cases, providing confirmation of the base case results and confirming the robustness of these Alternatives. There was greater variability in the rankings of the other Alternatives for the different sensitivity cases with rankings typically varying by 1 to 2 levels.

Table 19: Sensitivity Assessment Overall Ranking Results

Cases	Weightings				Alternative C8 (Centerline)	Alternative C10’ – Base Case (Centerline)	Alternative C10’ – (Base Case with Downstream)	Alternative C12 (Centerline)	Alternative C13 (Centerline)
	Environment	Socio-economic	Technical	Project Economics					
Base Case	30%	30%	20%	20%	5	1	3	2	4
Sensitivity 1	25%	25%	25%	25%	5	1	3	2	4
Sensitivity 2	40%	40%	10%	10%	5	1	3	2	4
Sensitivity 3	10%	10%	40%	40%	4	1	3	2	5
Sensitivity 4	40%	10%	40%	10%	5	1	2	4	3

7.0 CONCLUSIONS AND RECOMMENDATIONS

The study concludes that Alternative C10’ Centreline is the most viable solution to consider for advancement through engineering design. The Alternative scored higher overall compared to the other Alternatives. The robustness of Alternatives C10’ Centreline has been demonstrated in the sensitivity analysis, which shows that the Alternative consistently scored highest under a wide range of scenarios and therefore, Alternative C10’ Centreline is recommended as the preferred Alternative for the Kami project.

Previous studies for the tailings facility at the Kami site considered the same location as Alternative C10’, with a reduced footprint area, and an upstream raise method of construction. Utilizing an upstream raise has a lower construction cost associated with Sustaining Capital (Sustaining CAPEX) after the started dam has been constructed compared to a centreline or downstream raise. Utilizing a centreline method of construction for embankment raises, as the preferred Alternative resulting from this MAA assessment, represents a significant change in construction methodology for the project as the upstream raise was eliminated at the pre-screening phase. As a result, there will be increases to the Sustaining CAPEX for the project compared to past studies that considered the upstream method of construction for raising the tailings facility.

The following are recommendations for the project and updated Feasibility Design, based on the results of the MAA.

- Alternative C10’ Centreline is recommended for storage of tailings.
- Confirm boundaries of protected and unprotected water sheds that will be utilized for the project.
- Optimize embankment layout of Alternate C10’ Centreline, in the northwest extent of the facility, to minimize embankment fill volume (in progress).
- Identify potential borrow sources to provide fill materials required for the dam embankments (in porgress).
- Confirm requirement for inclusion of internal berms for progressive reclamation and dust control.
- Identify requirements for site investigations in the Southern extension of the dam footprint.
- Assess viability of separating tailings (coarse and fine) to produce an embankment fill material.

8.0 CLOSURE

We trust this report presents the information you presently require. If you have any questions regarding the contents of this report, please do not hesitate to contact us.

Sincerely yours,

WSP Canada Inc.

Ben Plumridge, PEng (ON)
Senior Engineer

Siavash Farhangi, PhD, PEng (ON, BC, NL)
Senior Principal Engineer, Project Director

Ali Ghirian, PhD, PEng (ON)
Project Manager

BP/SF/AG/sv/hp

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of Member-in-Responsible-Charge

https://golderassociates.sharepoint.com/sites/166310e/mfqkamiprojectfeasibilityupdateexternal/shared documents/03_technical work/2000_maa/7_maa report/22538752-r-mfq_kamitmf_fs_maareport_final_05dec_23.docx

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FIGURES

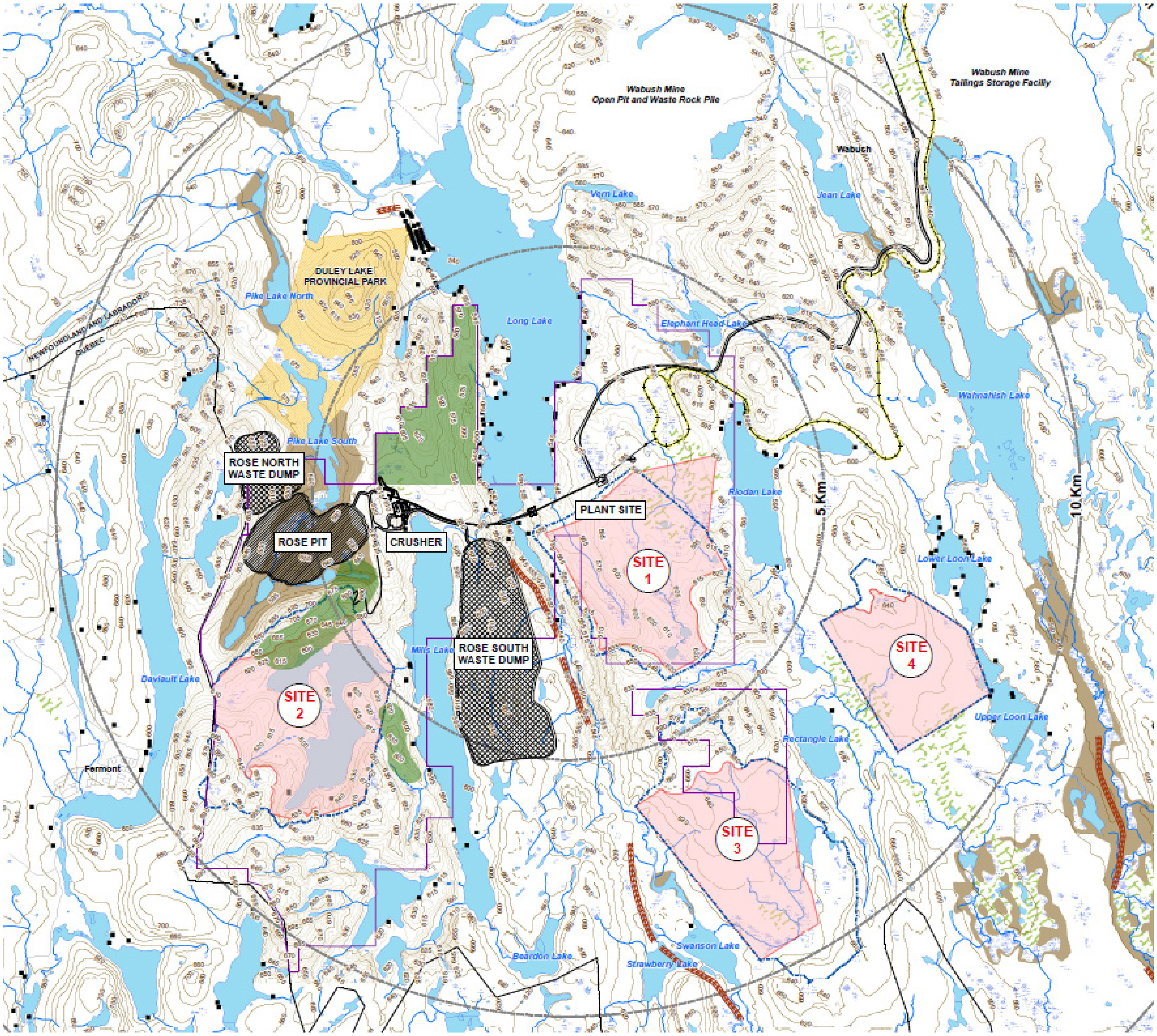

Figure 1: Potential TMF Sites (Golder 2012a)

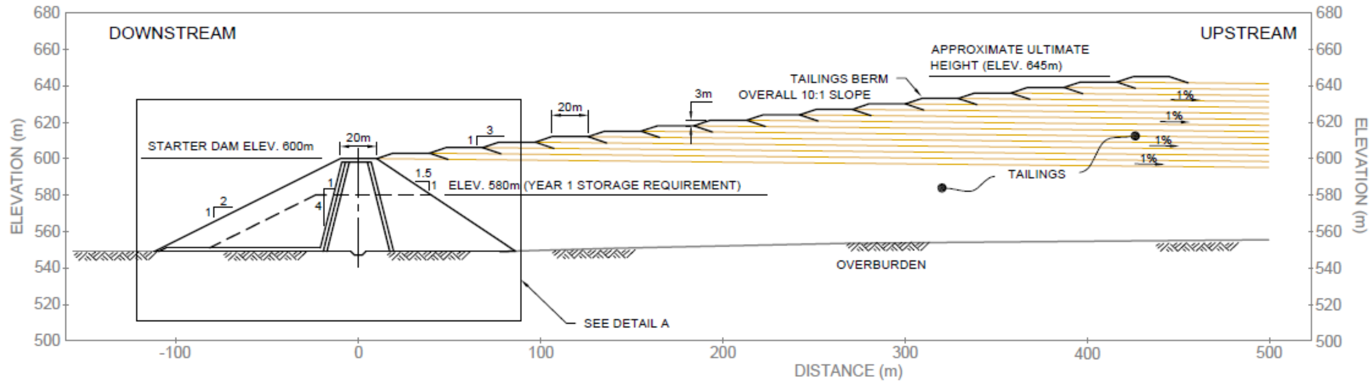

Figure 2: Typical TMF Cross-Section (Golder 2012b)

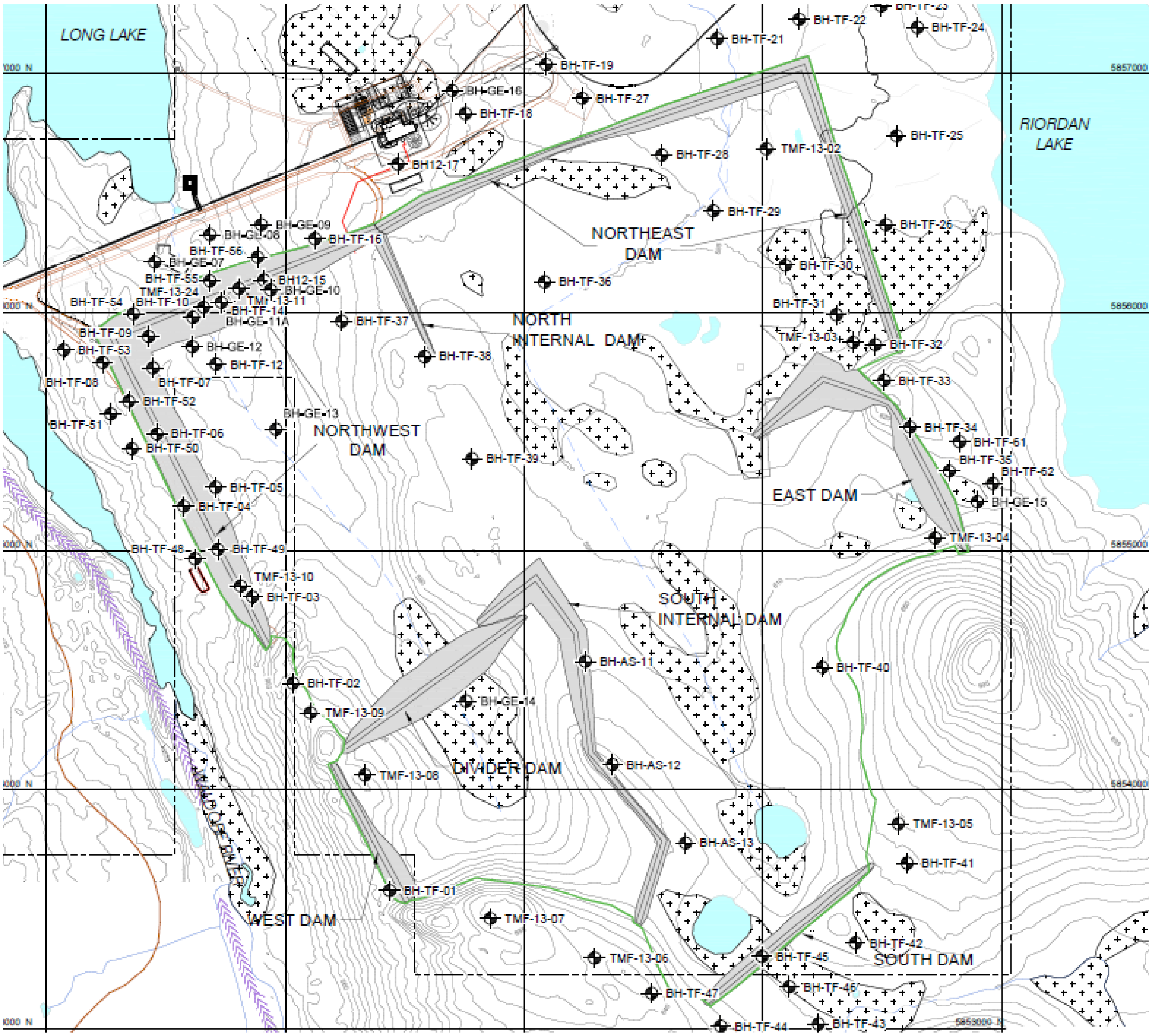

Figure 3: Typical TMF Plan View (Golder 2018)

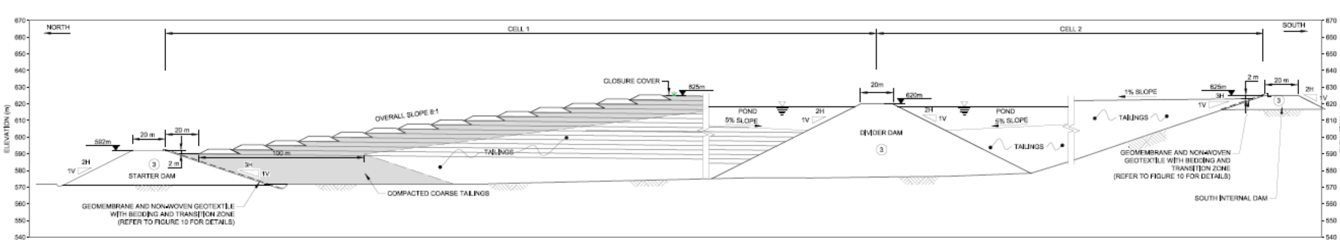

Figure 4: Typical TMF Cross-Section (Golder 2018)

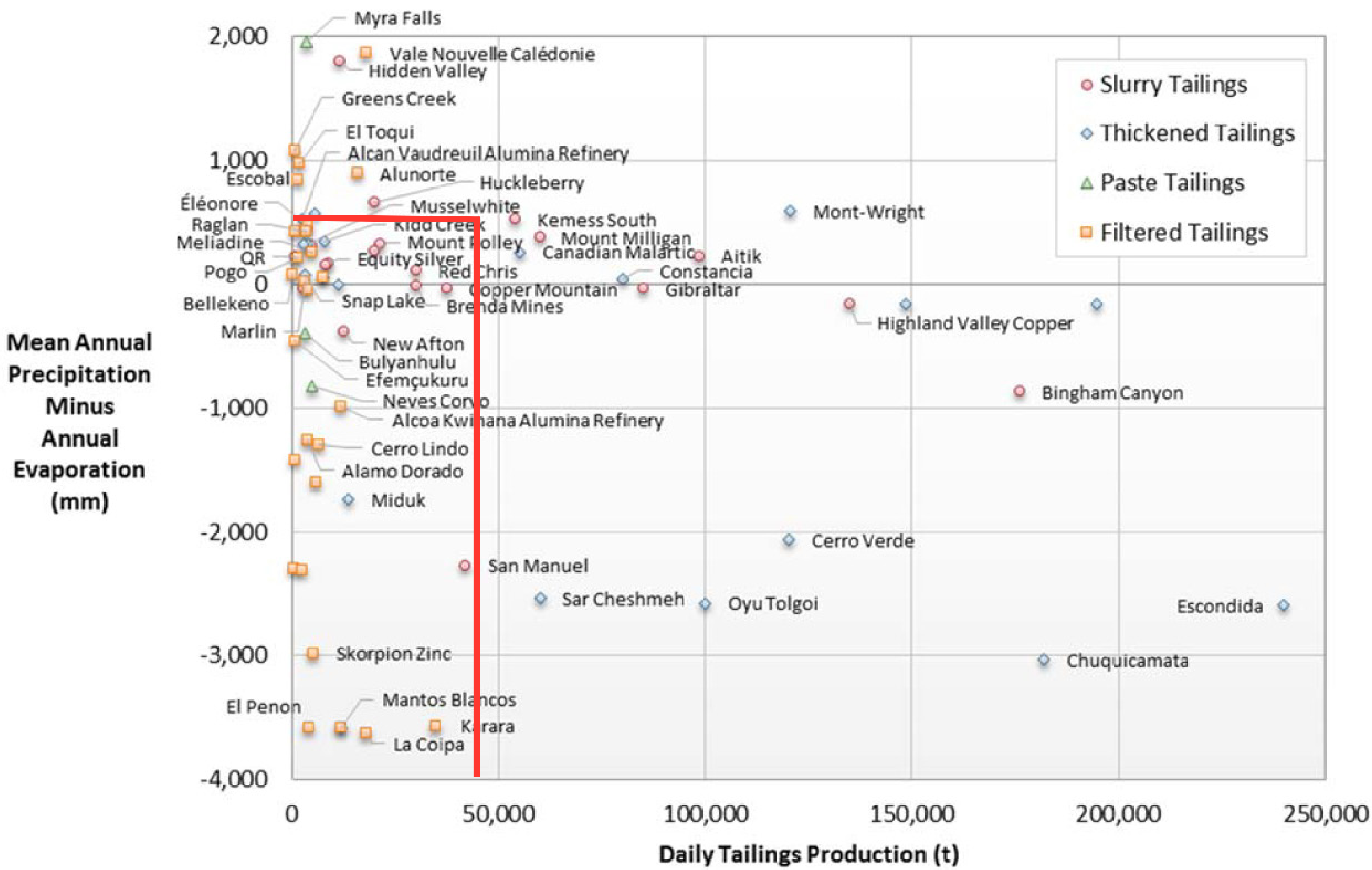

Figure 5: Dewatering Technologies – Daily Production and Mean Annual Precipitation (KCB 2017)

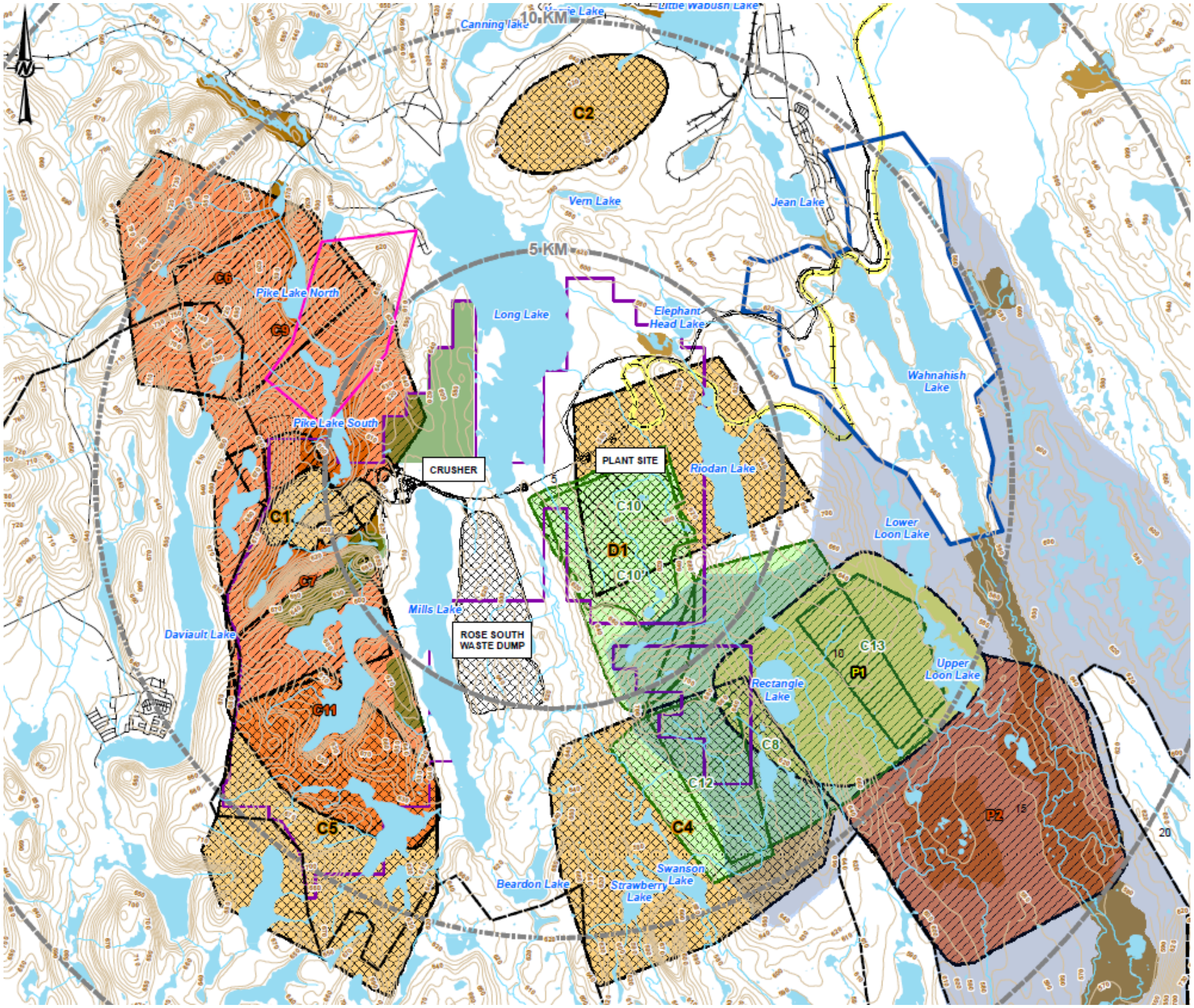

Figure 6: Alternative TMF Locations

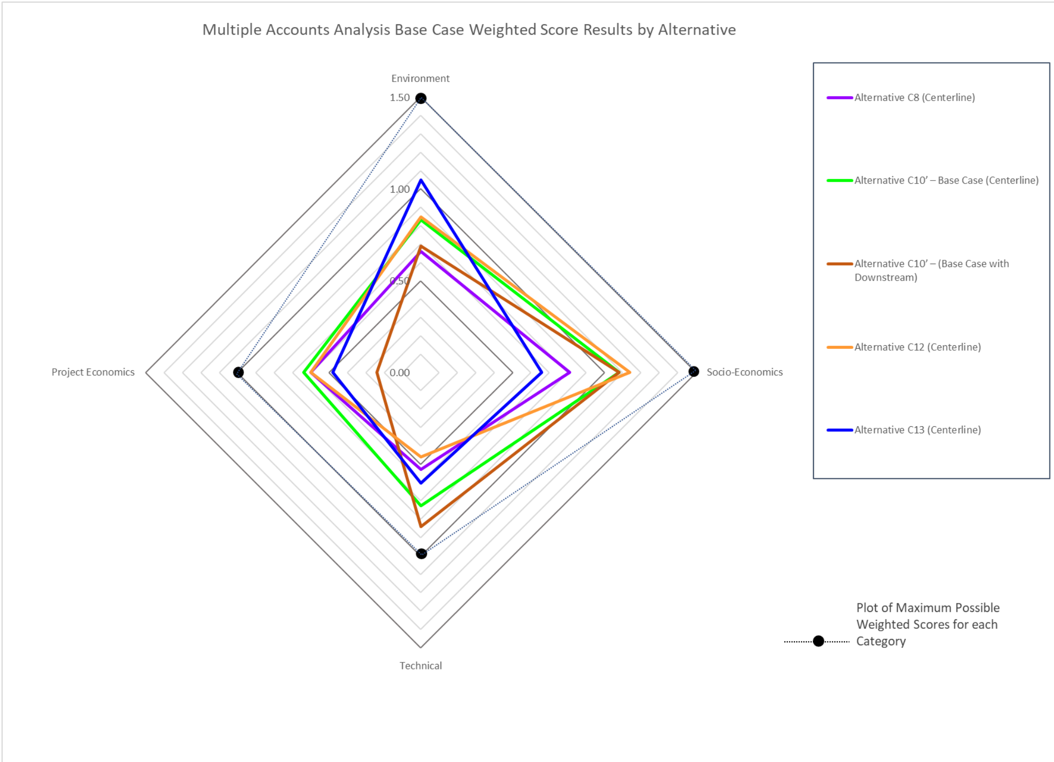

Figure 7: Multiple Accounts Analysis Base Case Weighted Score Results Plotted by Alternative

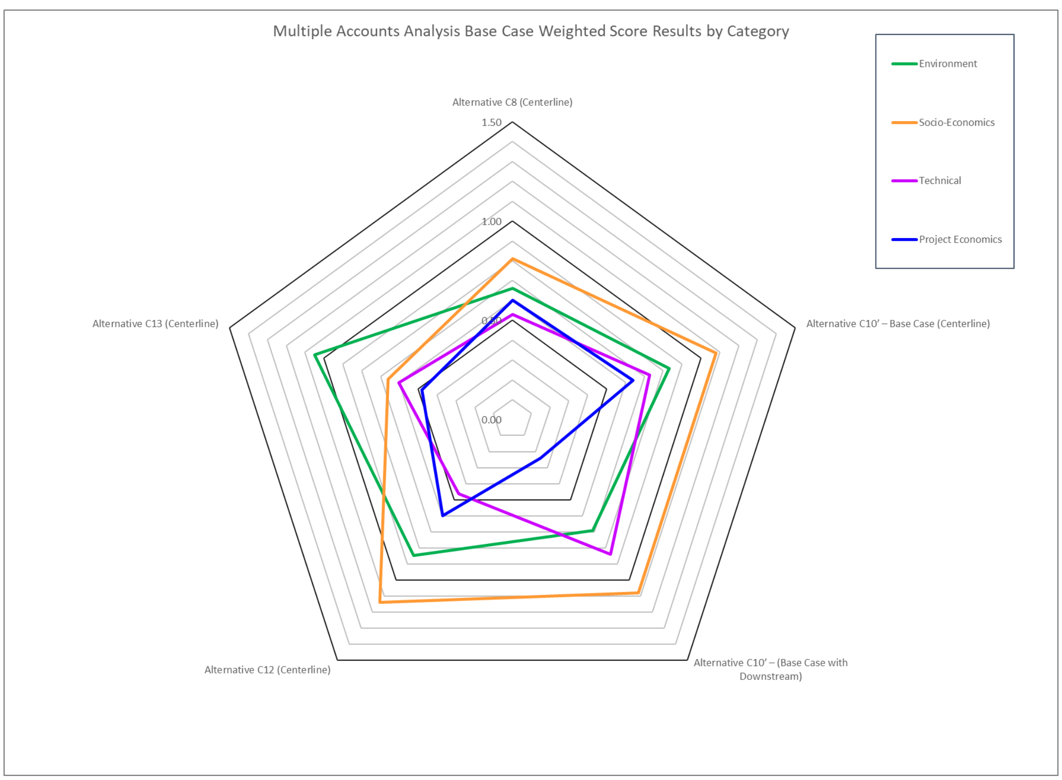

Figure 8: Multiple Accounts Analysis Weighted Base Case Results Plotted by Category

APPENDIX A

Multiple Account Analysis Tables

Table A-1 - Environmental Evaluation Criteria

Criteria No.	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative A: Convention Slurry Tailings Site C8 - (Centerline)		Alternative B: Convention Slurry Tailings Site C10' – Base Case with (Centerline)	
						1	2	3	4	5	Description	Score	Description	Score
E1	Potential to generate greenhouse gas emissions	15%	Distance from mill X embankment fill volume – more emissions with greater volume and distance	- Emissions released to the atmosphere due to the transport of earth and rock materials for construction and closure of the facility. - Alternatives that have lower total material movement requirements and therefore consume less fuel will generate less GHG and are preferred. - Measurement was completed on basis of volume of material, haul distance. Volume of material to be moved (M m3) multiplied by the haul distance (km) = M m3.km.	100%	Total material movement quantity > 200 Mm3.km	Total material movement quantity between 200 and 100 Mm3.km	Total material movement quantity between 100 and 50 Mm3.km	Total material movement quantity between 50 and 25 Mm3.km	Total material movement quantity < 25 Mm3.km	66	**3**	66	**3**
E2	Potential Impact to Aquatic habitat	75%	Direct loss of habitat within TSF footprint (area for lakes, length of streams/rivers assuming 2 m width)	Alternatives that result in less direct aquatic habitat loss are preferred (Assumed that all lakes and streams have similar quality/biodiversity, presence of species of concerns)	70%	Larger area of streams and water bodies habitat lost due to the impoundment >50 ha of riparian habitat	20 to 50 ha of riparian habitat lost	10 to 20 ha of riparian habitat lost	5 to 10 ha of riparian habitat lost	Smaller area (water bodies habitat) impacted by TSF footprint <5 ha of riparian habitat lost	140	**1**	11	**3**
E3			Potential affects to downstream habitat (area for lakes, length of streams/rivers assuming 2 m width) with 1 km of dam (hectares)	Alternatives that have less potential to impact aquatic habitat downstream of the facility from dam breach are preferred	30%	Larger area impacted. > 200 ha	> 150 and < 200 ha	> 100 and < 150 ha	> 60 and < 100 ha	Aquatic habitat impacted: < or equal to 60 ha	60	**5**	195	**2**
E4	Potential Impact to Terrestrial habitat	10%	Loss of habitat within TSF footprint. Area of habitat (hectares).	Alternatives that result in less habitat loss are preferred. Assumed that all habitats have similar quality/biodiversity, presence of species of concerns	100%	Largest TSF footprint > 1100 ha	TSF footprint: 1000 to 1100 ha	TSF footprint: 900 to 1000 ha	footprint: 800 to 900 ha	Smallest footprint <800 ha	1419	**1**	910	**3**

Table A-1 - Environmental Evaluation Criteria

Criteria No.	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative C: Convention Slurry Tailings Site C10' – Base Case (Downstream)		Alternative D: Convention Slurry Tailings Site C12 - (Centerline)	
						1	2	3	4	5	Description	Score	Description	Score
E1	Potential to generate greenhouse gas emissions	15%	Distance from mill X embankment fill volume – more emissions with greater volume and distance	- Emissions released to the atmosphere due to the transport of earth and rock materials for construction and closure of the facility. - Alternatives that have lower total material movement requirements and therefore consume less fuel will generate less GHG and are preferred. - Measurement was completed on basis of volume of material, haul distance. Volume of material to be moved (M m3) multiplied by the haul distance (km) = M m3.km.	100%	Total material movement quantity > 200 Mm3.km	Total material movement quantity between 200 and 100 Mm3.km	Total material movement quantity between 100 and 50 Mm3.km	Total material movement quantity between 50 and 25 Mm3.km	Total material movement quantity < 25 Mm3.km	130	**2**	288	**1**
E2	Potential Impact to Aquatic habitat	75%	Direct loss of habitat within TSF footprint (area for lakes, length of streams/rivers assuming 2 m width)	Alternatives that result in less direct aquatic habitat loss are preferred (Assumed that all lakes and streams have similar quality/biodiversity, presence of species of concerns)	70%	Larger area of streams and water bodies habitat lost due to the impoundment >50 ha of riparian habitat	20 to 50 ha of riparian habitat lost	10 to 20 ha of riparian habitat lost	5 to 10 ha of riparian habitat lost	Smaller area (water bodies habitat) impacted by TSF footprint <5 ha of riparian habitat lost	11	**3**	40	**2**
E3			Potential affects to downstream habitat (area for lakes, length of streams/rivers assuming 2 m width) with 1 km of dam (hectares)	Alternatives that have less potential to impact aquatic habitat downstream of the facility from dam breach are preferred	30%	Larger area impacted. > 200 ha	> 150 and < 200 ha	> 100 and < 150 ha	> 60 and < 100 ha	Aquatic habitat impacted: < or equal to 60 ha	253	**1**	56	**5**
E4	Potential Impact to Terrestrial habitat	10%	Loss of habitat within TSF footprint. Area of habitat (hectares).	Alternatives that result in less habitat loss are preferred. Assumed that all habitats have similar quality/biodiversity, presence of species of concerns	100%	Largest TSF footprint > 1100 ha	TSF footprint: 1000 to 1100 ha	TSF footprint: 900 to 1000 ha	footprint: 800 to 900 ha	Smallest footprint <800 ha	1010	**2**	730	**5**

Table A-1 - Environmental Evaluation Criteria

Criteria No.	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative E: Convention Slurry Tailings Site C13 - (Centerline)	
						1	2	3	4	5	Description	Score
E1	Potential to generate greenhouse gas emissions	15%	Distance from mill X embankment fill volume – more emissions with greater volume and distance	- Emissions released to the atmosphere due to the transport of earth and rock materials for construction and closure of the facility. - Alternatives that have lower total material movement requirements and therefore consume less fuel will generate less GHG and are preferred. - Measurement was completed on basis of volume of material, haul distance. Volume of material to be moved (M m3) multiplied by the haul distance (km) = M m3.km.	100%	Total material movement quantity > 200 Mm3.km	Total material movement quantity between 200 and 100 Mm3.km	Total material movement quantity between 100 and 50 Mm3.km	Total material movement quantity between 50 and 25 Mm3.km	Total material movement quantity < 25 Mm3.km	280	**1**
E2	Potential Impact to Aquatic habitat	75%	Direct loss of habitat within TSF footprint (area for lakes, length of streams/rivers assuming 2 m width)	Alternatives that result in less direct aquatic habitat loss are preferred (Assumed that all lakes and streams have similar quality/biodiversity, presence of species of concerns)	70%	Larger area of streams and water bodies habitat lost due to the impoundment >50 ha of riparian habitat	20 to 50 ha of riparian habitat lost	10 to 20 ha of riparian habitat lost	5 to 10 ha of riparian habitat lost	Smaller area (water bodies habitat) impacted by TSF footprint <5 ha of riparian habitat lost	0.4	**5**
E3			Potential affects to downstream habitat (area for lakes, length of streams/rivers assuming 2 m width) with 1 km of dam (hectares)	Alternatives that have less potential to impact aquatic habitat downstream of the facility from dam breach are preferred	30%	Larger area impacted. > 200 ha	> 150 and < 200 ha	> 100 and < 150 ha	> 60 and < 100 ha	Aquatic habitat impacted: < or equal to 60 ha	229	**1**
E4	Potential Impact to Terrestrial habitat	10%	Loss of habitat within TSF footprint. Area of habitat (hectares).	Alternatives that result in less habitat loss are preferred. Assumed that all habitats have similar quality/biodiversity, presence of species of concerns	100%	Largest TSF footprint > 1100 ha	TSF footprint: 1000 to 1100 ha	TSF footprint: 900 to 1000 ha	footprint: 800 to 900 ha	Smallest footprint <800 ha	710	**5**

Table A-2 - Socio-Economics Evaluation Criteria

Criteria No.	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative A: Convention Slurry Tailings Site C8 - (Centerline)		Alternative B: Convention Slurry Tailings Site C10' – Base Case with (Centerline)	
						1	2	3	4	5	Description	Score	Description	Score
SE1	Relocation of cabins downstream of facility.	30%	Number of cabins immediately adjacent to and within 2 km of TSF footprint	Alternatives with fewer people, communities and infrastructure within a potential failure inundation zone have less risk to assets and loss of life	100%	20 cabins	15 - 20 cabins	5 - 15 cabins	1 - 5 cabins	No cabins	12	3	11 (note) Alderon previously paid compensation to cabin owners on Long Lake therefore indicator (22 cabins) was reduced by 50% for scoring	3
SE2	Potential to impact to water sources used for drinking, or economic purposes	50%	Potential to impact community water supply	Alternatives that have a lower potential to impact water used for domestic or commercial purposes downstream of the facility are preferred	100%	Alternative is within protected watershed, adjacent to water supply lake, with high impact to the community water supply	Alternative is within protected watershed, upstream of water supply lake, with high impact to the community water supply	Alternative is partially within protected watershed or is immediately adjacent to protected watershed. Topography makes water management to maintain protected watershed difficult	Alternative is partially within protected watershed, topography allows for downstream water management to maintain protected drinking water catchment	Alternative is outside of protected watershed. No impact to the community water supply.	within, upstream of Wahnahnish Lake	2	partially within, topography allows for downstream water management possible to maintain protected drinking water catchment	4
SE3	Proximity to communities (nuisance from dust and noise, visual impact, etc.)	10%	Potential impacts to community health due to dust and noise and visual concerns with seeing mine - distance from community	Alternatives that are further way from the communities are preferred presumably because they will be less affected	100%	< 9 km	9 to 10 km	10 to 11 km	11 to 12 km	> 12 km	12km	4	9km	2
SE4	Ability to obtain land tenure	10%	Alternative land tenure	Land tenured is needed to proceed with development	100%	Asserted Claim	Multiple Private Owners	One Private Owner	Crown	MFQ	Crown	4	MFQ	5

Table A-2 - Socio-Economics Evaluation Criteria

Criteria No.	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative C: Convention Slurry Tailings Site C10' – Base Case (Downstream)		Alternative D: Convention Slurry Tailings Site C12 - (Centerline)	
						1	2	3	4	5	Description	Score	Description	Score
SE1	Relocation of cabins downstream of facility.	30%	Number of cabins immediately adjacent to and within 2 km of TSF footprint	Alternatives with fewer people, communities and infrastructure within a potential failure inundation zone have less risk to assets and loss of life	100%	20 cabins	15 - 20 cabins	5 - 15 cabins	1 - 5 cabins	No cabins	11 (note) Alderon previously paid compensation to cabin owners on Long Lake therefore indicator (22 cabins) was reduced by 50% for scoring	3	2	5
SE2	Potential to impact to water sources used for drinking, or economic purposes	50%	Potential to impact community water supply	Alternatives that have a lower potential to impact water used for domestic or commercial purposes downstream of the facility are preferred	100%	Alternative is within protected watershed, adjacent to water supply lake, with high impact to the community water supply	Alternative is within protected watershed, upstream of water supply lake, with high impact to the community water supply	Alternative is partially within protected watershed or is immediately adjacent to protected watershed. Topography makes water management to maintain protected watershed difficult	Alternative is partially within protected watershed, topography allows for downstream water management to maintain protected drinking water catchment	Alternative is outside of protected watershed. No impact to the community water supply.	partially within, topography allows for downstream water management possible to maintain protected drinking water catchment	4	partially within, potential to modify layout so outside of catchment	3
SE3	Proximity to communities (nuisance from dust and noise, visual impact, etc.)	10%	Potential impacts to community health due to dust and noise and visual concerns with seeing mine - distance from community	Alternatives that are further way from the communities are preferred presumably because they will be less affected	100%	< 9 km	9 to 10 km	10 to 11 km	11 to 12 km	> 12 km	9km	2	11 km	4
SE4	Ability to obtain land tenure	10%	Alternative land tenure	Land tenured is needed to proceed with development	100%	Asserted Claim	Multiple Private Owners	One Private Owner	Crown	MFQ	MFQ	5	Crown	4

Table A-2 - Socio-Economics Evaluation Criteria

Criteria No.	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative E: Convention Slurry Tailings Site C13 - (Centerline)	
						1	2	3	4	5	Description	Score
SE1	Relocation of cabins downstream of facility.	30%	Number of cabins immediately adjacent to and within 2 km of TSF footprint	Alternatives with fewer people, communities and infrastructure within a potential failure inundation zone have less risk to assets and loss of life	100%	20 cabins	15 - 20 cabins	5 - 15 cabins	1 - 5 cabins	No cabins	28	1
SE2	Potential to impact to water sources used for drinking, or economic purposes	50%	Potential to impact community water supply	Alternatives that have a lower potential to impact water used for domestic or commercial purposes downstream of the facility are preferred	100%	Alternative is within protected watershed, adjacent to water supply lake, with high impact to the community water supply	Alternative is within protected watershed, upstream of water supply lake, with high impact to the community water supply	Alternative is partially within protected watershed or is immediately adjacent to protected watershed. Topography makes water management to maintain protected watershed difficult	Alternative is partially within protected watershed, topography allows for downstream water management to maintain protected drinking water catchment	Alternative is outside of protected watershed. No impact to the community water supply.	within, upstream of Wahnahnish Lake	2
SE3	Proximity to communities (nuisance from dust and noise, visual impact, etc.)	10%	Potential impacts to community health due to dust and noise and visual concerns with seeing mine - distance from community	Alternatives that are further way from the communities are preferred presumably because they will be less affected	100%	< 9 km	9 to 10 km	10 to 11 km	11 to 12 km	> 12 km	13km	5
SE4	Ability to obtain land tenure	10%	Alternative land tenure	Land tenured is needed to proceed with development	100%	Asserted Claim	Multiple Private Owners	One Private Owner	Crown	MFQ	Crown	4

Table A-3 - Technical Evaluation Criteria

Criteria No.	Sub-category	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative A: Convention Slurry Tailings Site C8 - (Centerline)		Alternative B: Convention Slurry Tailings Site C10' – Base Case with (Centerline)	
							1	2	3	4	5	Description	Score	Description	Score
T1	Design Risk and Complexity (Ability to design a reliable facility)	Risk of dam/structure failure	40%	Average Embankment Height	Dams that have higher embankments can have risk related to stability and hydraulic pressure on the dam.	10%	30 m - 27 m	26 m - 24 m	23 m - 21 m	20 m - 18 m	17 m - 15 m	15 m	5	25 m	2
T2				Embankment Length	Longer dams can have higher risk and consequence of failure	10%	10,300 m - 9,811 m	9,812 m to 9,324 m	9,323 m to 8,836 m	8,835 m to 8, 348 m	8,347 m - 7,860 m	7,860 m	5	8,230 m	5
T3				Method of dam construction	- Upstream Raise: Higher risk of instability from static liquefaction. Potential issues with seasonal compaction of tailings. Water management is important to maintaining stability. - Centreline Raise: Upstream foundation consists of coarse tailings. More stable than Upstream Construction. - Downstream Raise: Dam is fully founded on original ground foundation, no tailings. Considered most stable dam geometry.	80%	Upstream Raise		Centreline Raise		Downstream Raise	Centreline Raise	3	Centreline Raise	3
T4		Mine waste/water management complexity	30%	Tailings and water management within facility	Alternatives that do not require mechanical assistance with placement and/or minimal manipulation to manage the tailings beach and supernatant pond are preferred.	80%	Requires mechanical compaction and ongoing deposition manipulation by operations for the tailings beach and ponded water.		Moderate deposition manipulation by operations to manage tailings beach and ponded water with unfavorable containment geometry.		Minimal deposition manipulation by operations to manage tailings beach and ponded water with favorable containment geometry.	Moderate deposition manipulation required with deposition unfavorable geometry of basin resulting - challenges to optimize deposition.	3	Minimal deposition manipulation required with favorable basin geometry for tailings beach and pond management.	5
T5				Downstream Water Management	- Alternatives that require a shorter length of downstream surface water management to protect water courses and protected water sheds immediately downstream are preferred. - Estimated cumulative length of runoff collection and diversion ditches.	20%	19,029 to 16,781 (lin. m)	16,780 - 14,534 (lin. m)	14,533 to 12,286 (lin. m)	12,285 - 10,039 (lin. m)	10,038 - 7,791 (lin. m)	19,029 lin. m. (full perimeter length and option is located within protected watershed)	1	8,139 lin. m.	5
T6		Adaptability to changes in hydrology/climate	5%	Catchment Area of Final Embankment	Alternatives that are expected to perform well for increasingly severe and intense storms associated with potential climate change are preferred. Smaller catchments with lower runoff are expected to weather high intensity storms than larger catchments.	100%	Catchment area (facility + tributary) >1,500 ha	Catchment area (facility + tributary) 1,167 to 1,500 ha	Catchment area (facility + tributary) 834 to 1,166 ha	Catchment area (facility + tributary) 500 to 833 ha	Catchment area (facility + tributary) < 500 ha,	Centreline Raise with largest catchment area - 1,530 ha	1	Base case with centreline raise - 1,030 ha	3
T7	Project Development Schedule Risk and Complexity (Ability to meet Project Start up Schedule)	Ability to meet project schedule. Additional Study requirements	20%	Available background data and studies	Alternatives that require additional studies (site characterization, engineering, field trials, environmental, social, etc.) require more time to complete and may not meet start up schedule.	100%	Would require extensive additional studies and design to develop Alternative.		Would require moderate level of studies and design to develop Alternative.		Would require lowest level of studies and design to develop Alternative. Access permission for in-situ studies has been obtained.	No site investigation or other studies present	1	Limited site investigation (associated with Option C10 footprint) available. No further studies completed.	3
T8	Expansion Potential	Expansion Flexibility	5%	Downstream area available	Options that are not impeded downstream by infrastructure, water bodies or protected water sheds or areas downstream that can be mitigated are preferred.	100%	Limited downstream area available due to presence of infrastructure, water bodies or protected water sheds.				Sufficient downstream area available.	Area available downstream for extended dam footprint.	5	River system and plant site located in downstream footprint to limit expansion. Potential to expand south with mitigation measures for protected water shed.	3

Table A-3 - Technical Evaluation Criteria

Criteria No.	Sub-category	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative C: Convention Slurry Tailings Site C10' – Base Case (Downstream)		Alternative D: Convention Slurry Tailings Site C12 - (Centerline)	
							1	2	3	4	5	Description	Score	Description	Score
T1	Design Risk and Complexity (Ability to design a reliable facility)	Risk of dam/structure failure	40%	Average Embankment Height	Dams that have higher embankments can have risk related to stability and hydraulic pressure on the dam.	10%	30 m - 27 m	26 m - 24 m	23 m - 21 m	20 m - 18 m	17 m - 15 m	29 m	1	26 m	2
T2				Embankment Length	Longer dams can have higher risk and consequence of failure	10%	10,300 m - 9,811 m	9,812 m to 9,324 m	9,323 m to 8,836 m	8,835 m to 8, 348 m	8,347 m - 7,860 m	8,500 m	4	10,300 m	1
T3				Method of dam construction	- Upstream Raise: Higher risk of instability from static liquefaction. Potential issues with seasonal compaction of tailings. Water management is important to maintaining stability. - Centreline Raise: Upstream foundation consists of coarse tailings. More stable than Upstream Construction. - Downstream Raise: Dam is fully founded on original ground foundation, no tailings. Considered most stable dam geometry.	80%	Upstream Raise		Centreline Raise		Downstream Raise	Downstream Raise	5	Centreline Raise	3
T4		Mine waste/water management complexity	30%	Tailings and water management within facility	Alternatives that do not require mechanical assistance with placement and/or minimal manipulation to manage the tailings beach and supernatant pond are preferred.	80%	Requires mechanical compaction and ongoing deposition manipulation by operations for the tailings beach and ponded water.		Moderate deposition manipulation by operations to manage tailings beach and ponded water with unfavorable containment geometry.		Minimal deposition manipulation by operations to manage tailings beach and ponded water with favorable containment geometry.	Minimal deposition manipulation required with favorable basin geometry for tailings beach and pond management.	5	High level of deposition manipulation required to manage tailings beach and pond due to narrow shape of basin.	2
T5				Downstream Water Management	- Alternatives that require a shorter length of downstream surface water management to protect water courses and protected water sheds immediately downstream are preferred. - Estimated cumulative length of runoff collection and diversion ditches.	20%	19,029 to 16,781 (lin. m)	16,780 - 14,534 (lin. m)	14,533 to 12,286 (lin. m)	12,285 - 10,039 (lin. m)	10,038 - 7,791 (lin. m)	8,139 lin. m.	5	9,027 lin. m.	5
T6		Adaptability to changes in hydrology/climate	5%	Catchment Area of Final Embankment	Alternatives that are expected to perform well for increasingly severe and intense storms associated with potential climate change are preferred. Smaller catchments with lower runoff are expected to weather high intensity storms than larger catchments.	100%	Catchment area (facility + tributary) >1,500 ha	Catchment area (facility + tributary) 1,167 to 1,500 ha	Catchment area (facility + tributary) 834 to 1,166 ha	Catchment area (facility + tributary) 500 to 833 ha	Catchment area (facility + tributary) < 500 ha,	Base case with downstream raise - 1,130 ha	3	Centreline Raise - 740 ha	4
T7	Project Development Schedule Risk and Complexity (Ability to meet Project Start up Schedule)	Ability to meet project schedule. Additional Study requirements	20%	Available background data and studies	Alternatives that require additional studies (site characterization, engineering, field trials, environmental, social, etc.) require more time to complete and may not meet start up schedule.	100%	Would require extensive additional studies and design to develop Alternative.		Would require moderate level of studies and design to develop Alternative.		Would require lowest level of studies and design to develop Alternative. Access permission for in-situ studies has been obtained.	Limited site investigation (associated with Option C10 footprint) available. No further studies completed.	3	No site investigation or other studies present	1
T8	Expansion Potential	Expansion Flexibility	5%	Downstream area available	Options that are not impeded downstream by infrastructure, water bodies or protected water sheds or areas downstream that can be mitigated are preferred.	100%	Limited downstream area available due to presence of infrastructure, water bodies or protected water sheds.				Sufficient downstream area available.	River system and plant site located in downstream footprint to limit expansion. Potential to expand south with mitigation measures for protected water shed.	3	Water bodies located in downstream footprint along eastern alignment to limit expansion potential.	1

Table A-3 - Technical Evaluation Criteria

Criteria No.	Sub-category	Sub-accounts	Sub-account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative E: Convention Slurry Tailings Site C13 - (Centerline)	
							1	2	3	4	5	Description	Score
T1	Design Risk and Complexity (Ability to design a reliable facility)	Risk of dam/structure failure	40%	Average Embankment Height	Dams that have higher embankments can have risk related to stability and hydraulic pressure on the dam.	10%	30 m - 27 m	26 m - 24 m	23 m - 21 m	20 m - 18 m	17 m - 15 m	29 m	1
T2				Embankment Length	Longer dams can have higher risk and consequence of failure	10%	10,300 m - 9,811 m	9,812 m to 9,324 m	9,323 m to 8,836 m	8,835 m to 8, 348 m	8,347 m - 7,860 m	9,210 m	3
T3				Method of dam construction	- Upstream Raise: Higher risk of instability from static liquefaction. Potential issues with seasonal compaction of tailings. Water management is important to maintaining stability. - Centreline Raise: Upstream foundation consists of coarse tailings. More stable than Upstream Construction. - Downstream Raise: Dam is fully founded on original ground foundation, no tailings. Considered most stable dam geometry.	80%	Upstream Raise		Centreline Raise		Downstream Raise	Centreline Raise	3
T4		Mine waste/water management complexity	30%	Tailings and water management within facility	Alternatives that do not require mechanical assistance with placement and/or minimal manipulation to manage the tailings beach and supernatant pond are preferred.	80%	Requires mechanical compaction and ongoing deposition manipulation by operations for the tailings beach and ponded water.		Moderate deposition manipulation by operations to manage tailings beach and ponded water with unfavorable containment geometry.		Minimal deposition manipulation by operations to manage tailings beach and ponded water with favorable containment geometry.	Minimal deposition manipulation required with favorable basin geometry for tailings beach and water management.	5
T5				Downstream Water Management	- Alternatives that require a shorter length of downstream surface water management to protect water courses and protected water sheds immediately downstream are preferred. - Estimated cumulative length of runoff collection and diversion ditches.	20%	19,029 to 16,781 (lin. m)	16,780 - 14,534 (lin. m)	14,533 to 12,286 (lin. m)	12,285 - 10,039 (lin. m)	10,038 - 7,791 (lin. m)	10,079 lin. m (full perimeter length and option is located within protected watershed)	4
T6		Adaptability to changes in hydrology/climate	5%	Catchment Area of Final Embankment	Alternatives that are expected to perform well for increasingly severe and intense storms associated with potential climate change are preferred. Smaller catchments with lower runoff are expected to weather high intensity storms than larger catchments.	100%	Catchment area (facility + tributary) >1,500 ha	Catchment area (facility + tributary) 1,167 to 1,500 ha	Catchment area (facility + tributary) 834 to 1,166 ha	Catchment area (facility + tributary) 500 to 833 ha	Catchment area (facility + tributary) < 500 ha,	Centreline Raise - 640 ha	4
T7	Project Development Schedule Risk and Complexity (Ability to meet Project Start up Schedule)	Ability to meet project schedule. Additional Study requirements	20%	Available background data and studies	Alternatives that require additional studies (site characterization, engineering, field trials, environmental, social, etc.) require more time to complete and may not meet start up schedule.	100%	Would require extensive additional studies and design to develop Alternative.		Would require moderate level of studies and design to develop Alternative.		Would require lowest level of studies and design to develop Alternative. Access permission for in-situ studies has been obtained.	No site investigation or other studies present	1
T8	Expansion Potential	Expansion Flexibility	5%	Downstream area available	Options that are not impeded downstream by infrastructure, water bodies or protected water sheds or areas downstream that can be mitigated are preferred.	100%	Limited downstream area available due to presence of infrastructure, water bodies or protected water sheds.				Sufficient downstream area available.	River system/water body located on all sides of downstream footprint to limit expansion potential.	1

Table A-4 - Project Economics Evaluation Criteria

Criteria No.	Sub-accounts	Sub-Account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative A: Convention Slurry Tailings Site C8 - (Centerline)		Alternative B: Convention Slurry Tailings Site C10' – Base Case with (Centerline)	
						1	2	3	4	5	Description	Score	Description	Score
PE1	Capital Expenditure (CapEx)	20%	Capital Cost	Alternatives with lower CapEx costs are preferred.	100%	1.00 - 0.844	0.843 - 0.688	0.687 - 0.532	0.531 - 0.376	0.375 - 0.220	0.220	5	0.908	1
PE2	Sustaining Capital	60%	Embankment Raise Costs	Alternatives with lower Sustaining Capital costs are preferred.	100%	1.00 - 0.819	0.818 - 0.638	0.637 - 0.458	0.457 - 0.277	0.276 - 0.096	0.165	3	0.422	4
PE3	Closure Costs	20%	Closure Construction Cost	Alternatives with lower Closure costs are preferred.	100%	1.00 - 0.909	0.908 - 0.818	0.817 - 0.727	0.726 - 0.636	0.635 - 0.545	1.00	1	0.798	3

Table A-4 - Project Economics Evaluation Criteria

Criteria No.	Sub-accounts	Sub-Account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative C: Convention Slurry Tailings Site C10' – Base Case (Downstream)		Alternative D: Convention Slurry Tailings Site C12 - (Centerline)	
						1	2	3	4	5	Description	Score	Description	Score
PE1	Capital Expenditure (CapEx)	20%	Capital Cost	Alternatives with lower CapEx costs are preferred.	100%	1.00 - 0.844	0.843 - 0.688	0.687 - 0.532	0.531 - 0.376	0.375 - 0.220	0.908	1	0.988	1
PE2	Sustaining Capital	60%	Embankment Raise Costs	Alternatives with lower Sustaining Capital costs are preferred.	100%	1.00 - 0.819	0.818 - 0.638	0.637 - 0.458	0.457 - 0.277	0.276 - 0.096	1.00	1	0.486	3
PE3	Closure Costs	20%	Closure Construction Cost	Alternatives with lower Closure costs are preferred.	100%	1.00 - 0.909	0.908 - 0.818	0.817 - 0.727	0.726 - 0.636	0.635 - 0.545	0.875	2	0.621	5

Table A-4 - Project Economics Evaluation Criteria

Criteria No.	Sub-accounts	Sub-Account Weighting	Indicators	Rationale	Indicator Weighting	Scoring Criteria					Alternative E: Convention Slurry Tailings Site C13 - (Centerline)	
						1	2	3	4	5	Description	Score
PE1	Capital Expenditure (CapEx)	20%	Capital Cost	Alternatives with lower CapEx costs are preferred.	100%	1.00 - 0.844	0.843 - 0.688	0.687 - 0.532	0.531 - 0.376	0.375 - 0.220	1.00	1
PE2	Sustaining Capital	60%	Embankment Raise Costs	Alternatives with lower Sustaining Capital costs are preferred.	100%	1.00 - 0.819	0.818 - 0.638	0.637 - 0.458	0.457 - 0.277	0.276 - 0.096	0.791	2
PE3	Closure Costs	20%	Closure Construction Cost	Alternatives with lower Closure costs are preferred.	100%	1.00 - 0.909	0.908 - 0.818	0.817 - 0.727	0.726 - 0.636	0.635 - 0.545	0.591	5

Table A-5 - MAA Calculations

Category	Category Weighting (W_c)	Sub-Account	Sub-Account Weighting (W_S)	Indicator	Indicator Weight (W_I)	Alternative C8 (Centerline)		Alternative C10' – Base Case (Centerline)		Alternative C10' – (Base Case with Downstream)		Alternative C12 (Centerline)		Alternative C13 (Centerline)	
						Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)
Environment	30%	Potential impact on watersheds	0%	Number of watersheds impacted	0%	3	0	1	0	1	0	3	0	5	0
				Area of watersheds impacted	0%	4	0	1	0	1	0	4	0	4	0
				Sub-Account Score (Σ(S_IxW_I))		0		0		0		0		0	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0		0		0		0		0	
		Potential to generate greenhouse gas emissions	15%	Distance from mill X embankment fill volume – more emissions with greater volume and distance	100%	3	3	3	3	2	2	1	1	1	1
				Sub-Account Score (Σ(S_IxW_I))		3		3		2		1		1	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.45		0.45		0.3		0.15		0.15	
		Potential Impact to Aquatic habitat	75%	Direct loss of habitat within TSF footprint (area for lakes, length of streams/rivers assuming 2 m width)	70%	1	0.7	3	2.1	3	2.1	2	1.4	5	3.5
				Potential affects to downstream habitat (area for lakes, length of streams/rivers assuming 2 m width) with 1 km of dam (hectares)	30%	5	1.5	2	0.6	1	0.3	5	1.5	1	0.3
				Potential to impact aquatic habitat during tailings transport (stream crossings)	0%	4	0	4	0	4	0	3	0	3	0
				Sub-Account Score (Σ(S_IxW_I))		2.2		2.7		2.4		2.9		3.8	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		1.65		2.025		1.8		2.175		2.85	
		Potential Impact to Terrestrial habitat	10%	Loss of habitat within TSF footprint. Area of habitat (hectares).	100%	1	1	3	3	2	2	5	5	5	5
				Sub-Account Score (Σ(S_IxW_I))		1		3		2		5		5	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.1		0.3		0.2		0.5		0.5	
				Category Score Σ(Σ(SI×WI))*Ws)		2.2		2.775		2.3		2.825		3.5	
				Weighted Category Score (Σ(Σ(SI×WI))*Ws))*W_c		0.66		0.8325		0.69		0.8475		1.05	
				Ranking - Environmental		5		3		4		2		1	
Socio-Economics	30%	Land Use	0%	Number of cabins within the TSF footprint	100%	4	4	5	5	5	5	5	5	5	5
				Sub-Account Score (Σ(S_IxW_I))		4		5		5		5		5	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0		0		0		0		0	
		Relocation of cabins downstream of facility.	30%	Number of cabins immediately adjacent to and within 2 km of TSF footprint	100%	3	3	3	3	3	3	5	5	1	1
				Sub-Account Score (Σ(S_IxW_I))		3		3		3		5		1	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.9		0.9		0.9		1.5		0.3	
		Potential to impact to water sources used for drinking, or economic purposes	50%	Potential to impact community water supply	100%	2	2	4	4	4	4	3	3	2	2
				Sub-Account Score (Σ(S_IxW_I))		2		4		4		3		2	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		1		2		2		1.5		1	
		Proximity to communities (nuisance from dust and noise, visual impact, etc.)	10%	Potential impacts to community health due to dust and noise and visual concerns with seeing mine - distance from community	100%	4	4	2	2	2	2	4	4	5	5
				Sub-Account Score (Σ(S_IxW_I))		4		2		2		4		5	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.4		0.2		0.2		0.4		0.5	
		Ability to obtain land tenure	10%	Alternative land tenure	100%	4	4	5	5	5	5	4	4	4	4
				Sub-Account Score (Σ(S_IxW_I))		4		5		5		4		4	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.4		0.5		0.5		0.4		0.4	
				Category Score Σ(Σ(SI×WI))*Ws)		2.7		3.6		3.6		3.8		2.2	
				Weighted Category Score (Σ(Σ(SI×WI))*Ws))*Wc		0.81		1.08		1.08		1.14		0.66	
				Ranking - Socio-Economics		4		2		2		1		5	

Table A-5 - MAA Calculations

Category	Category Weighting (W_c)	Sub-Account	Sub-Account Weighting (W_S)	Indicator	Indicator Weight (W_I)	Alternative C8 (Centerline)		Alternative C10' – Base Case (Centerline)		Alternative C10' – (Base Case with Downstream)		Alternative C12 (Centerline)		Alternative C13 (Centerline)	
						Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)	Value (S_I)	Score (S_I x W_I)
Technical	20%	Risk of dam/structure failure	40%	Average Embankment Height	10%	5	0.5	2	0.2	1	0.1	2	0.2	1	0.1
				Embankment Length	10%	5	0.5	5	0.5	4	0.4	1	0.1	3	0.3
				Method of dam construction	80%	3	2.4	3	2.4	5	4	3	2.4	3	2.4
				Sub-Account Score (Σ(S_IxW_I))		3.4		3.1		4.5		2.7		2.8	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		1.36		1.24		1.8		1.08		1.12	
		Mine waste/water management complexity	30%	Tailings and water management within facility	80%	3	2.4	5	4	5	4	2	1.6	5	4
				Downstream Water Management	20%	1	0.2	5	1	5	1	5	1	4	0.8
				Sub-Account Score (Σ(S_IxW_I))		2.6		5		5		2.6		4.8	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.78		1.5		1.5		0.78		1.44	
		Adaptability to changes in hydrology/climate	5%	Catchment Area of Final Embankment	100%	1	1	3	3	3	3	4	4	4	4
				Sub-Account Score (Σ(S_IxW_I))		1		3		3		4		4	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.05		0.15		0.15		0.2		0.2	
		Ability to meet project schedule. Additional Study requirements	20%	Available background data and studies	100%	1	1	3	3	3	3	1	1	1	1
				Sub-Account Score (Σ(S_IxW_I))		1		3		3		1		1	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.2		0.6		0.6		0.2		0.2	
		Expansion Flexibility	5%	Downstream area available	100%	5	5	3	3	3	3	1	1	1	1
				Sub-Account Score (Σ(S_IxW_I))		5		3		3		1		1	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.25		0.15		0.15		0.05		0.05	
				Category Score Σ(Σ(SI×WI))*Ws)		2.64		3.64		4.2		2.31		3.01	
				Weighted Category Score (Σ(Σ(SI×WI))*Ws))*Wc		0.528		0.728		0.84		0.462		0.602	
				Ranking - Technical		4		2		1		5		3	
Project Economics	20%	Capital Expenditure (CapEx)	20%	Capital Cost	100%	5	5	1	1	1	1	1	1	1	1
				Sub-Account Score (Σ(S_IxW_I))		5		1		1		1		1	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		1		0.2		0.2		0.2		0.2	
		Sustaining Capital	60%	Embankment Raise Costs	100%	3	3	4	4	1	1	3	3	2	2
				Sub-Account Score (Σ(S_IxW_I))		3		4		1		3		2	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		2		2.4		0.6		1.8		1.2	
		Closure Costs	20%	Closure Construction Cost	100%	1	1	3	3	2	2	5	5	5	5
				Sub-Account Score (Σ(S_IxW_I))		1		3		2		5		5	
				Weighted Sub-Account Score (Σ(SI×WI))*W_s		0.2		0.6		0.4		1		1	
				Category Score Σ(Σ(SI×WI))*Ws)		3		3.2		1.2		3		2.4	
				Weighted Category Score (Σ(Σ(SI×WI))*Ws))*Wc		0.60		0.64		0.24		0.6		0.48	
				Ranking - Project Economics		2		1		5		2		4	

Results	Alternative A	Alternative C	Alternative D	Alternative E	Alternative F
Total Score Σ((Σ(Σ(SI×WI))*Ws))*Wc)	2.60	3.28	2.85	3.05	2.79
Ranking	5	1	3	2	4

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APPENDIX E

Closure Summary

Saskatoon
112 - 112 Research Drive
Saskatoon, SK S7N 3R3
Canada
www.okc-sk.com

Memorandum

To:	Michel Groleau – Director, Government Affairs, Champion Iron Ore Ltd.
From:	Gillian Allen, Senior Consultant
Our ref:	923-222-M-003
Date:	March 22, 2024
Re:	**Kami Conceptual Rehabilitation and Closure Plan Summary**

Okane Consultants (Okane) has been retained by Champion Iron Mines Ltd. (Champion) to complete a rehabilitation and closure plan (RCP) for the Kamistiatusset Iron Ore Mine Project (Kami Project). The RCP is required under Newfoundland and Labrador Mining Act, Chapter M-15.1 respecting the operation of mines and mills in the Province (assented to December 14, 1999). The RCP entails development of final closure management of the mine and mine support infrastructure and cost estimates for closure of the mine after operations.

1 Objective and Background

The objective of this document is to provide an overview of the closure management for the major infrastructure at the Kami Project, a discussion of the risks associated with the conceptual rehabilitation and closure plan in the Post-Closure Period, and potential mitigations that may be implemented to mitigate those risks. Final closure of the Kami Project will be refined and updated as the project progresses towards operations and closure. Final closure of the mine site is anticipated to be a maximum of 50 years after the end of the Operations Phase when either long term monitoring of the tailings management facility (TMF) dams as required by RCP guidelines is complete, or once the TMF has been reclassified as a landform and the site has reached long-term stability chemically and geotechnically.

The Closure Phase is anticipated to last for 10 years, based on initial accelerated pit flooding estimates. Activities in the Closure Phase include accelerated flooding of the pit, water treatment as required, gradual re-establishment of passive surface water drainage, recontouring, and revegetation of disturbed areas and demolition and removal of mine support infrastructure as required.

The transition from Closure Phase to Post-Closure Period involves ongoing dam safety monitoring, water treatment (if necessary) and environmental monitoring to verify that water quality is achievable for passive discharge and decommissioning criteria have been met. The Post-Closure Period is anticipated to last 40 years or until TMF dams have been reclassified and the site has reached long-term stability. A conceptual closure configuration can be found in Figure 1. Major mine landforms include the Rose Pit, Overburden Stockpile, Mine Rock Stockpile, and the TMF. Mine support infrastructure includes the railway, concentrator building, the Primary Ore Crusher Station, and the In-pit Crushing and Conveying (IPCC) system.

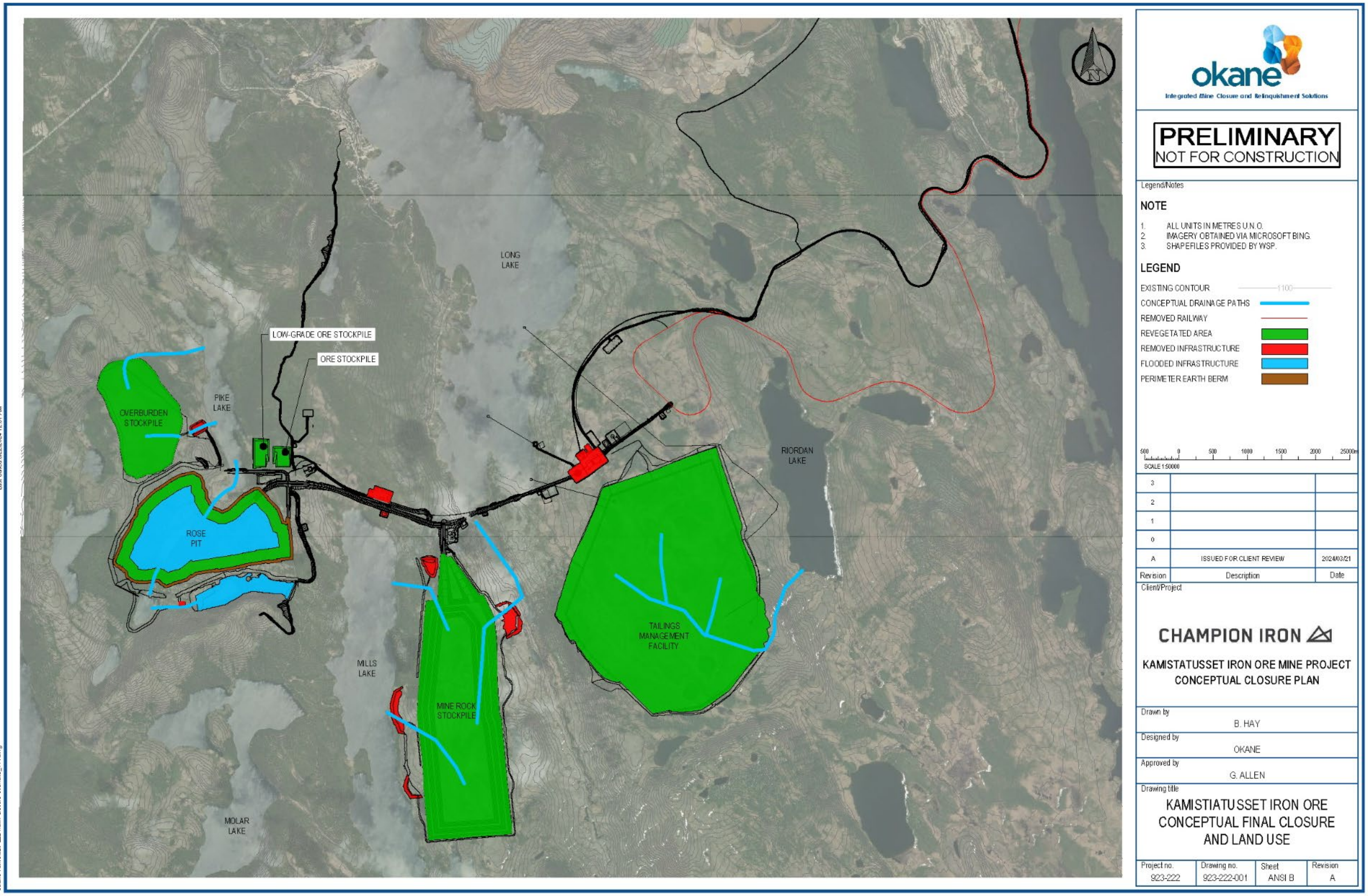

Figure 1: **Conceptual final closure configuration and closure drainage.**

2 Rose Pit

Final closure of the Rose Pit includes accelerated flooding from the TMF, Overburden Stockpile collection ponds, Mine Rock Stockpile collection ponds, and Long Lake, as well as recontouring along the pit rim where possible to a maximum of 2H:1V to support stability and vegetation establishment. Temporary access control measures will be in place during the flooding period, which is anticipated to be approximately 10 years with permanent non-potentially acid generating (NPAG) rock berm construction to limit general public access in areas where recontouring to less than 30° is not possible.

3 Stockpiles

3.1 Overburden Stockpile

The Overburden Stockpile does not require a cover system as the material is NPAG/non-metal leaching (NML) and is expected to successfully revegetate without a soil cover system. The overburden is mainly till, though topsoil and peat containing organic matter was highlighted in the few samples that were noted to contain some acidic risk.

Where appropriate the overburden material will be used for rehabilitation of mine infrastructure (process plant, mine offices, TMF or Mine Rock Stockpile cover systems etc.) prior to final rehabilitation and closure. The slopes will be regraded to an appropriate slope for revegetation and final land use.

3.2 Mine Rock Stockpile

Most of the mine rock is anticipated to be NPAG/ NML. Some potentially acid generating/metal leaching (PAG/ML) is expected to be encountered during production. Acid-base accounting (ABA) results support that there is sufficient neutralization potential (NP) in the mine rock stockpile to neutralize acid generation if the stockpile has sufficient blending of PAG/ML and NPAG/NML material to limit metal leaching/acid rock drainage (ML/ARD) generation. However, there is still potential risk for metals to be released from sulfide oxidation, though maintaining high pH from available buffering carbonate minerals could potentially attenuate some of these metals released from sulfide oxidation before seeing their release into the environment. The Menihek Formation is classified as PAG with the highest risk of producing ML/ARD and may be associated with exceedances for Cd, Co, Cr, Cu Ni, Se, Fe, Zn, and U. The Katsao Formation has the potential to be PAG with a risk of producing ML/ARD and may be associated with exceedances for Cd, Co, Ni, and Se.

Where appropriate, the mine rock material will be used for rehabilitation of mine infrastructure (pit berms, drainage material, etc.) prior to final rehabilitation and closure. Where feasible, Champion will manage the use of NPAG mine rock to meet aggregate needs of local third-party contractors. A waste rock management plan will be developed to ensure both that PAG/ML mine rock is not made available for use as construction aggregate and that removal of NPAG/NML mine rock does not compromise the overall ML/ARD management strategy. The slopes of the Mine Rock Stockpile will be regraded to an appropriate slope for revegetation and final land use.

4 Tailings Management Facility

4.1 Tailings Landform

Rehabilitation of the TMF begins during the Closure Phase with dewatering of any remaining ponded water to the Rose Pit, re-grading and landforming where necessary, and placement of a soil cover system to promote positive passive drainage, limit ponding, and support revegetation. The objective of the cover system is to encourage runoff and reduce the net infiltration into the TMF, reducing the potential for the tailings to remain liquifiable long-term. Eliminating the tailings' ability to flow is one condition that must be met for the dam to be reclassified to a mine waste structure (CDA, 2019). Cover system placement and revegetation activities are expected to be completed in four (4) years once commenced.

Based on static testing performed to date, the tailings are considered NPAG with low metal leaching potential. Kinetic testing is ongoing for tailings materials; however, stabilized loading rates from the kinetic test program are not yet available. Supernatant sampling from bench scale testing has been completed, but was limited to three supernatant samples from the gravity flotation tailings streams due to availability and timing constraints during the tailings program testing. The gravity flotation stream represents approximately 6% of the total tailing stream and the supernatant may contribute approximately 10% of the total TMF water (Bombard I. (Soutex), *personal communication*, November 17, 2023). Water quality estimates derived from the gravity flotation stream are likely conservative with respect to N-containing amines, as collector (Tomamine M100-7) had been added to the stream.

4.2 Dams

The Post-Closure Period objective for the TMF dams is to reclassify the dams to mine waste structures or landforms. To achieve this, several criteria must be met as outlined in the CDA guidelines. The criteria for a dam to become a mine waste structure includes (CDA, 2019):

- Ponded water will not propagate a failure or uncontrolled release of tailings;
- Tailings do not and cannot flow and do not rely on a barrier to prevent an uncontrolled release;
- Tailings do not and cannot migrate or pipe through the dam or foundation; and,

- Conditions will not develop in the future that could violated the previous criteria.

Mine rock is proposed as construction material for the dam and embankment raises for the TMF. A starter dam will be constructed using mine rock with the upstream slope lined with a geomembrane liner. The geomembrane liner will be keyed into the glacial foundation at the base. Sand bedding will be used on the starter dam crest to key in the liner. Lining starter dams will limit speed at which drain down can occur, potentially limiting the ability for dams to be reclassified in the desired timeframe. Opportunities to improve drainage in the operational period should be assessed. During construction, care will need to be taken to ensure the waste rock used in construction is not PAG material through a waste rock management plan. The presence of PAG material will limit the ability for the dam to become a landform long-term as it may not meet long term chemical stability requirements.

If feasible, the TMF will be substantially drained with the aim to meet the criteria for the dam to be reclassified as a landform. Monitoring of the tailings dam will be performed for 50 years with dam safety reviews performed every five (5) years, or until the above criteria can be successfully met. Geotechnical inspections will be performed annually. Signage will be utilized during Post-Closure Period monitoring of the TMF to alert the public and site visitors to the risks associated with the TMF prior to reclassification.

5 Mine Support Infrastructure

5.1 Ore Processing Infrastructure

Mine infrastructure not required to support future land use and site monitoring purposes will be dismantled and removed from site.

Once the Operations Phase is completed, the Process Plant and ore stockpile areas will be evaluated for residual mine waste. Identified material will be moved to appropriate storage areas on site such as the Mine Rock Stockpile or the TMF or disposed offsite at an appropriate disposal location.

Railway infrastructure on site will be removed and dismantled for final closure. Rehabilitation for the railways includes grading of sub-surface, placement of a soil cover, revegetation, and fertilization.

Electrical infrastructure not required to support future land use purposes will be dismantled and removed from site.

5.2 Waste Infrastructure

5.2.1 Hazardous Waste

Areas of the site may be identified at the end of Operations as having the potential to contain hazardous waste and materials. The hazardous waste and materials may either be in storage or in the ground from normal activities and/or accidental spills. Material in ground will be identified and inventoried for removal from site, provided clean-up and disposal at the time of identification is not feasible. Stored materials may include fuel, oils, lubricants, explosives, hazardous chemicals, and other hazardous materials and will be removed from site, transported, and disposed of according to the safety data sheets (SDSs) and Newfoundland and Labrador best management practices (Newfoundland and Labrador Department of Environment and Conservation Pollution Prevention Division, 2015).

5.2.2 Sewage Facilities

Sewage facilities not required to support future land use purposes will be dismantled and removed from site by a license disposal company.

5.3 Mine Roads

Mine roads not required for future land purposes will be graded, scarified, and revegetated at closure.

6 Water Management

6.1 Closure Phase

At the beginning of Closure Phase, dewatering of the Rose Pit will cease and accelerated flooding will start. Pike Lake, Mills Lake, Daviault Lake, and Molar Lake are expected to contribute to flooding the Rose Pit through groundwater flow paths. While accelerated flooding occurs, surface flow rates in surrounding water bodies will be maintained. Water may be pumped from Long Lake to facilitate accelerated flooding. Water collected at the Mine Rock Stockpile and the TMF will be pumped to the Rose Pit Collection Pond, where ditching will be used to allow the Rose Pit Collection Pond to drain passively to Rose Pit (Figure 2).

The TSF will be recontoured as needed and covered to facilitate long-term passive surface water drainage and reconnection with existing water bodies such that the tailings dams no longer retain ponded water, or liquifiable tailings. Drain down and seepage water quality will be monitored using the seepage and runoff collection ditches constructed along the toe of the perimeter of the TMF during Operations. Long-term water treatment of water impacted by the TSF is not anticipated as the tailings are categorized as NPAG. The East Water Treatment Plant will be decommissioned and removed when the Concentrator building is removed. Until seepage meets water quality criteria, or until Rose Pit flooding is complete, water collected in the sumps will be pumped to Rose Pit Collection Pond.

Surface water runoff from the Overburden Stockpile will be collected in the ditches surrounding the landform. It is anticipated that runoff from the Overburden Stockpile will not require treatment. In the Closure Phase, water will be directed to the Rose Pit via drainage channels.

Runoff and seepage water will be collected in drainage ditches around the Mine Rock Stockpile and directed to the four Collection Ponds (North, East, West, and South-West Collection Ponds). Water collected in the West Collection Pond, East Collection Pond and South-West Collection Pond will be pumped to the North Collection Pond, then ultimately pumped to the Rose Pit Collection Pond. Surface and seepage water will be routinely tested during the Closure Phase.

The pumping system and pipeline transferring the non-contact water from Mid Lake to Pike Lake will be maintained until Rose Pit is flooded and water quality in Rose pit has reached acceptable discharge quality.

The pumping system and pipeline transferring water from the south side of the Pike Lake Dike to Pike Lake will be maintained until Rose Pit is flooded and water quality in Rose Pit has reached acceptable discharge quality.

During closure, water will be pumped to both Pike Lake and Rose Pit from Long Lake to aid with maintaining the water level in Pike Lake and accelerating pit flooding.

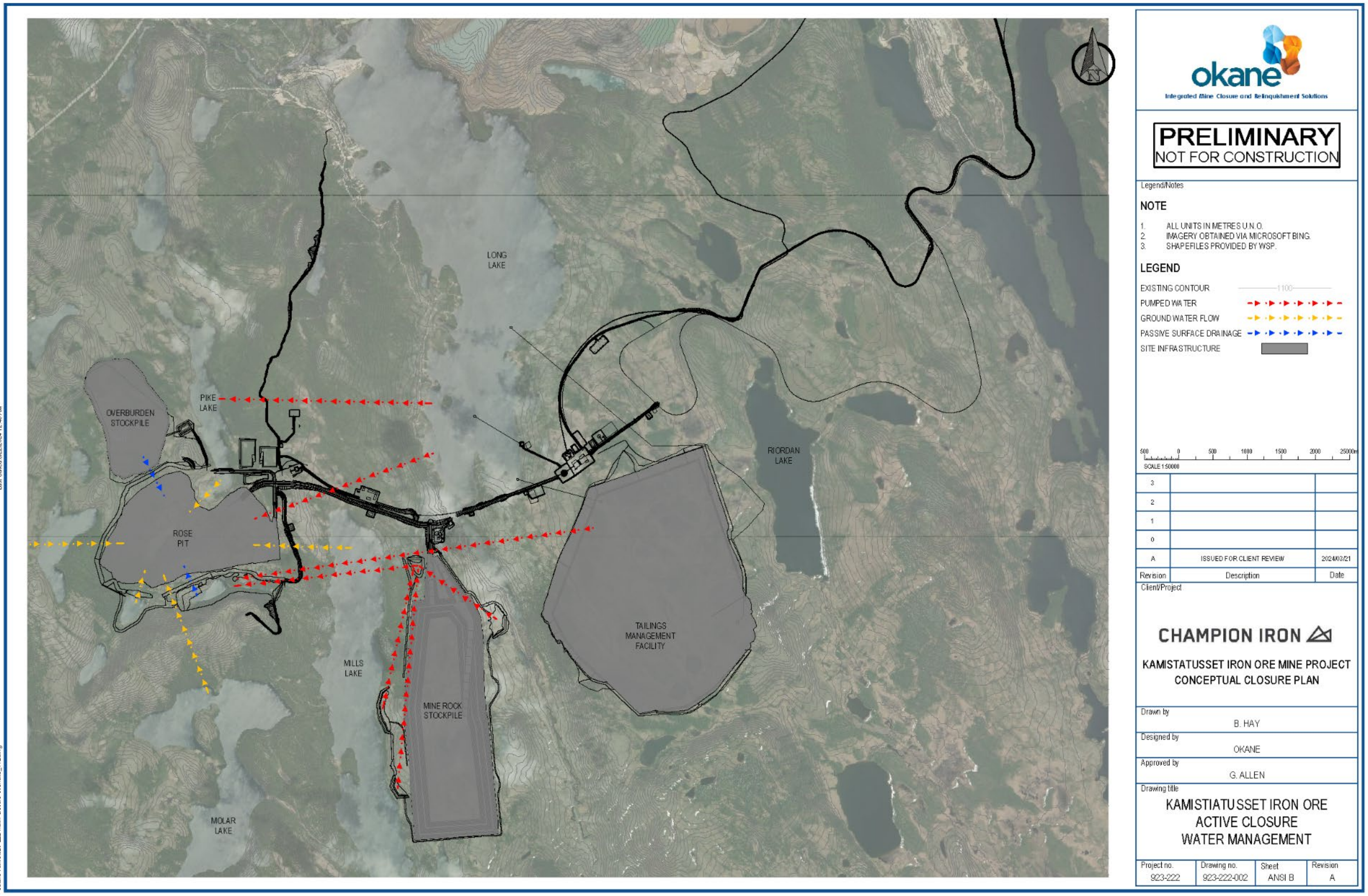

Figure 2: Water management plan schematic during the Closure Phase

6.2 Post-Closure Phase

Post-closure will begin when pit flooding is complete and the site has stabilized (i.e. geochemically and physically). Allowance for five years of operation of the West Water Treatment Plant at a rate of approximately 3,000,000 m^3 if inflows from the TSF require treatment to improve final water quality has been included. Ditching used to direct water to Rose Pit from the Overburden Stockpile for flooding will be backfilled and shaped to allow passive drainage into the surrounding environment. Ditching will be shaped from the Rose Pit Collection Pond to allow passive drainage towards Mid Lake. At this time, the Mid Lake dike will be breached, allowing water from Mid Lake to passively drain into Rose Pit long-term. The pumping system and pipeline transferring the non-contact water from Mid Lake to Pike Lake will be decommissioned. The pipeline transferring water from the south side of the Pike Lake Dike to Pike Lake will also be decommissioned and the Pike Lake Dike will be breached allowing Rose pit to passively drain into Pike Lake. Once reconnection of Rose Pit is re-established, the pumping system from Long Lake to Pike Lake and Rose Pit will no longer be required and will be decommissioned. Passive drainage paths are shown in Figure 1.

At the Mine Rock Stockpile, ditches and four Collection Ponds will be backfilled, and the Mine Rock Stockpile will passively drain to the surrounding environment. Pumping stations and pipelines directing water to the Rose Pit Collection Pond will be decommissioned. At the TMF, pumping stations and pipelines directing water to the Rose Pit Collection Pond will be decommissioned. Once water quality and dam reclassification criteria are met and the Rose Pit is flooded, drainage to surrounding water bodies will be re-established.

7 Closure Costs

A comprehensive closure cost estimate for the Kami Project was performed by Okane Consultants. The cost estimate was primarily performed using the RECLAIM 7.0 model (Brodie Consulting, 2017) developed by the Government of the Northwest Territories and Indigenous and Northern Affairs Canada (INAC). To the extent achievable, unit costs developed for RECLAIM 7.0 are based on independent third-party costs for past northern reclamation projects (Brodie Consulting, 2017). In some instances, the Standardized Reclamation Cost Estimator Version 1.4.1 (SRCE) has been used in estimating heavy equipment unit rates in conjunction with hourly contractor labor rates (BBA, 2024) and 2023 BC Blue Book Equipment rates (BC Road Builders & Heavy Construction Association, 2023).

Costs were divided into 13 main components for the Kami Project. These components are:

- Rose pit;
- Tailings management facility;

- Overburden stockpile;
- Mine Rock stockpile;
- Buildings and equipment;
- Railway;
- Electrical infrastructure;
- Hazardous waste and contaminated soil management;
- Water management;
- Water treatment;
- Interim care and maintenance;
- Mobilization and demobilization; and,
- Post closure monitoring and maintenance.

Closure costs for the 13 components may be found in Table 1 with detailed cost breakdowns found in the Rehabilitation and Closure Plan (Okane, 2024). The total estimated cost for closure of the Kami Project is $302,200,000**.** The Overburden Stockpile is expected to be progressively reclaimed, while all other components are expected to be deconstructed / reclaimed during Closure.

Active closure is expected to take 10 years from the time flooding of the Rose Pit begins. Post closure monitoring is assumed to be 40 years following the active closure phase, or until the tailings dams can be declassified. The extended post closure monitoring time is assumed based on 50 years of dam monitoring (Rehabilitation and Closure Plan Guidance Document Section 17.7 h). Cover maintenance, monitoring and inspections are assumed to occur for 15 years following operations, or until water quality is acceptable for direct passive discharge and landform revegetation has stabilized. Allowance for water treatment for five years in the post-closure period has been included. Geotechnical inspections for the tailings dam are expected to occur for 50 years through the active closure and Post-Closure period.

Table 1: Kami Project Closure Cost Estimate

Rehabilitation and Closure Plan Activity	Progressive Reclamation Cost	Closure Cost	Total Cost
Rose Pit	$ -	$ 13,163,000	$ 13,163,000
Tailings Management Facility	$ -	$ 61,529,000	$ 61,529,000
Overburden Stockpile	$ 1,669,000	$ 3,387,000	$ 5,056,000
Mine Rock Stockpile	$ -	$ 33,963,000	$ 33,963,000
Buildings and Equipment	$ -	$ 19,391,000	$ 19,391,000
Railway	$ -	$ 2,776,000	$ 2,776,000
Electrical Infrastructure	$ -	$ 2,026,000	$ 2,026,000
Hazardous Waste and Contaminated Soils Management	$ -	$ 572,000	$ 572,000
Water Management	$ -	$ 87,746,000	$ 87,746,000
Water Treatment	$ -	$ 7,846,000	$ 7,846,000
Interim Care and Maintenance	$ -	$ 4,851,000	$ 4,851,000
Post Closure	$ -	$ 2,738,000	$ 2,738,000
Mobilization	$ -	$ 100,000	$ 100,000
Subtotal	**$ 1,669,000**	**$ 240,088,000**	**$ 241,757,000**
Project Management (7%)	**$ 117,000**	**$ 16,806,000**	**$ 16,923,000**
Engineering Allowance (3%)	**$ 50,000**	**$ 7,203,000**	**$ 7,253,000**
Contingency Allowance (15%)	**$ 250,000**	**$ 36,013,000**	**$ 36,263,000**
Total Estimated Cost	**$ 2,086,000**	**$ 300,110,000**	**$ 302,196,000**

8 Kami Project Risks During Closure Phase and Post-Closure Period

Although the utmost care has been taken to determine all relevant information for the Closure Phase and Post-Closure Period, there are uncertainties associated with long-term closure that remain. To effectively manage risk related to these uncertainties, it is important to identify and assess risks and uncertainties early for the Kami Project to determine mitigations that may be implemented throughout the life of the project.

For the purposes of this document risks and uncertainties are identified for Closure and Post-Closure costs. Risks and uncertainties for each landform or mine support area can be found in Table 2.

Water management associated with accelerated pit flooding is the single largest line item included in the closure cost estimate. While the open pit could be left to flood passively through groundwater inflows, there are anticipated to be impacts to Pike Lake water levels while the open pit floods if left unmitigated. Active water management to maintain water levels within Pike Lake will be required. Of the $8,100,000 in annual pumping estimated for accelerated pit flooding, approximately $1,700,000 is associated with transfer of water directly to Pike Lake to maintain water levels during the pit flooding period. Conversely, passive sources of water to the pit (including runoff, and groundwater inflows) represent approximately 28% of inflows to the open pit in the case of accelerated pit flooding. Though detailed pit flooding assessments have yet to be completed, a passive pit flooding approach could be expected to take several decades (30 to 40 years) to reach a final discharge elevation. Transfer of water to Pike Lake would be required for the duration of pit flooding in either passive or accelerated pit flooding.

The tailings dams have the potential of becoming a long-term liability in the event the tailings are unable to drain down as anticipated and the dams are unable to be reclassified. Approximately $70,000 in annual geotechnical inspections, site surveys, regulatory reviews, and water monitoring would be required until the dams are able to satisfy the chemical, ecological, and social stability requirements.

Table 2: Closure and Post-Closure uncertainty and risks for the Kami Project

Location	Uncertainty	Risk Description	Effect	Controls and Mitigations
Rose Pit	Groundwater contribution volumes to pit flooding in closure	Pit flooding takes longer than anticipated (10 years)	Pumping from Long Lake required for longer period. Longer timeframe for personnel on site. Estimated annual water management costs of $8,100,000	Updated hydrogeology studies in the closure period. Updated site-wide water balance and water quality model to confirm estimated pumping rates from Long Lake, Mid Lake, and Pike Lake are sustainable.
	Stability of final pit configuration	Failure of pit wall	Risk to general public Loss of revegetation efforts	Updated slope stability studies Regrade and slope overburden Vegetation establishment Adaptive management plan to identify and mitigate geotechnical risk throughout LOM
	Expected closure / post-closure pit water quality	Longer water treatment and / or active water management timeframes than anticipated.	Delay in site relinquishment. Estimated additional annual water management costs of $8,100,000. Additional water treatment costs annually up to $4,000,000 during Post-Closure should contact water streams require treatment.	Hydrodynamic pit modelling to understand potential pit lake stratification. Adaptive management plan to identify and mitigate ML/ARD risk throughout LOM.
	Success of direct revegetation in overburden	Vegetation does not establish in overburden slope	Slope Repairs – erosion, slope failure Large scale replanting Estimated revegetation costs $1,900,000	Vegetation studies and trials Regrade and prep overburden for revegetation
Overburden Stockpile	Expected closure / post-closure seepage and runoff water quality	Water treatment required during Post-Closure Phase (no water treatment expected)	Increased water treatment costs. Cover system required Estimated additional annual water treatment costs of $1,100,000 annually during Post-Closure	Updated site-wide water balance and water quality model to confirm effects of range of potential seepage and runoff quality values.
	Success of direct revegetation in overburden	Vegetation does not establish on stockpile	Slope repairs – erosion, slope failure Large scale replanting Estimated revegetation costs $4,300,000	Vegetation studies and trials Regrade and prep stockpile slopes for revegetation
	Stability of final Overburden Stockpile configuration	Slope failure	Loss of vegetation Risk to general public Impacts to water bodies (close proximity)	Updated stability studies

Location	Uncertainty	Risk Description	Effect	Controls and Mitigations
Mine Rock Stockpile	Expected closure / post-closure seepage and runoff water quality	Water treatment required longer than anticipated (5 years)	Longer than anticipated pumping and treatment of water. Increased cover system requirements. Estimated additional annual treatment costs of $2,600,000 annually	Updated site-wide water balance and water quality model to confirm effects of range of potential seepage and runoff quality values. Geochemical block model Waste management plan Geochemical studies
	Success of direct revegetation in cover system	Vegetation does not establish on stockpile slopes	Slope Repairs – erosion, slope failure Large scale replanting Estimated revegetation costs $13,000,000	Vegetation studies and trials Regrade and prep stockpile slopes for revegetation Soil Management Plan
	Stability of final Mine Rock Stockpile configuration	Slope failure	Loss of vegetation Loss of reputation in community Impacts to water bodies (close proximity)	Updated stability studies Geotechnical investigations
	Suitability of borrow material for cover system construction	Insufficient borrow available for cover system construction	Borrow material required from off-site source. Requirement for different cover system	Borrow Management Plan Soil management plan. Vegetation trials with overburden material
	Proportion of PAG/ML rock	Larger volume of PAG/ML waste rock	Long term water treatment required. Estimated $2,600,000 annually for additional water treatment	Geochemical studies Update block model for mining
	Timing of waste extraction to support blended waste rock strategy to balance AP/NP	Insufficient quantities of NPAG and PAG material available during Operations for proper material blending	Areas of stockpile with high AP and no NP Increased water treatment requirements Increased cover system requirements	Waste management plan In-Pit Stockpile material
Tailings Management Facility	Expected closure / post-closure seepage and water quality	Water treatment required longer than anticipated (5 years)	Longer than anticipated pumping and treatment of water. Increased cover system requirements. Estimated additional annual costs of $1,300,000 annually	Updated site-wide water balance and water quality model to confirm effects of range of potential seepage and runoff quality values. Geochemical characterization studies Effluent studies Waste management plan

Location	Uncertainty	Risk Description	Effect	Controls and Mitigations
	Stability of final tailings dam configuration	Dam failure	Loss of reputation in community Impacts to down stream water bodies (close proximity) Cost of clean-up Regulatory Fines	Geotechnical investigations Update stability studies
	Expected drain down timeframe of the tailings	Inability to reclassify dams to landform	Long-term monitoring requirements Long-term water treatment and pumping requirements Inability to relinquish site to crown	Place and regrade cover to promote water shedding and limit ponding. QA/QC during construction Geotechnical investigations Dam monitoring during construction
	Suitability of borrow material for cover system construction	Insufficient borrow available for cover system construction	Borrow material required from off-site source. Requirement for different cover system (liner)	Borrow Management Plan Soil management plan. Vegetation trials with overburden material
Surrounding Water Bodies	Acceptable dewatering rates in closure of surrounding water bodies	Lake levels/surface flow during pit flooding reduced	Negative impacts on downstream water bodies Impacts to fish habitat, water quality, and water availability	Updated lake bathymetry Flow monitoring Use of a measured approach with weirs/barriers to limit flow into pit Updated site-wide water balance and water quality model to confirm effects of range of potential seepage and runoff quality values. Monitor lake levels during construction Hydrogeological investigations
Ore Stockpiles, Crushed Ore Stockpile, Process Plant, Concentrator, and Concentrator Load-out	Volume of contaminated material from ore processing operations	Larger amount of contaminated material than anticipated	Increased cost for removal Increased requirement of material and equipment for drainage Inability to dispose in on-site facilities Inability for regional disposal location to receive volume of material	Containment of stockpile runoff water (concrete pad, liner)
Mine Support Buildings	Total volume of building material that must be disposed in landfill facilities	Regional landfill unable to receive all demolition material	Disposal at landfill further away (increased haulage) Construction of landfill on-site	Repurpose mine buildings to suit end land use objectives Salvage and sell materials Permitting of on-site demolition landfill

We trust information provided in this memorandum is satisfactory for your requirements. Please do not hesitate to contact me at 306-713-1568 or gallen@okaneconsultants.com should you have any questions or comments.

9 References

BBA Engineering Ltd. (BBA). 2024. NI 43-101 Technical Report Pre-feasibility Study for the Kamistiatusset (Kami) Iron Ore Property, Newfoundland and Labrador, Canada. Prepared for Champion Iron Limited.

B.C. Road Builders & Heavy Construction Association. 2023. Blue Book Equipment Rental Rate Guide.

Soutex. 2023. Personal communication between Okane and I. Bombard. November 17, 2023.

Brodie Consulting. 2017. RECLAIM 7.0 User Manual - Mining. Prepared for the Government of the Northwest Territories.

CDA. 2019. Revision to CDA Technical Bulletin Application of Dam Safety Guidelines to Mining Dams - Revision to Section 2.4.

APPENDIX F

Ambient Air Quality Baseline Report

REPORT

Ambient Air Quality Baseline Report

Kami Iron Ore Mine Project

Submitted to:

Champion Iron Mines Ltd.
1155 René-Lévesque Blvd. West
Suite 3300
Montréal, QC H3B 3X7

Submitted by:

WSP Canada Inc.
25 York St.
Suite 700
Toronto, ON M5J 2V5

April 2024

Distribution List

Champion Iron Mines Ltd.

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EXECUTIVE SUMMARY

The Kamistiatusset (Kami) Iron Ore Mine Project (the Project) is a proposed iron ore mine in Newfoundland and Labrador. The Project site is located entirely in Labrador, approximately seven kilometres from the Town of Wabush, 10 kilometres from the Town of Labrador City, and five kilometres east of Ville de Fermont, Québec. The future mine operation is expected to produce eight million tonnes of iron ore concentrate annually, which will be transported by rail to the Pointe Noire port terminal in Ville de Sept-Îles, Québec, for international shipping.

To support the Project Registration and effects assessment from the revised Project design changes, Champion retained WSP Canada Inc. (WSP) to assess the baseline ambient air quality at the communities surrounding the Project. An earlier baseline data collection program was completed between 2011 and 2012 for the Kami Project; however, the data is more than 10 years old, so it was determined that additional data would be required to describe the current background concentrations for particulate matter (PM) in the nearby communities.

The air quality baseline monitoring program focussed on particulates because potential dust generated from the Project has been raised as a concern from nearby communities. The air quality monitoring stations for PM were deployed within three communities within the vicinity of the Project area from July 26 to September 17, 2023. Overall, there were no exceedances of the Newfoundland and Labrador Air Quality (NL AAQ) standards for TPM, PM10 and PM2.5 measured during the program sampling period.

Measured SO_2 and NO_2 concentrations were obtained from the Department of Environment and Climate Change for the Province of Newfoundland and Labrador (Department) for the period of June through August 2023, which overlapped with the period that the particulate monitors were deployed. Following a review of the data from these stations, the Labrador City (Firehall) station operated by the Iron Ore Company of Canada, was selected as the most representative location to summarize the baseline conditions for the Kami Project. The maximum measured rolling average and maximum measured daily averages were below the NL AAQ standards.

Table of Contents

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
AAQBA	Ambient Air Quality Baseline Assessment
AQHI	Air Quality Health Index
CAAQS	Canadian Ambient Air Quality Standards
COC	Contaminants of Concern
CCME	Canadian Council of Ministers of the Environment
the Department	Department of Environment and Climate Change for the Province of Newfoundland and Labrador
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
IAAC	Impact Assessment Agency of Canada
NAPS	National Air Pollutant Surveillance
NL AAQ	NL Ambient Air Quality
NO_X	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
NO	Nitric Oxide
N_2O	Nitrous Oxide
TPM	Total Particulate Matter
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5 micrometres in diameter
PM_{10}	Particulate Matter less than 10 micrometres in diameter
SO_2	Sulphur Dioxide

UNITS OF MEASURE

Unit	Description
ACFM	Cubic Feet Per Minute at Actual Conditions
LPM	Litres Per Minute
ppb	parts per billion
µm	Micrometres
$\mu g/m^3$	Microgram per Cubic Metre

1.0 INTRODUCTION

The Kamistiatusset (Kami) Iron Ore Mine Project (the Project) is a proposed iron ore mine in Newfoundland and Labrador. The Project site is located entirely in Labrador, approximately seven kilometres from the Town of Wabush, 10 kilometres from the Town of Labrador City, and five kilometres east of Ville de Fermont, Québec (**Figure 1-1**).

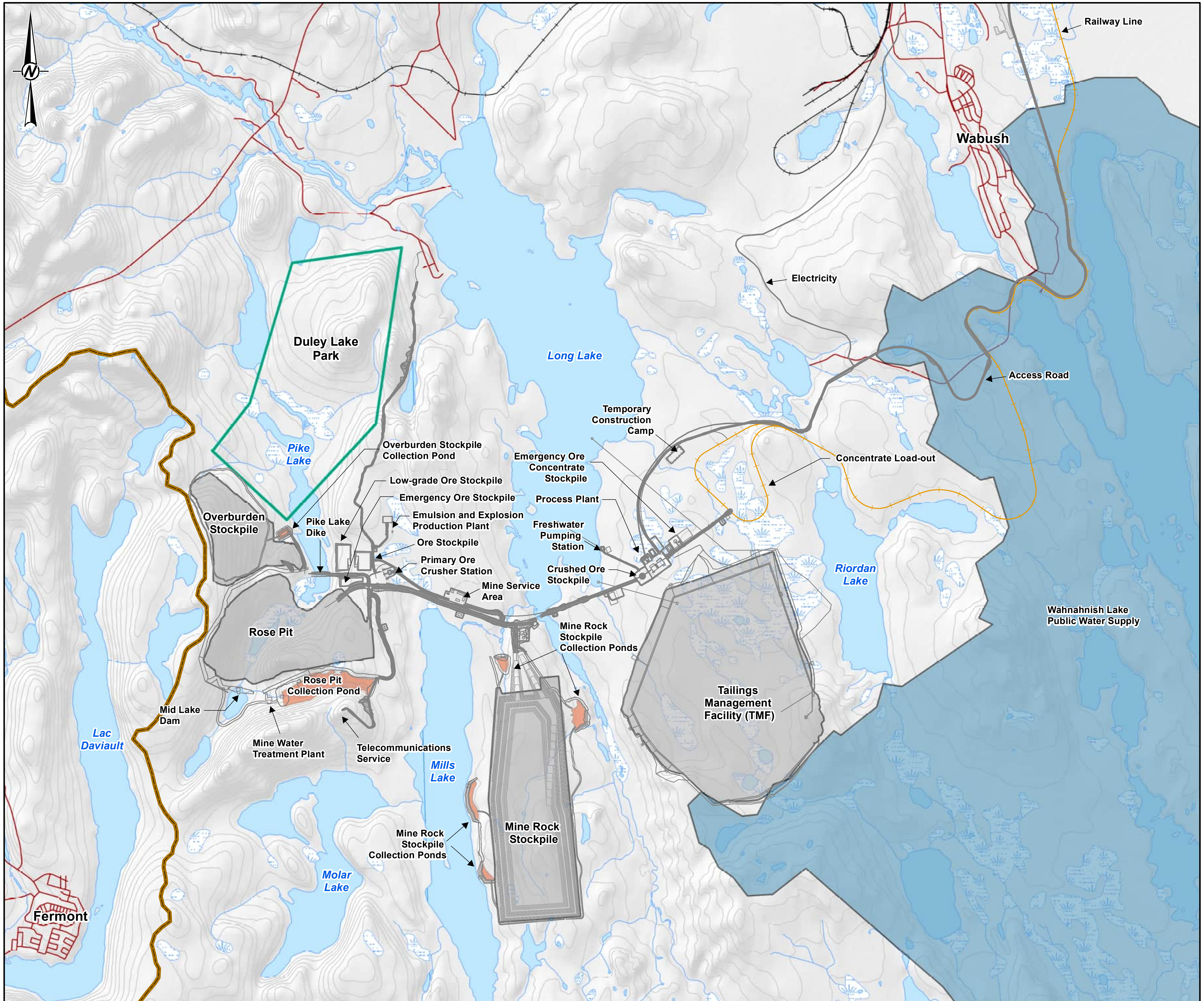
The Project was originally proposed by the Alderon Iron Ore Corporation (Alderon) and underwent a provincial and federal environmental impact assessment from 2011 to 2013, including a comprehensive baseline program that was completed in 2011 and 2012. The Project was released from the provincial and federal EA process in 2014. In 2021, Champion Iron Mines Ltd. (Champion) completed the acquisition of the Project from Alderon.

Champion is proposing several optimizations to the Project design proposed by Alderon through the previous Environmental Impact Study (EIS). These proposed optimizations include updates to the Project's water management strategy and modernization of the proposed ore handling, conveyance, and processing. Champion's objective for the Kami Project is to produce high purity (>67.5%) iron ore concentrate, which can be used as direct reduction pellet feed for electric arc furnaces in the green steel supply chain. Champion is planning to submit a Project Registration to the Newfoundland and Labrador Environmental Assessment Division of the Department of the Environment and Climate Change (the Department) in 2024.

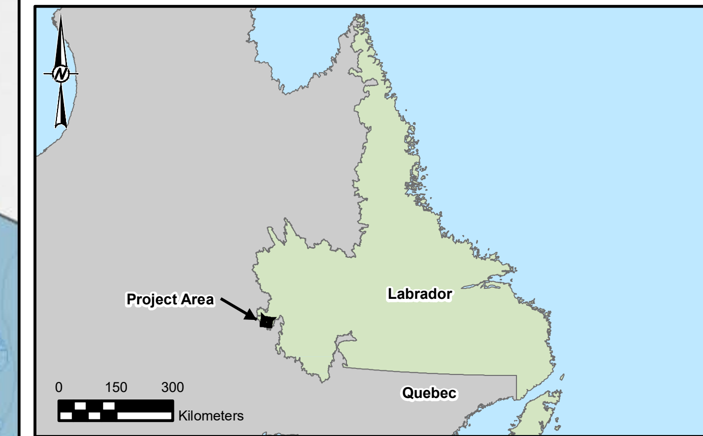
To support the Project Registration and assessment of effects from the revised Project design optimizations, Champion has commissioned the services of WSP Canada Inc. (WSP) to complete a comprehensive baseline field program that documents the existing natural and socio-economic environments in the anticipated area of the Project. The Ambient Air Quality Baseline Assessment (AAQBA) represents a component of the comprehensive baseline program and was undertaken to provide context from which Project environmental ambient air quality effects could be evaluated in the Project Registration.

Figure 1-1 outlines some of the main activities of the Project site including:

- Open pit (Rose Pit);
- Mine rock stockpile;
- Ore stockpiles (operational, low-grade and emergency);
- Tailings management facility;
- Overburden stockpile;
- Processing infrastructure including crushing and concentrating;
- Ancillary infrastructure to support the mine and process plant.



KEY MAP



SCALE 1:20,000,000

LEGEND

PROJECT DATA	BASEMAP INFORMATION
Proposed Infrastructure	Duley Lake Park
Proposed Railway	Existing Railway
Proposed Infrastructure	Existing Road
Proposed Sedimentation Pond	River/Stream
	Contour
	Bog/Wetland
	Waterbody
	Labrador/Quebec Boundary
	Public Water Supply

0 625 1,250 2,500
1:60,000 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT
CHAMPION IRON MINES LTD.

PROJECT
KAMI IRON ORE MINE PROJECT (KAMI PROJECT)
WABUSH, NL

TITLE
PROJECT LOCATION AND SITE LAYOUT

CONSULTANT

wsp

YYYY-MM-DD	2024-03-14
DESIGNED	----
PREPARED	####
REVIEWED	SPC
APPROVED	HJ

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	1-1

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PATH: E:\Kami\Project_Figures\MXD\General\TE23930010_GE_Footprint_March2024.mxd PRINTED ON: 2024-03-14 AT: 4:22:31 PM

1.1 Contaminants of Concern

As part of the main activities of the mining operations, it is expected that the following Contaminants of Concern (COC) will be PM emissions (dust) generated during mechanical disturbance of rock and soil materials, blasting and crushing, and wind erosion over stockpiles during development of the Project. Suspended dust (i.e., airborne PM) is expected from vehicular traffic volumes on haul roads. Airborne PM is often split into three categories based on particle size:

- Total particulate matter (TPM) – this category includes the largest particle size, airborne particles with an aerodynamic diameter less than 100 micrometres (µm).
- PM_{10} – a portion of the TPM with aerodynamic diameters of 10 µm or less is referred to as PM_{10}. The PM_{10}-sized particles are small enough to be inhaled into the upper respiratory tract (inhalable particulate).
- $PM_{2.5}$ – a portion of PM_{10} with an aerodynamic diameter of 2.5 µm or less is referred to as $PM_{2.5}$. This fine PM is small enough to be drawn into the lungs and are sometimes described as the respirable fraction of airborne particles (respirable particulate).

There will also be stationary and mobile fuel combustion sources associated with the Project, such as explosive detonation, haul trucks, material handling equipment, and power generation equipment which will produce airborne gaseous emissions. Carbon monoxide (CO) is an intermediate combustion product that forms when there is an incomplete reaction of CO to carbon dioxide (CO_2). Nitrogen dioxide (NO_2) emissions occur mainly from high-temperature combustion processes. Although most of the NO_X emissions are in the form of Nitric oxide (NO), NO will rapidly oxidize in the presence of ozone to form NO_2. Sulphur dioxide (SO_2) is formed when sulphur is present in fuel mixtures, which reacts with oxygen during the combustion process.

1.2 Regulatory Criteria and Guidelines

The AAQBA will be limited to the Project-related COC, which include nitrogen oxides (NOx as nitrogen dioxide, NO_2), SO_2, CO, TPM, PM_{10}, and $PM_{2.5}$. The predicted ground level concentrations from the Project will be determined through dispersion modelling, and compared to the relevant air quality limits and objectives. The Government of Newfoundland and Labrador lists the ambient air quality standards in Table I of Schedule A of the *Air Pollution Control Regulations, 2022* (O.C. 2022-072), under the *Environmental Protection Act*. For provincial permitting, facilities are expected to demonstrate compliance with the standards at the facility's administrative boundary.

The Government of Canada has set the Canadian Ambient Air Quality Standards (CAAQS), which are non-regulatory limits that can be used to facilitate air quality management on a regional scale and provide goals for ambient air quality that protect public health, the environment, or aesthetic properties of the environment. Table 1-1 provides a summary of the standards, applicable to the COC emissions from the Project.

Table 1-1: Standards Applicable to the Contaminants of Concern Emissions for the Project

Pollutant	Averaging Period	Newfoundland and Labrador Ambient Air Quality Standards[a]	Canadian Ambient Air Quality Standards[b]
NO_2	1 hour	213 ppb	60 ppb 42 ppb[c,d] (2025)
	24 hour	106 ppb	—
	Annual	53 ppb	17 ppb 12 ppb[e,d] (2025)
SO_2	1 hour	344 ppb	70 ppb 65 ppb[f,d] (2025)
	3 hour	229 ppb	—
	24 hour	115 ppb	—
	Annual	23 ppb	5.0 ppb 4.0 ppb[g,d] (2025)
CO	1 hour	30,582 ppb	—
	8 hour	13,107 ppb	—
TPM	24 hour	120 µg/m³	—
	Annual	60 µg/m³	—
PM_{10}	24 hour	50 µg/m³	—
$PM_{2.5}$	24 hour	25 µg/m³	27 µg/m³[h]
	Annual	8.8 µg/m³	8.8 µg/m³[i]

Notes:

(a) Government of Newfoundland and Labrador (O.C. 2022-072)

(b) CAAQS published in the Canada Gazette Volume 147, No. 21 – May 25, 2013.

(c) The 3-year average of the annual 98th percentile of the daily maximum 1-hour average concentrations of NO_2.

(d) The Canadian Ambient Air Quality Standard (CAAQS) is effective from 2025.

(e) The average over a single calendar year of all 1-hour average concentrations of NO_2.

(f) The 3-year average of the annual 99th percentile of the SO_2 daily maximum 1-hour average concentrations.

(g) The average over a single calendar year of all 1-hour average concentrations of SO_2.

(h) The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations of $PM_{2.5}$.

(i) The 3-year average of the annual average of the daily 24-hour average concentrations of $PM_{2.5}$.

2.0 RATIONALE AND OBJECTIVES

The objectives of the AAQBA are to quantify the background air quality in the Project area and nearby communities. A baseline data collection program was completed between 2011 and 2012 for the Kami Project; however, since the data is more than 10 years old, it was determined that additional data would be required to describe the current background concentrations for PM (TPM, PM10 and PM2.5) in the nearby communities. The baseline monitoring program focused on particulates because potential dust generated from the Project has been raised as a concern from nearby communities.

Local industries also operate ambient air quality monitoring stations within the vicinity of the Project. The Iron Ore Company of Canada operates three monitoring stations in Labrador City and Tacora Resources Inc. operates two stations in Wabush, NL. These stations are intended to monitor local effects from the respective mine sites. The Iron Ore Company of Canada station located on Hudson Drive in Labrador City, is considered a National Air Pollution Surveillance (NAPS) equivalent station for the purpose of generating hourly readings for the Air Quality Health Index (AQHI). The annual monitoring results from these stations are summarized in the Annual Ambient Air Monitoring Reports published by the Department.

The results from the AAQBA data characterization will be used to support the assessment of Project related effects from the Construction, Operations, and Closure phases of the Project.

3.0 STUDY AREA

3.1 Local Meteorology

Wind data measured at the NAV Canada weather station at the Wabush Airport (Climate ID: 8504176) was used to describe the prevailing winds for the Project area. The weather station is located approximately 12 km northeast of the Project.

Figure 3-1 shows the five-year (2018 to 2022) wind rose for the Wabush Airport outlining the wind speed in metres/second (m/s) and wind direction frequency. A second wind rose showing the July to September 2023 wind patterns is included as the summer conditions are generally associated with higher fugitive dust emissions and this period overlapped with the AAQBA period. The wind roses show limited variability between the annual (2018 to 2022) and July to September (2023) periods with the prevailing winds generally blowing from the south and west.

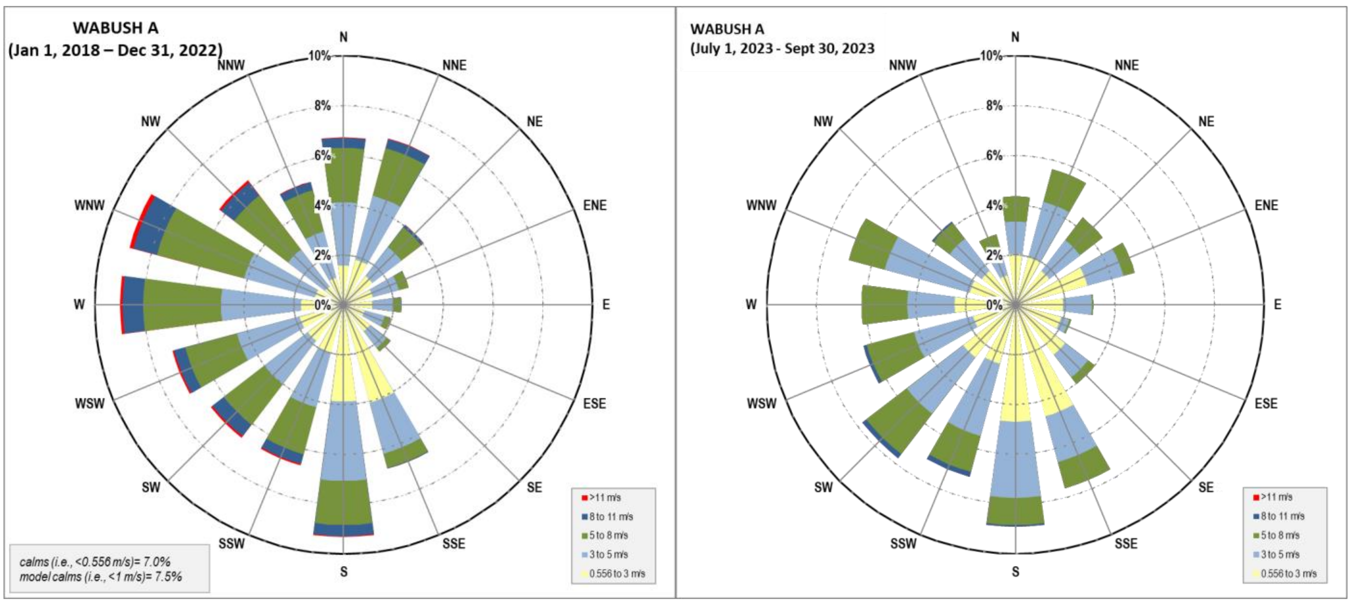
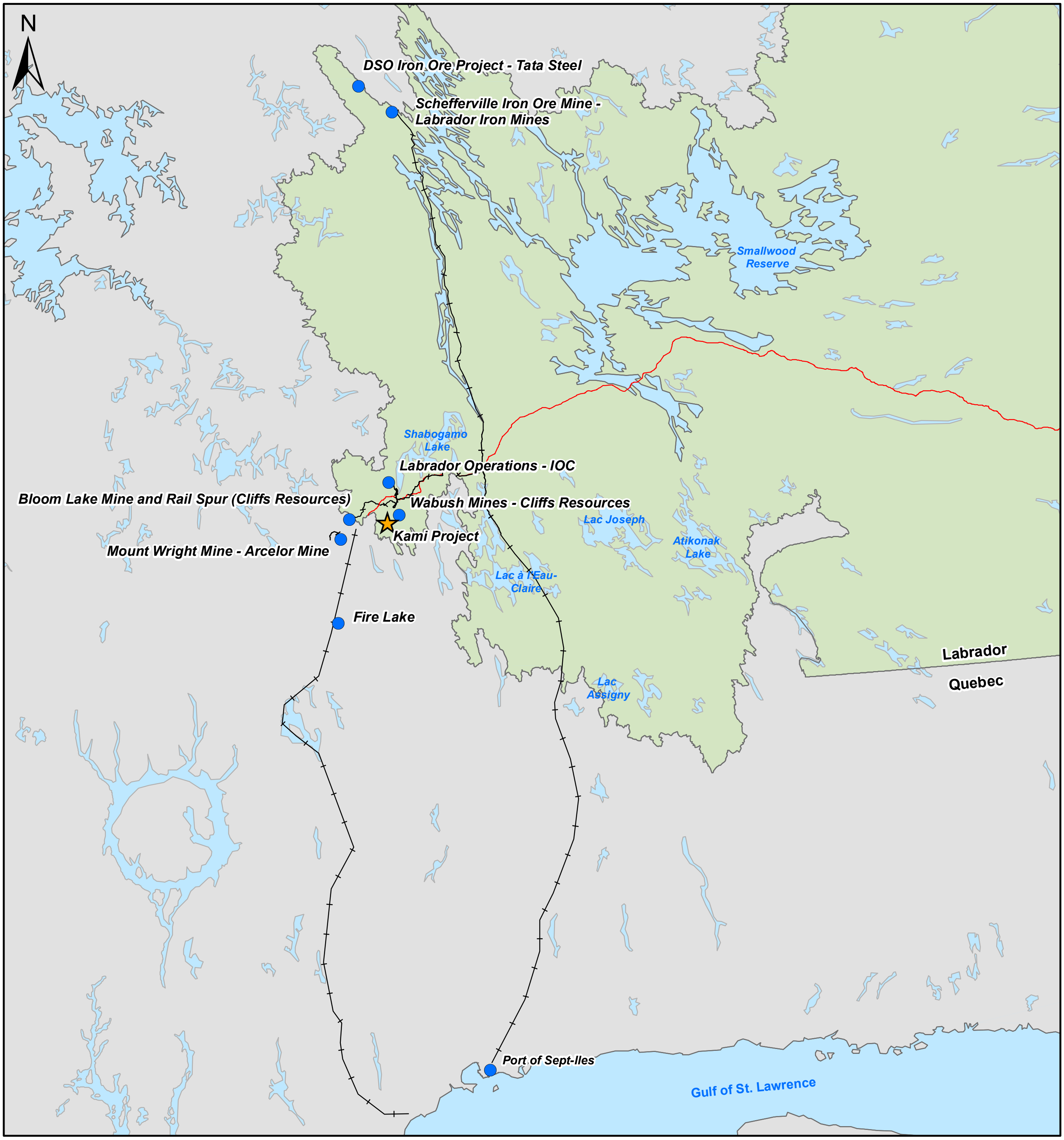


Figure 3-1: Wind Roses for the Wabush Airport

3.2 Existing Ambient Air Quality

Ambient air quality at the Project is influenced by natural and anthropogenic sources at the local and regional scales. Natural sources include, but are not limited to, pollen from vegetation during spring and summer months and air pollutants associated with forest fires. Anthropogenic sources include road traffic, construction, building heating, wind-blown particulate from exposed area sources, mining, power generation activities, and contributions from transboundary or long-range transport of air contaminants.

Figure 3-2 shows other mining projects that are located within the vicinity of the Kami Project. With respect to the Project, the main sources of air emission during construction and operations would include fugitive dusts and COC from fuel combustion.



LEGEND

- Kami Project Site
- Other Project Locations
- Railway
- Existing Road

0 28,500 57,000 114,000

1:2,975,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE PROJECT
WABUSH, NL

TITLE
OTHER MINING PROJECTS IN THE VICINITY OF THE KAMI PROJECT

CONSULTANT
wsp

YYYY-MM-DD	2023-12-08
DESIGNED	----
PREPARED	JA
REVIEWED	JT
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 3-2

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3.3 Ambient Air Quality Monitoring Program

The main activities for the Project, as described in Section 1, are located in Western Labrador approximately seven kilometres from the Town of Wabush, 10 kilometres from the Town of Labrador City, and five kilometres east of Ville de Fermont, Québec. There are a number of cabins located around the lakes adjacent to the Project area, particularly Long Lake, Riordan Lake, and Mills Lake. Duley Lake Provincial Park and the Duley Lake Provincial Nature Reserve are located north of the Project near Long Lake.

Three ambient air quality monitoring station locations were selected to maintain consistency with the air quality monitoring program completed in 2011 and 2012 for the Kami Project since the rationale for the initial site selection is still sound.

Fermont was selected as an air quality monitoring station location because of the proximity of the community to the proposed Project. Although the predominant winds for the region are not from the East, as shown on Figure 3-1, the community has raised concerns about potential dust impacts from the Project. In addition, background air quality data is not readily available for the community of Fermont. The air quality station was selected based on discussions held between WSP field staff and community members. The ski club was chosen because there was continuous power available, and the location was readily accessible and secure.

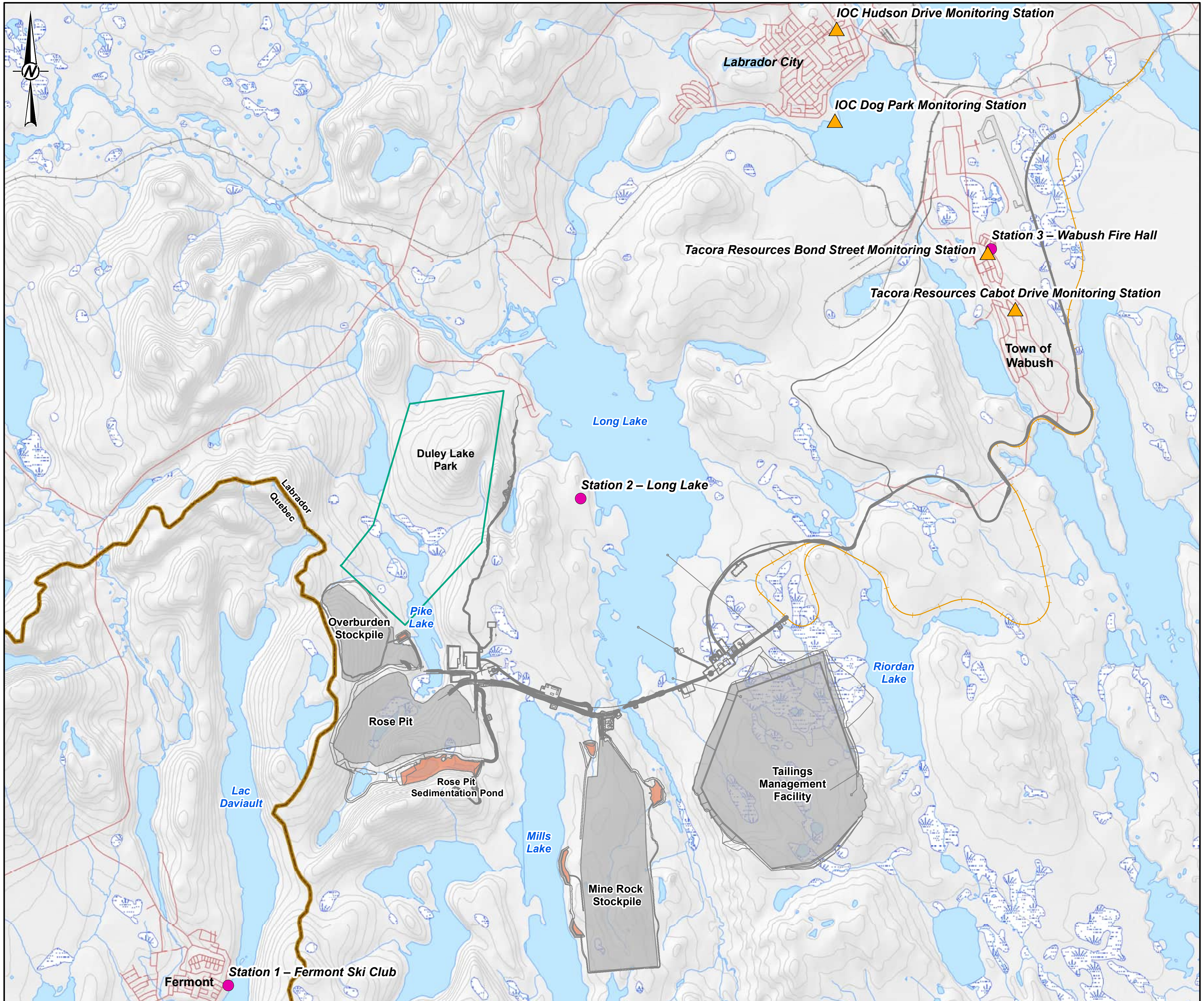
The station near Long Lake was moved further south from the location selected for the 2011 and 2012 monitoring program, because the previous station location had been repurposed as a campground. As noted in the previous baseline report, the Long Lake site presented a challenge (Stassinu Stantec 2012). The air quality monitoring station was located away from the main unpaved road, which made the accessibility challenging. The site also did not have a continuous power supply, so the monitoring station was set up using a power system with 12V batteries, which maintain their charge through solar panels.

The Wabush monitoring station location was selected because it is in the predominant downwind direction from the Project. Discussions were held with local community members to identify an ideal station siting. The fire hall provided a secure and easily accessible monitoring location and a continuous power source.

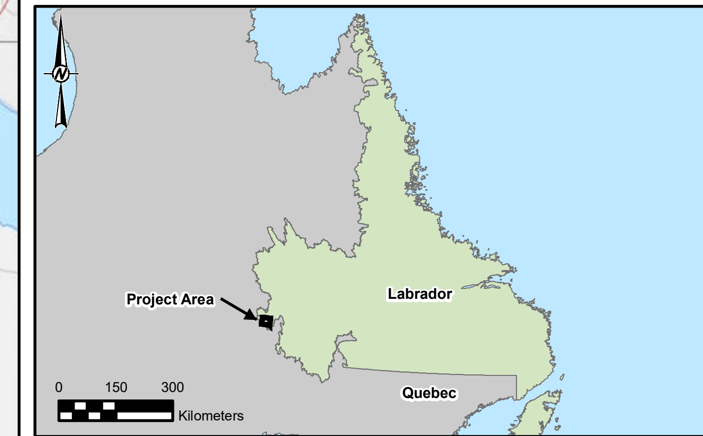
Table 3-1 provides a summary of the monitor locations from the 2011 to 2012 and the 2023 baseline sampling programs. The locations of the ambient air quality monitors from the 2023 baseline sampling program are shown on Figure 3-3.

Table 3-1: Ambient Air Quality Monitoring Programs

Station Location	2011-2012 Baseline Air Quality Sampling Program			2023 Baseline Air Quality Sampling Program		
	Easting (m)	Northing (m)	Description	Easting (m)	Northing (m)	Description
Fermont, Québec	629449	5851022	Residential property	629479	5851009	Ski club
Long Lake, Labrador	634479	5862308	Recreational area near Duley Lake	635823	5859779	Remote area adjacent to Long Lake
Wabush, Labrador	643272	5863149	Residential property	643215	5864276	Fire hall



KEY MAP



SCALE 1:20,000,000

LEGEND

- Baseline Air Quality Monitoring Stations
- Air Quality Monitoring Stations

PROJECT DATA

- Proposed Infrastructure
- Proposed Railway
- Proposed Infrastructure
- Proposed Sedimentation Pond

OTHER MAP DATA

- Duley Lake Park

BASEMAP INFORMATION

- Existing Railway
- Roads
- Watercourse
- Contour
- Waterbody
- Bog/Wetland
- Labrador/Quebec Boundary

0 700 1,400 2,800

1:69,781 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - NEWFOUNDLAND AND LABRADOR
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE PROJECT
WABUSH, NL

TITLE
BASELINE AIR QUALITY MONITORING LOCATIONS

CONSULTANT

YYYY-MM-DD	2024-03-21
DESIGNED	----
PREPARED	JMA
REVIEWED	JT
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 3-3

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4.0 METHODS

4.1 Particulate Monitoring Equipment

An Aeroqual Particle Profiler "near-reference", demonstrating good precision and accuracy in the field when calibrated against reference methods, was used to collect real-time continuous TPM, PM_{10} and $PM_{2.5}$ data for the AAQBA. The specifications of the unit are outlined in Table 4-1.

Aeroqual Dust Sentry Profiler's (DS pro) were used at monitoring locations 1 (Fermont Ski Club), 2 (Long Lake) and 3 (Wabush Fire Hall). The DS Pro units collected PM data continuously and offered two-way remote connectivity, which was considered an asset when selecting the air quality monitoring station locations due to the relatively remote nature of the Project. The units were fitted with an inlet heater to help mitigate bias associated with high relative humidity (RH). The manufacturer has tested the units down to -40°C and concluded that the units operated adequately down to -40°C, albeit for short periods.

Table 4-1: Specification of the Aeroqual DS Pro Unit

Particle Module	Sizes	Range	Resolution	Lower Detectable Limit (2s)	Accuracy
DS Profiler (Optical Particle Counter)	$PM_{2.5}$, PM_{10}, and TPM	$PM_{2.5}$ 2000 µg/m^3 PM_{10} 5000 µg/m^3 TSP 5000 µg/m^3	0.1 µg/m$_3$	<1 µg/m$_3$	+/- (5 µg/m^3 +15% of reading)

4.2 Data Collection

Total Particulate Matter (TPM), PM_{10} and $PM_{2.5}$ monitoring was recorded on 1-min average concentrations utilizing internally measured flow rate, ambient temperature, ambient pressure, and relative humidity data. These data were averaged to obtain 1-hour averages, rolling 24-hour average or daily average (midnight to midnight) concentrations for comparison to the applicable regulatory criteria.

The DS pro monitors utilize a forward laser light scatter nephelometer system to measure ambient particulate levels. This methodology is sensitive to ambient fog, which results in the measurements over-stating ambient PM concentrations during these conditions.

Instrumentation issues arose during the baseline monitoring period for the air quality monitoring station at Long Lake (Station 2). During the baseline program, the DS Pro unit stopped operating due to a lack of electrical power. The station was supported by battery/solar panel system and during the period of August 1 to September 19, 2023, there was not enough solar input to supply charge to the batteries. Consequentially no air quality data was collected during this sampling period at Station 2.

4.3 Quality Assurance/Quality Control Procedures

The AAQBA was carried out in accordance with defined quality assurance/quality control (QA/QC) protocols to ensure that the basic elements outlined in the ambient air quality monitoring guidance documentation were adhered to. These procedures included:

- Strategic site selection to minimize interferences and obstacles that may affect airflow;

- Sampling system requirements;
- Site and analyzer operation;
- Frequency of sampler flow checks and equipment calibrations;
- Performance and system audits;
- Data validation, editing, and reporting;
- Documentation of field notes; and
- Personnel training.

Field staff were appropriately trained with the deployment, installation and operation of the air monitoring equipment, including safe transport of the equipment.

Data validation for the continuous monitors was included in the routine data QA/QC checks and regular monitoring of concentrations and investigations into suspect data was undertaken as applicable. The DS Pro, demonstrated good precision and accuracy in the field, and was calibrated by the manufacturer against reference methods prior to field deployment.

5.0 STUDY RESULTS

The ambient air quality monitoring stations for PM measurements, were deployed within the vicinity of the Project area, as described in Section 3.3, from July 26 to September 17, 2023, to establish baseline levels for local air quality. This monitoring period was prior to the commencement of any construction activities associated with the Kami Project. WSP did not undertake monitoring for SO_2 and NO_2, since concentrations are measured at the ambient air quality monitoring stations in Labrador and Wabush. The 2023 monitoring data for June through August was provided by the Department and the 2022 monitoring results were summarized in the Annual Ambient Air Monitoring Reports prepared by the Department. Measured SO_2 and NO_2 data were not yet available for the month of September 2023, when the data analysis was completed. The ambient air quality monitoring stations located in the vicinity of the Kami Project do not monitor for CO; therefore, baseline CO concentrations are not included in the summary below.

During the baseline sampling period, the Department noted that forest fires across the province of Newfoundland and Labrador impaired the ambient air quality in the region. The prevailing winds during this time, for the most part, did not bring significant smoke from the fires in the direction of the air quality monitoring stations and elevated COC levels were not obvious in the collected data; however, it is recognized that COC levels in the area may have been elevated during this time.

Sections 5.1 to 5.3 provide a summary of tabulated concentrations of TPM, PM_{10}, $PM_{2.5}$, SO_2 and NO_2 which will form the baseline air quality for the assessment of Project effects.

5.1 Particulate Matter

5.1.1 Monitoring Results

Ambient TPM, PM_{10} and $PM_{2.5}$ concentrations were measured continuously for the July 26 to September 17, 2023 sampling period at the Fermont, QC and Wabush, NL stations. A summary of measured maximum, and daily average for the particulate measurements over the monitoring period is presented in Table 5-1.

The maximum measured rolling 24-hour average PM_{10} concentrations at the Fermont and Wabush stations is 25 $\mu g/m^3$. The maximum measured daily average of $PM_{2.5}$ was measured in September 2023 at the Fermont and Wabush stations. The daily maximum concentration of TPM was 27 $\mu g/m^3$ and 28 $\mu g/m^3$ for Fermont and Wabush, respectively. The measured particulate concentrations during the sampling period are below their respective 24-hour Newfoundland and Labrador ambient air quality (NL AAQ) standards. Figure 5-1 and Figure 5-2 present the average 24-hour concentrations for particulates measured during the sampling period.

Table 5-1: Summary of Ambient PM Monitoring Data

Year	Month	Sample Location	# Valid Days	% Valid Days	24 Hour Average (µg/m³)			Daily Maximum (µg/m³)			Regulatory Exceedances (%)		
					$PM_{2.5}$	PM_{10}	TPM	$PM_{2.5}$	PM_{10}	TPM	$PM_{2.5}$ (>25)	PM_{10} (>50)	TPM (>120)
2023	July	Fermont	3	10%	2	2	3	2	2	3	0%	0%	0%
	August		31	100%	5	5	7	11	12	13	0%	0%	0%
	September		19	100%	16	17	18	23	25	27	0%	0%	0%
2023	July	Wabush	4	13%	4	6	8	5	7	10	0%	0%	0%
	August		31	100%	6	7	10	16	18	20	0%	0%	0%
	September		18	95%	18	20	22	23	25	28	0%	0%	0%

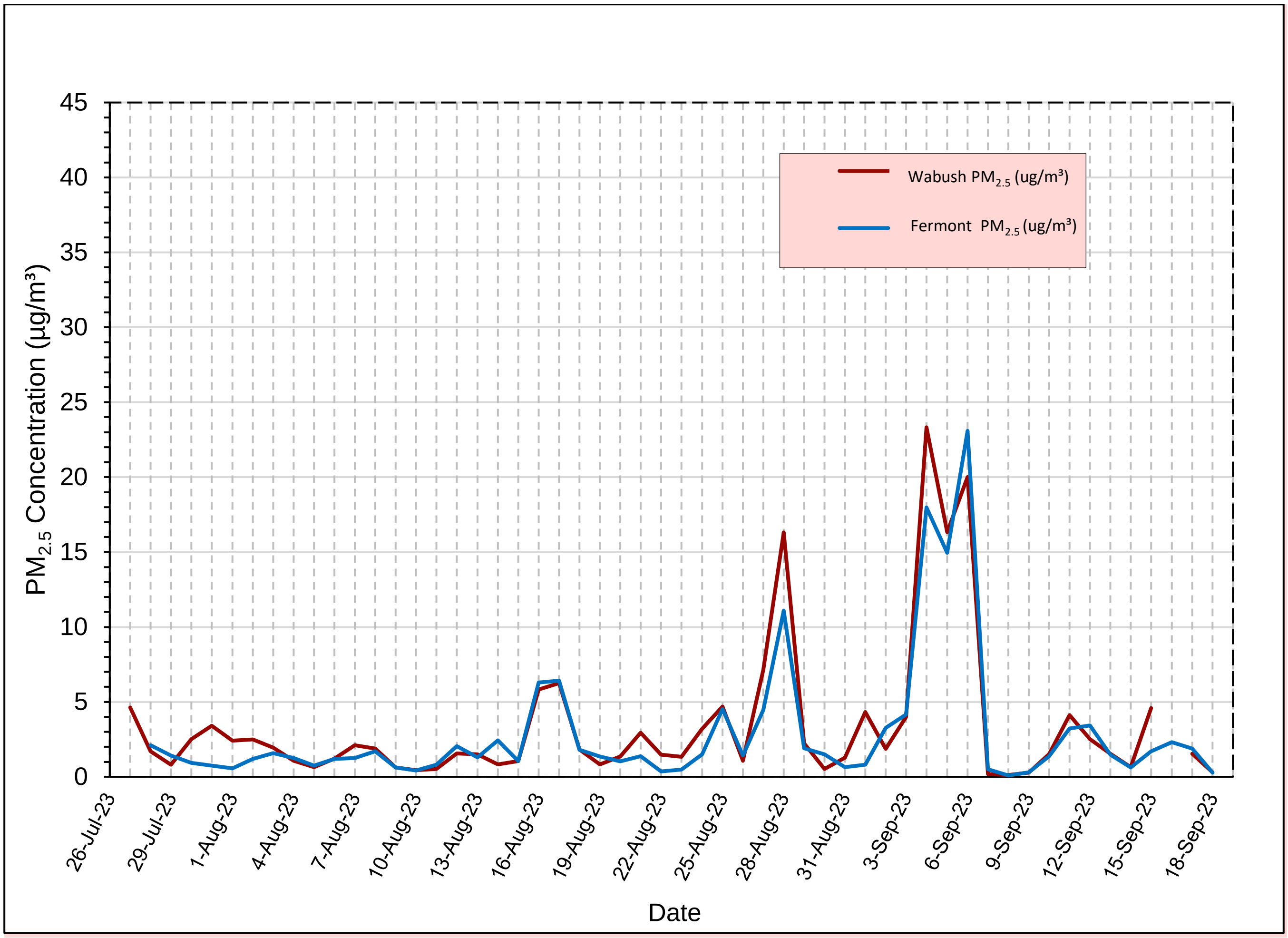

Figure 5-1: Average $PM_{2.5}$ 24-Hour Concentration During the 2023 Monitoring Program

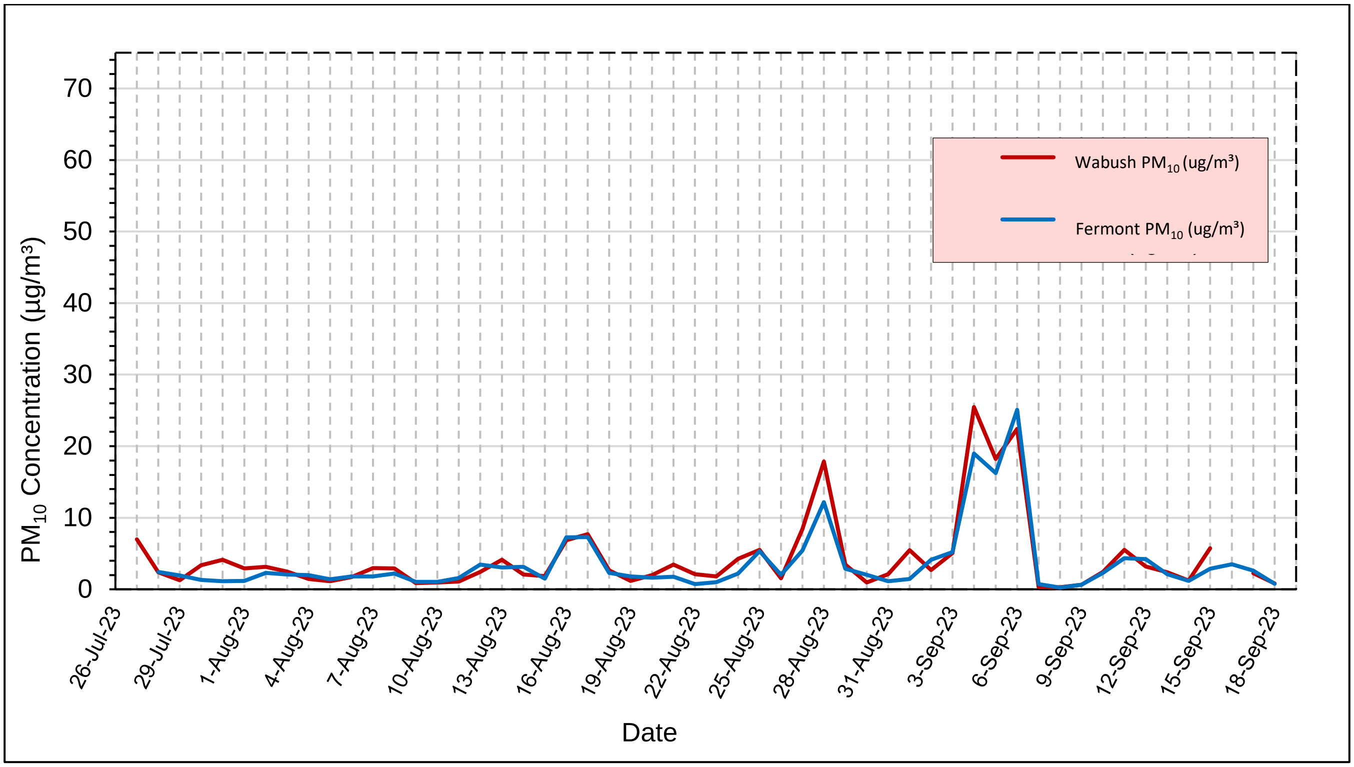

Figure 5-2: Average PM_{10} 24-Hour Concentration During the 2023 Monitoring Program

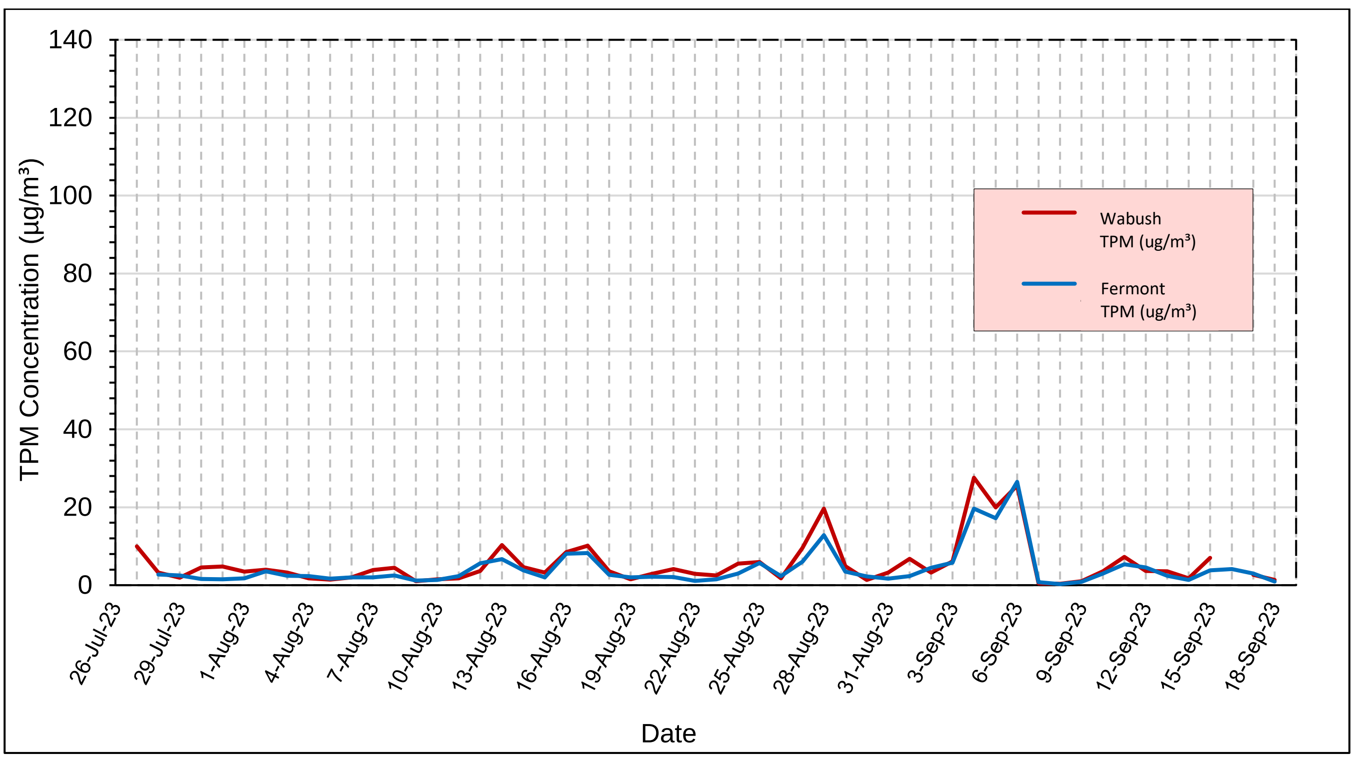

Figure 5-3: Average TPM 24-Hour Concentration During the 2023 Monitoring Program

5.2 Sulphur Dioxide

5.2.1 Ambient Monitoring Data

Ambient SO_2 concentrations were measured continuously at the monitoring networks operated by the Iron Ore Company of Canada and Tacora Resources Inc. Data from these motioning stations were provided by the Department for the sampling duration of approximately 90 days (June through August 2023) which overlapped with the period the particulate monitors were deployed. Following a review of the data from these stations, the station operated by the Iron Ore Company of Canada located at Hudson Drive (Firehall) in Labrador City, was selected as the most representative location. A summary of measured maximum, and daily average for the SO_2 measurements over the 90-day period is presented in Table 5-2.

The maximum measured rolling average and maximum measured daily average for SO_2 concentration are below the 1-hour, 3-hour and 24-hour NL AAQ standards. **Error! Reference source not found.** shows the average 24-hour concentration of SO_2 measured between June 2023 and August 2023.

Table 5-2: Summary of Ambient SO_2 Monitoring Data - Labrador City (IOCC Firehall)

Year	Month	# Valid Days	%Valid Days	24 Hour Average	Maximum (ppb)			Regulatory Exceedances (%)		
				SO_2 (ppb)	1-Hour	3-Hour	24-Hour	1-Hour (>344)	3-Hour (>229)	24-Hour (>115)
2023	June	26	87%	0.59	21.88	14.52	4.04	0%	0%	0%
	July	31	100%	0.27	9.29	6.28	1.51	0%	0%	0%
	August	31	100%	0.24	8.71	6.65	1.52	0%	0%	0%

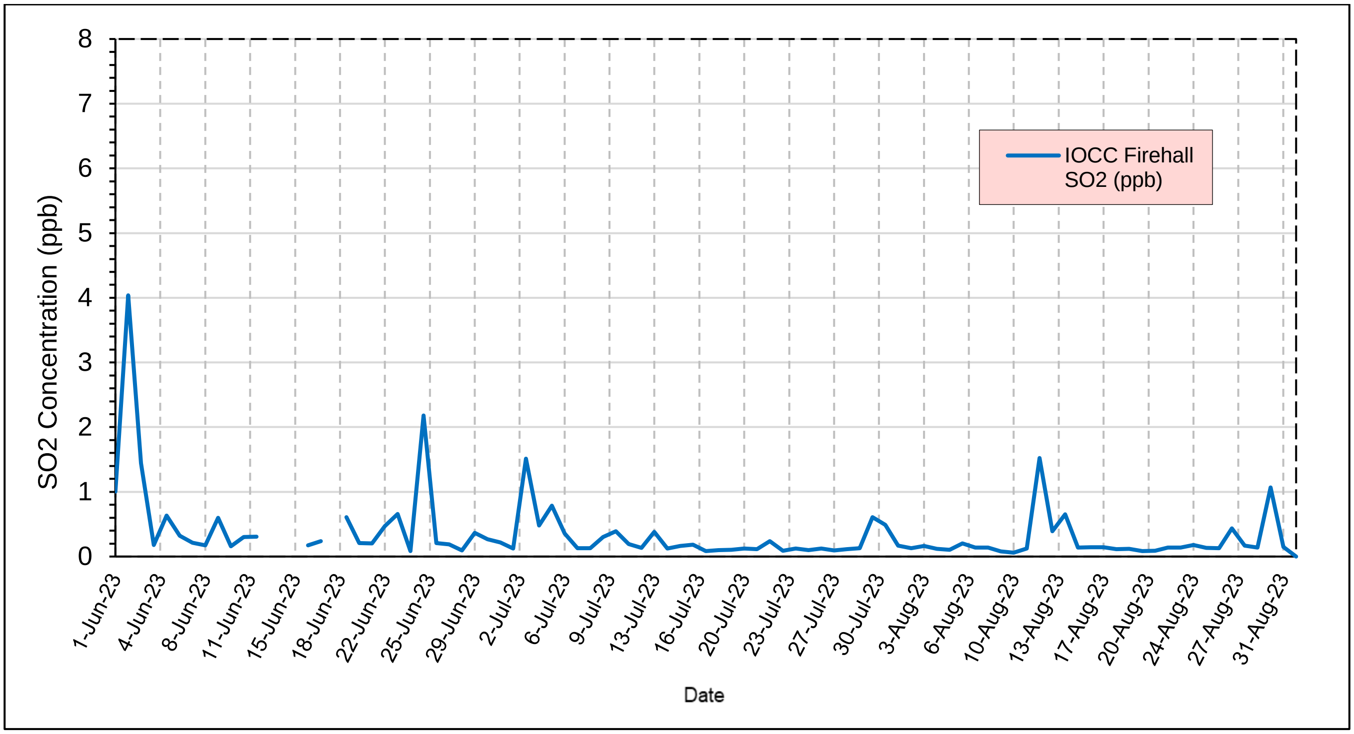

Figure 5-4: Average SO_2 24-Hour Concentration from June 2023 to August 2023

5.2.2 Annual Monitoring Report

The maximum one-hour, three-hour and 24-hour concentrations of SO_2 measured between June and August 2022 are 32.8, 20.8, and 5.9 ppb, respectively (Ministry 2023). These were measured at the Hudson Drive station located in Labrador City. The 2022 concentrations are slightly higher than the 2023 concentrations shown in Table 5-2.

5.3 Nitrogen Oxide Measurements

5.3.1 Ambient Monitoring Data

Ambient NO_2 concentrations were measured continuously at the monitoring networks operated by the Iron Ore Company of Canada and Tacora Resources. Data from these motioning stations was provided by the Department for the sampling duration of approximately 90 days (June 2023 through August 2023) which overlapped with the period the particulate monitors were deployed. Following a review of the data from these stations, the station operated by the Iron Ore Company of Canada located at Hudson Drive (Firehall) in Labrador City, was selected as the most representative location. A summary of measured maximum concentrations and daily average concentrations for NO_2 over the monitoring period is presented in Table 5-3.

Figure 5-5 shows the average 24-hour concentration of NO_2 measured between June and August 2023 at the Iron Ore Company of Canada ambient air quality monitoring station located at the Firehall.

The maximum measured rolling average and maximum measured daily average for NO_2 concentration are below the one-hour and 24-hour NL AAQ standards.

Table 5-3: Summary of Ambient NO_2 Monitoring Data - Labrador City (IOCC Firehall)

Year	Month	# Valid Days	%Valid Days	24 Hour Average	Maximum		Regulatory Exceedances (%)	
				NO_2 (ppb)	1-Hour	24-Hour	1-Hour (>213)	24-Hour (>106)
2023	June	28	93%	1.92	14.04	4.36	0%	0%
	July	31	100%	1.49	11.95	2.96	0%	0%
	August	31	100%	1.30	15.56	2.20	0%	0%

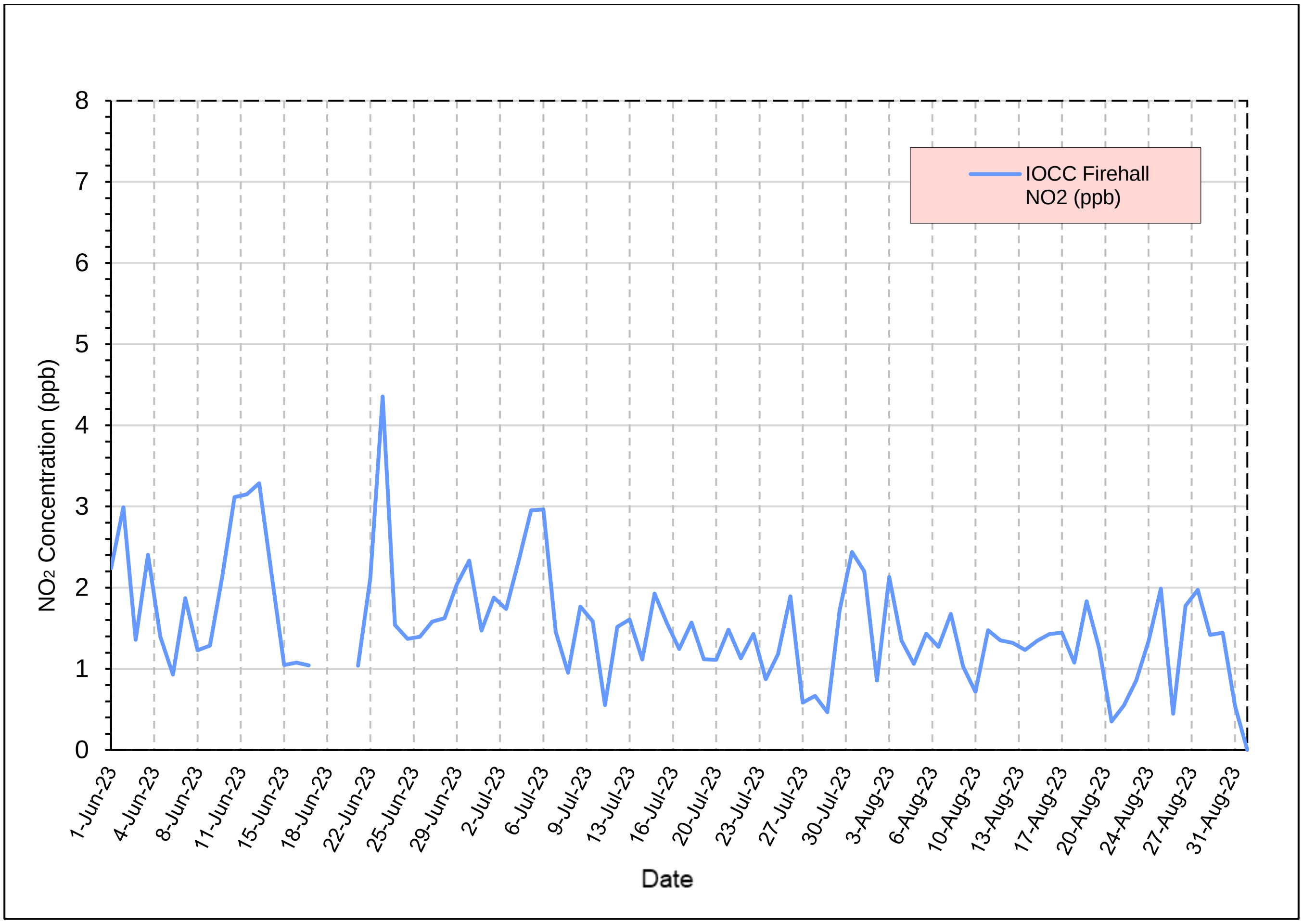

Figure 5-5: Average NO2 24-Hour Concentration June 2023 to August 2023

5.3.2 Ambient Monitoring Report

The maximum one-hour and 24-hour concentrations of NO_2, measured between June and August 2022, are 19.4 and 6.3 ppb, respectively (Ministry 2023). These were measured at the Hudson Drive station located in Labrador City. The 2022 concentrations are slightly higher than the 2023 concentrations shown in Table 5-3.

6.0 KEY FINDINGS

An ambient air monitoring and sampling program was undertaken within the vicinity of the proposed Project site. The prime objectives of the program are to provide updated information of the environmental conditions of the proposed site and to quantify the air quality in the Project area prior to commencement of the Project. The results of the monitoring program are expected to feed into the air quality assessment for the EIS.

The baseline monitoring program focussed on particulates because potential dust generated from the Project has been raised as a concern from nearby communities. The air quality monitoring stations for PM were deployed within three communities within the vicinity of the Project area in from July 26 to September 18, 2023.. Overall, there were no exceedances of the TPM, PM10 and PM2.5 measured during the sampling period.

Measured SO_2 and NO_2 concentrations were obtained from the Department for the period of June through August 2023 which overlapped with the period that the PM monitors were deployed. Following a review of the data from these stations, the station operated by the Iron Ore Company of Canada located at Hudson Drive (Firehall) in Labrador City, was selected as the most representative location. The maximum measured rolling average and maximum measured daily averages were below the NL AAQ standards. These results were compared to the maximum measured concentrations in June through August 2022 in the 2022 Annual Ambient Air Monitoring Reports published by the Department. It was found that the 2022 measured concentrations are slightly higher than then 2023 values. The stations operated by local industry in the vicinity of the Kami Project do not monitor for CO; therefore, baseline monitoring data for CO concentrations was not included in the report

Signature Page

WSP Canada Inc.

Julia Trautmann, M.Sc.
Senior Air Quality Scientist

Roy Sabino, P.Eng.
Lead Senior Air Quality Engineer

JAT/RS

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wsp.com

APPENDIX G

Terrain and Soils Baseline Report

REPORT

Terrain and Soils Baseline Report

Kami Iron Ore Mine Project

Submitted to:

Champion Iron Mines Ltd.
1155 René-Lévesque Blvd. West
Suite 3300
Montréal, QC H3B 3X7

Submitted by:

WSP Canada Inc.
25 York St.
Suite 700
Toronto, ON M5J 2V5

April 2024

Distribution List

Champion Iron Mines Ltd.

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ACRONYMS AND ABBREVIATIONS

Acronym or Abbreviation	Description
DEM	Digital Elevation Model
EIS	Environmental Impact Statement
GPS	Global Positioning System
LSA	Local study area
RSA	Regional study area
RUSLEFAC	Revised Universal Soil Loss Equation for Application in Canada
SSA	Site study area
SMU	Soil Management Unit
WSP	WSP Canada Inc.

UNITS OF MEASURE

Acronym or Abbreviation	Description
cm	centimetre
ha	Hectare
km	Kilometre
M	Metre
%	Percent

Executive Summary

The Kami Local Study Area (LSA) overlies rocks from the Paleoproterozoic Era.

Surficial materials in the Kami LSA are dominated by till (moraine) occupying over 75% of the LSA and organic accumulations occupying approximately 14.6% of the LSA. The majority (approximately 98%) of the LSA is mapped as stable terrain (Class I, II, and III), with minor areas (1.2%) mapped as potentially unstable ([Class IV] or 46.5 ha,), and 1.4% mapped as unstable (Class V).

Topography is relatively planar in most areas of the LSA with inclined and rolling landscapes with slopes between 10% and 20% grade found on slopes adjacent to lakes and fluvial systems and steep slopes (up to 97%) found in association with bedrock outcrops.

Soils in the Kami LSA are generally well to moderately well drained Brunisols and Podzols. There are some areas of very poorly drained areas associated with Organic soils. Reclamation suitability for soils in the LSA is generally classified as unsuitable due to very low pH values (<3.5) in the Ae horizons or because of very high coarse fragment contents. Mineral soils in the LSA were generally at a moderate risk for wind erosion, very low risk for water erosion, and low risk for soil compaction. Organic soils were not rated for reclamation suitability or erosion and compaction risk as the rating systems are not designed to include Organic soils. Approximately 64.0% of the LSA is considered to be well drained, 0.1% is considered to be very rapidly drained, and 8.1% is mapped as having imperfect to poor drainage where water tables fluctuate, or inundation or seepage is present. Very poor drainage associated with areas of organic accumulation account for 15.5% of the LSA.

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TABLES

FIGURES

APPENDICES

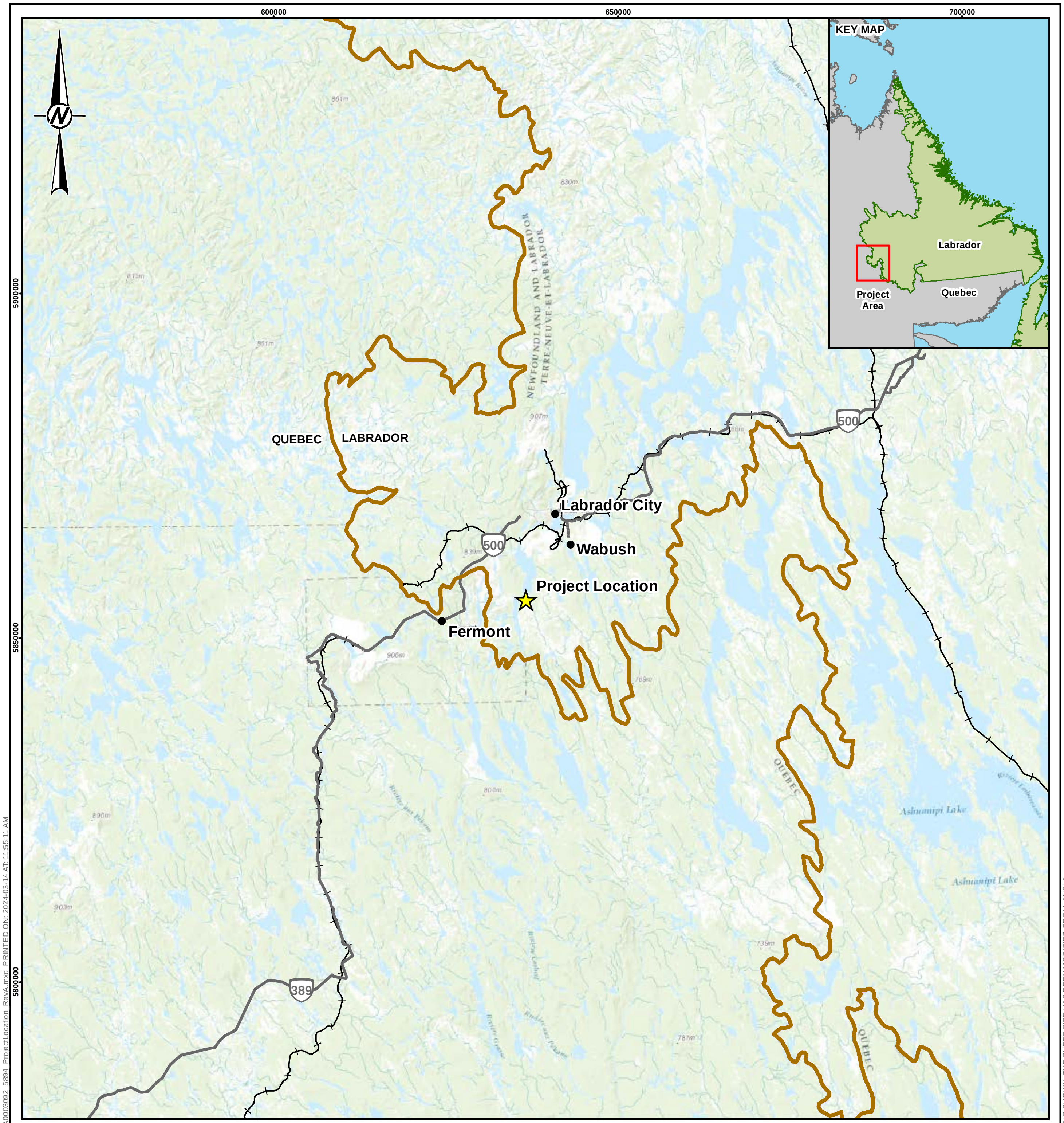
1.0 INTRODUCTION

The Kamistiatusset (Kami) Iron Ore Mine Project (the Project) is a proposed iron ore mine in Newfoundland and Labrador. The Project site is located approximately seven kilometres southwest of the Town of Wabush, ten kilometres south of the Town of Labrador City, and five kilometres northeast of Ville de Fermont, Québec (Figure 1-1).

The Project was originally proposed by the Alderon Iron Ore Corporation (Alderon) and underwent a provincial and federal environmental impact assessment from 2011 to 2013, including a comprehensive baseline program that was completed in 2011 and 2012. The Project was released from the provincial and federal EA process in 2014. In 2021, Champion Iron Mines Ltd. (Champion) completed the acquisition of the Project from Alderon.

Champion is proposing several optimizations to the Project design proposed by Alderon through the previous EIS. These proposed optimizations include improvements to the Project's water management strategy and modernization of the proposed ore handling, conveyance, and processing. Champion's objective for the Kami Project is to produce high purity (>67.5%) iron ore concentrate, which can be used as direct reduction pellet feed for electric arc furnaces in the green steel supply chain. Champion is planning to submit a Project Registration to the Newfoundland and Labrador Environmental Assessment Division of the Department of Environment and Climate Change in 2024.

To support the Project Registration and assessment of effects from the revised Project design optimizations, Champion has commissioned the services of WSP Canada Inc. (WSP) to complete a comprehensive baseline field program that documents the existing natural and socio-economic environments in the anticipated area of the Project. The terrain and soils baseline report represents a component of the comprehensive baseline program and was undertaken to provide context from which terrain and soil effects could be evaluated. WSP also reviewed the 2012 EIS Guidelines (Government of Canada 2012) to understand potential regulatory expectations and aid in the development of the terrain and soils baseline program.



LEGEND

- ★ PROJECT LOCATION
- ● POPULATED PLACE
- HIGHWAY
- RAILROAD
- LABRADOR/QUEBEC BOUNDARY

DRAFT

0 15 30

1:800,000 KILOMETRES

REFERENCE(S)

DIGITAL BASE DATA MAY BE OBTAINED FROM GEOGRATIS, © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED. BASES TOPOGRAPHIC MAP FROM ESRI AND IT'S LICENSORS.
PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
PROJECT LOCATION

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	LM
PREPARED	AB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	1-1

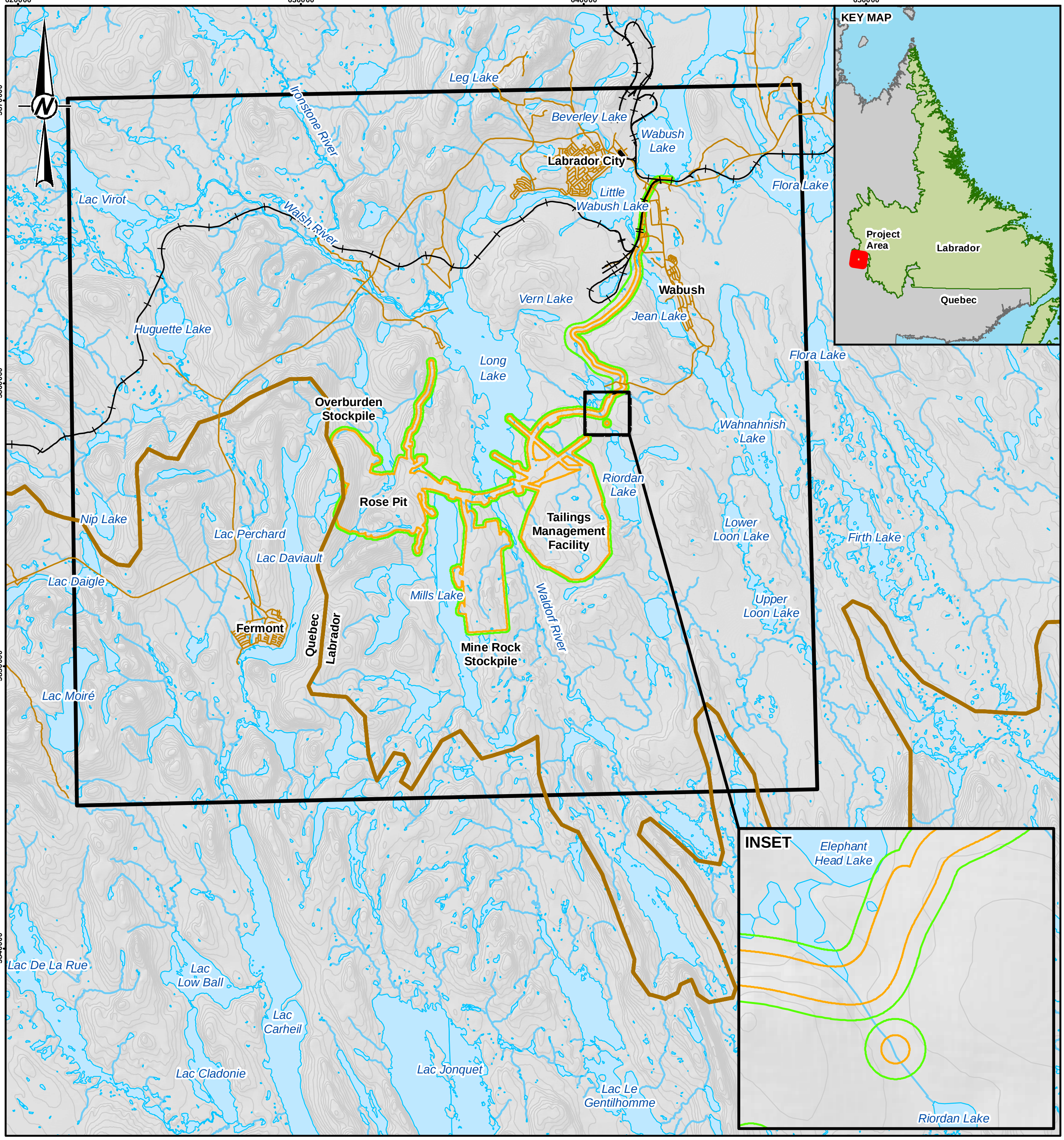
2.0 STUDY AREAS

The baseline conditions for terrain and soils are documented within three defined study areas for the Project. Baseline study areas were defined to delineate the spatial extent in which baseline information and data are collected and compiled with sufficient detail to enable the characterization of existing environmental conditions for terrain and soils within the local and regional vicinity of the Kami Project.

The Site Study Area (SSA) is the area of potential direct disturbance (i.e., location of proposed infrastructure) and is the area where most of the direct effects from the proposed Project are likely to occur. It is represented by the proposed Project footprint and is approximately 2,681 hectares (ha). The SSA was based on the Project design information available at the time of planning for the field program (Figure 2-1).

The Local Study Area (LSA) includes the SSA plus a 100-meter buffer for a total of approximately 3,869 ha (Figure 2-1). The extent of the LSA was designed to allow for the documentation of existing conditions and to provide context for assessing the combined potential direct and indirect effects of the Project on terrain and soils. The outer boundary of the LSA represents the furthest extent to which Project effects on soils and terrain are likely to occur.

The Regional Study Area (RSA) includes the SSA, LSA, and additional areas where cumulative effects of the Project could potentially occur depending on physical and biological conditions and the types and location of other past, present, and reasonably foreseeable projects. The RSA from the 2012 Environmental Impact Statement (EIS) (Alderon 2012) was used, however it is only discussed in terms of background bedrock geology and surficial geology in this report, as no measurable ecological effects on terrain and soils are predicted from direct physical disturbance beyond the LSA.



LEGEND

- CONTOUR (40m INTERVAL)
- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA
- REGIONAL STUDY AREA
- LABRADOR/QUEBEC BOUNDARY
- WATERBODY

DRAFT

0 4 8

1:200,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
KAMI IRON ORE MINE PROJECT STUDY AREAS

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	LM
PREPARED	AB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	2-1

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3.0 RATIONALE AND OBJECTIVES

WSP was retained to collect terrain and soil baseline data in support of the Kami Project Registration. The baseline program was designed to meet the requirements outlines in the 2012 EIS Guidelines (Government of Canada 2012) for the Kami Project, which specified that a description of unique landforms, terrain stability, and a description of soil characteristics to determine their sensitivity to erosion and their suitability for supporting revegetation was required. To meet these requirements, detailed terrain and soil mapping and analysis was completed across the LSA. Field data was also collected to support the baseline assessment (Section 4.2 and 6.2.1). Therefore, the objectives of the terrain and soils baseline program are to:

- Provide an updated baseline desktop study for landform (terrain) and soil characterization within the LSA.
- Provide baseline terrain mapping at a 1:5,000 scale within the SSA, 1:20,00 scale in the LSA and the largest scale, publicly available bedrock and surficial geology mapping within the RSA.
- Provide soil mapping at a 1:5,000 scale in the SSA, 1:20,000 scale in the LSA.
- Provide relevant baseline reporting and summaries on terrain, soil quality, and soil quantity.

4.0 METHODS

4.1 Desktop Analysis

4.1.1 Background Information Sources

Existing data were used to support the characterization of baseline conditions in the SSA, LSA, and RSA. These data were gathered from the Province of Newfoundland and Labrador, from available in-house data at WSP, and published maps and reports from a variety of sources. For the purpose of characterizing the terrain and soil conditions within the SSA, LSA, and RSA, the following reports and maps were included in the compilation and review of existing information:

- Glacial landforms and deposits, Labrador, Newfoundland and eastern Quebec (GSC 1992);
- 1982 Exploration Program in the Labrador City Area. Report on Block No. 72 with appended reports on Blocks No. 51-59, 62, 64-67, 69-71, 73-77 and 83-91 (Labrador Mining and Exploration Company Limited 1982);
- 2013 Geotechnical Site Investigation and Subsurface Details (WorleyParsons, 2014);
- 2012 Site Wide Geotechnical Program – Geotechnical Investigation Field and Laboratory Results (Volume 1) (Stantec 2013a);
- 2012 Site Wide Geotechnical Program – Preliminary Aggregate Source Assessment (Volume 2) (Stantec 2013b); and
- Kami Iron Ore Project: Tailings Management Facility Feasibility Design (Golder, 2018).

4.1.2 Terrain and Soil Mapping

4.1.2.1 Terrain Mapping

Terrain mapping combines terrain, soil, and landscape features to delineate areas with similar topography and soil properties. It subdivides the landscape into relatively homogenous terrain units based on:

- Soil parent materials;
- Overburden thickness/depth to bedrock;
- Underlying surficial material;
- Surface expression (topography);
- Slope;
- Aspect;
- Soil drainage; and
- On-going geomorphological processes.

Detailed preliminary terrain mapping was completed at a 1:5,000 scale for the SSA and LSA using WSP's softcopy mapping tool which incorporates both ArcGIS and PurVIEW software. Digital stereo imagery was purchased from the National Air Photo Library in Ottawa and subsequently merged with the provincial 1:50,000 scale Digital Elevation Model (DEM) to create imagery that could be viewed in 3D (stereo) on a computer monitor using specialised 3D glasses. The softcopy mapping environment allows mappers the ability to zoom down from the initial capture scale of the aerial photographs (e.g., 1:20,000) to scales greater than 1:5,000. The preliminary detailed terrain mapping was completed by terrain scientists with no less than 10 years of mapping experience.

The following data sources were used to complete pre-field mapping:

- 1:40,000 scale black and white aerial photos acquired in 1955 from the National Air Photo Library in Ottawa, Ontario and
- A 1:50,000 scale Digital Elevation Model (DEM) from Natural Resources Canada (NRCan)

In addition to the stereo imagery, WSP used borehole logs and bog probe data from previous investigations (Stantec 2013a; WorleyParsons 2014) to assist with determining the origin, thickness, and texture of the surficial materials.

Final mapping was completed in 2023 and incorporated with recently acquired LiDAR data, and higher resolution ortho photographs:

- 1 m contour data acquired in 2023;
- 10 cm resolution LiDAR data and associated hillshade acquired in 2023; and
- Colour 10 cm resolution orthophotos acquired in 2023.

The mapping framework outlined in Terrain Classification System for British Columbia, Version 2, (Howes and Kenk 1997) was used to classify individual terrain units. Relatively homogenous terrain units (e.g., 100% morainal veneers over bedrock) were delineated where possible, however in some instances, polygons may have a secondary component (i.e., second decile; e.g., 70% morainal veneers over bedrock, 30% bedrock outcrops) to represent distinctly different areas in a polygon too small to delineate at the mapping scale. The summary data in the results section has accounted for all terrain units (including second deciles) assigned to a polygon, and a weighted representation is displayed in the tables.

Each terrain polygon was also rated for terrain stability and was assigned a stability class from the Mapping and Assessing Terrain Stability Guidebook, 2nd edition (B.C. Ministry of Environment 1999). Table 4-1 provides the five-class terrain stability classification system (B.C. Ministry of Environment 1999) that was used to support this attribution. No field work specific to terrain stability was completed to verify the classification system.

Table 4-1 Terrain Stability Classification

Terrain Stability Class	Interpretation
I	No significant stability problems exist.
II	There is very low likelihood of landslides following timber harvesting or road construction; minor slumping is expected along road cuts, especially for 1- or 2-years following construction.
III	Minor stability problems can develop. Timber harvesting should not significantly reduce terrain stability. There is a low likelihood of landslide initiation following timber harvesting. Minor slumping is expected along road cuts, especially for 1- or 2-years following construction. There is a low likelihood of landslide initiation following road construction.
IV	Expected to contain areas with a moderate likelihood of landslide initiation following timber harvesting or road construction.
V	Expected to contain areas with a high likelihood of landslide initiation following timber harvesting or road construction.

Notes: The classification addresses landslides greater than 0.05 ha using conventional forest clearing practices and sidecast road construction. Terrain units classed as I, II, or III may contain minor amounts of Class IV or V terrain. These areas may not have been delineated due to mapping scale and scope of work.

Source: BC Ministry of Environment (1999)

A legend (Appendix A, Figure A-1) and a draft set of 1:10,000 scale figures have been produced and are provided in Appendix A (Figure A-2a to Figure A-2o). Surficial material types have been colour coded based on dominant surficial material and the maps also show the spatial extent of all terrain units, a label for each terrain polygon, and contours.

A typical terrain polygon label is shown in Figure 4-1, followed by a description of the label composition.

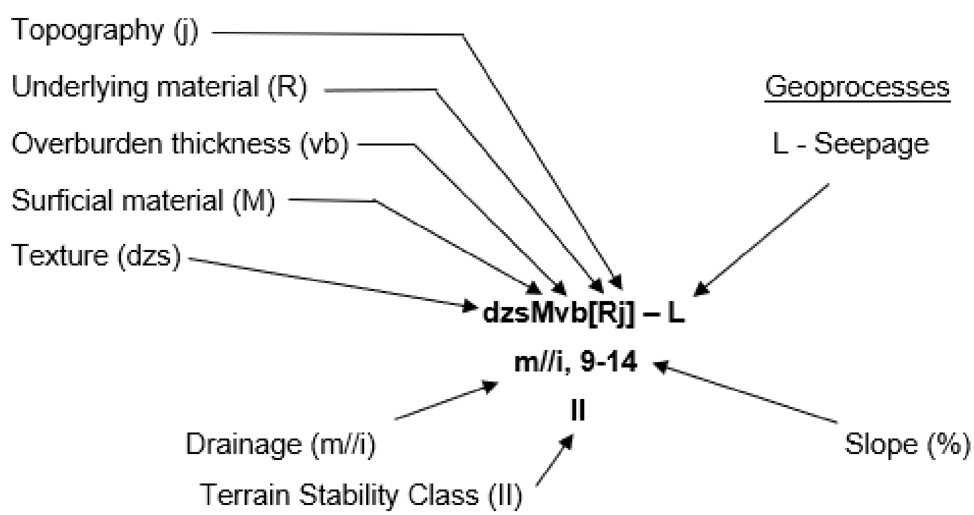


Figure 4-1: Typical Terrain Polygon Label

The example in Figure 4-1 shows the terrain unit is characterized by till (M) veneers (v) (less than 1 m thick) and blankets (b) (between 1 and 3 m in thickness) overlying bedrock (R) that is gently sloping (j). The till is composed of mixed fragments (d) in a silty sand matrix (zs). The surficial sediments are moderately well (m) drained much more (//) than imperfectly (i) drained with slopes of 9% to 14%. Seepage (L) is mapped as a geomorphological process within this unit, and terrain stability has been rated as generally stable (Terrain Stability Class II). Figure A-1 in Appendix A shows the terrain legend used for this assessment.

4.1.2.2 Soil Mapping

Soil mapping is a process that incorporates pedology and geomorphology to describe a landscape in terms of a taxonomy combining soil development with the physical and chemical properties of surficial materials. Soil units were mapped at 1:5,000 scale or larger in the SSA and LSA to characterize soil and provide detail for baseline inventory of soil and reclamation planning. At this scale, the complexity of soil types and landscape features are represented by Soil Map Units (SMUs) which are individual polygons encompassing areas of similar dominant surficial materials, commonly occurring soil types, range of dominant slope gradients, topographic assemblages, and soil drainages. Soil Map Unit naming was developed to reflect variations in each type of parent material, drainage, texture, and soil type.

Soil mapping in the SSA and LSA was generated using the terrain mapping linework and attributes as a base along with field data (Section 4.1.2.1). Soils were mapped as per federal standards (Mapping System Working Group 1981). Each polygon was identified based on surficial materials, surficial material texture, soil development, soil drainage, depth to bedrock, and topography. Each polygon within the LSA was edited, if and where it was appropriate, and then spatially assigned the following in addition to the attributes already assigned during the terrain mapping:

- SMU;
- Reclamation suitability;
- Soil wind erosion risk;
- Soil water erosion risk; and
- Soil compaction risk.

4.1.3 Reclamation Suitability

Soil attributes recorded during the field surveys and from the analytical data were compared to the criteria for evaluating soil reclamation suitability after removal and salvage of surface and subsurface layers and assigned a reclamation suitability class (Table 4-2). Soil suitability for reclamation focuses on chemical and physical characteristics affecting the soil's suitability for reclamation and usefulness for revegetation during reclamation and is referred to as soil quality (Alberta Soils Advisory Committee [ASAC] 1987).

Reclamation suitability was quantitatively determined based on the soil characteristics for each SMU. If multiple calculations were generated based on lab results for the same SMU, the most representative profile was chosen for the assigned ratings. The Soil Quality Criteria Relative to Disturbance and Reclamation (ASAC 1987) was adopted for the Project and adapted based on conditions in the SSA and LSA. Upper lift and lower lift criteria for the Northern Forest Region (ASAC 1987) were used to develop the assigned ratings (Table 4-3 and Table 4-4). The percent of organic carbon criteria from the British

Columbia criteria (BC MEMPR 2009) was added to the upper lift rating assignments to provide additional insight to the possible limitations of the SMUs.

The most limiting criteria determines the overall reclamation suitability rating for each SMU. It should be noted a “poor” rating does not necessarily mean the soil cannot be used for reclamation, but when salvaged, would require careful planning and good management (ASAC 1987). Soil rated as “unsuitable” due to one limitation may have been assigned an overall better rating (e.g., poor) as management practices can be utilized to result in a more suitable soil material for reclamation purposes (ASAC 1987). Some map units were not assigned ratings as they are non-soils (rock, water), or are considered disturbed (anthropogenic). This soil quality system is for use in mineral soils only; however, Organic soils should be considered for salvage and used as a soil conditioner (ASAC 1987).

Table 4-2: Soil Suitability Class Descriptions for Criteria Relative to Disturbance and Reclamation

Suitability Class	Description
Good	No soil limitations to slight soil limitations that affect use for plant growth.
Fair	Moderate soil limitations that affect use but can be overcome by proper planning and good management.
Poor	Severe soil limitations that make use questionable; careful planning and very good management are required.
Unsuitable	Limitations of soil chemical or physical properties are so severe that reclamation is not possible or economically feasible

Source: ASAC 1987

Table 4-3: Criteria for Evaluating Suitability of Surface Material (Upper Lift) for Revegetation in the Northern Forest Region

Rating/Property	Good	Fair	Poor	Unsuitable
Reaction (pH)	5.0 to 6.5	4.0 to 5.0, 6.5 to 7.5	3.5 to 4.0, 7.5 to 9.0	<3.5, >9.0
Salinity (EC) [dS/m]	<2	2 to 4	4 to 8	>8
Sodicity (SAR)	<4	4 to 8	8 to 12	>12
Saturation (%)	30 to 60	20 to 30, 60 to 80	15 to 20, 80 to 120	<15, >120
Stoniness/Rockiness (% area)	<30/<20	30 to 50/20 to 40	50 to 80/40 to 70	>80/>70
Texture [(a)]	fSL, vfSL, L, SiL, SL	CL, SCL, SiCL	LS, SiC, C, HC, S	n/a
Moist Consistency	very friable, friable	loose, firm	very firm	extremely firm
CaCO3 Equivalent (%)	<2	2 to 20	20 to 70	>70
% Organic Carbon [(b)]	2 to 30	1 to 2, or >30	<1	-

Source: ASAC (1987) Table 8 – Northern Forest Region. More details are provided in the source document.

a) Texture abbreviations found in Appendix B.

b) Criteria taken from Table 1 (BC MEMPR 2009)

EC = electrical conductivity; dS/m = deciSiemens per metre; SAR = sodium adsorption ratio (sodicity)

Table 4-4: Criteria for Evaluating the Suitability of Subsurface Material (Lower Lift) for Revegetation in the Northern Forest Region

Rating/Property	Good	Fair	Poor	Unsuitable
Reaction (pH)	5.0 to 7.0	4.0 to 5.0, 7.0 to 8.0	3.5 to 4.0, 7.5 to 9.0	<3.5, >9.0
Salinity (EC) [dS/m]	<3	3 to 5	4 to 8	>8
Sodicity (SAR)	<4	4 to 8	8 to 12	>12
Saturation (%)	30 to 60	20 to 30, 60 to 80	15 to 20, 80 to 100	<15, >100
Coarse Fragments (% Vol)	<30/<15	30 to 50/15 to 30	50 to 70/30 to 50	>70/>50
Texture[a]	fSL, vfSL, L, SiL, SL	CL, SiC, SiCL	LS, C, HC, S	bedrock
Moist Consistency	very friable, friable, firm	loose, very firm	extremely firm	hard rock
CaCO3 Equivalent (%)	<5	5 to 20	20 to 70	>70

Source: ASAC (1987) Table 9 – Northern Forest Region. More details are provided in the source document.

a) Texture abbreviations found in Appendix B.

EC = electrical conductivity; dS/m = deciSiemens per metre; SAR = sodium adsorption ratio (sodicity)

4.1.4 Wind Erosion Risk

Soil erosion potential refers to the risk of degradation in soil quality or soil loss from erosive forces, typically wind and water (i.e., physical loss of soil or organic matter). The loss of surface soil by erosion my result in a reduction in soil quality and the ability for soil to support vegetation.

Soil erosion was evaluated using rates of erosion risk for dry, exposed mineral soils (i.e., vegetation cover has been removed). Erosion risk is dependent on soil and site characteristics such as soil texture, coarse fragment content, slope gradient, and length of slope. Wind erosion risk ratings are texturally based; therefore, organic soils are not rated but are inherently resistant to wind erosion because of their physical characteristics. It should be noted that wet soils, such as gleysols, or frozen soils are generally not susceptible to wind erosion but a change in a soil's state (e.g., frozen) or moisture regime can alter the risk of erosion. High erosion potential does not necessarily equate with poor quality soil; however, a high erosion potential at a given location increases the risk of soil degradation.

The dominant soil texture assigned to each SMU was used to establish soil sensitivity to wind erosion (wind erosion risk). This was done based primarily on texture and a dimensionless index adapted from Coote and Pettapiece (1989). The criteria for determining wind erosion risk are presented in Table 4-5.

Table 4-5: Criteria for Determining Wind Erosion Risk

Soil Texture	Wind Erosion Risk Class
Very fine sand, sand, coarse sand, loamy sand, gravelly sand	High
Sandy loam, loam, silt loam, sandy clay loam, sandy clay	Moderate
Silt, silty clay loam, clay loam, silty clay, clay, heavy clay	Low

Source: adapted from Coote and Pettapiece (1989)

4.1.5 Water Erosion Risk

The potential water erosion rating was estimated using the Revised Universal Soil Loss Equation for Application in Canada (RUSLEFAC; Wall et al. 2002). The RUSLEFAC equation is an equation that is applicable for Canada and was developed to predict the average soil losses by soil erosion via water. Characteristics of soil and terrain (i.e., topsoil texture, slope length, and gradient) recorded during the field programs were used, where possible, to calculate the estimated soil loss. Estimated soil loss by water erosion (A) was calculated using the RUSLEFAC equation A = R * K * LS * C * P, then ranked into one of the five erodibility classes of very low, low, moderate, high, and severe as per Wall et al. (2002). Units comprised of mainly water (N), rock or bedrock (R), or anthropogenic polygons were not assigned ratings.

Inputs considered when estimating soil loss include rainfall and runoff (R), soil erodibility factor (K), slope factor (LS), crop/vegetation and management factor (C), and support or management practices (P). Details are as follows:

- The rainfall and runoff factor (R) was estimated based on a global rainfall erosivity index (Panagos et al. 2017).
- The soil erodibility factor (K) was established using laboratory soil textures (particle size analysis) for the representative mineral soil within a SMU and the soil erodibility values for common surface textures with less than 2% organic matter content (Table K-3 in Wall et al. 2002). For profiles having variable surface and subsurface textures, the most limiting was chosen to take a conservative approach.
- Slope length (L) and slope gradient (S) were assigned based on field data, where present. The median value of the slope length and slope gradient classes were assigned to best represent each polygon. In areas where no field data were available, slope gradient values were established in ArcGIS using a 1 m Digital Elevation Model (DEM) to assign dominant slope gradients in each polygon. Slope length values were assigned based on measuring slope lengths in ArcGIS, extrapolation (the most common slope length recorded for similar map units in the LOD), and professional judgment. These values were used to calculate the LS (slope or topographic factor) value for each polygon. To take a more conservative approach, LS values for existing conditions were determined using Table LS-3 in Wall et al. (2002) to account for disturbed soil conditions, with little or no cover.
- The crop/vegetation and management factor (C) was given the value of 1.
- Management practices (P) factor was given the value of 1.

Water erosion risk in the LSA was assigned spatially, meaning rather than assigning a risk to a soil map unit, ratings were assigned based on the dynamic landscape. The LS factor calculation was determined from a 3 m resolution Digital Elevation Model (DEM) which is generated by a tool (ESRI 2018), and the erosivity data (the R value) was applied from a global rainfall erosivity index (Panagos et al. 2017).

4.1.6 Compaction Risk

Compaction risk is associated with soil physical properties, the moisture content when the soil is disturbed, and the nature of the applied force (Cannon and Landsburg 1990). Compacted soil can have decreased soil porosity which is an important property of soil to control moisture availability to vegetation and can result in greater amounts of surface runoff (Archibald 1997). Soil compaction risk was assigned to soil units based on their texture, coarse fragment content, and drainage. Soil compaction ratings were assigned based on a generalized rating system for compaction risk (Table 6), which was developed using professional judgment and adaption from two compaction systems. Both compaction systems were designed for forestry applications and are soil and moisture based, so are applicable to the SSA and LSA. The matrix considers the combined influences of soil texture, coarse fragment content, and soil drainage. Organic soils were not rated for compaction but are susceptible to compaction due to their low load bearing materials being easy to displace (BC FLNRORD 1999).

Table 4-6: Compaction Risk Matrix

Drainage	Soil Textural Class[a]				
	Fragmental (>70% coarse fragments) and Very Coarse	Moderately Coarse	Medium	Moderately Fine	Fine/Very Fine
	S, LS	SL, fSL	SiL, Si, L	SCL, CL, SiCL, Si	SC, SiC, C, HC
Rapid	Low	Low	Low	Low	Moderate
Well	Low	Low	Low	Moderate	Moderate
Moderately Well	Low	Low	Low	Moderate	Moderate
Imperfect	Low	Low	Moderate	High	High
Poor	Moderate	Moderate	High	High	High
Very Poor (Organic)	Not rated				

Source: Adapted from BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (BC FLNRORD 1999) and Compaction and Rutting Hazard for Soils in Ontario (Archibald et al. 1997)

a) Texture abbreviation definitions are found in Appendix B

4.2 Field Program

4.2.1 Field Investigations

Field surveys were undertaken to verify preliminary mapping by completing inspection points to collect specific soil and terrain data. A combination of detailed and non-detailed site inspections was completed to collect data in the field. Detailed site inspections describe the soil conditions by digging a test pit and recording soil profile data, terrain data, and other localized data. Non-detailed site inspections describe field observations with or without digging a test pit and can provide information to support mapping. Non-detailed inspection sites generally describe available data on surficial materials, slope, and drainage or geomorphological processes existing in an area.

Terrain data collected at each inspection site follows guidelines found in the Field Manual for Describing Terrestrial Ecosystems Second Edition (BC MOFR and BC MOE 2010). Soil field data was collected following the manual for describing soils in the field (Expert Committee on Soil Survey 1982) and the Canadian System of Soil Classification (SCWG 1998).

Inspection sites were chosen based on results of the desktop study, prior to the field survey and accessed by ATV, truck, or on foot, where possible. Field information was recorded on a global positioning system (GPS) enabled iPad. Soil pits were excavated and inspected to a maximum depth of 100 centimetres if mineral soil, and 220 centimetres if organic; however, reaching this depth of excavation with hand tools was limited in some areas due to lithic contact (i.e., shallow bedrock).

The following soil and terrain information was recorded for soil survey inspection sites, where applicable:

- GPS location (easting/northing);
- Slope position, gradient, and aspect;
- Soil surficial (parent) material and texture;
- Surficial material expression;
- Subsurface material and texture;
- Subsurface material expression;
- Geomorphological processes (if applicable);
- Soil horizon designation and thickness, including organic/litter layer;
- Soil horizon structure (if applicable), consistence, colour, texture, and coarse fragment content (%);
- Presence of mottling;
- Seepage and/or water table depth;
- drainage; and
- Soil subgroup classification.

The soil profiles were described according to the Canadian Soil Information Service (CanSIS; Expert Committee on Soil Survey 1982). Soil horizon information was used to classify soils using the Canadian System of Soil Classification (SCWG 1998) and to determine soil characteristics and reclamation suitability. Classification of soils was completed using field data to the extent possible. The field assessment aimed at collecting data to meet requirements outlined in the 2012 EIS Guidelines and to verify the preliminary terrain and soil mapping (Section 4.1.2). Field data was collected from locations throughout the LSA, including the SSA.

4.2.2 Soil Chemistry

At representative soil sites, mineral soil was collected from each horizon of the soil profiles. A minimum of 10% of soil inspection sites were sampled within the SSA. Samples were collected to provide baseline chemical characterization and data for calculating soil reclamation quality and sensitivity to erosion. Soil samples for the program were delivered to Bureau Veritas for analysis.

The following laboratory analyses were run on representative modal soil profiles:

- pH (pH @ 25°C [1:2 calcium chloride extract]);
- particle size (soil texture – percent gravel, sand, silt, clay) (hydrometer);
- Soil salinity (electrical conductivity);
- Soil sodicity (sodium adsorption ratio);
- total organic carbon;
- Saturation % (water holding capacity);
- total nitrogen (nitrite and nitrate);
- plant available nutrients (available nitrogen, phosphorus, potassium, and sodium; cation exchange capacity; and exchangeable cations);
- saturated paste extractables (sodium adsorption ratio [SAR], calcium [Ca], conductivity saturated paste, Magnesium [Mg], pH in water and saturated paste, potassium [K], % saturation, sodium [Na]);
- theoretical gypsum requirement;
- cation exchange capacity;
- total metals: (aluminium [Al], antimony [Sb], arsenic [As], barium [Ba], beryllium [Be], bismuth [Bi], boron [B], cadmium [Cd[, calcium [Ca], chromium [Cr], cobalt [Co], copper [Cu], iron [Fe], lead [Pb], lithium (Li], magnesium [Mg], manganese [Mn], mercury [Hg], molybdenum [Mo], nickel [Ni], phosphorus [P], potassium [K], selenium [Se], silver [Ag], sodium [Na], strontium [Sr], thallium [Tl], tin [Sn], titanium [Ti], uranium [U], vanadium [V], zinc [Zn], Zirconium [Zr]);

4.3 Data Management and Analysis

Data management, including quality assurance and quality control was completed to minimize potential for data entry and analysis errors, prepare data sets for analysis, and limit sensitive data distribution in accordance to established agreements.

A Quality Assurance / Quality Control program was implemented to verify that data collection, data entry, and data analysis were conducted with a high level of confidence. Quality Assurance / Quality Control of field data and data summary calculations consisted of:

- Reviewing and verifying field data on site, at the end of each day, and at the end of each field shift to maintain data quality and consistency;
- Using tablets to provide consistent use of field codes;
- Transferring and backing-up field data and field photos to online databases and laptops regularly;
- Using systematic data checks on field parameters for consistency and accuracy; and
- Verifying the accuracy of calculations performed to generate summary statistics.

Database checks included verifying values outside of expected ranges for each parameter. Calculations of summary statistics were verified by recalculating minimum and maximum values, evaluating relationships between parameters, querying sample sizes and medians for a subset of the data. Mapping products and data analysis results were reviewed by WSP soil and terrain specialists who were not directly involved in the final products.

The specific tasks for post-field data management and Quality Assurance / Quality Control were as follows:

- Complete daily field summary report;
- Download all photographs and GPS locations to file server; and
- Review GPS coordinates for accuracy;
- Complete office review and Quality Assurance / Quality Control of all field data collected by soil and terrain scientists;
- Review all data forms and field notebooks; and entre all relevant data not already entered into the field tablet into a database.

5.0 BACKGROUND

5.1 Physiography

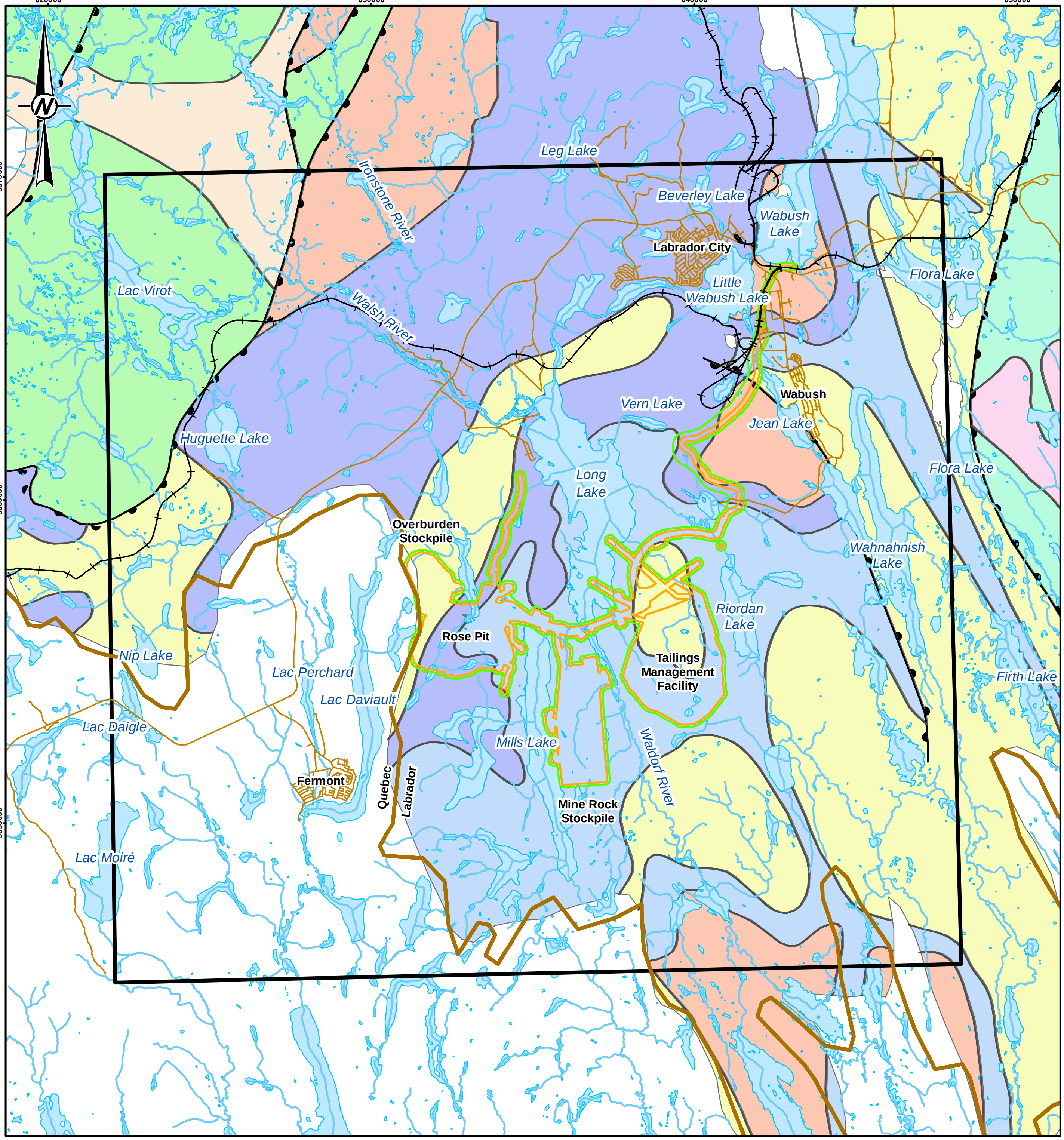
The Kami Project is located in the Lake Plateau division of the James Region subregion which is part of the Canadian Shield Physiographic Region (Bostock 1970a). The Canadian Shield is a generally smooth landscape interrupted by rounded or flat-topped monadnocks and ranges of hills (Bostock 1970b). The smooth horizon is evidence of an old erosion surface with much of the elevation of the Shield between 200 and 300 feet (60 to 90 m) above sea level (Bostock 1970b), but elevation does rise above this towards the central interior of the Shield (Vincent 1989). As a result of glaciation, there are numerous lakes, ponds and swamps throughout the Shield landscape, and the main rivers and streams flow in the direction of general slope of the land surface (Bostock 1970b). Despite the general uniformity of the Shield terrain, there are geological and physiographic differences allowing the landscape to be divided into subregions (e.g., James Region) and divisions (e.g., Lake Plateau). The Lake Plateau is described by Bostock (1970b) as a rolling plain with numerous lakes and isolated hills of bedrock which stand approximately 500 feet (150 m) above the general surface.

Klassen and Thompson (1993) describe the physiography of Central Labrador as reflecting regional variations and structural trends in bedrock geology. They suggest much of Central Labrador is characterised by typical Shield terrain; low relief punctuated by rugged highland plateaus and elongated hills and valleys. The bedrock hills are commonly streamlined by glacial abrasion and areas of extensive drift cover are characterised by poor drainage and numerous lakes, many of which are elongated in the direction of the last ice flow.

5.2 Bedrock Geology

Bedrock geology mapping by Wardle et al. (1997) at a 1:1,000,000 scale indicates the Kami RSA is underlain by dolomite marble, pelitic schist, pelitic phyllite, pelitic gneiss, meta-ironstone, and quartzite from the Mid Paleoproterozoic Era (Figure 5-1).

Golder (2018) describes the Kami Project site as typically underlain by the Wabush-Labrador City sequence of sedimentary iron formation of the Labrador Trough. This sequence is early Precambrian (Lower Proterozoic-Aphebian) in age and was subsequently deformed, faulted, and metamorphosed in the much later Precambrian Grenville Orogen.



LEGEND

- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA
- REGIONAL STUDY AREA
- LABRADOR/QUEBEC BOUNDARY
- WATERBODY

LINEAR GEOLOGIC FEATURES

- CONTACT
- FAULT

BEDROCK GEOLOGY

- EARLY MESOPROTEROZOIC - GABBRO, AMPHIBOLITE
- LATE PALEOPROTEROZOIC - GRANITE, QUARTZ MONZONITE, GRANODIORITE, SYENITE
- MID PALEOPROTEROZOIC - DOLOMITE MARBLE
- MID PALEOPROTEROZOIC - META-IRONSTONE, QUARTZITE
- MID PALEOPROTEROZOIC - PELITIC SCHIST, PELITIC GNEISS
- MID PALEOPROTEROZOIC - PELITIC SCHIST, PELITIC PHYLLITE
- NEOARCHEAN - GRANITOID, GRANITOID GNEISS
- NEOARCHEAN - METATONALITE, TONALITE GNEISS

0 4 8

1:175,000 KILOMETRES

DRAFT

REFERENCE(S)

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
BEDROCK GEOLOGY IN THE KAMI IRON ORE MINE PROJECT REGIONAL STUDY AREA

CONSULTANT

wsp

YYYY-MM-DD	2024-03-14
DESIGNED	LM
PREPARED	AB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
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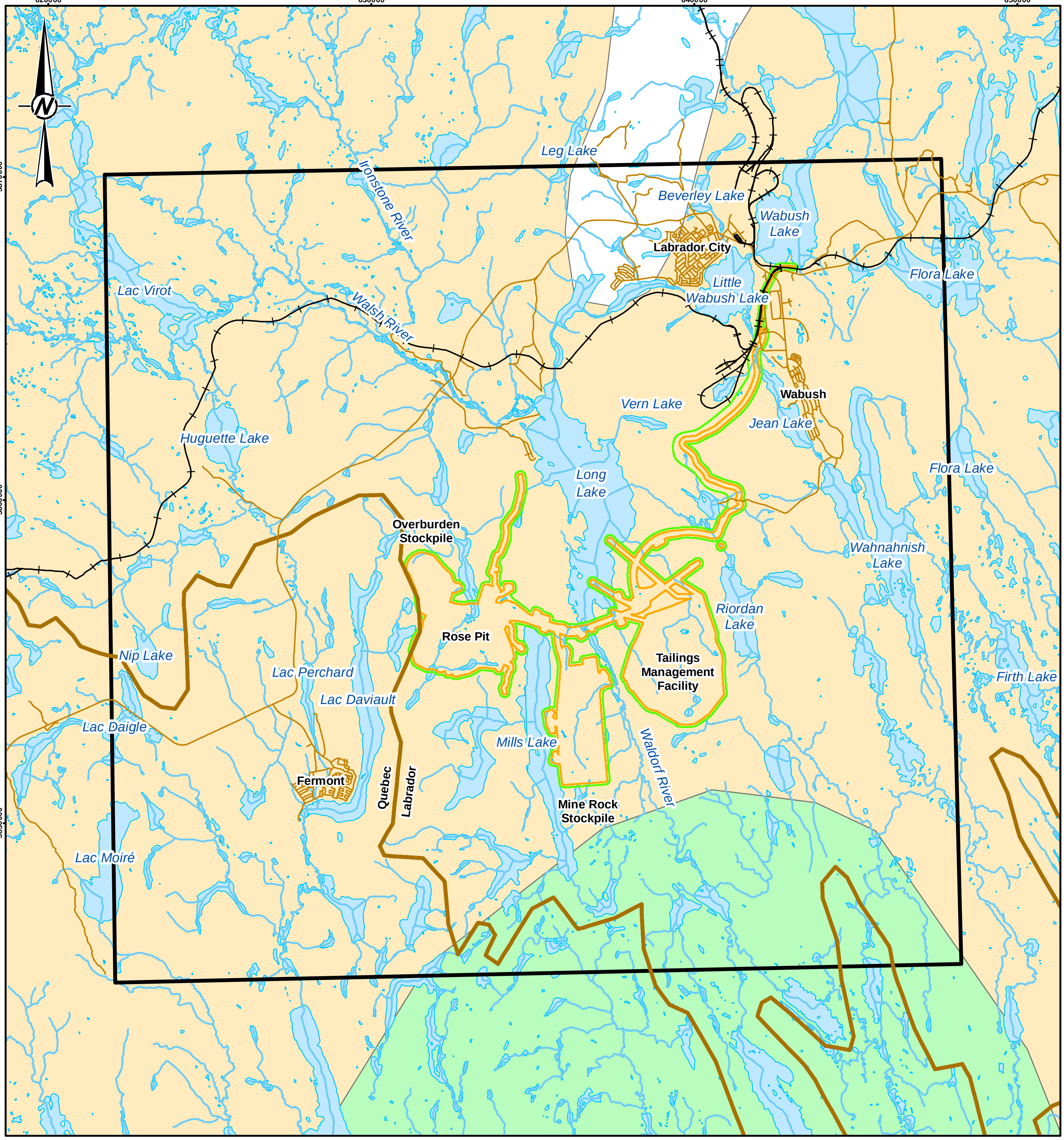
5.3 Surficial Geology

Few Quaternary studies have been completed in Labrador and eastern Quebec and the published information tends to be near communities throughout Labrador (Klassen and Thomson 1993). Surficial geology mapping at a scale of 1:1,000,000 for Labrador was completed by Klassen et al. (1992) by compiling existing surficial geology mapping at scales ranging from 1:100,000 to 1:5,000,000; references are provided by Klassen et al. (1992) Surficial geology of the RSA is displayed on Figure 5-2. More detailed mapping at a scale of 1:50,000 has been published by Kirby et al. (1989) however only the northern part of the Kami Project is covered by this mapping.

Klassen and Thompson (1993) provide a brief summary of the glacial history in central Labrador. Glacially streamlined landforms, eskers and ribbed (Rogen) moraine suggest that during the last glaciation ice was generally flowing from western Labrador southward and eastward across central Labrador to the Labrador coast. This is confirmed by Bird (1982) who identified a regional ice flow direction in the Kami Project area from approximately 315 ± 5° based on the measurements of striations on bedrock surfaces. Klassen and Thompson (1993) provide a description of surficial sediments throughout central Labrador, with glacial till being identified as the dominant surficial material, however a more detailed description of the sediments specific to the Kami Project area are provided by Stantec (2013a). The following is a summary of the surficial sediments identified by Stantec (2013a) in the Kami Project area. The thickness of the overburden throughout the Project area based on the boreholes completed by Stantec (2013a) ranges from 0.5 m to 48.5 m extending to the termination of the borehole or to bedrock.

Soil survey and associated mapping at a 1:12,500 scale completed by the Government of Newfoundland and Labrador (2004) in support of locating suitable land to increase agricultural development opportunities in the region have been published. The surveys completed in 2013 indicate glacial till is deeper and relatively free of stones and boulders in an area southeast of Wabush Lake. More boulder and exceedingly stony till on hummocks and inclines were identified west of Labrador City, and similar boulder and exceedingly stony till material was identified in association with steep terrain and abundant rock outcrops in the Huguette Lake area, north of Fermont, Quebec, and southwest of Labrador City.



LEGEND

EXISTING RAILWAY
ROAD
WATERCOURSE
LOCAL STUDY AREA
SITE STUDY AREA
REGIONAL STUDY AREA
LABRADOR/QUEBEC BOUNDARY
WATERBODY

SURFICIAL GEOLOGY
GLACIAL SEDIMENTS - BLANKET
GLACIAL SEDIMENTS - VENEER

DRAFT

0 4 8
1:175,000 KILOMETRES

REFERENCE(S)
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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SURFICIAL GEOLOGY MAPPING IN THE KAMI IRON ORE MINE PROJECT REGIONAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
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PREPARED	AB
REVIEWED	
APPROVED	

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5.4 Soils

There are very limited detailed soil maps available for the SSA, LSA, and RSA. The Soil Landscapes of Canada Working Group (2010) published a very low-resolution (1:1,000,000 scale) map of the distribution of soil landscapes across Canada. Podzols and Organic soils have been mapped in the general area of the Project (SLCWG 2010).

The closest available detailed soil map available is The Detailed Soil Surveys of Javelin Road, Canning Lake and Huguette Lake areas in Labrador West, Labrador (Government of Newfoundland and Labrador, 2004) which is presented at a scale of 1:12,500. The Canning and Huguette Lake sections of the report are the closest available data to the Project area; these soil surveys were completed approximately eight km northwest of the SSA. The third part of the soil survey, Javelin Road, is approximately four km northeast of the furthest east edge of the proposed rail infrastructure for the Project.

The report indicates that till materials dominate the landscape and are composed of moderately coarse to coarse grained (sandy loam) material. Orthic Gleysols are anticipated on lower slope positions. Orthic Humo-Ferric Podzols of varying depths due to the presence of bedrock can be found in upper slope positions. Gleyed Ferro-Humic Podzols form on mid to lower slopes, and Orthic Ferro-Humic Podzols develop on well stratified and well drained glaciofluvial eskers (Government of Newfoundland and Labrador 2004).

Soil associations portray a sequence of soils approximately the same age, derived from similar parent materials, and occurring under similar climatic conditions, but having unlike characteristics because of variations in relief and drainage (Government of Newfoundland and Labrador 2004). Associations can be divided into soil series which are defined in terms of horizon characteristics, drainage, and depth to bedrock (Government of Newfoundland and Labrador 2004). Three soil associations and seven soil series are described in the Government of Newfoundland and Labrador (2004) report the details of which are summarised below:

- Flora Lake Association:
  - Flora Lake is characterized as a sloping fen composed of dominantly sedge peat with sphagnum and with water at or near the surface for most of the year.
  - Walshes River is wetter than Flora Lake and is described as ribbed fens where open water is high (>70%) and is usually inundated.
- Huguette Lake Association:
  - Huguette Lake soils are characterized by slightly stony, rapidly drained, medium to fine textured, well stratified glaciofluvial esker deposits. A cemented layer between approximately 10 to 35 cm below surface was noted to occur in these soils, limiting vegetative growth.
- Javelin Road Association:
  - Canning Lake soils are characterised by moderately coarse to coarse (sandy loam) glacial till. These soils are poorly drained, and very to exceedingly stony soils are found in poorly drained depressions.

- Wabush soils are characterised by moderately coarse to coarse (sandy loam) glacial till. These soils are located on mid to lower slopes of undulating to ridged terrain, are imperfectly drained with seepage at 30 cm, and are slightly to exceedingly stony.
- Javelin Road soils are also characterised by moderately coarse to coarse (sandy loam) glacial till, however they are moderately well drained, slightly to exceedingly stony and located on upper to mid slopes of undulating to ridged terrain.
- Lake Virot soils are very similar to the Javelin Road soils but bedrock is less than 1 m from the surface. Mapped on ridged terrain these soils are shallow in depth and are very to excessively stony.

6.0 RESULTS

6.1 Terrain

A total of 653 terrain units were delineated within the LSA, resulting in an average polygon size of 5.89 ha. The polygons ranged in size from 0.04 ha (a bedrock outcrop in the south buffer of the proposed mine rock stockpile) to 158.2 ha (a gently sloping, well drained area of till in the proposed overburden stockpile).

6.1.1 Surficial Materials

Appendix A, Figure A-2a to A-2o provides the detailed terrain mapping within the SSA and LSA at a scale of 1:10,000. Each polygon is labelled with a symbol as outlined in Figure 4-1 (Section 4.1.2.1) and the polygons are colour coded based on the dominant surficial material in each polygon. Refer to the associated legend Figure A-1, Appendix A for an explanation of the terrain labels.

Table 6-1 summarizes the surficial materials mapped in the SSA and LSA. Moraine (till) is the dominant surficial material mapped in the LSA (2,064.2 ha, 77.0%), followed by organic deposits (421.4 ha, 15.7%), and glaciofluvial sediments (58.9 ha, 2.2%). The SSA reflects a similar distribution of dominant surficial materials. Minor areas of lacustrine and fluvial materials, bedrock, colluvium, anthropogenic material, and open water have also been mapped in the LSA and SSA (Table 6-1).

Table 6-1: Surficial Materials in the Site Study Area and Local Study Area

Surficial Material	Site Study Area		Local Study Area	
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
Anthropogenic (A)	5.4	0.2	69.9	1.8
Colluvium (C)	5.9	0.2	5.9	0.2
Fluvial (F)	18.2	0.7	24.8	0.6
Glaciofluvial (FG)	58.9	2.2	99.2	2.6
Lacustrine (L)	3.3	0.1	12.8	0.3
Moraine (till) (M)	2,064.2	77.0	2,909.6	75.2
Open Water (N)	98.4	3.7	174.7	4.5
Organic (O)	421.4	15.7	564.5	14.6
Bedrock (R)	5.1	0.2	7.1	0.2
Total[a]	2,680.9	100	3,868.6	100

a) Numbers may not add up due to rounding.

6.1.1.1 *Anthropogenic and Open Water*

Areas mapped as anthropogenic are associated with disturbances to natural materials and soils such as roads, existing borrow pits, and urban areas. Open water identifies areas of open water based on available imagery.

6.1.1.2 *Colluvium*

Colluvium is material that has reached its present position as a result of direct, gravity-induced movement (Howes and Kenk 1997). Colluvium is mapped in one area of the LSA on the west side of the proposed Rose Pit (Figure A-2i, Appendix A) and is associated with what appears to be a minor landslide involving slumping as a slow mass movement.

6.1.1.3 Fluvial

Fluvial materials have been mapped in 24.8 ha (0.6%) of the LSA and 18.2 ha (0.7%) of the SSA (Table 6-1). Fluvial (alluvial) sediments are materials transported and deposited by streams and rivers, and generally consist of gravel and/or sand and/or silt (Howes and Kenk 1997). They are often relatively well sorted and show stratification (Howes and Kenk 1997). Fluvial sediments often vary in texture in association with the speed and energy of water flow. In slower, low energy, depositional environments, finer textures are more common, and in faster, higher energy environments, coarser materials are deposited. In addition, materials usually reflect the surrounding sediment available for transport.

Field data collected by WSP indicates fluvial sediments in the LSA are composed of cobbles. Terrain mapping suggests that fluvial sediments in the LSA are generally veneers overlying till or glacial fluvial plains, one of the more significant areas of fluvial material is at the center of the proposed Tailings Management Facility surrounded by organic materials. Smaller areas of fluvial materials are mapped throughout the LSA in associated with drainages and water movement between lake basins and select organic areas. These fluvial materials are often composed of very various sizes of coarse fragments as the original material have likely had the fine materials of the soil matrix (clay, silt, and sand) washed out (Appendix C, Photo C-4). Drainage within areas mapped as fluvial are commonly poor due to lower depressional slope positions and being prone to inundation and flooding.

6.1.1.4 Glaciofluvial

The detailed mapping by WSP indicates there is approximately 99.2 ha (2.6%) of glaciofluvial sediments in the LSA and 58.8 ha (2.2%) in the SSA (Table 6-1; Appendix A, Figures A-2a to A-2u). Glaciofluvial sediments are materials that exhibit evidence of having been deposited by glacial meltwater streams either directly, in front of, or in contact with glacier ice (Howes and Kenk 1997). Although glaciofluvial sediment can vary in particle size and associated texture due to variations in the speed and energy of water flow in the glacial meltwater streams, it is generally associated with coarser textured sand and gravel, and commonly appropriate for aggregate use. Glaciofluvial material ranges from non-sorted and non-bedded gravel resulting from very rapid aggradation at an ice front, to moderately to well sorted, stratified gravel (Howes and Kenk 1997). Slump structures, and hummocky or irregular terrain may be present and are indicative of collapse of the material due to melting of supporting ice that is buried or partially buried, forming kettles (Howes and Kenk 1997).

In the LSA, all surveyed sites identified as glaciofluvial (K23CB003, K23CB031, K23LM001, and K23LM023) were described as sand (Appendix C, Photos C-2 and C-3) with varying amounts of subrounded mixed fragments (between 2% and 70% by volume). Coarse fragment content generally increased with depth in the soil pits. The terrain mapping suggests the glaciofluvial sediments range in thickness from veneers and blankets overlying till to sediments over 3 m in thickness. The veneers and blankets are mapped on the northwest facing slope that extends to Pike Lake in the northern portion of the proposed Rose Pit and the site road crossing the Waldorf River (Appendix A, Figures A-2h to A-2j). Thicker glaciofluvial materials are found in the northeast corner of the proposed mine rock stockpile adjacent to Long Lake and along the rail line east of Knoll Lake (Appendix A, Figures A--2k and A-2m). The most notable glaciofluvial feature in the SSA is the Waldorf River Esker (Appendix A, Figures A-2k and A-2m), which is located to the south of Long Lake along the western bank of the Waldorf River. Previous provincial surficial geology mapping (Kirby et al. 1989, Klassen et al. 1992, Klassen and Thomson 1993) and site investigations by Stantec (2013a, b) indicate the esker is composed of sand and silt in combination with varying amounts of gravel and cobbles. The boreholes suggest the glaciofluvial sediments are up to 22 m thick on the ridge of the Esker (Stantec 2013a, b). Drainage within areas mapped as glaciofluvial ranges from rapid to areas of imperfect.

6.1.1.5 Lacustrine

Lacustrine sediments have settled from suspension and underwater gravity flows, such as turbidity currents, in bodies of standing fresh water, and include sediments that have accumulated at their margins through wave action (Howes and Kenk 1997). They often consist of stratified fine sand, silt and/or clay deposited by suspension with coarser sediments (e.g., stratified sand and gravel) associated with beaches and other littoral sediments transported and deposited by wave action (Howes and Kenk 1997).

Very minor areas of lacustrine sediments have been mapped in the Project study areas; they account for 12.8 ha (0.3%) of the LSA and 3.3 ha (0.1%) of the SSA (Table 6-1; Appendix A, Figures A-2b and A-2k). They are generally mapped immediately or nearly adjacent to small river systems connecting larger water bodies within the LSA (Appendix C, Photos C-5 and C-6). Field data collected by WSP suggests the lacustrine sediments have a clayey silty sand texture. Limited deposits of thick (i.e., greater than 3 metres) lacustrine materials have been mapped in the LSA based on the borehole data available (Stantec 2013a, b), field verification by WSP identified one area of likely thick (greater than 3 metres) lacustrine material (a plain) adjacent to the south shores of Wabush Lake, and veneers of lacustrine overlying till materials located Northwest of Jean Lake. Drainage within areas mapped as glaciofluvial ranges from moderately well to well.

6.1.1.6 Till (Moraine)

The detailed mapping completed by WSP indicates there is approximately 2,909.6 ha (75.2%) of till within the LSA and approximately 2,064.2 ha (77.0%) in the SSA (Table 6-1), making it the dominant surficial material type within the Project study areas (Appendix A, Figures A-2a to A2o). Till is described as material associated with glacial activity, and can be transported beneath, beside, on, within and in front of a glacier (Howes and Kenk 1997). It has highly variable textural, structural, and topographic characteristics which depend on the source of the material incorporated by the glacier and the mode of deposition (Howes and Kenk 1997).

Based on field data collected by WSP, the till in the LSA and SSA is generally characterised by a sandy silt to silty sand texture, with a range of coarse fragment (clast) content ranging from 0% to 85% and in size from gravel to boulders (Appendix C, Photos C-1, C-12, and C-14). In areas where bedrock was exposed, or near the surface, veneers (between 0.2 metres to 1 metre in thickness) and thin veneers (less than 0.2 metres) of till are mapped overlying undulating bedrock. Blankets of till (between 1 m and 3 m in thickness) have been mapped adjacent to these areas. Elsewhere the till is considered to be thick (greater than 3 m in thickness) and slopes range from planar (0-5% slopes) to moderate (26-49%). Available borehole data from Stantec (2013a,b) also suggests the till is composed of sandy silt material with coarse fragments, and can be up to 30 m thick in some areas (e.g., the proposed Rose Pit and Tailings Management Facility). Drainage within areas mapped as till ranges from rapid in coarser sediments with higher coarse fragment content found in mid, upper, and crest slope positions to poor in lower lying, depressional, level, or lower slope positions prone to flooding, seepage accumulation, or inundation.

6.1.1.7 Organic

In saturated ground conditions, vegetative matter can accumulate, creating organic material (Howes and Kenk 1997). These organic accumulations can vary in thickness, but when thicker than 40 centimetres, they are associated with bogs, fens, and swamps, and are mapped as organic parent material (peatlands). Organic material is abundant in the Project study areas, comprising 564.5 ha (14.6%) of the LSA, and 421.4 ha (15.7%) of the SSA (Table 6-1). The organic soils are commonly located in low lying or planar (level) landscapes (e.g., the proposed Tailings Management Facility). Throughout the LSA, organic soils have been mapped as veneers and blankets overlying till, or as thick organic accumulations more than 3 m in thickness (e.g., just outside the east edge of the Rose Pit). Pockets of organic accumulations with an excessive number of coarse fragments (>70%) have also been identified in the LSA. These organic pockets are found in areas adjacent to water bodies where humic organic material has accumulated between the coarse fragments. These pockets are not terribly common in the SSA and generally restricted to areas of the landscapes that connect two bodies of water such as the river system running through the Rose Pit connecting Pike Lake to the small water bodies in the south of the Pit and the water bodies connecting Long Lake and Mills Lake, north of the north basin proposed sedimentation pond (Appendix C, Photo C-23). Organic deposits are typically associated with very poor drainage, however drainage within polygons mapped as organic vary from very poor to poor as there may be variations in organic thickness, and small inclusions of wet mineral soil in some polygons.

6.1.1.8 Bedrock

Areas of exposed rapidly drained exposed bedrock represent 7.1 ha (0.2%) of the LSA and 5.1 ha (0.2%) of the SSA (Table 6-1; Appendix C, Photos C-20 and C-21). Bedrock is mainly exposed in areas of the LSA that are upland adjacent to thin veneers of till (e.g., the central eastern portion of the proposed mine rock stockpile and the southern portion of the proposed Rose Pit).

6.1.2 Soil Drainage in the Site Study Area and Local Study Area

Table 6-2 summarizes the soil drainage mapped in the SSA and LSA. Approximately 2,473.1 ha (64.0%) of the LSA is considered to be well drained (moderately well, well, and rapidly drained), 5.6 ha (0.1%) is considered to be very rapidly drained, which are areas associated with bedrock, and 311.6 ha (8.1%) is mapped as having imperfect to poor drainage where water tables fluctuate, or inundation or seepage is present. Very poor drainage associated with areas of organic accumulation accounts for 599.1 ha (15.5%) of the LSA. Soil drainage in the LSA is presented in the terrain polygon labels found in Appendix A, Figure A-2.

Table 6-2: Soil Drainage in the Local Study Area and Project Development Area

Drainage	Site Study Area		Local Study Area	
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
Very rapid (x)	3.9	0.1	5.6	0.1
Rapid (r)	25.4	0.9	76.0	2.0
Well (w)	1,337.8	49.9	1,868.1	48.3
Moderately well (m)	383.8	14.3	529.0	13.7

Drainage	Site Study Area		Local Study Area	
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
Imperfect (i)	212.5	7.9	311.6	8.1
Poor (p)	167.6	6.3	242.4	6.3
Very Poor (v)	448.2	16.7	599.1	15.5
Null (open water or anthropogenic)	101.7	3.8	236.7	6.1
Total[a]	2,680.9	100.0	3,868.6	100.0

a) Numbers may not add up due to rounding.

6.1.3 Terrain Stability in the Site Study Area and Local Study Area

Table 6-3 summarizes the terrain stability classes mapped within the SSA and LSA. Approximately 3,814.8 ha (98.6%) of the LSA is considered to be stable (Terrain Stability Class I, II, III and Null), 46.4 ha (1.2%) has been mapped as potentially unstable (Class IV), 7.3 ha (0.2%) as unstable (Class V).

Areas of Potentially unstable (Class IV) and Unstable (Class V) terrain have been mapped as a steep bedrock outcrop (Class V) as well as thin till materials on a very steep slope (Class IV) in the centre of the proposed mine rock stockpile. These two areas are associated with the potential for rockfall and smaller, shallow landslides. A third area identified as a potential failure (slump) on the west side of the proposed Rose Pit has been mapped as unstable as well. Adjacent and south of this potential slump, there is a relatively subdued slope (average of 15% grade) showing features that may be indicative of solifluction or minor slumping, so this slope has been assigned a Class IV stability. Terrain stability classes assigned in the LSA can be found in the terrain polygon labels in Appendix A, Figure A-2.

Table 6-3: Terrain Stability Classes in the Site Study Area and Local Study Area

Terrain Stability Class	Site Study Area		Local Study Area	
	Area (ha)	Area (ha)	Percentage (%)	Percentage (%)
Stable (I)	1,527.3	2,163.4	55.9	57.0
Generally stable (II)	851.8	1,147.0	29.7	31.8
Moderately stable (III)	153.0	267.7	6.9	5.7
Potentially unstable (IV)	39.7	46.5	1.2	1.5
Unstable (V)	7.3	7.3	0.2	0.3
Null (open water or anthropogenic)	101.7	236.7	6.1	3.8
Total[a]	2,680.9	3,868.6	100.0	100.0

a) Numbers may not add up due to rounding.

6.2 Soil

6.2.1 Field Survey

Field surveys in the LSA were completed from September 24th to 30th, 2023. A total of 62 detailed inspection sites were completed with 31 sites completed outside the SSA (Appendix B). An additional 22 ground truthing sites were recorded and used to support final mapping. Soil samples were collected from 12 inspection sites during the field survey and submitted for baseline chemical and physical analyses. Laboratory and chemical analysis results are presented in Section 6.4.3. The survey was focused on the anticipated SSA. The field assessment for the SSA conforms to Survey Intensity Level 3 (SIL 3), with 1 soil inspection site per 45 ha. Detailed terrain, site, and soil horizon data accompanied with an abbreviation key is found in Appendix B.

6.2.2 Soil Mapping and Characteristics

Much of the LSA is characterized by topography that ranges from inclined to undulating with some level areas and minor areas of steeper slopes associated with bedrock outcrops.

Soil in the LSA has developed on very coarse (sand to loamy sand) to moderately coarse (sandy loam to fine sandy loam) till with organic accumulations found in lower, level, or depressional slope positions, or in areas with variable water levels adjacent to water bodies. There are inclusions of gravelly and very coarse (sand) glaciofluvial materials within the LSA, with the most extensive area associated with the Waldorf River Eskers. Lacustrine materials are also found adjacent to lakes, and these materials are moderately fine (loam) textured. Fluvial materials composed of up to 80% coarse fragments and organic materials were commonly found between networks of small lakes common in the LSA.

Soil Map Units (SMUs) within the LSA were assigned based on similarities of materials, soil drainage, topography, and soil development. Fourteen soil map units were developed or adapted from the Detailed soil survey of Javelin Road, Canning Lake, Huguette Lake areas in Labrador West (Government of Newfoundland and Labrador 2004). Three of the SMUs are associated with organic material, and three of the SMUs are water, bedrock, or anthropogenic areas. The remaining eight SMUs describe mineral soil of varying textures and drainages. Details on the characteristics and descriptions of the SMUs are provided in Table 6-4. The distribution of the SMUs within the LSA is displayed in Appendix A, Figure A-3 and Appendix C provides representative photos for each SMU.

Table 6-4: Soil Map Unit Descriptions for the Kami Local Study Area

SMU Symbol	SMU Name	Associated Surficial Material	Associated Terrain Call	Dominant Soil Texture/Coarse Fragments				Soil Types		Dominant Drainage Class	Dominant Slope Gradient	Average Depth to Bedrock	Representative Sampled Sites	Upper Lift Quality Criteria	Lower Lift Quality Criteria	Upper Lift Wind Erosion	Lower Lift Wind Erosion	Upper Lift Compaction	Lower Lift Compaction	Project Development Area		Local Study Area	
				Surface		Subsurface		Major	Significant/ Minor											Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
				Texture	Coarse Fragments	Texture	Coarse Fragments																
CAL	Canning Lake	Till	Mp	SL	0	SL	0	R.G	O.G	Poor	3	>3 m	K23CB020	Fair	Fair	Moderate	Moderate	Moderate	Moderate	165.3	6.2	243.7	6.3
FLO	Flora Lake	Organic/Till	Ov/M	Fibric	N/A	Fibric	N/A	T.F	TY.M, TY.F, T.M	Very Poor	0	>3 m	NA	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated	166.8	6.2	245.8	6.4
HUL	Huguette Lake	Glaciofluvial	FG	S	0	S	18	O.FHP	E.DYB, O.DYB	Rapid	11	>3 m	K23LM023	Unsuitable	Unsuitable	High	High	Low	Low	61.0	2.3	107.1	2.8
JAL	Jean Lake	Lacustrine	Lp	L	0	L	0	O.R	R.G	Well to Moderately Well	2	>3 m	K23CB028	Fair	Fair	Moderate	Moderate	Low	Low	3.5	0.1	13.0	0.3
JAV	Javelin Road	Till	Mu	SL	23	SL	32	O.HFP	E.DYB, OT.HP, O.FHP	Well	10	>3 m	K23CB009	Unsuitable	Poor	Moderate	Moderate	Low	Low	709.2	26.5	989.7	25.6
LAB	Labrador	Till	Mj	SL	22	SL	27	E.DYB	GL.R, GL.DYB, GL.FHP, O.HFP	Well to Moderately Well	7	>3 m	K23CB010	Unsuitable	Poor	Moderate	Moderate	Low	Low	698.9	26.1	969.4	25.1
LAV	Lake Virot	Till/Bedrock	Mv/Ru	SL	3	SL	5	O.HFP	E.DYB	Well	5	>100 cm	K23CB011	Unsuitable	Poor	Moderate	Moderate	Low	Low	100.3	3.7	150.2	3.9
MIL	Mills Lake	Organic	Ov	Humic	80	Humic	80	T.H	HU.FO	Very Poor	0	>3 m	K23CB024	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated	15.0	0.6	21.2	0.5
R1	Rock	Bedrock	R	N/A	-	N/A	-	-	-	Very Rapid	-	0 m	-	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.9	0.1	5.6	0.1
WAB	Wabush	Till	Mp	SL	20	SL	22	GL.FHP	O.HP, R.G	Imperfect	2	>3 m	K23CB018	Poor	Poor	Moderate	Moderate	Low	Low	370.3	13.8	529.0	13.7
WDR	Waldorf River	Fluvial	Fv/Mp	N/A	80	N/A	80	R.G	R	Imperfect to Poor	2	>3 m	K23CB025	Unsuitable	Unsuitable	Not Rated	Not Rated	Low	Low	16.7	0.6	22.4	0.6
WLR	Walshes River	Organic	Ob or Op	Fibric	N/A	Fibric	N/A	TY.F	TY.M	Very Poor	0	>3 m	K23CB002	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated	268.3	10.0	334.9	8.7
ZDL	Anthropogenic	Anthropogenic	A	-	-	-	-	-	-	-	-	-	-	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	3.3	0.1	62.0	1.6
ZWA	Water	Open Water	N	-	-	-	-	-	-	Water	0	-	-	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	98.4	3.7	174.7	4.5

Anthropogenic (ZDL), Water (ZWA), and Rock (R1)

These three SMUs represent non-soils. Areas mapped as anthropogenic are associated with disturbances to natural materials and soils such as roads, existing borrow pits, and urban areas. Open water identifies areas of open water based on available imagery. Bedrock is mapped in areas where exposed bedrock outcrops were identified.

Canning Lake (CAL)

The Canning Lake SMU was originally described as an Orthic Gleysol by the Government of Newfoundland and Labrador (2004). Based on field data collected by WSP this SMU has been modified to describe poorly drained Rego Gleysols (Appendix C, Photos C-7 and C-8) with inclusions of Orthic Gleysols and peaty phases (i.e., an organic horizon > 10 cm thick) of both types of gleysol. These soils are mainly formed on moderately coarse (sandy loam) till materials with variable coarse fragment content (10% to 80%). They are generally limited to lower, depressional, or level slope positions with very subdued to level topography. They are commonly found in areas with high water tables or seepage in the profile.

Flora Lake (FLO)

The Flora Lake SMU represents Organic soils and was described as a Typic Fibrisol by the Government of Newfoundland and Labrador (2004). For the purpose of this baseline however this SMU is described as very poorly drained Terric Fibrisols (less than 100 cm of organic material) with some inclusions of Terric Mesisols, Typic Fibrisols, and Typic Mesisols (i.e., greater than 100 cm of organic material) organic soils (Appendix C, Photo C-9). The threshold of 100 cm of organic matter accumulation is distinguished from the Canadian System of Soil Classification (SCWG 1998) and was modified to better integrate the SMUs with terrain mapping units. Soils of this SMU are found in depressions, with the exception of some sloping fen environments where they tend to be upslope of much deeper Organic soils. These soils are free of any coarse fragments.

Huguette Lake (HUL)

The Huguette Lake SMU was used by the Government of Newfoundland and Labrador (2004) to described rapidly drained Orthic Ferro Humic Podzols. Inclusions of Eluviated Dystric Brunisols and Orthic Dystric Brunisols have been added to the SMU for this baseline report. These soils are found on very coarse (sand) textured glaciofluvial materials (Appendix C, Photo C-2 and C-3). These areas are often associated with mid to upper slope positions in high relief environments, when compared to the other SMUs.

Jean Lake (JAL)

The Jean Lake SMU represents units composed of well to moderately well drained Orthic Regosols with some inclusions of Rego Gleysols. These soils are generally moderately fine (silt loam to loam) textured lacustrine materials with little to no coarse fragments with variable thickness. There are however inclusions of shallow lacustrine veneers (less than 1m in depth) overlying moderately coarse (sandy loam) textured till with higher coarse fragment content (Appendix C, Photos C-5 and C-6). These soils are not common and are restricted to three polygons in the entire SSA, specifically they are around adjacent to large water bodies such as Jean Lake and Little Wabush Lake. Soils of these SMUs are expected to become more poorly drained with proximity to adjacent water bodies as the profiles are lower in elevation and the water table is found higher in the profile.

Javelin Road (JAV)

The Javelin Road SMU was used by the Government of Newfoundland and Labrador (2004) to represent units composed of well drained Orthic Humo-Ferric Podzols with some inclusions of Eluviated Dystric Brunisols, Ortstein Humic Podzols, and Orthic Ferro-Humic Podzols (Appendix C, Photo C-10 and C-11). These soils are generally developed on moderately coarse (sandy loam) textured till that can have a very high coarse fragment content (5-70%). These soils are commonly found on mid to upper slope positions, in landscapes of hummocks or ridged slopes.

Labrador (LAB)

The Labrador SMU is used to represent units of well to moderately well drained Eluviated Dystric Brunisols, with some inclusions of Gleyed Regosols, Gleyed Dystric Brunisols, Gleyed Ferro-Humic Podzols, and Orthic Humo-Ferric Podzols. These soils have developed on moderately coarse (sandy loam) textured till materials that can have a very high coarse fragment content (5-100%) which tends to increase with depth (Appendix C, Photos C-12 and C-13). Although similar to the Javelin Road SMU, these soils form on gentle slopes and have inclusions of more poorly drained profiles.

Lake Virot (LAV)

The Lake Virot SMU was used by the Government of Newfoundland and Labrador (2004) to represent units composed of moderately well drained shallow Orthic Humo-Ferric Podzols with some inclusions of Eluviated Dystric Brunisols. These soils are developed on moderately coarse (sandy loam) textured till. This SMU is very similar to the Javelin Road SMU, but bedrock is less than 100 cm from the surface in the Lake Virot profiles, and rock outcrops are common (Appendix C, Photos C-14 and C-15).

Mills Lake (MIL)

The Mills Lake SMU characterises Organic soil units composed of very poorly drained Typic Humisols with some inclusions of Humic Folisols. These soils are generally composed of humic materials with a very high coarse fragment content (>70%) in the form of rounded cobbles and boulders but can also include minor areas of Terric Mesisols with coarse fragments (Appendix C, Photo C-16). They are associated with areas beside rivers or small steam systems connecting other water bodies.

Wabush (WAB)

The Wabush SMU was used by the Government of Newfoundland and Labrador (2004) to represent units composed of imperfectly drained Gleyed Ferro-Humic Podzols with inclusions of Orthic Humic Podzols and Rego Gleysols. Peaty phased soils, which have an organic horizon more than 10 cm thick, are common in this SMU (Appendix C: Photo C-17 and C-18). Wabush soils are composed of moderately coarse (sandy loam) till and generally have a very high coarse fragment content (15-60%) throughout the profile. They are associated with lower slope positions in undulating terrain and commonly have seepage at a depth of less than 30 cm. Wabush soils are distinguished from the Canning Lake SMU as their profiles are more strongly developed and they are generally better drained and/or drier.

Walshes River (WLR)

The Walshes River SMU was used by the Government of Newfoundland and Labrador (2004) to represent units composed of ribbed fen deposits with a high proportion of open water. However, for the purpose of this baseline a more specific description is required. This SMU is characterized by very poorly drained typic fibrisols with inclusions of typic mesisols (Appendix C, Photo C-19). These soils have no coarse fragments and are found in plain environments. This SMU is different from the other Organic SMUs as it has deep organic soils (more than 100 cm of organic material).

Waldorf River (WDR)

The Waldorf River SMU characteries units composed of imperfect to poorly drained rego gleysols. These soils are composed of up to 90% coarse fragments, specifically in the form of rounded cobbles and boulders from fluvial systems (Appendix C: Photo C-4). This SMU varies from the Mills Lake SMU as they have inclusions of active fluvial channels or open water.

6.2.3 Soil Chemistry and Physical Characterisation

Samples were collected at 12 field inspection locations. Of these 12 sites, 36 samples were collected from representative soil types in the LSA and submitted to Bureau Veritas Laboratories for analyses. Chemical lab results from Bureau Veritas Laboratories are provided in Appendix D.

Metals analyses were completed on a limited number of samples using Bureau Veritas Laboratories. Two samples have concentrations of metals higher than the guidelines:

- K23CB001Ae0-8 exceeds the criteria for Chromium (Appendix A, Figure A-3j)
- K23CB028C0-120 exceeds the criteria for Chromium (Appendix A, Figure A-3a)

Appendix E shows these results compared with Canadian Council of Ministers of the Environment (CCME 2023) guidelines and criteria.

6.2.4 Soil Reclamation Suitability

Criteria in Table 4-2 (Section 4.1.3) were used to assign soils a good, fair, poor, or unsuitable class, or rating for use in reclamation.

Based on the soil mapping within the LSA, approximately 2,238.8 ha (57.9%) of the mineral soils were assigned an overall rating of Unsuitable, 550.9 ha (14.2%) are considered Poor, and the remaining 234.6 ha (6.1 %) is Fair (Table 6-5). Spatial extents of reclamation suitability ratings for the upper lift are displayed in Appendix A, Figure A-4. Organic soils were not assigned reclamation suitability ratings as the rating system was not designed to capture organic soils (ASAC 1987).

Of the mineral SMUs, CAL, and JAL were the only SMUs assigned an overall reclamation suitability of fair, WAB was assigned a poor rating, and five (HUL, JAV, LAB, LAV, and WDR) within the LSA were assigned an unsuitable reclamation suitability rating (Table 6-6). Appendix F details the reclamation suitability classification, individual horizon ratings with each criteria, and associated limiting factors of each soil sample submitted for analysis.

The SMUs were rated as unsuitable due to very low pH values (<3.5) in the Ae horizons (HUL, JAV, LAB, and LAV) or because of very high coarse fragment content (WDR). The LAV SMU (well drained O.HFP profile with bedrock within 1 m) was assigned a reclamation suitability of unsuitable due to its profile similarities with JAV (well drained O.HFP with bedrock beyond 1 m). LAV was not sampled as soil properties are capture by the sample collected for the JAV SMU.

While pH did increase with depth it remained low in some SMUs, and combined with high coarse fragment content it was also identified as a limiting factor in the lower lift of many SMUs. Other limiting factors contributing to poor to fair ratings of the other mineral SMUs are coarse textured material, low saturation percentage, consistency, and low organic carbon content. A low saturation percentage and coarser (sandier) textures would reduce water holding capacity due to low porosity which is reflected in the low saturation percentages.

It should be noted that Poor, and even Unsuitable suitability classes do not mean the material cannot be used for reclamation and vegetative regrowth, but that it may require careful planning, good management, and possible soil amendments to change the rating to a more suitable category.

Though pH impacts nutrient availability and 6.5 to 8.0 is considered optimum for availability, not all nutrients are available in the same pH range (Munroe 2018). In addition, the very low pH identified in the SSA is not uncharacteristic or unexpected of the soils (Podzols) common in the SSA. Podzols tend of have lower pH because of vegetation, climate, and parent material, however this does not mean they are incapable of supporting vegetation growth (Sandborn et al. 2011).

Table 6-5: Soil Reclamation Suitability Ratings in the Site Study Area and Local Study Area

Reclamation Suitability Class	Site Study Area		Local Study Area	
	Area (ha)	Area (ha)	Percentage (%)	Percentage (%)
Good	0	0	-	-
Fair	155.0	234.7	6.1	5.8
Poor	384.0	550.9	14.2	14.3
Unsuitable	1,586.1	2,238.8	57.9	59.2
Not Rated[(a)]	450.1	601.9	15.6	16.8
Not Applicable[(a)]	105.7	242.3	6.3	3.9
Total[(b)]	2,680.9	3,868.6	100.0	100.0

a) Rock (R1), water (ZWA), anthropogenic (ZDL) are not applicable and organic (FLO, MIL, WLR) units were not rated.

b) Numbers may not add up due to rounding.

Table 6-6: Reclamation Suitability Ratings and Limitations for Soil Map Units in the Potential Limit of Disturbance

Soil Map Unit Symbol (Representative Site ID)	Reclamation Suitability	
	Rating	Limitation(s)
CAL (K23CB020)	Fair	Low saturation, low organic carbon
FLO[(a)]	Not Rated	Organic

Soil Map Unit Symbol (Representative Site ID)	Reclamation Suitability	
	Rating	Limitation(s)
HUL (K23LM023)	Unsuitable	**Low pH,** coarse texture, low organic carbon, high coarse fragment content, consistency
JAL (K23CB030)	Fair	Low saturation, low organic carbon
JAV (K23CB023)	Unsuitable	**Low pH,** coarse texture, low organic carbon, consistency, high coarse fragment content
LAB (K23CB010)	Unsuitable	**Low pH**, coarse texture, low saturation, high coarse fragment content
LAV (K23CB023)[c]	Unsuitable	**Low pH,** low saturation, consistency, high coarse fragment content
MIL[a]	Not Rated	Organic
R1[a]	Not Applicable	Rock
WAB (K23CB018)[b]	Poor	Low pH, **texture,** consistency, low organic carbon, coarse fragment content, consistency
WRD[d]	Unsuitable	**Very high coarse fragments**
WLR[a]	Not Rated	Organic
ZDL[a]	Not Applicable	Anthropogenic
ZWA[a]	Not Applicable	Water

a) Rock (R1), water (ZWA), anthropogenic (ZDL) are not applicable and organic (FLO, MIL, WLR) units were not rated.

b) Sample mis-labelled during lab analysis, displayed as K23CB017 in lab analysis found in Appendix C

c) SMU not sampled but used similarly representative profile except for soil profile not being within 1 m of bedrock, as described for the LAV SMU

d) Sample not collected as insufficient mineral material typically found at site

Bold indicates the most limiting factor, if not bolded all factors are equally limiting

6.2.5 Soil Wind Erosion Risk

Soil wind erosion risk in the LSA is dominantly Moderate with Moderate ratings assigned to 2,743.9 ha (70.9%) (Table 6-7). Soils of the LSA are dominated by loamy sand, sandy loam or in some cases sand. These soils tend of much larger in particle size and have a higher resistance to movement by wind factor than other finer (heavy clay, clay, and silty clay) soil surface texture classes (Coote and Pettapiece 1989). The spatial distribution of wind erosion risk ratings based on the surface soil representative texture is displayed in Appendix A, on Figure A-5.

Table 6-7: Wind Erosion Risk Ratings in the Site Study Area and Local Study Area

Wind Erosion Risk Class	Site Study Area		Local Study Area	
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
Low	0	-	0	-
Moderate	1,949.5	72.7	2,743.9	70.9
High	159.0	5.9	258.1	6.7
Not Rated[a]	466.8	17.4	624.3	16.1
Not Applicable[a]	105.7	3.9	242.3	6.3
Total[b]	2,680.9	100.0	3,868.6	100.0

a) Rock (R1), water (ZWA), anthropogenic (ZDL) are not applicable and organic (FLO, MIL, WLR) units were not rated.

b) Numbers may not add up due to rounding.

6.2.6 Soil Water Erosion Risk

Soil water erosion risk on rated soils in the LSA is dominantly Very Low, with 1,278.4 ha (33.1%) rated as Low (Table 6-8). Similar to the Soil Wind erosion risk, the coarse textured (SL, LS, or S) soils of the SSA have higher K values, indicating they are only very slightly susceptible to water erosion (Wall et al. 2002). Coarse textured soils also lend to better infiltration, with leads to less runoff and water erosion (Wall et al. 2002). Ratings were not assigned to 22.4 % of the LSA because these are areas of open water, rock, organic or anthropogenic materials. Organic soils (FLO, MIL, and WLR) were not rated in Table 6-8 as the water erosion risk calculations are set up for mineral soil, however soils high in organic matter are better able to resist erosion (Government of Alberta 2018), as well as their association with generally level topography lending to water erosion resistivity. The fluvial Waldorf River (WDR) SMU was also not rated as it is described as material that has already had the finer textured material washed (eroded) from it, leaving only coarse fragments which are not susceptible to water erosion. The spatial distribution of water erosion risk ratings for surface soil is displayed in Appendix A, on Figure A-6.

Table 6-8:Water Erosion Risk Ratings in the Site Study Area and Local Study Area

Water Erosion Risk Class	Site Study Area		Local Study Area	
	Area (ha)	Area (ha)	Percentage (%)	Percentage (%)
Very Low	859.8	1,278.4	33.1	32.1
Low	241.0	308.9	8.0	9.0
Moderate	344.7	482.3	12.5	12.9
High	416.8	519.0	13.4	15.6
Severe	246.2	413.4	10.7	9.2
Not rated	572.4	866.6	22.4	21.4
Total[a]	2,680.9	3,868.6	100	100

a) Numbers may not add up due to rounding.

6.2.7 Soil Compaction Risk

Soil compaction risk is assigned based mainly on soil texture and soil drainage; 2,783.3 ha (71.9%) of the LSA were assigned a Low risk class for soil compaction (Table 6-9). Soil texture and moisture are some of the most important parameters related to soil compaction. Research indicates that soil compaction increases with increasing clay content, therefore the fact that soils of the LSA have inherently low clay content, being mostly sandy loam, loamy sand, and clay; makes them less susceptible to compaction (Cannon and Landsburg 1990). Areas of Organic soils have not been rated but would likely be at a High risk for compaction as mentioned in Section 4.1.6. Open water, rock, and previously disturbed areas in the LSA were also not rated for compaction risk (“Not rated” in Table 6-9). Appendix A, Figure A-7 shows the spatial extent of compaction risk ratings assigned for surface soil.

Table 6-9: Soil Compaction Risk Ratings in the Site Study Area and Local Study Area

Soil Compaction Risk Class	Site Study Area		Local Study Area	
	Area (ha)	Percentage (%)	Area (ha)	Percentage (%)
Low	1,960.8	73.1	2,783.4	71.9
Moderate	163.4	6.1	239.5	6.2
High	0.9	<0.01	1.6	<0.01
Not Rated[(a)]	450.1	16.8	601.9	15.6
Not Applicable[(a)]	105.7	3.9	242.3	6.3
Total[(b)]	2,680.9	100	3,868.6	100

a) Rock (R1), water (ZWA), anthropogenic (ZDL) are not applicable and organic (FLO, MIL, WLR) units were not rated.

b) Numbers may not add up due to rounding.

7.0 KEY FINDINGS

In summary, the Kami LSA overlies rocks from the Paleoproterozoic Era. Surficial materials are dominated by till (moraine) followed by organic accumulations. The majority of the LSA is mapped as stable terrain, with minor areas mapped as potentially unstable or unstable in association with small areas of rockfall, and a potential landslide and potential solifluction processes on the west side of the proposed Rose Pit. Topography of the LSA is relatively planar with inclined and rolling landscapes found on slopes adjacent to lakes and fluvial systems and steep slopes found in association with bedrock outcrops.

Soils of the LSA are generally Brunisols and Podzols, with some areas of Organic soils. Reclamation suitability for soils is generally classified as unsuitable due to very low pH values (<3.5) in the upper soil horizons or because of very high coarse fragment content. Mineral soils were generally classified to be at a moderate risk for wind erosion, very low risk for water erosion, and low risk for soil compaction. Over half of the LSA is classified as well drained and less than a quarter of the LSA is very poorly drained. The remaining area is mapped as either imperfectly to poorly drained due to fluctuating water tables, inundation, or seepage. A nearly negligible area of the LSA is considered to be very rapidly drained and associated with exposed bedrock.

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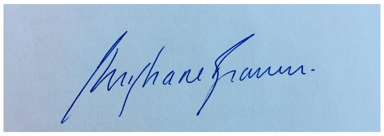

Christiane Brouwer
Terrain Mapper

Laura McFarlan
Associate, Soil Scientist

Anne Sommerville
Lead, Terrain Scientist

CB/LM/AS/sp

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APPENDIX A

Terrain and Soil Figures

Terrain Symbol Legend

Surficial Material

A	Anthropogenic
C	Colluvium
D	Weathered Bedrock (in situ)
E	Loess\Eolian
F	Fluvial
FG	Glaciofluvial
I	Ice
L	Lacustrine
LG	Glaciolacustrine
M	Morainal/Till
N	Waterbody
O	Organic
PG	Preglacial Gravels
R	Bedrock
PA	Pleistocene Alluvium

Texture

a	Blocks
b	Boulders
c	Clay
d	Mixed fragments
e	Fibric organic
g	Gravel
h	Humic organic
k	Cobble
m	Mud
p	Pebbles
r	Rubble
s	Sand
u	Mesic organic
x	Angular fragments
y	Shells
z	Silt

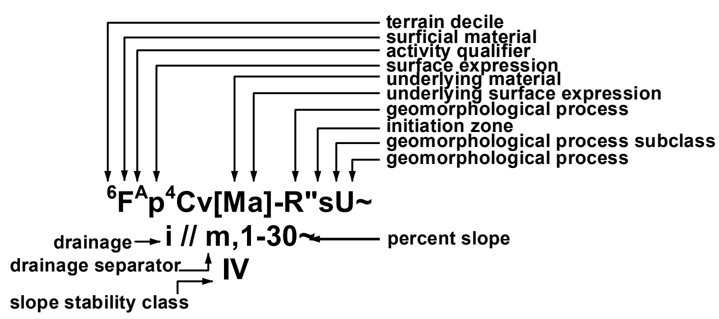
Terrain Stability Classification

Terrain Stability Class	Interpretation
I	No significant stability problems exist
II	Very low likelihood of landslide initiation following land clearing or road/pipeline construction
III	Low likelihood of landslide initiation following land clearing or road/pipeline construction
IV	Moderate likelihood of landslide initiation following land clearing or road/pipeline construction (may include areas of existing potentially unstable terrain)
V	High likelihood of landslide initiation following land clearing or road/pipeline construction (may include areas of existing unstable terrain)

Drainage Code Separator

,	no intermediate classes
-	all intermediate classes
/	first drainage dominant
//	first drainage significantly dominant

Complex Label



Drainage

r	rapid
w	well
m	moderately well
i	imperfect
p	poor
v	very poor
x	very rapid

Surface Expression

a	Moderate Slope
b	Blanket (1 - 3 m)
c	Cone(s)
d	Depression(s)
f	Fan(s)
h	Hummock(s)
j	Gentle Slope
k	Moderately Steep Slope
m	Rolling
p	Plain (> 3 m)
r	Ridge(s)
s	Steep Slope
t	Terrace(s)
u	Undulating
v	Veneer (0.2 - 1 m)
x	Thin Veneer (< 0.2 m)

Geomorphological Process Subclasses

Mass Movement Processes	
b	Rockfall
s	Debris slide
u	Slump in surficial material

Qualifiers

A	Active
I	Intermittant

Geomorphological Process

"	Initiation Zone
D	Deflation
K	Karst Processes
X	Permafrost Processes
V	Gully Erosion
W	Washing
B	Braiding Channel
I	Irregularly Sinuous Channel
J	Anastomosing Channel
M	Meandering Channel
A	Snow Avalanches
F	Slow Mass Movements
R	Rapid Mass Movements
S	Solifluction
E	Eroded
H	Kettled
U	Inundated
L	Surface Seepage

DRAFT

NOTE(S)
1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH WSP'S REPORT.

REFERENCE(S)
1. TERRAIN SYMBOL LEGEND ANNOTATED LIST FROM HOWES & KENK (1997).
2. TERRAIN STABILITY CLASSIFICATION ADAPTED FROM APEGBC (2002 AND MINISTRY OF FORESTS (1999)).

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

CONSULTANT

YYYY-MM-DD	2023-12-20
DESIGNED	LM
PREPARED	AB
REVIEWED	
APPROVED	

TITLE
TERRAIN LEGEND

PROJECT NO.	CONTROL	REV.	FIGURE
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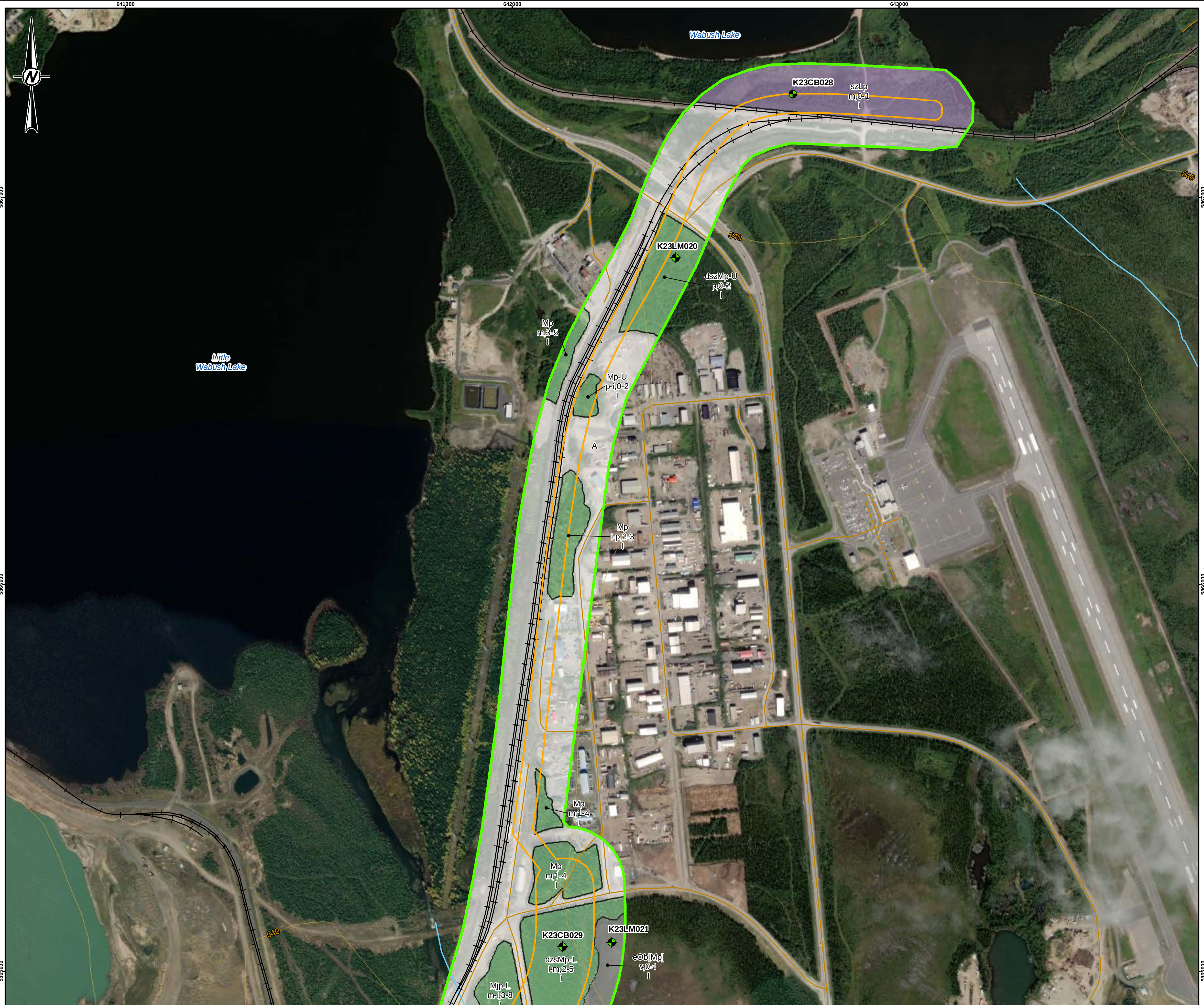


LEGEND

- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

DOMINANT SURFICIAL MATERIAL

- ANTHROPOGENIC (A)
- LACUSTRINE (L)
- MORAINAL (TILL)(M)
- ORGANIC (O)

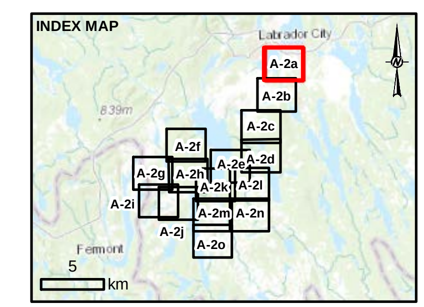
Terrain Polygon Label

szcMbv[Ru]-LV

m // i,6-8

II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE

TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
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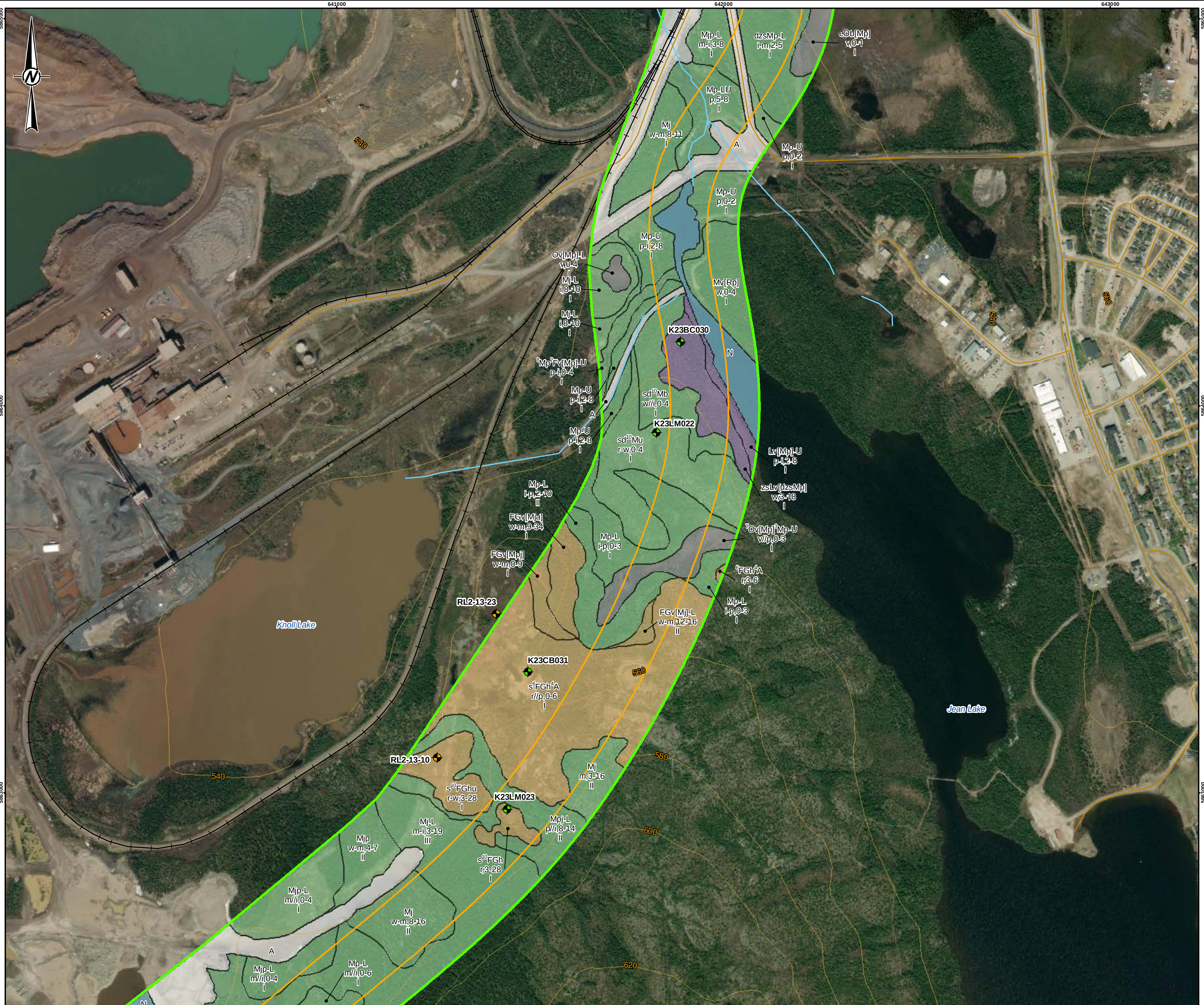


LEGEND

- DRILL HOLE
- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

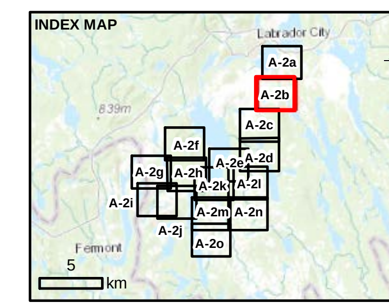
DOMINANT SURFICIAL MATERIAL

- ANTHROPOGENIC (A)
- GLACIOFLUVIAL (FG)
- LACUSTRINE (L)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture; surficial material; surface expression(s); underlying material; underlying surface expression; geomorphological process; drainage; drainage separator; percent slope; terrain stability class



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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
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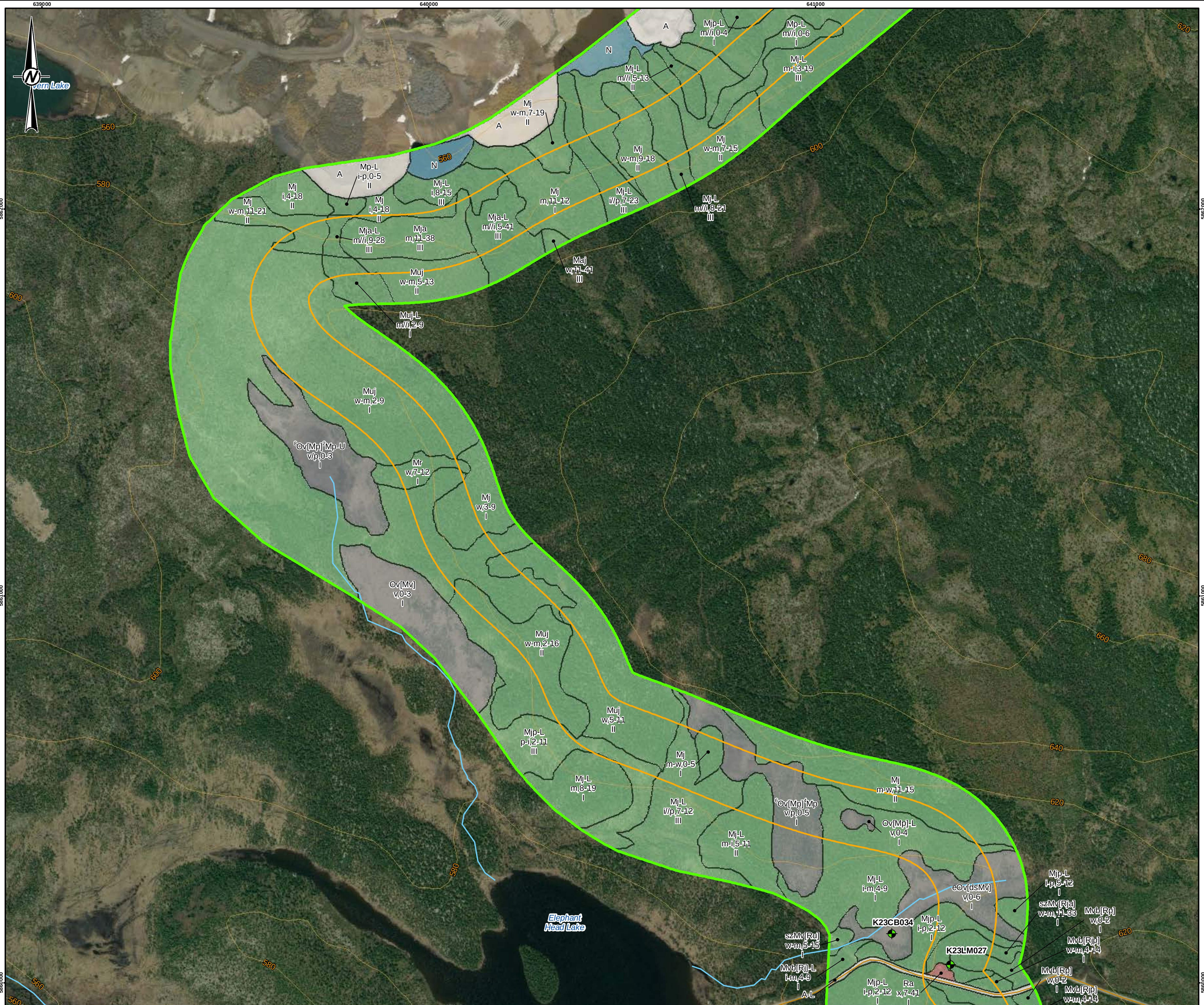


LEGEND

- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

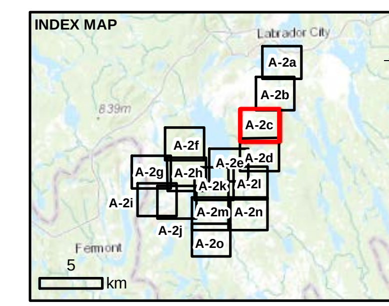
DOMINANT SURFICIAL MATERIAL

- ANTHROPOGENIC (A)
- BEDROCK (R)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
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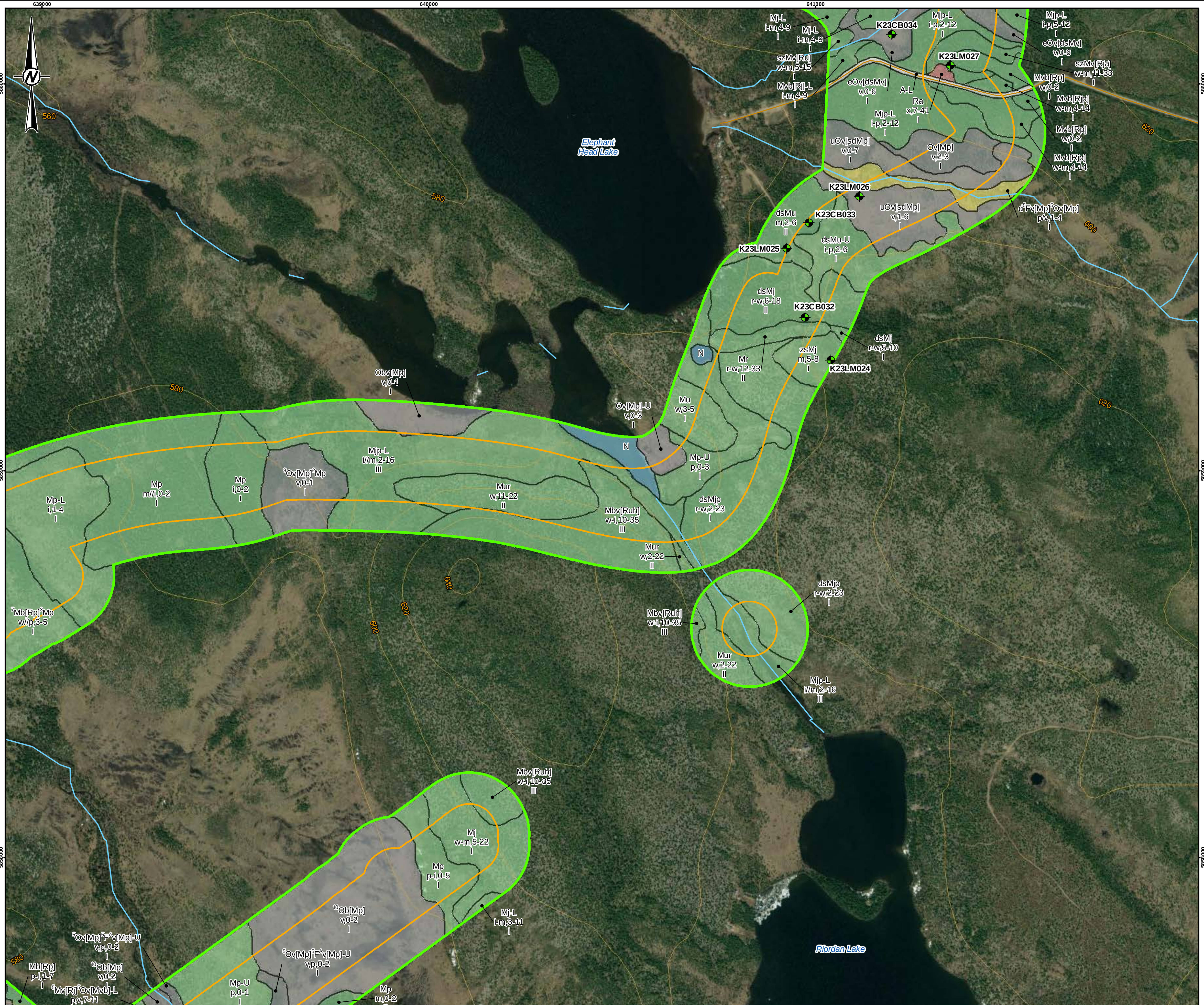


LEGEND

- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

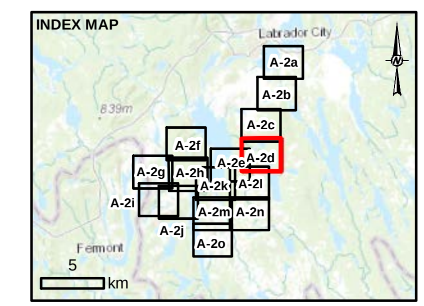
DOMINANT SURFICIAL MATERIAL

- ANTHROPOGENIC (A)
- BEDROCK (R)
- FLUVIAL (F)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE

TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

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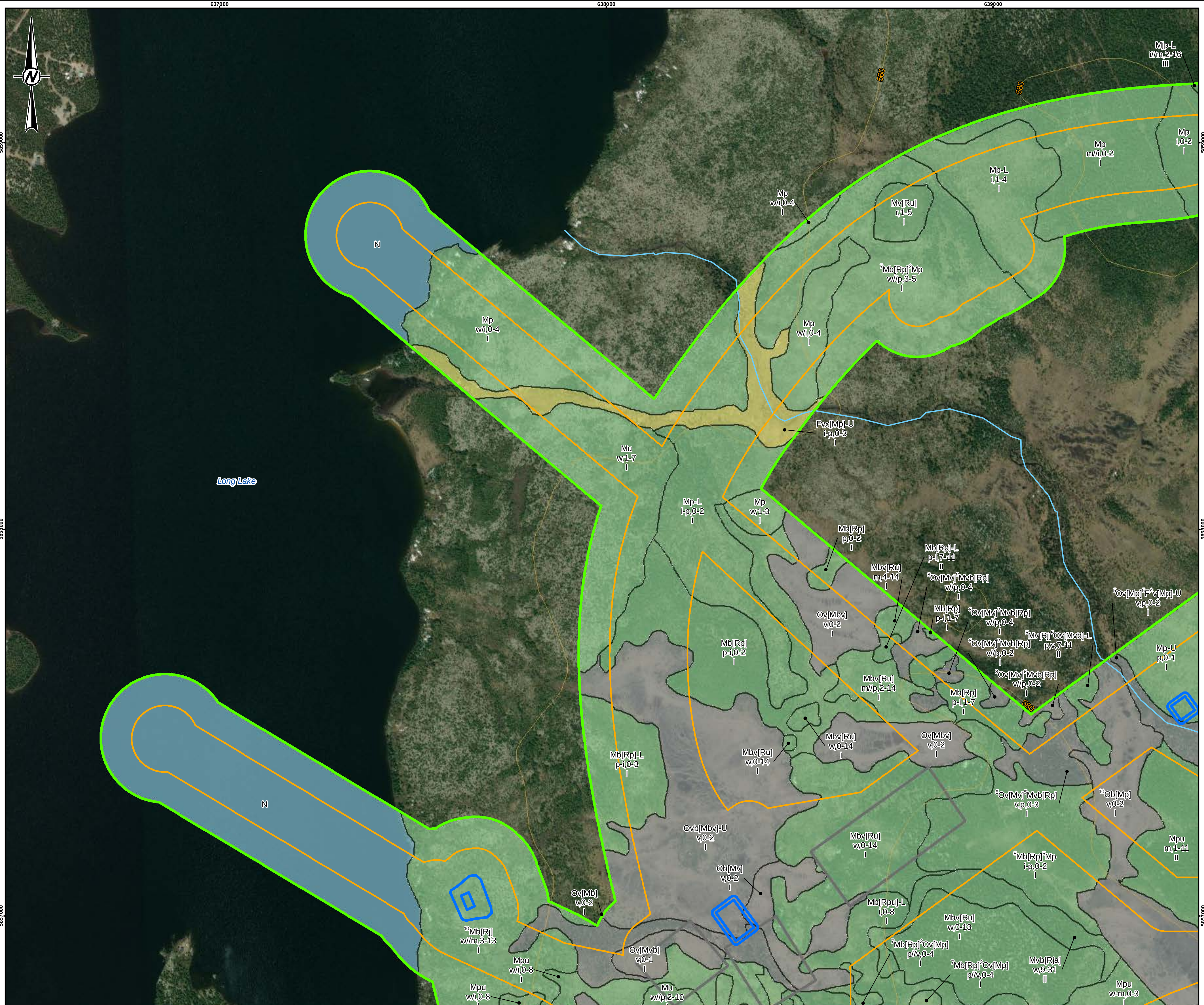


LEGEND

- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA

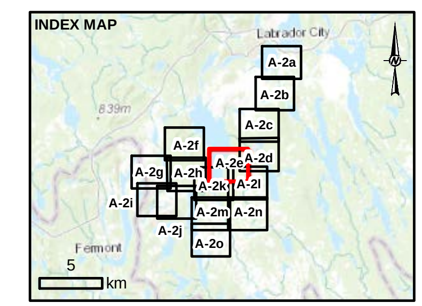
DOMINANT SURFICIAL MATERIAL

- FLUVIAL (F)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
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PROJECT NO.	CONTROL	REV.	FIGURE
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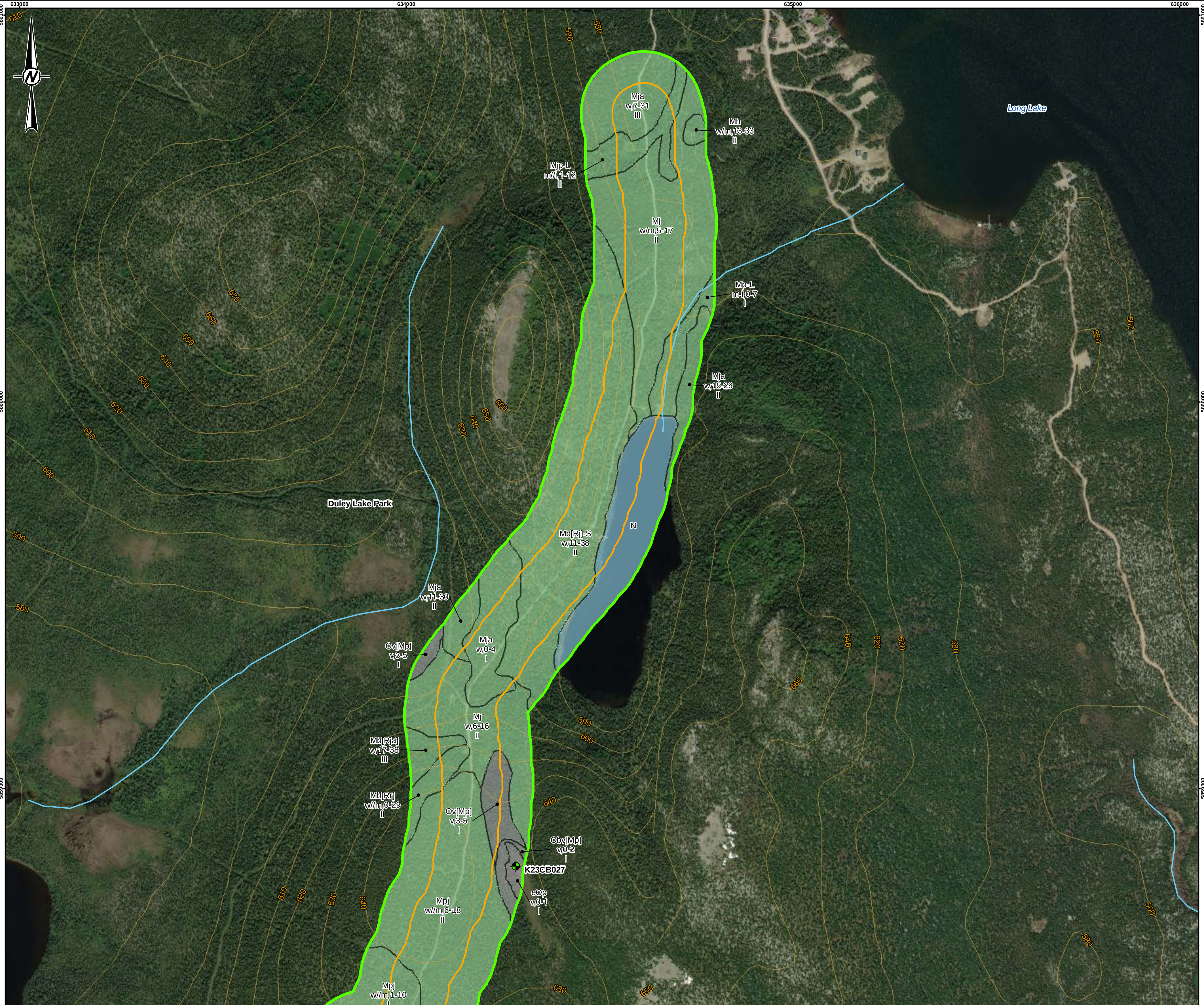


LEGEND

WSP 2023 INSPECTION SITE

CONTOUR (40m INTERVAL)

WATERCOURSE

LOCAL STUDY AREA

SITE STUDY AREA

DOMINANT SURFICIAL MATERIAL

MORAINAL (TILL)(M)

WATERBODY (N)

ORGANIC (O)

Terrain Polygon Label

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process

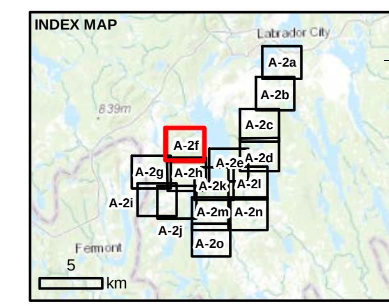
szcMbv[Ru]-LV

drainage → **m // i,6-8** ← percent slope

drainage separator

II

terrain stability class



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CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE

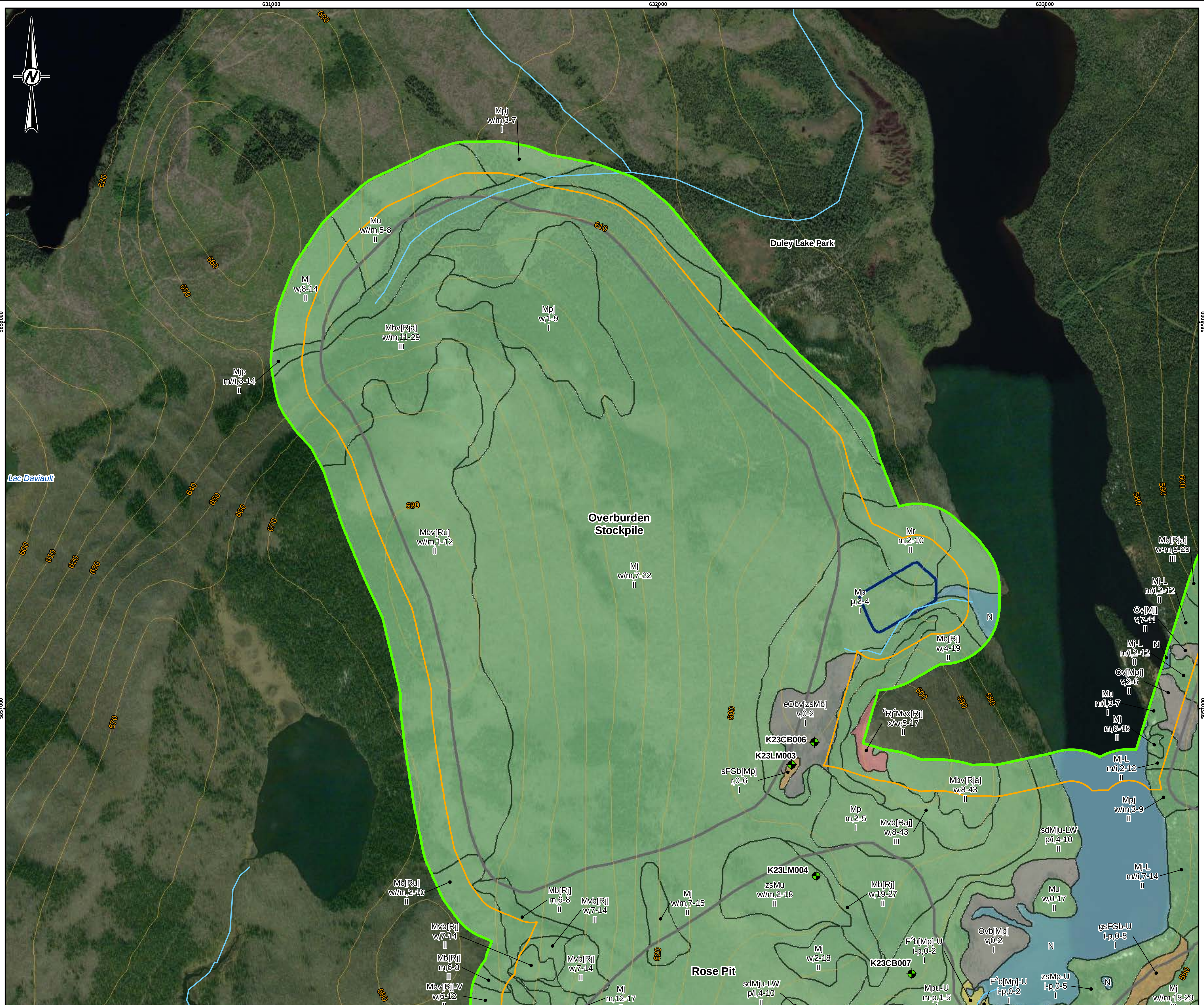
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2f



LEGEND

- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROPOSED SEDIMENTATION POND

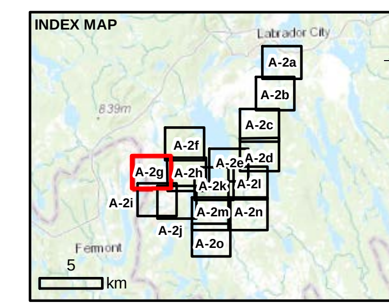
DOMINANT SURFICIAL MATERIAL

- BEDROCK (R)
- FLUVIAL (F)
- GLACIOFLUVIAL (FG)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process
drainage
drainage separator
percent slope
terrain stability class



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CLIENT
CHAMPION IRON MINES

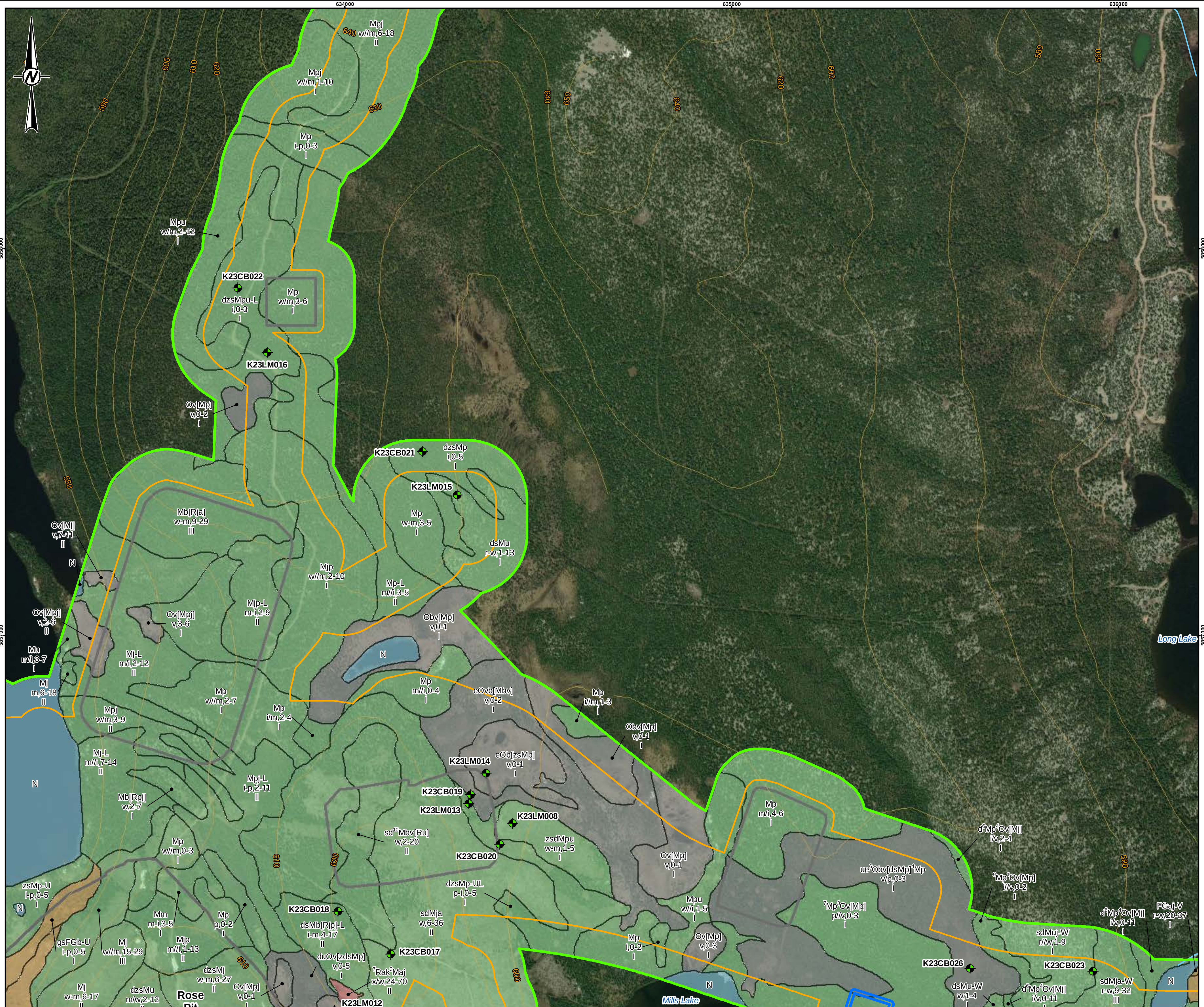
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2g



LEGEND

- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA

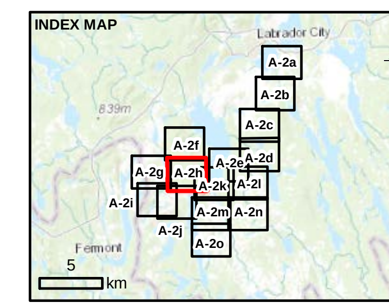
DOMINANT SURFICIAL MATERIAL

- BEDROCK (R)
- GLACIOFLUVIAL (FG)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



DRAFT

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CLIENT
CHAMPION IRON MINES

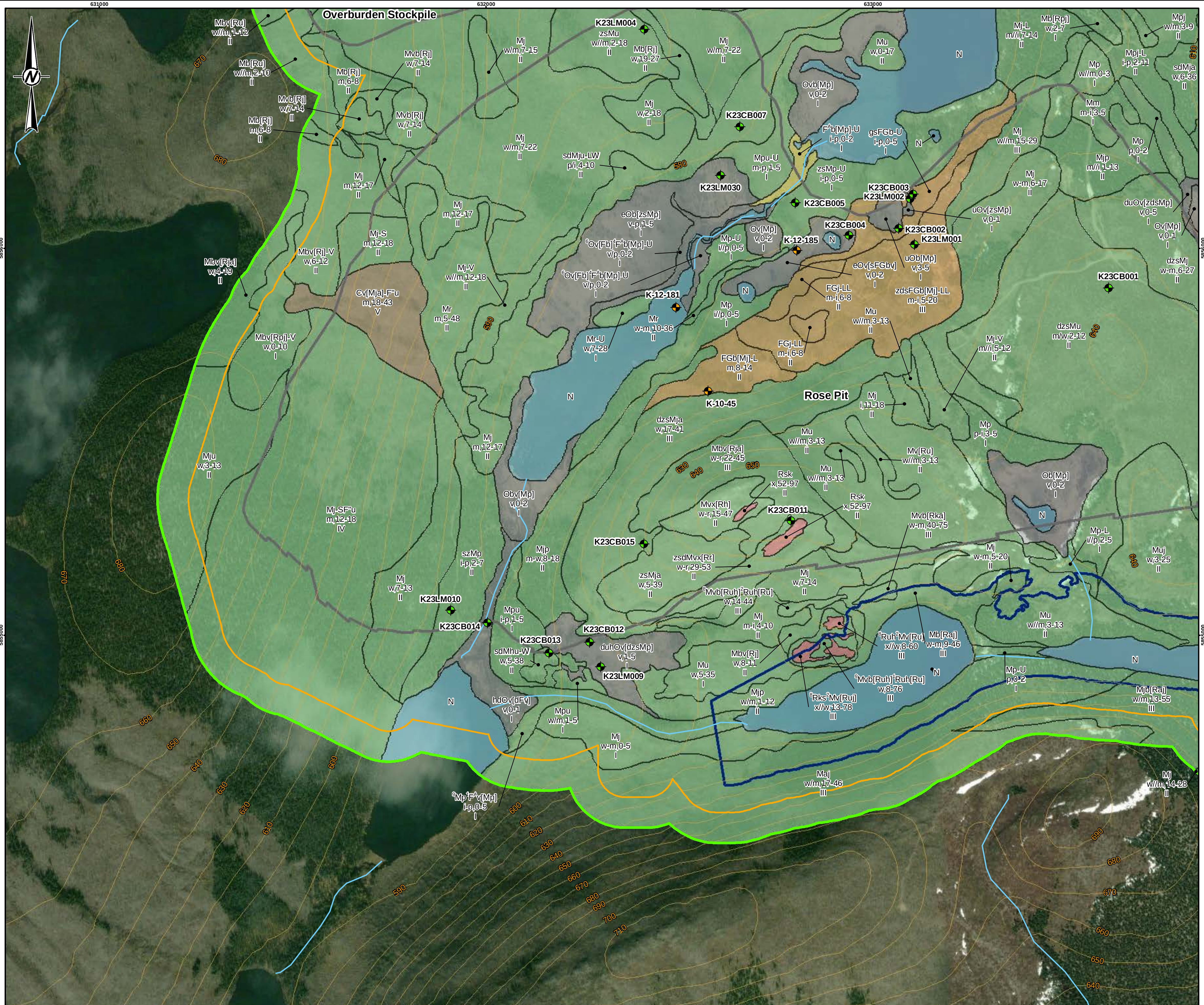
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2h



LEGEND

- DRILL HOLE
- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROPOSED SEDIMENTATION POND

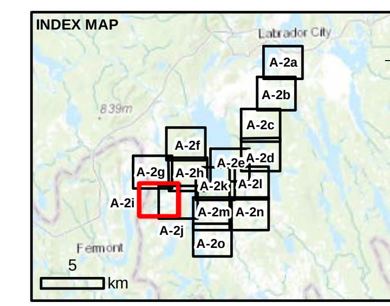
DOMINANT SURFICIAL MATERIAL

- BEDROCK (R)
- COLLUVIUM (C)
- FLUVIAL (F)
- GLACIOFLUVIAL (FG)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process
drainage
drainage separator
percent slope
terrain stability class



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CLIENT
CHAMPION IRON MINES

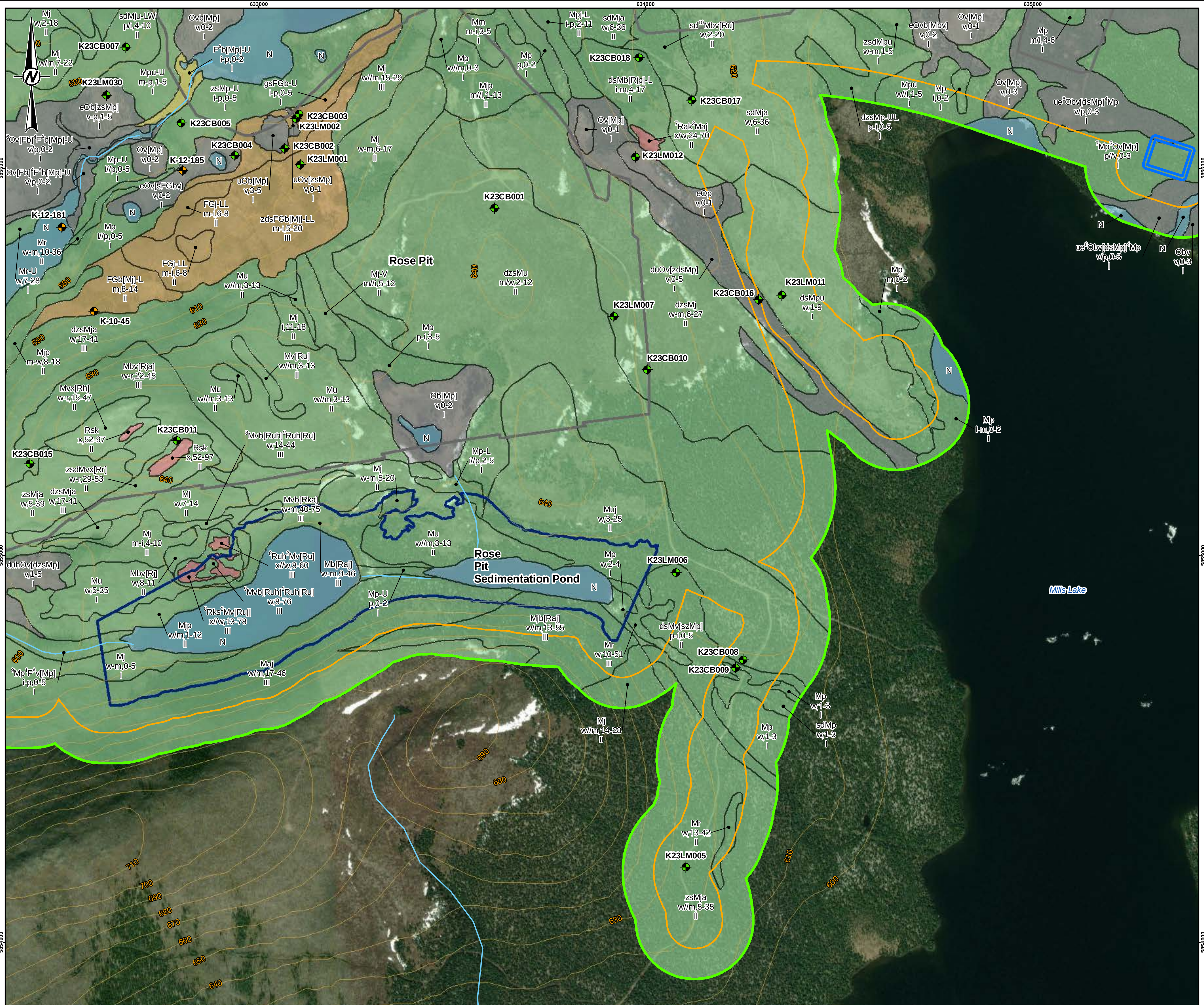
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2i



LEGEND

- DRILL HOLE
- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROPOSED SEDIMENTATION POND

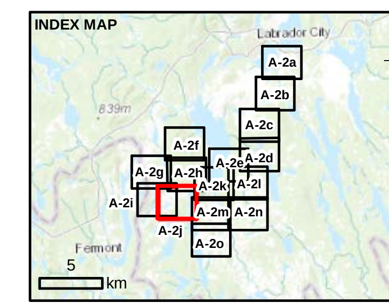
DOMINANT SURFICIAL MATERIAL

- BEDROCK (R)
- FLUVIAL (F)
- GLACIOFLUVIAL (FG)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process
drainage
drainage separator
percent slope
terrain stability class



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CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

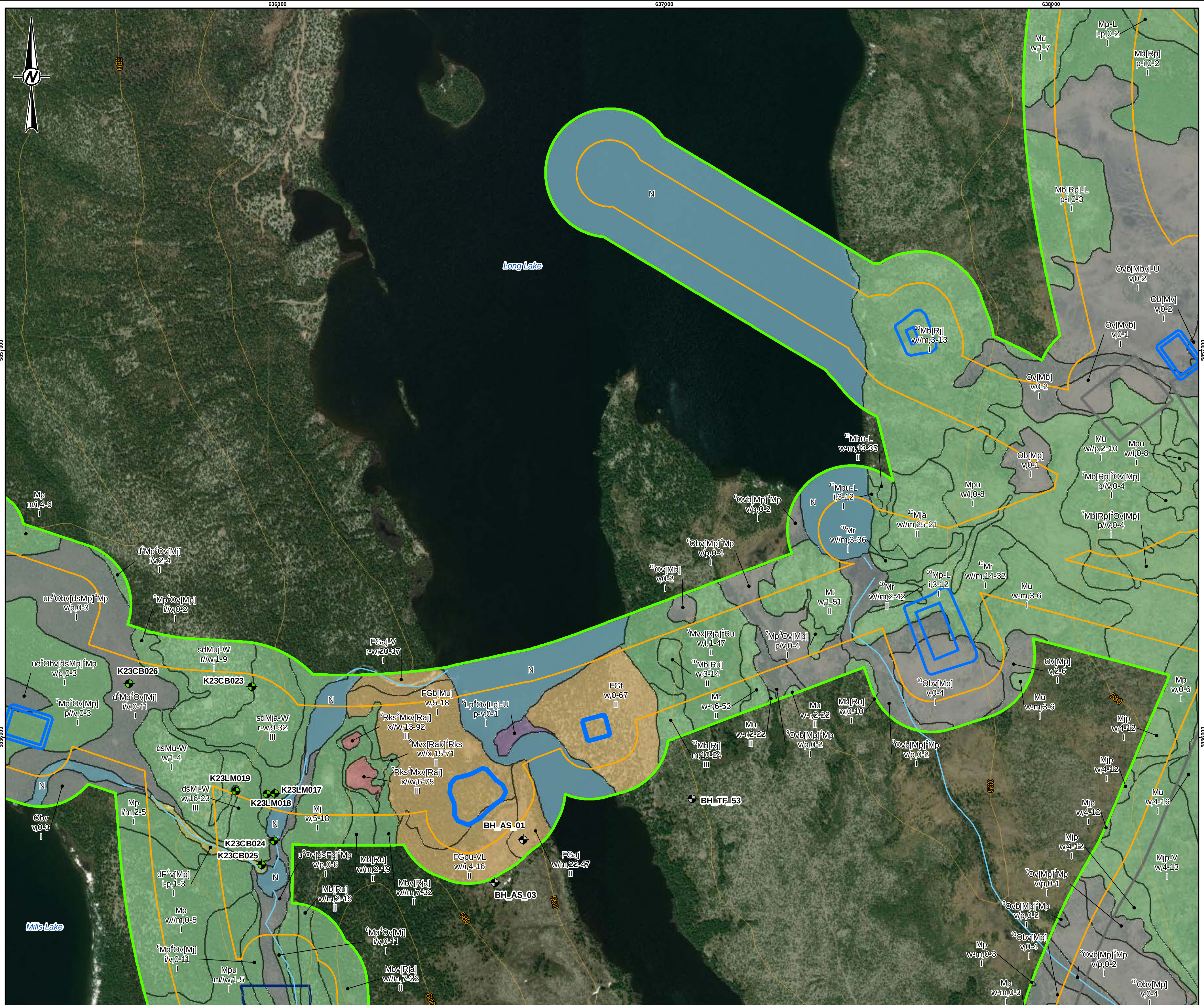
TITLE

TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2j



LEGEND

- BORE HOLE
- WSP 2023 INSPECTION SITE
- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROPOSED SEDIMENTATION POND

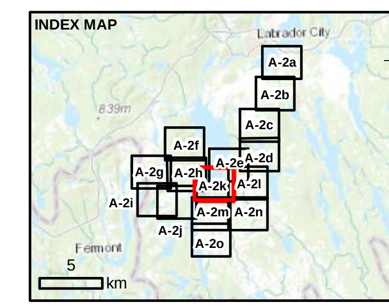
DOMINANT SURFICIAL MATERIAL

- BEDROCK (R)
- FLUVIAL (F)
- GLACIOFLUVIAL (FG)
- LACUSTRINE (L)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE

TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2k

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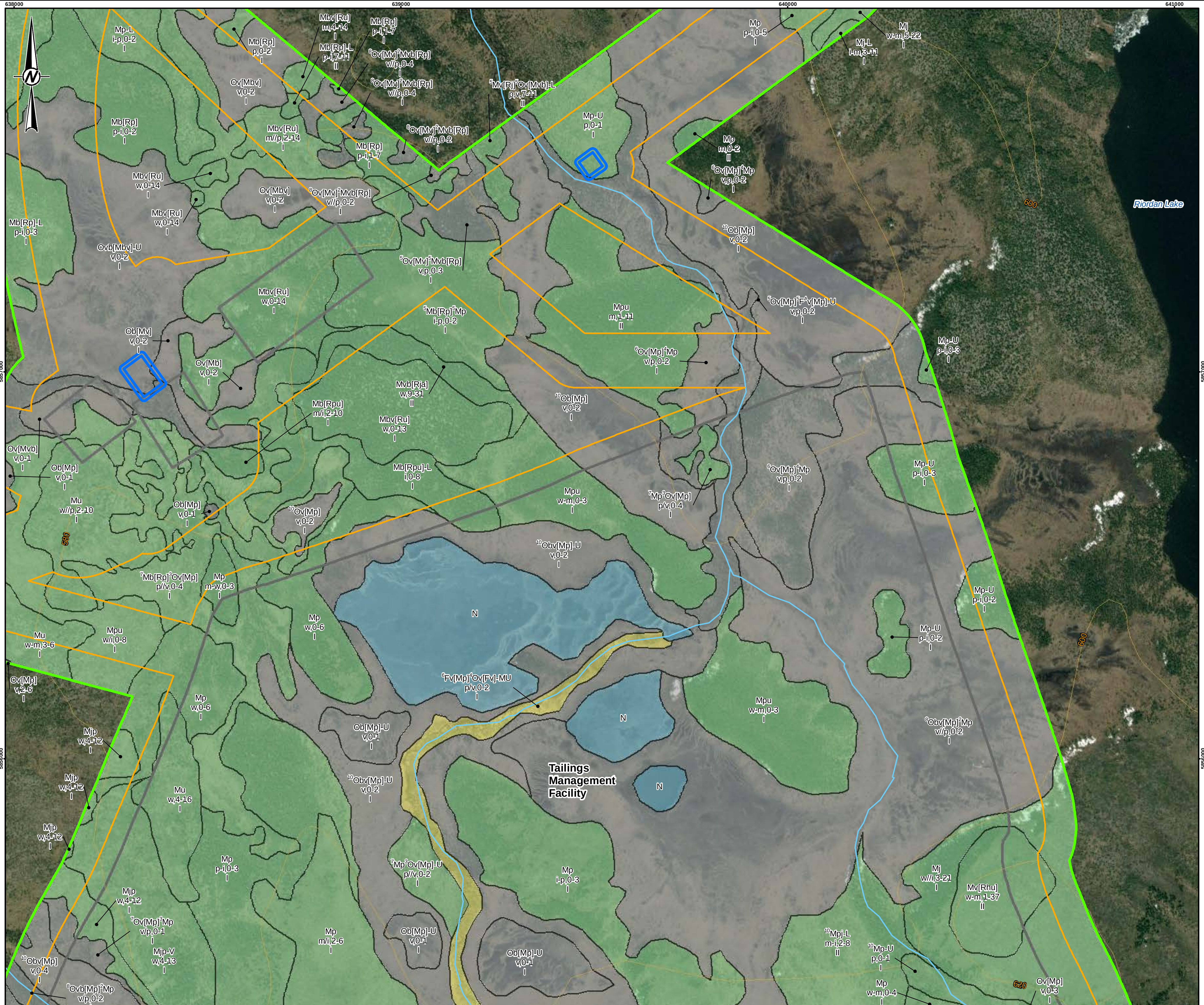


LEGEND

- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA

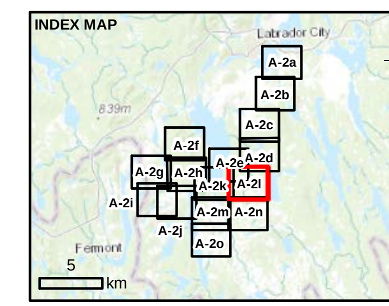
DOMINANT SURFICIAL MATERIAL

- FLUVIAL (F)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

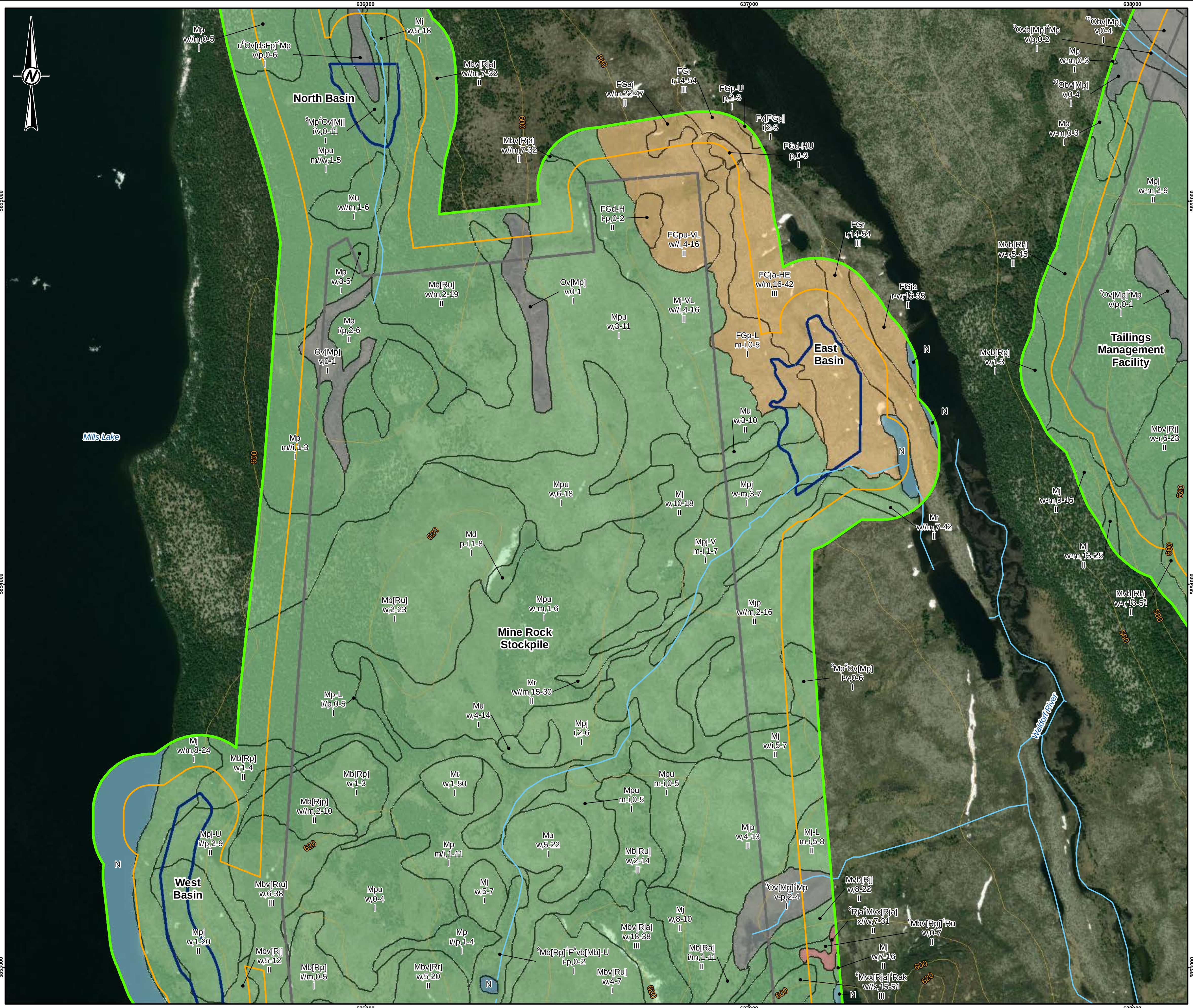
TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2l

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



LEGEND

CONTOUR (40m INTERVAL)
WATERCOURSE
PROPOSED INFRASTRUCTURE
LOCAL STUDY AREA
SITE STUDY AREA
PROPOSED SEDIMENTATION POND

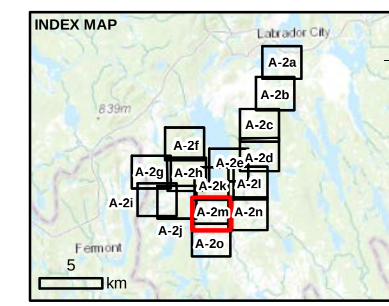
DOMINANT SURFICIAL MATERIAL

BEDROCK (R)
FLUVIAL (F)
GLACIOFLUVIAL (FG)
MORAINAL (TILL)(M)
WATERBODY (N)
ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process
drainage
drainage separator
percent slope
terrain stability class



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CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE

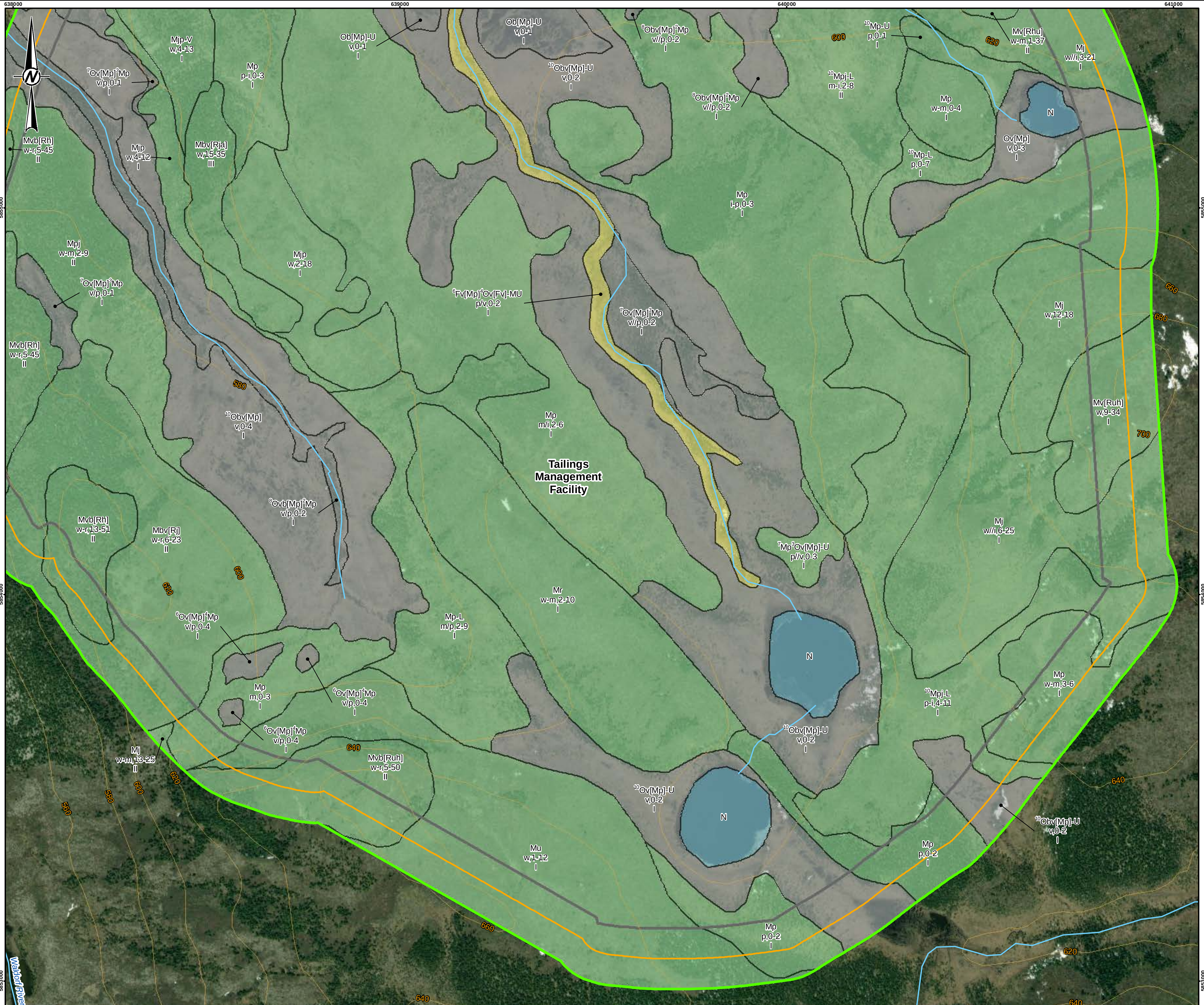
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

WSP

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2m



LEGEND

- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA

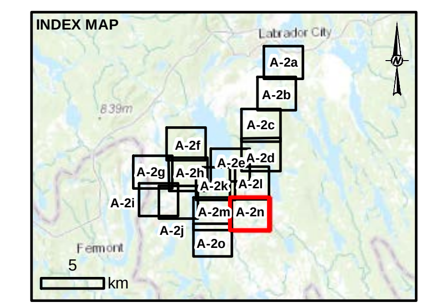
DOMINANT SURFICIAL MATERIAL

- FLUVIAL (F)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2n

LEGEND

- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROPOSED SEDIMENTATION POND

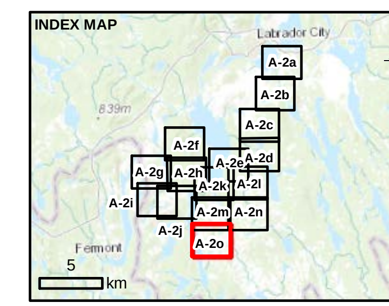
DOMINANT SURFICIAL MATERIAL

- BEDROCK (R)
- MORAINAL (TILL)(M)
- WATERBODY (N)
- ORGANIC (O)

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture; surficial material; surface expression(s); underlying material; underlying surface expression; geomorphological process; drainage; drainage separator; percent slope; terrain stability class



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CLIENT
CHAMPION IRON MINES

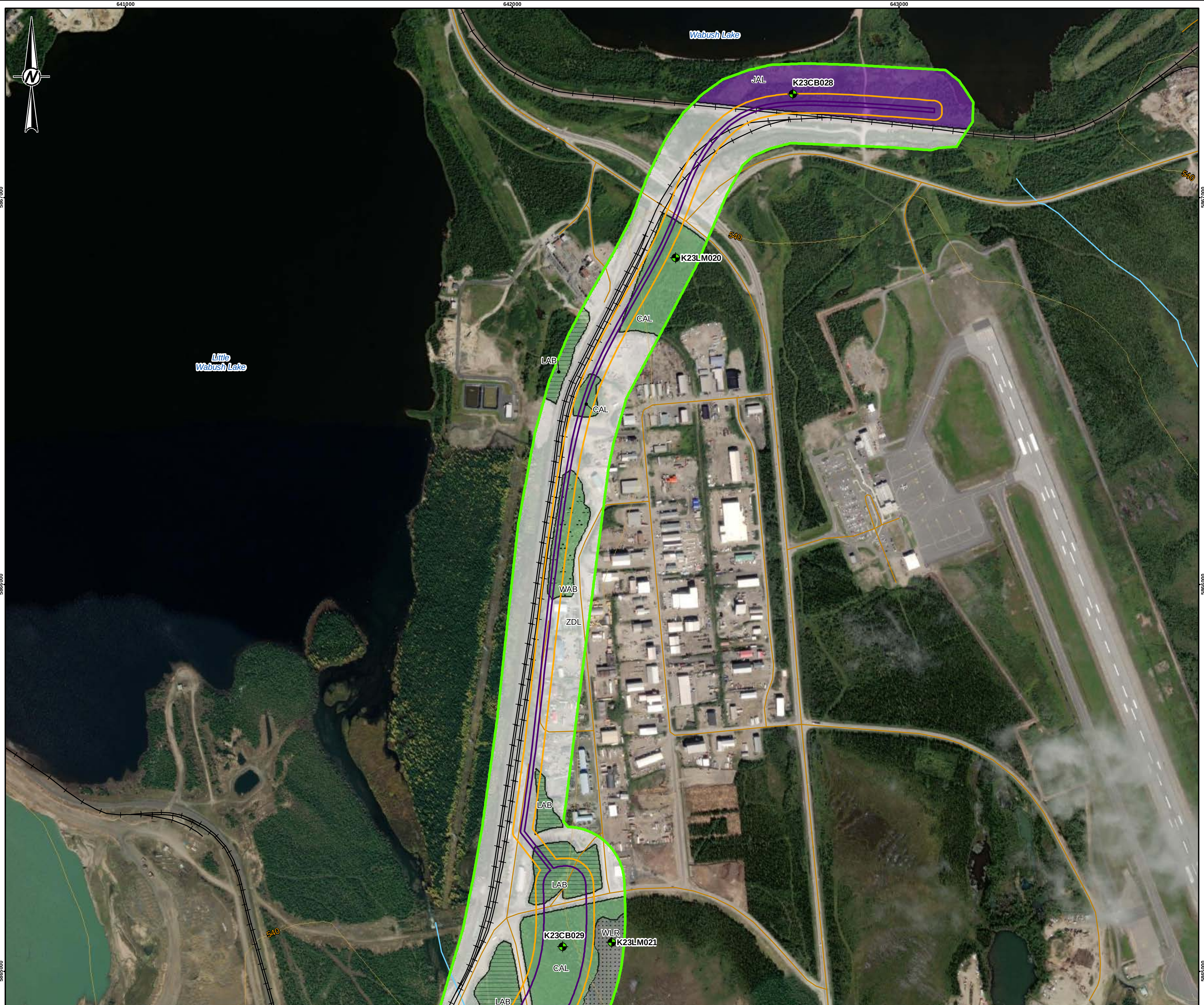
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
TERRAIN MAPPING IN THE KAMI IRON ORE MINE SITE STUDY AREA AND THE LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-2o



LEGEND

- SOIL SITE
- CONTOUR (40m INTERVAL)
- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

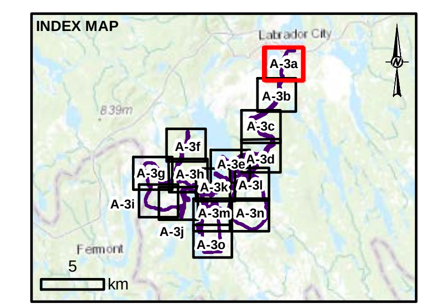
SOIL MAP UNITS

- CAL
- JAL
- LAB
- WAB
- WLR
- ZDL

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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0 250 500

1:10,000 METRES

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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3a

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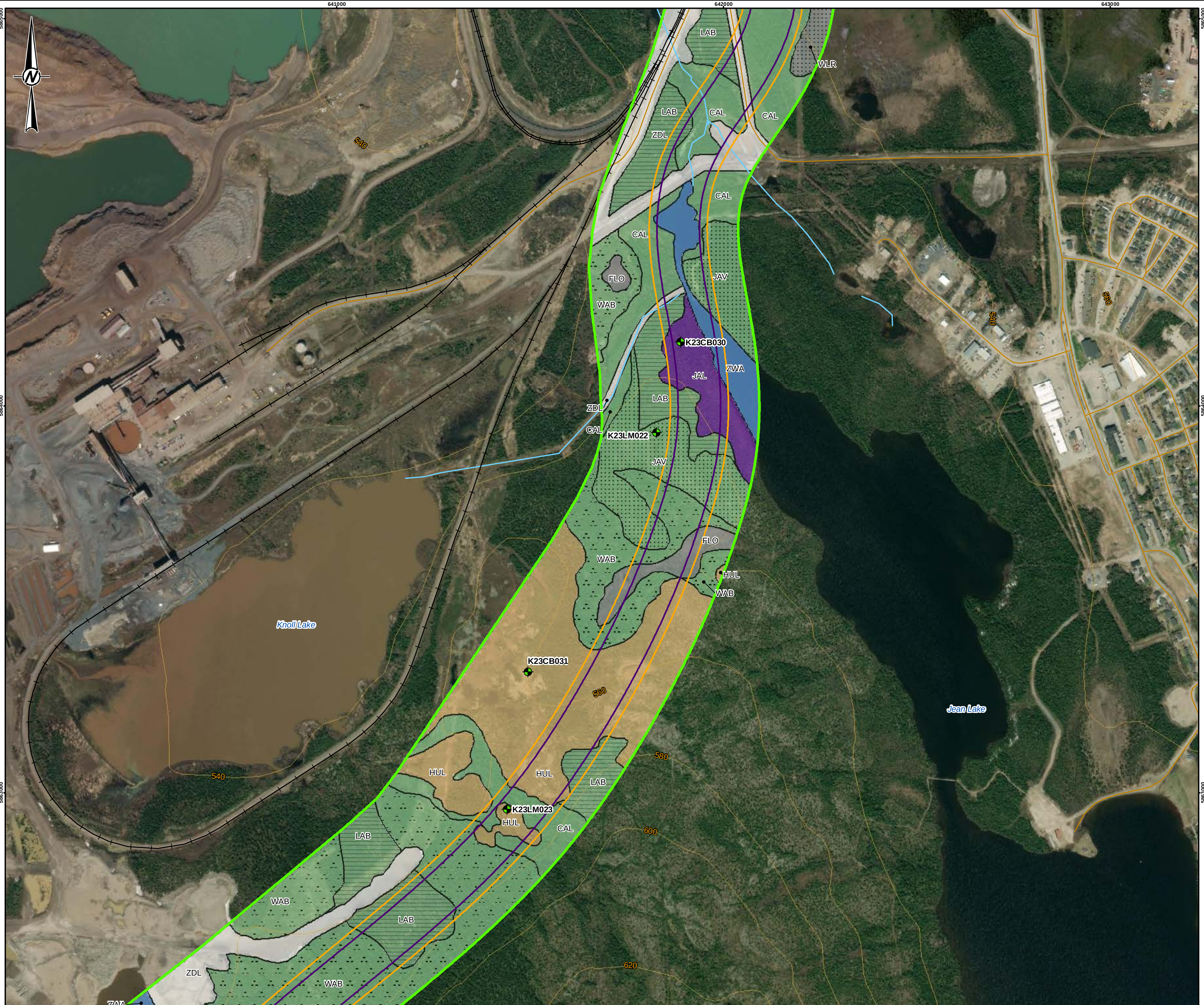


LEGEND

- SOIL SITE
- CONTOUR (40m INTERVAL)
- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

SOIL MAP UNITS

- CAL
- FLO
- HUL
- JAL
- JAV
- LAB
- WAB
- WLR
- ZDL
- ZWA

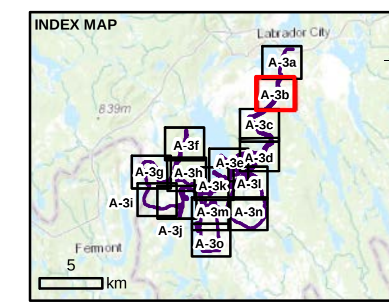
Terrain Polygon Label

szcMbv[Ru]-LV

m // i,6-8

II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



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0 250 500

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REFERENCE(S)

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CLIENT
CHAMPION IRON MINES

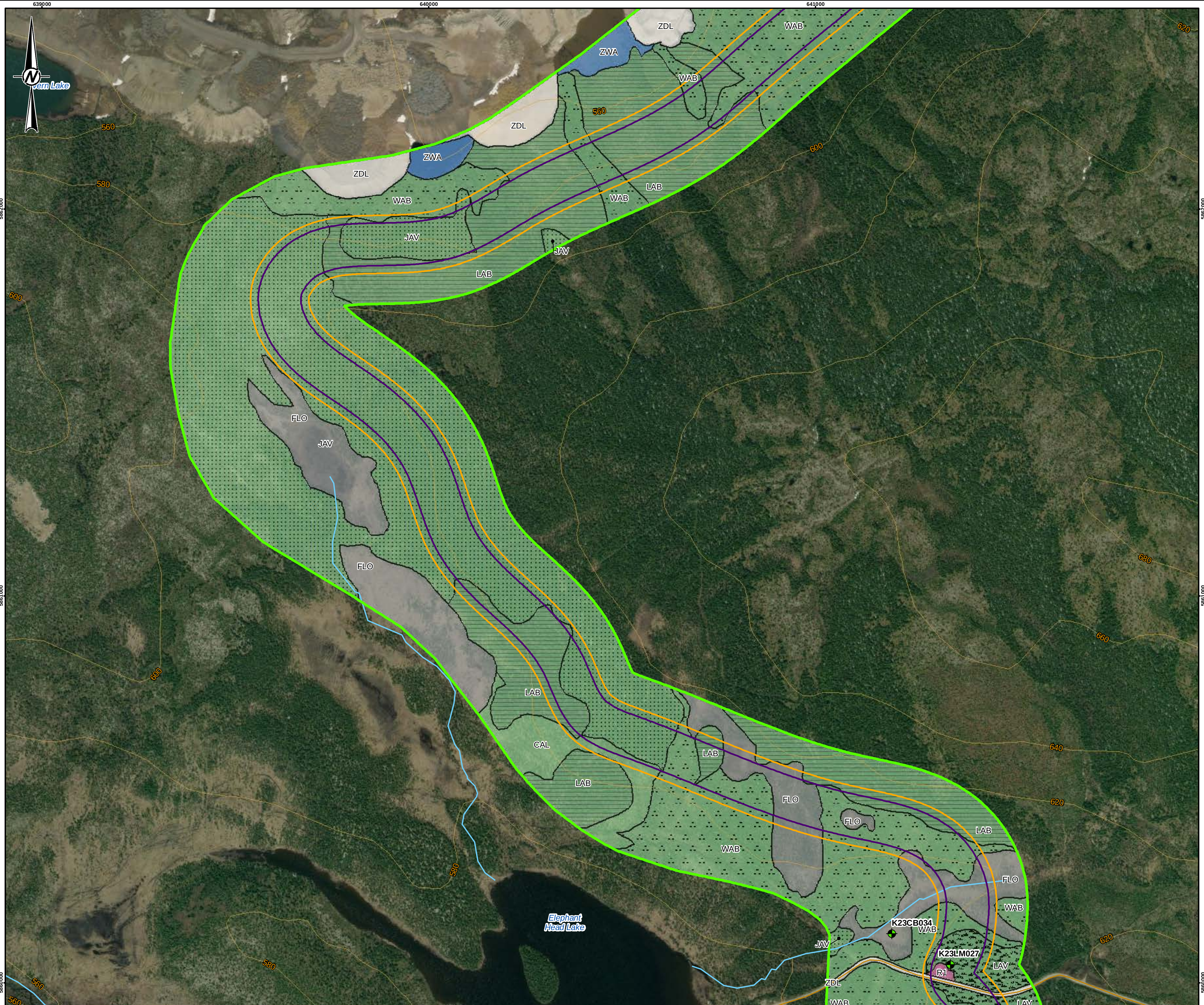
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT: wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3b



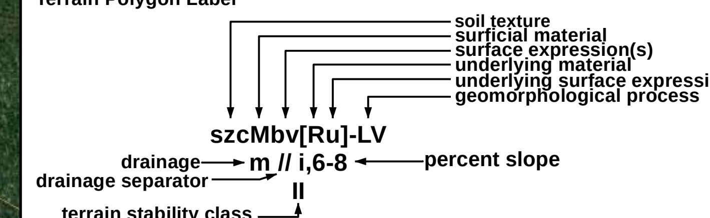
LEGEND

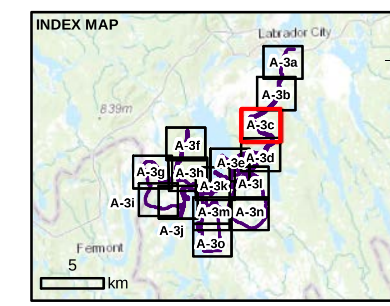
- SOIL SITE
- CONTOUR (40m INTERVAL)
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

SOIL MAP UNITS

- CAL
- FLO
- JAV
- LAB
- LAV
- R1
- WAB
- ZDL
- ZWA

Terrain Polygon Label





DRAFT

0 250 500
1:10,000 METRES

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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

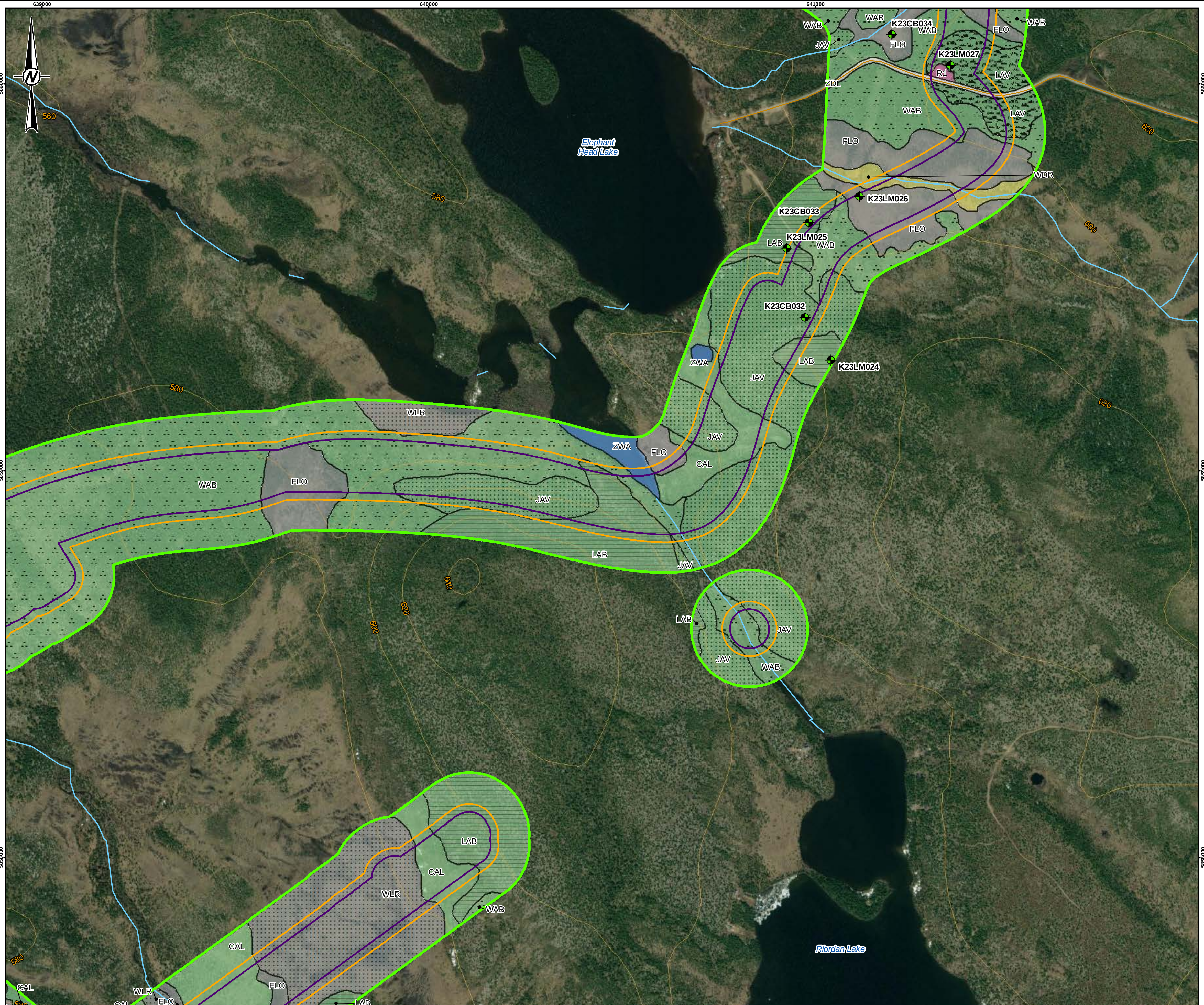
TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
WSP

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3c

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



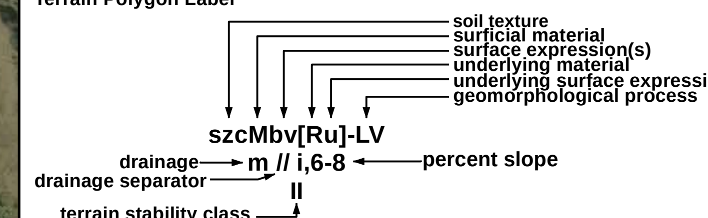
LEGEND

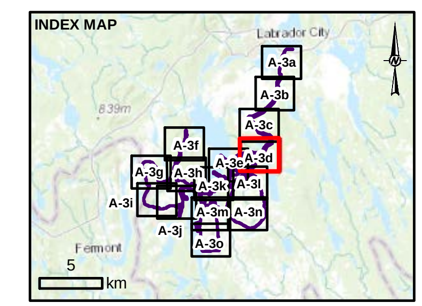
- SOIL SITE
- CONTOUR (40m INTERVAL)
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

SOIL MAP UNITS

- CAL
- FLO
- JAV
- LAB
- LAV
- R1
- WAB
- WDR
- WLR
- ZDL
- ZWA

Terrain Polygon Label





DRAFT

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

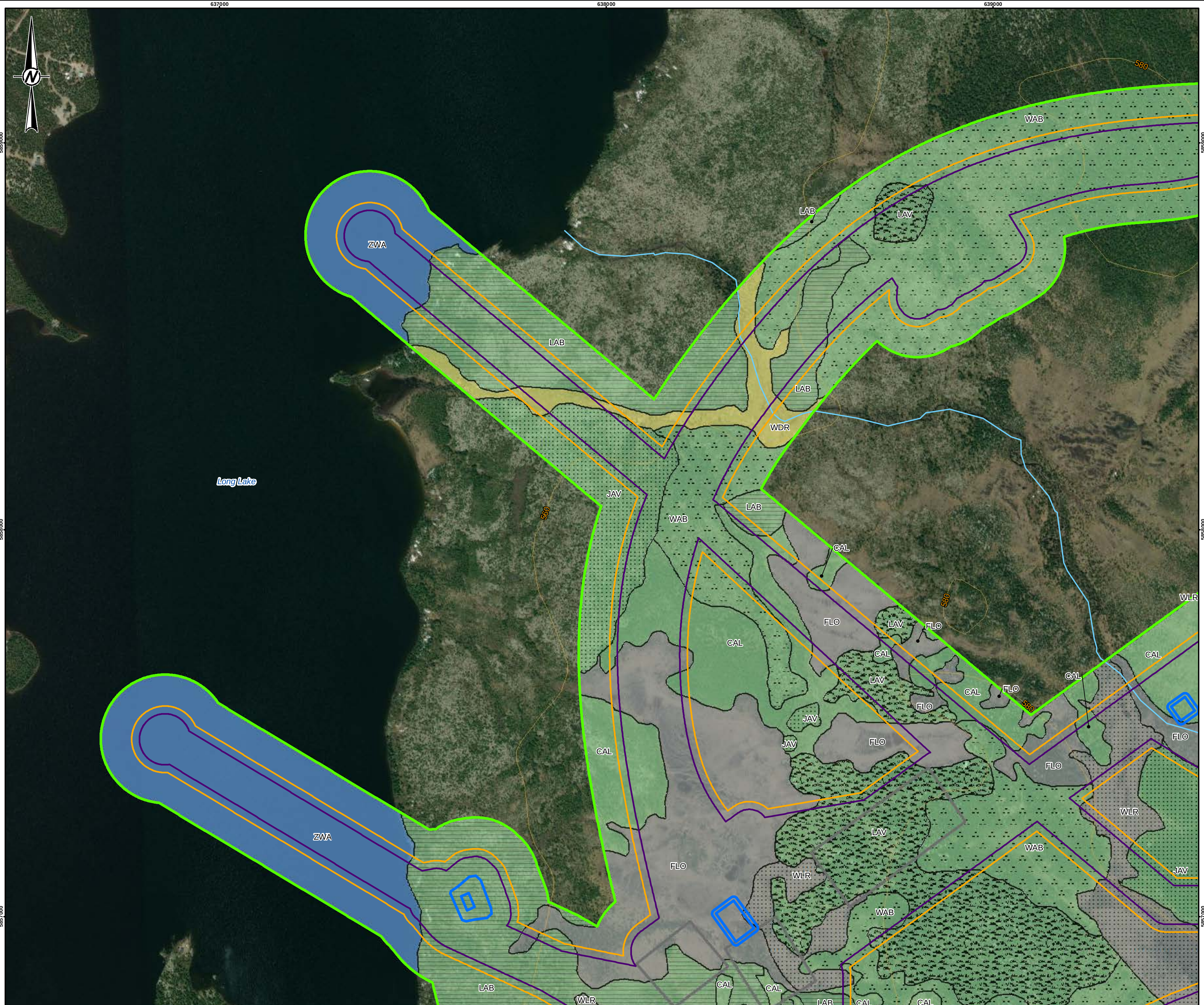
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3d



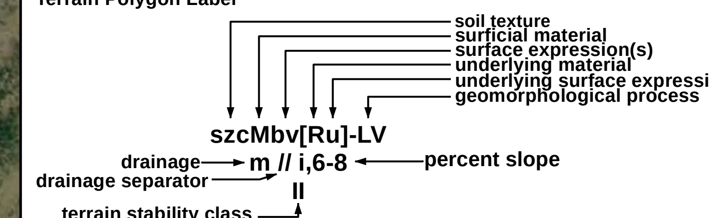
LEGEND

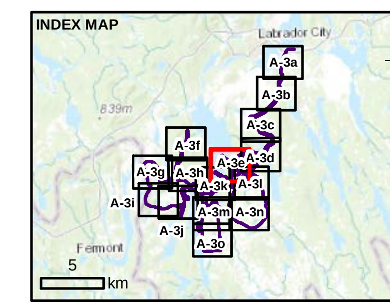
- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

SOIL MAP UNITS

- CAL
- FLO
- JAV
- LAB
- LAV
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label





DRAFT

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1:10,000 METRES

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CLIENT
CHAMPION IRON MINES

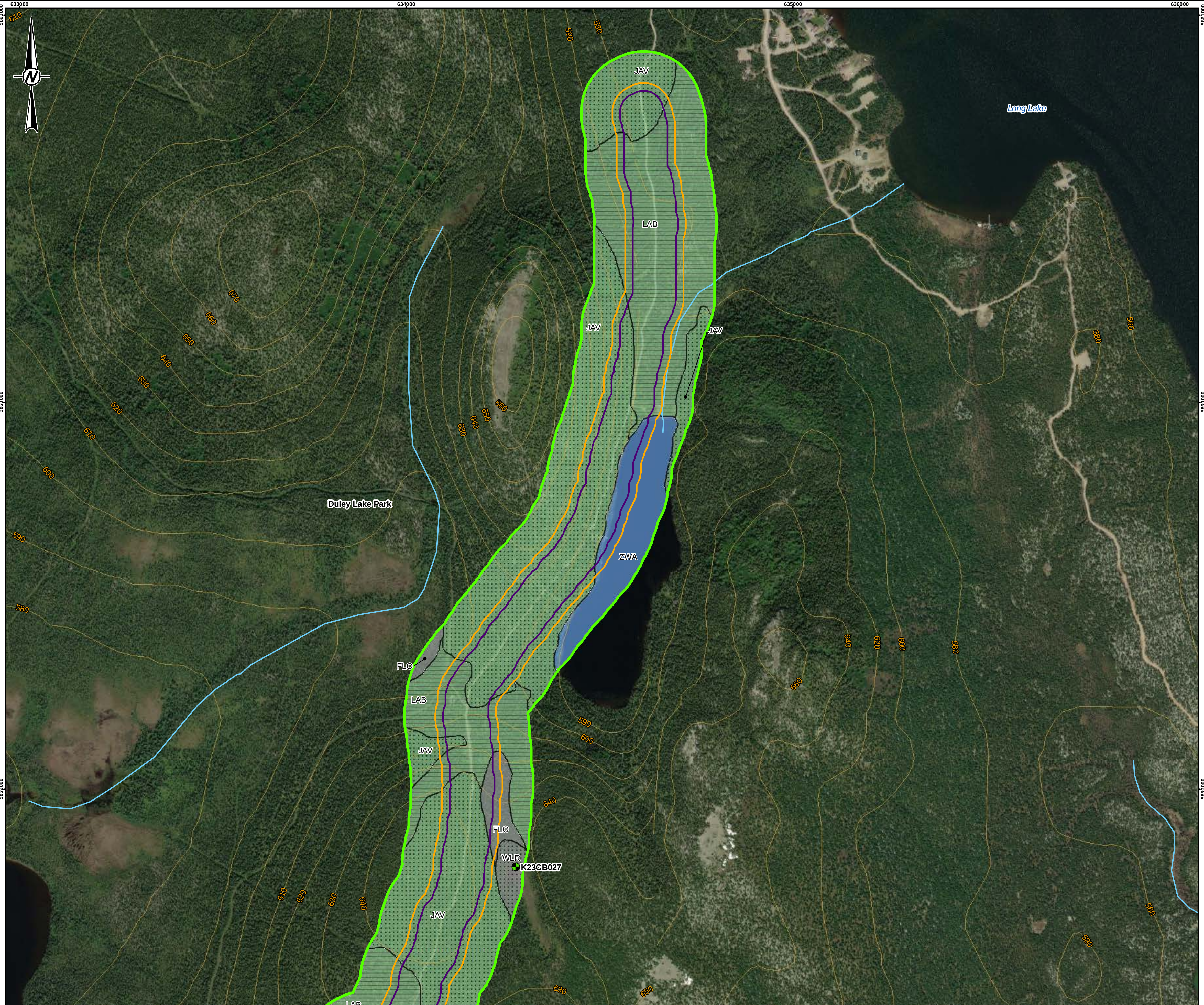
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3e



LEGEND

SOIL SITE
CONTOUR (40m INTERVAL)
WATERCOURSE
LOCAL STUDY AREA
SITE STUDY AREA
PROJECT FOOTPRINT

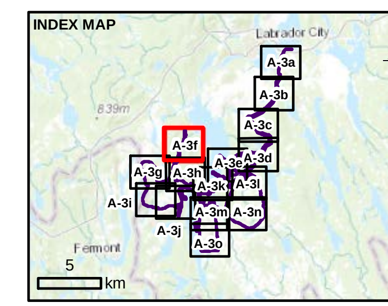
SOIL MAP UNITS

FLO
JAV
LAB
WLR
ZWA

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process
drainage
drainage separator
percent slope
terrain stability class



DRAFT

0 250 500

1:10,000 METRES

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CLIENT
CHAMPION IRON MINES

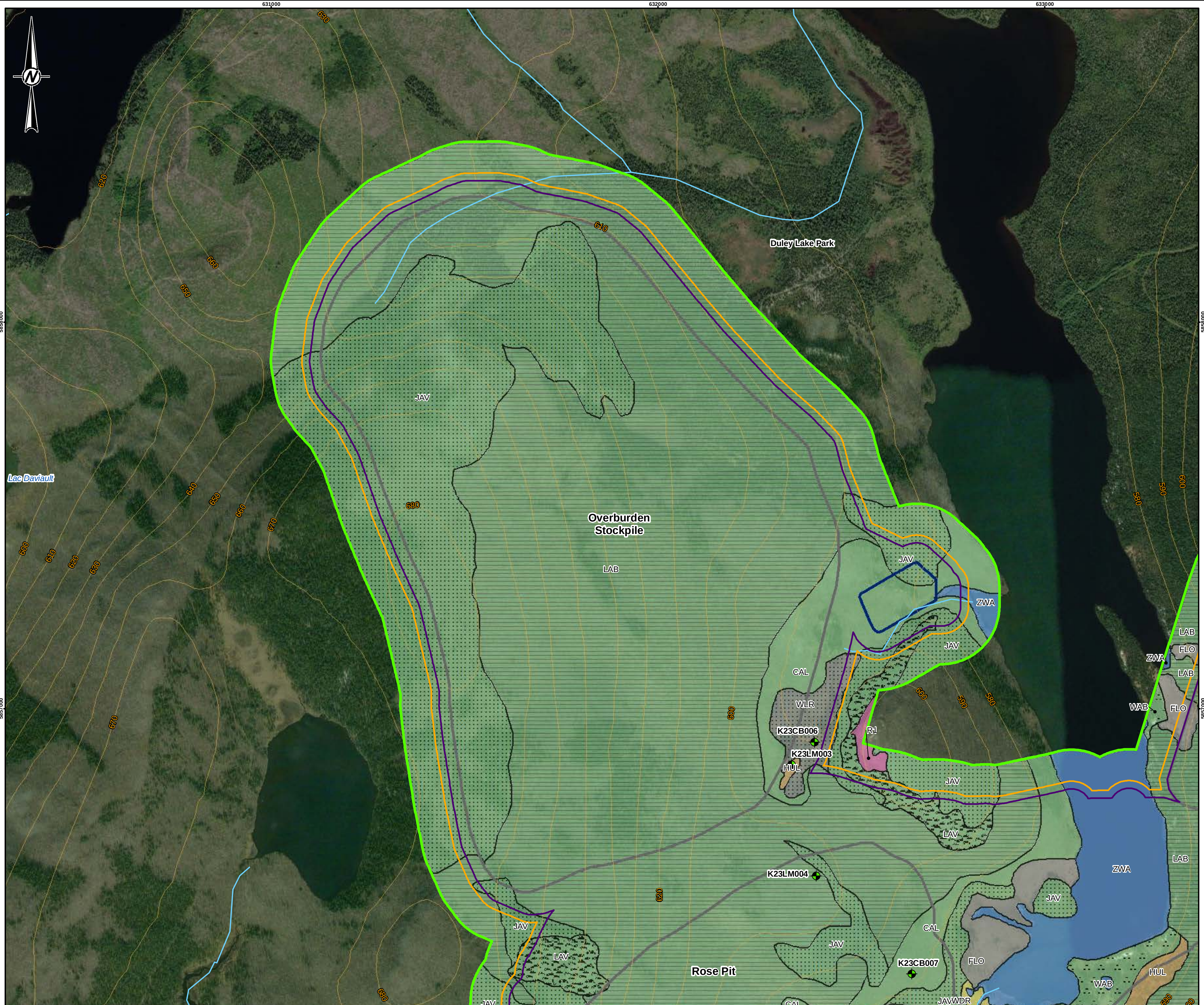
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3f



LEGEND

- SOIL SITE
- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT
- PROPOSED SEDIMENTATION POND

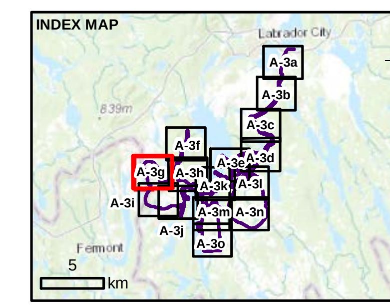
SOIL MAP UNITS

- CAL
- FLO
- HUL
- JAV
- LAB
- LAV
- R1
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture; surficial material; surface expression(s); underlying material; underlying surface expression; geomorphological process; drainage; drainage separator; percent slope; terrain stability class



DRAFT

0 250 500
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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3g

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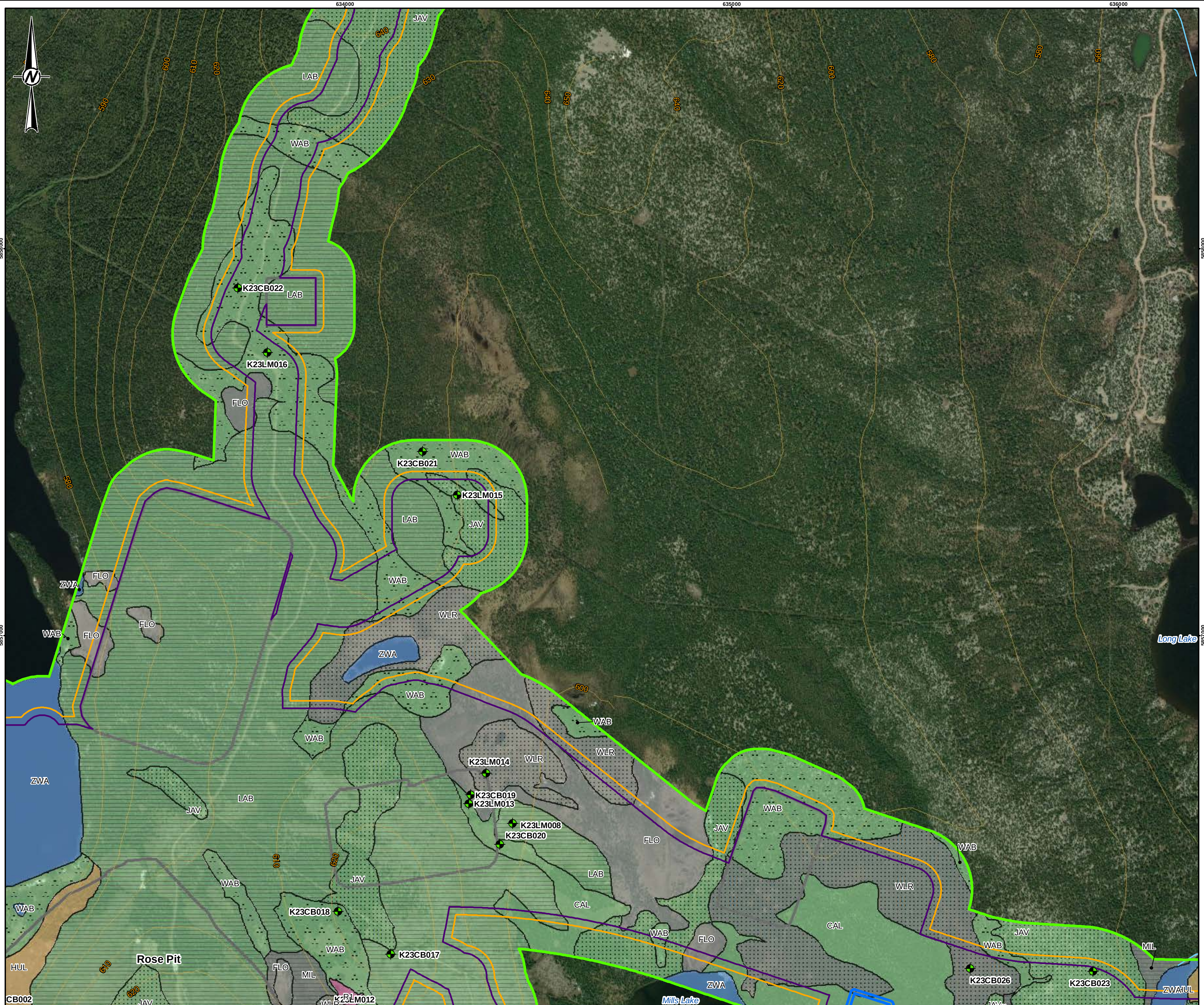


LEGEND

- SOIL SITE
- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

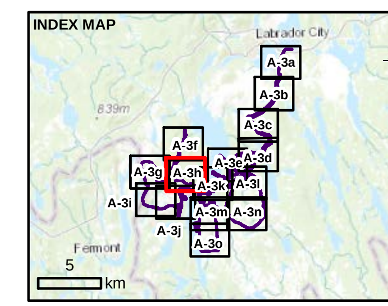
SOIL MAP UNITS

- CAL
- FLO
- HUL
- JAV
- LAB
- LAV
- MIL
- R1
- WAB
- WLR
- ZWA

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



DRAFT

0 250 500

1:10,000 METRES

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CLIENT
CHAMPION IRON MINES

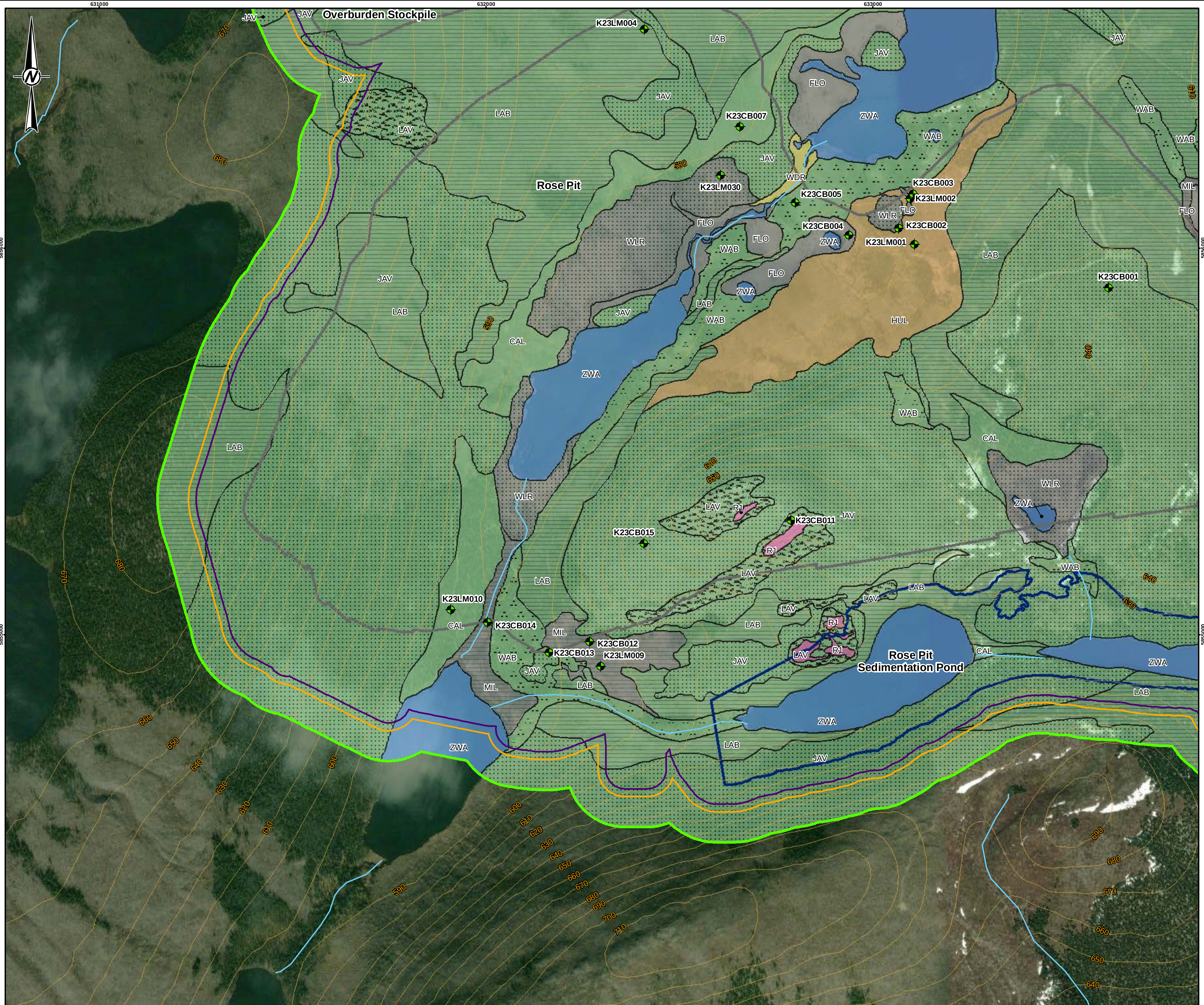
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3h



LEGEND

- SOIL SITE
- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT
- PROPOSED SEDIMENTATION POND

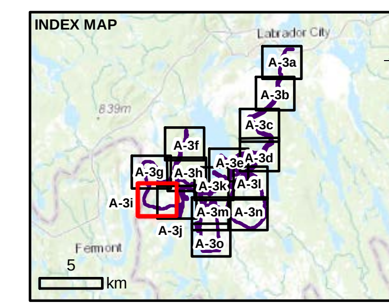
SOIL MAP UNITS

- CAL
- FLO
- HUL
- JAV
- LAB
- LAV
- MIL
- R1
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process
drainage
drainage separator
percent slope
terrain stability class



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CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE

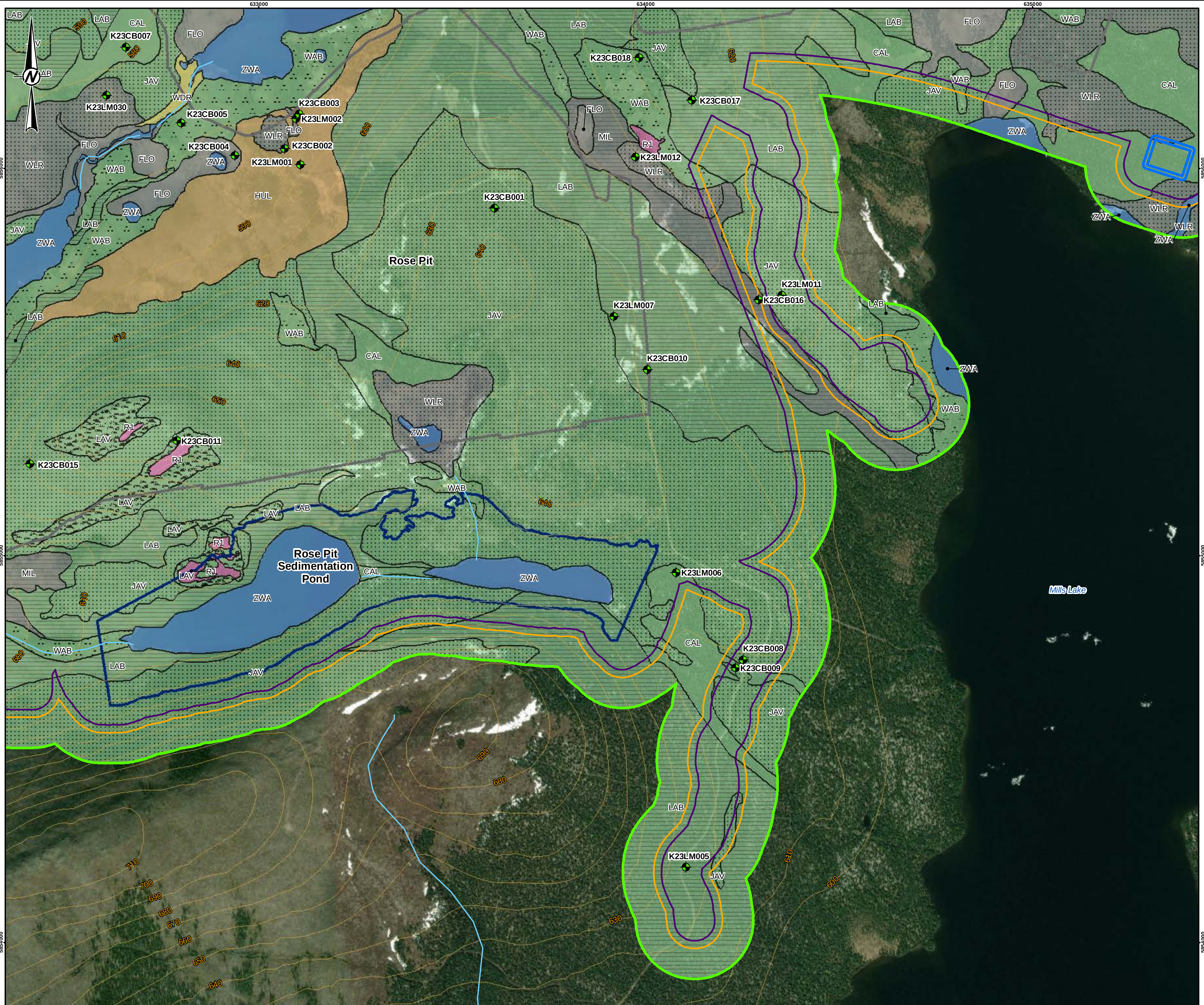
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3i



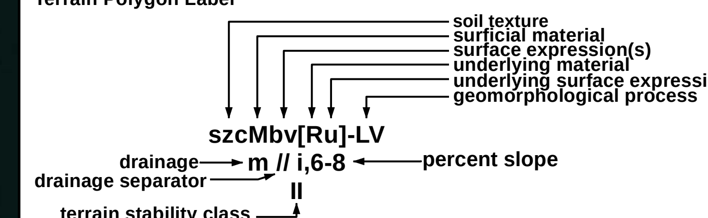
LEGEND

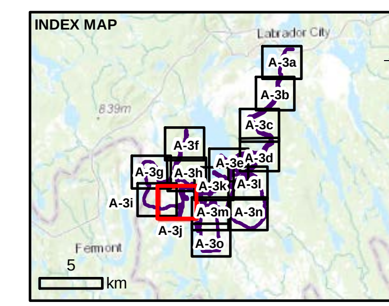
- SOIL SITE
- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT
- PROPOSED SEDIMENTATION POND

SOIL MAP UNITS

- CAL
- FLO
- HUL
- JAV
- LAB
- LAV
- MIL
- R1
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label





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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3j

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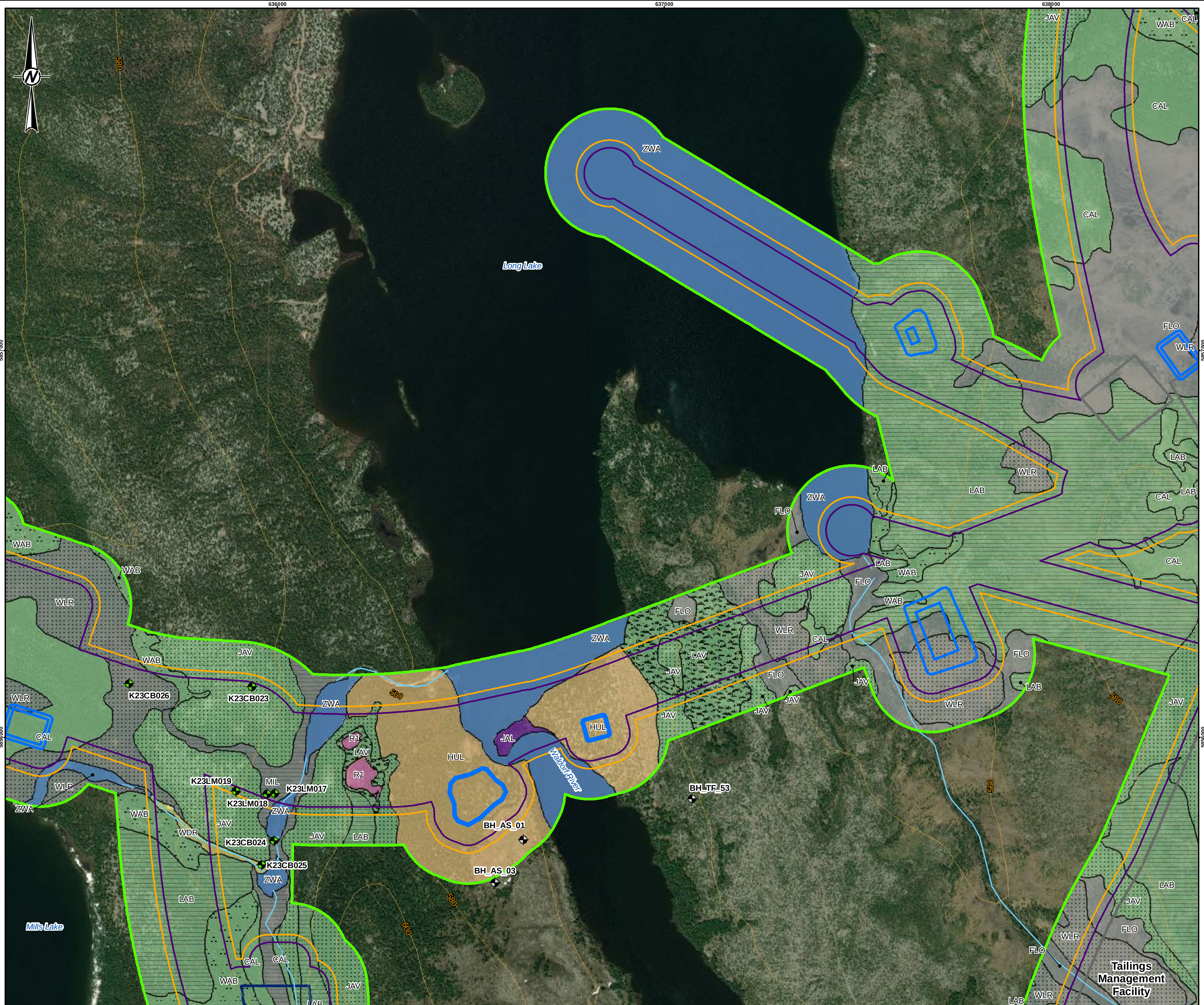


LEGEND

- BORE HOLE
- SOIL SITE
- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT
- PROPOSED SEDIMENTATION POND

SOIL MAP UNITS

- CAL
- FLO
- HUL
- JAL
- JAV
- LAB
- LAV
- MIL
- R1
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label

szcMbv[Ru]-LV

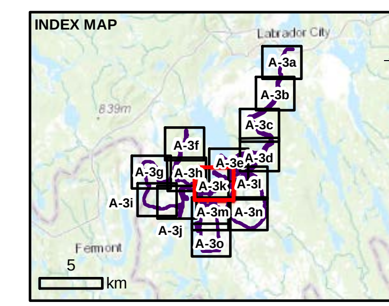
- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process

m // i,6-8

- drainage
- drainage separator
- percent slope

II

- terrain stability class



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CLIENT
CHAMPION IRON MINES

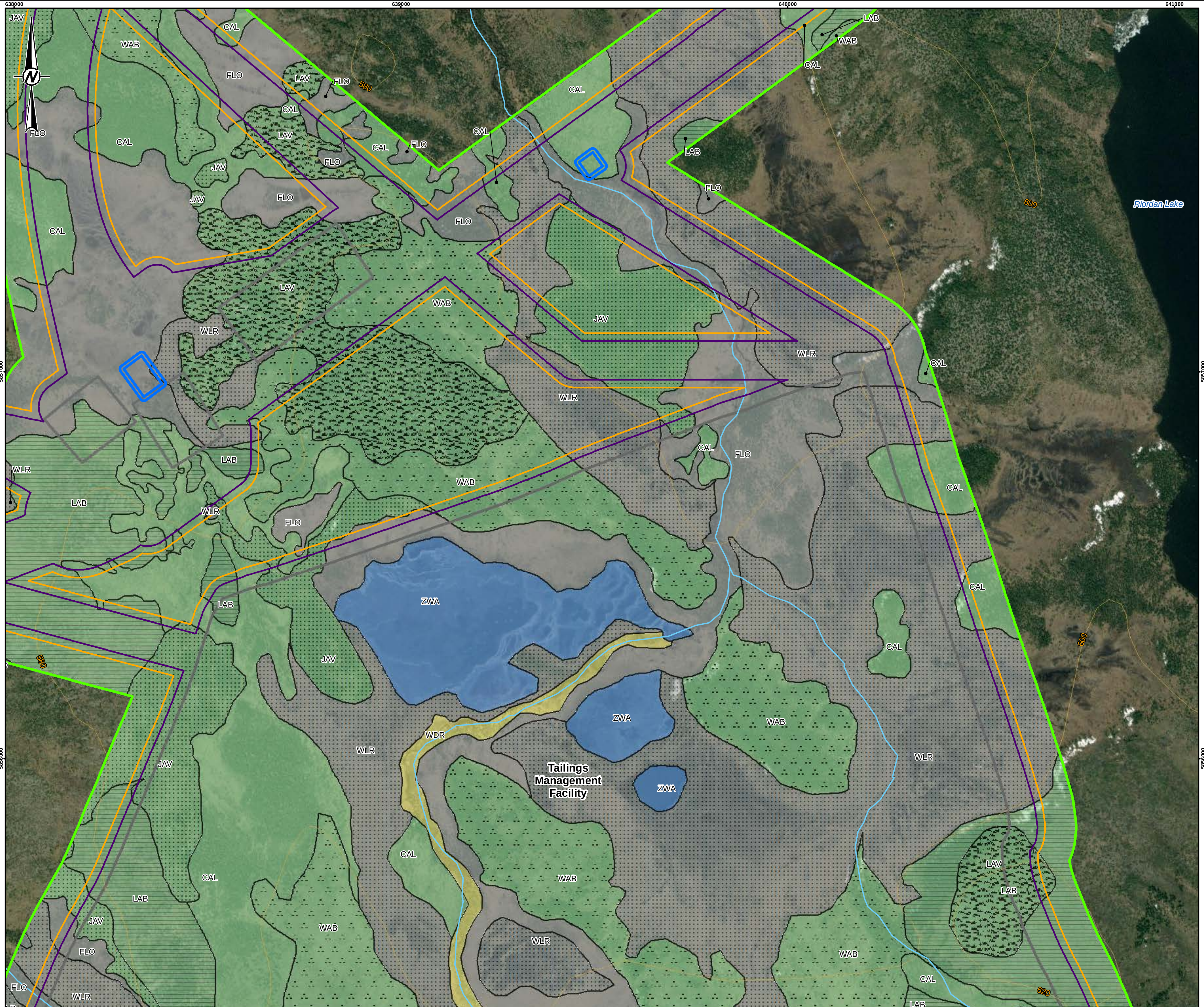
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
WSP

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3k



LEGEND

- CONTOUR (40m INTERVAL)
- PROPOSED POND
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

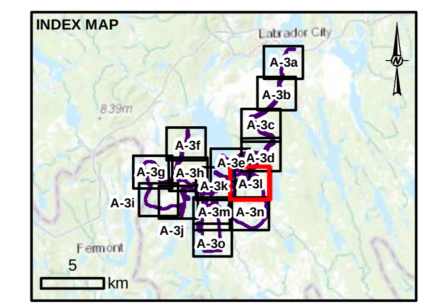
SOIL MAP UNITS

- CAL
- FLO
- JAV
- LAB
- LAV
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



DRAFT

0 250 500

1:10,000 METRES

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CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3l

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

25mm

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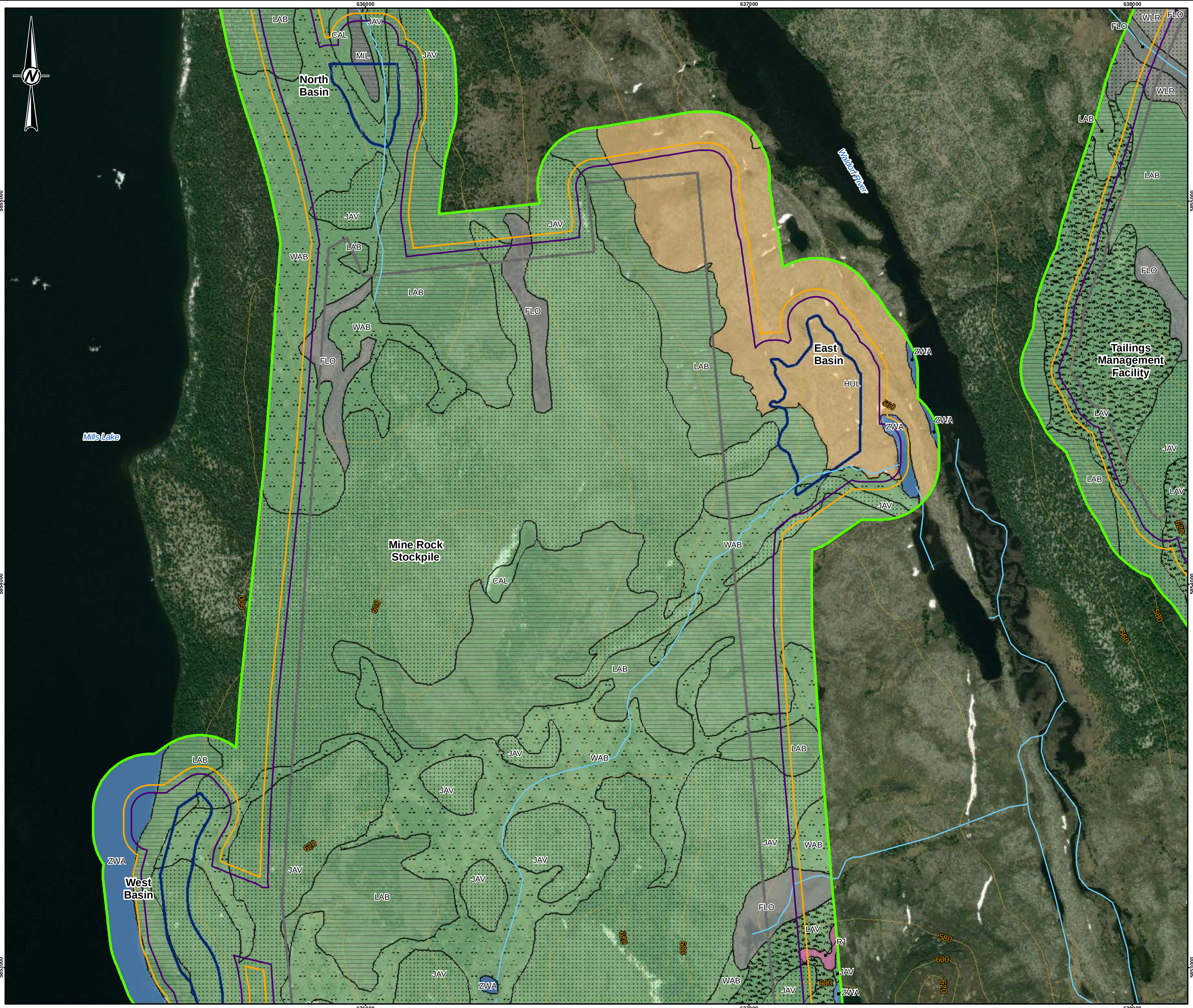


LEGEND

- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT
- PROPOSED SEDIMENTATION POND

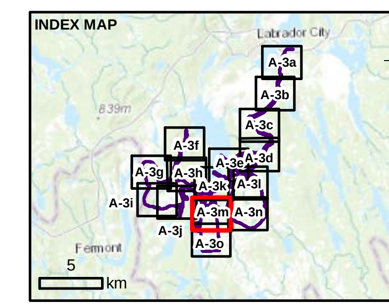
SOIL MAP UNITS

- CAL
- FLO
- HUL
- JAV
- LAB
- LAV
- MIL
- R1
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label

szcMbv[Ru]-LV
m // i,6-8
II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



DRAFT

0 250 500
1:10,000 METRES

REFERENCE(S)
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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

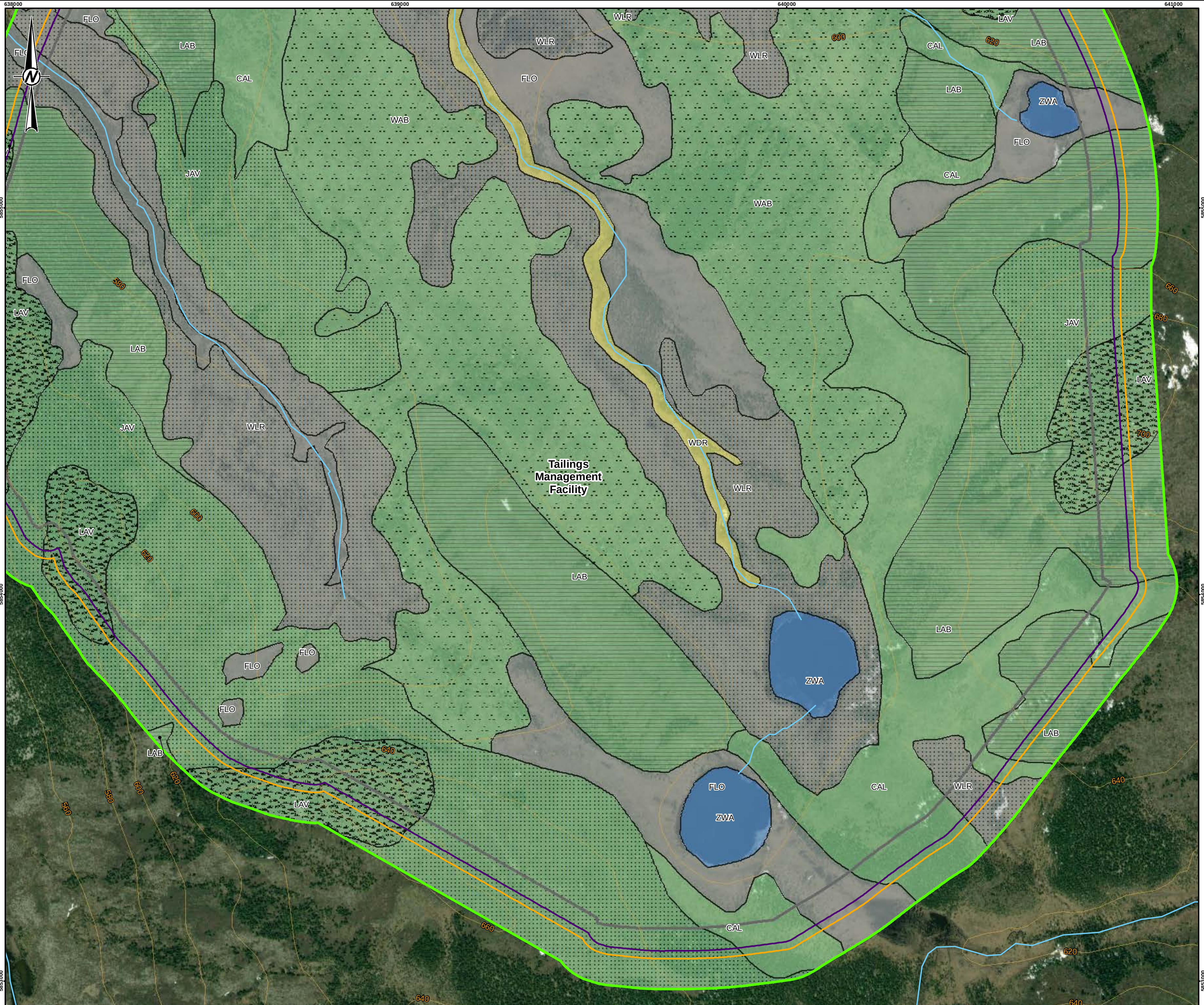
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3m



LEGEND

- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT

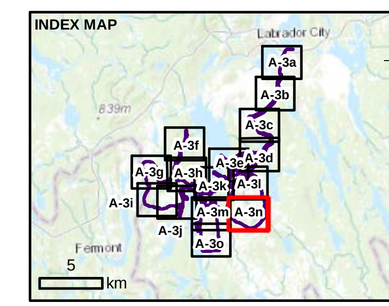
SOIL MAP UNITS

- CAL
- FLO
- JAV
- LAB
- LAV
- WAB
- WDR
- WLR
- ZWA

Terrain Polygon Label

soil texture
surficial material
surface expression(s)
underlying material
underlying surface expression
geomorphological process

szcMbv[Ru]-LV
drainage → m // i,6-8 ← percent slope
drainage separator
II
terrain stability class



DRAFT

0 250 500
1:10,000 METRES

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

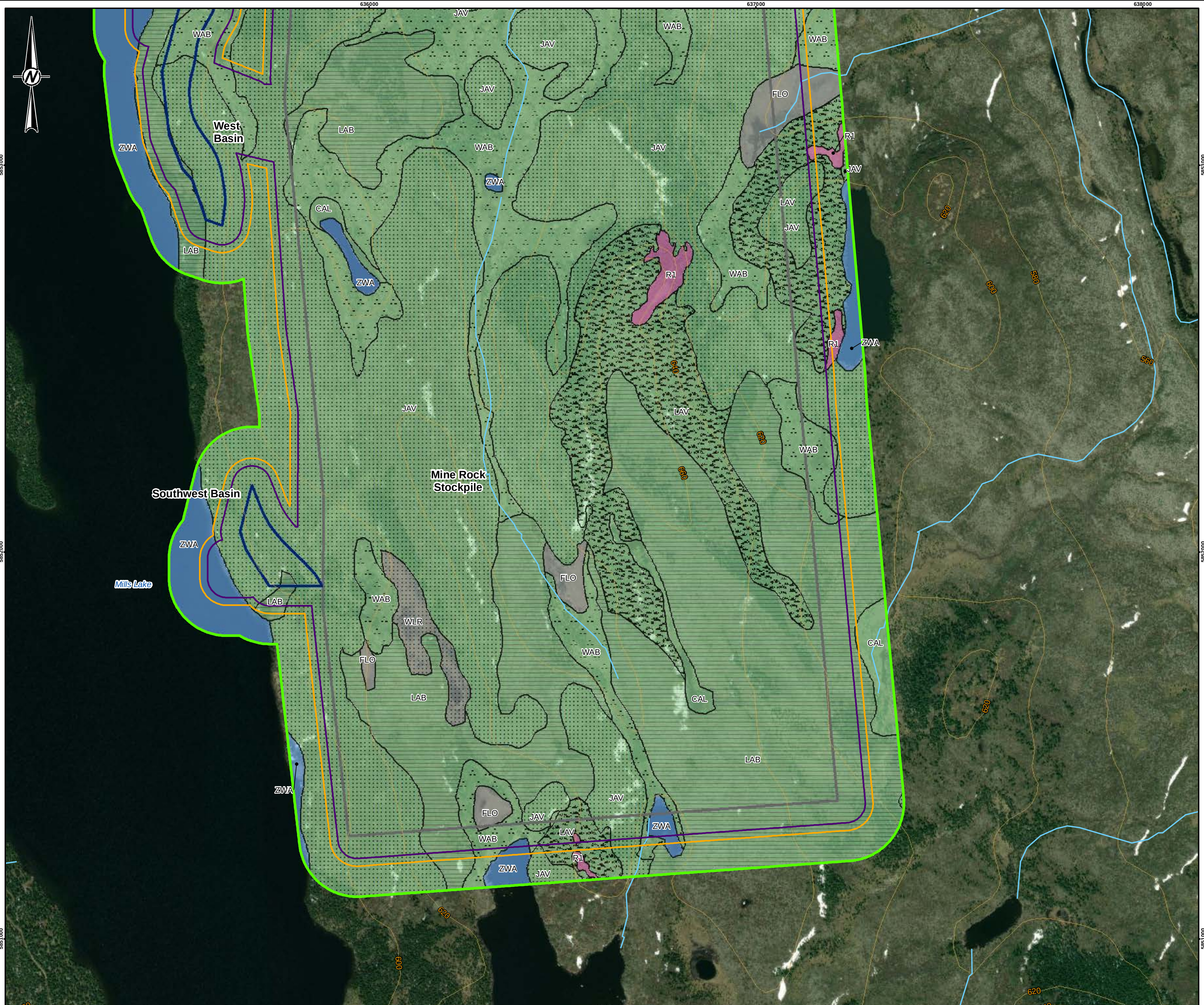
TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3n

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25mm



LEGEND

- CONTOUR (40m INTERVAL)
- WATERCOURSE
- PROPOSED INFRASTRUCTURE
- LOCAL STUDY AREA
- SITE STUDY AREA
- PROJECT FOOTPRINT
- PROPOSED SEDIMENTATION POND

SOIL MAP UNITS

- CAL
- FLO
- JAV
- LAB
- LAV
- R1
- WAB
- WLR
- ZWA

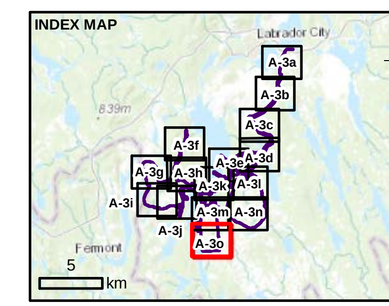
Terrain Polygon Label

szcMbv[Ru]-LV

m // i,6-8

II

- soil texture
- surficial material
- surface expression(s)
- underlying material
- underlying surface expression
- geomorphological process
- drainage
- drainage separator
- percent slope
- terrain stability class



DRAFT

0 250 500

1:10,000 METRES

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

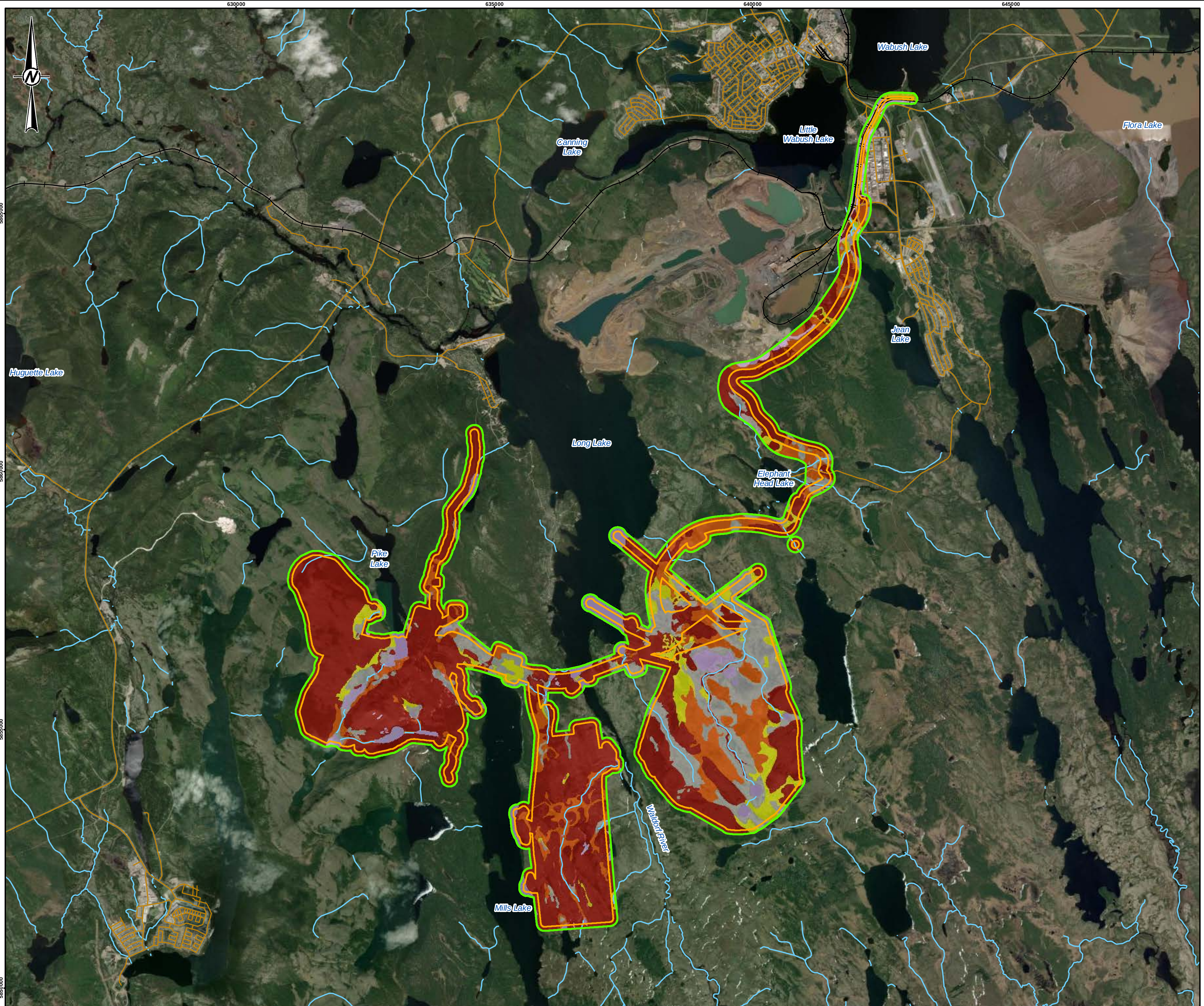
PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SOIL SURVEY LOCATIONS AND SOIL MAP UNITS IN THE KAMI IRON ORE MINE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT
wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	MCP
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-3o



LEGEND

- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

RECLAMTION SUITABILITY RATING

- UNSUITABLE
- POOR
- FAIR
- NOT RATED
- N/A

DRAFT

0 2 4

1:75,000 KILOMETRES

REFERENCE(S)

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SURFACE SOIL RECLAMATION SUITABILITY RATINGS IN THE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

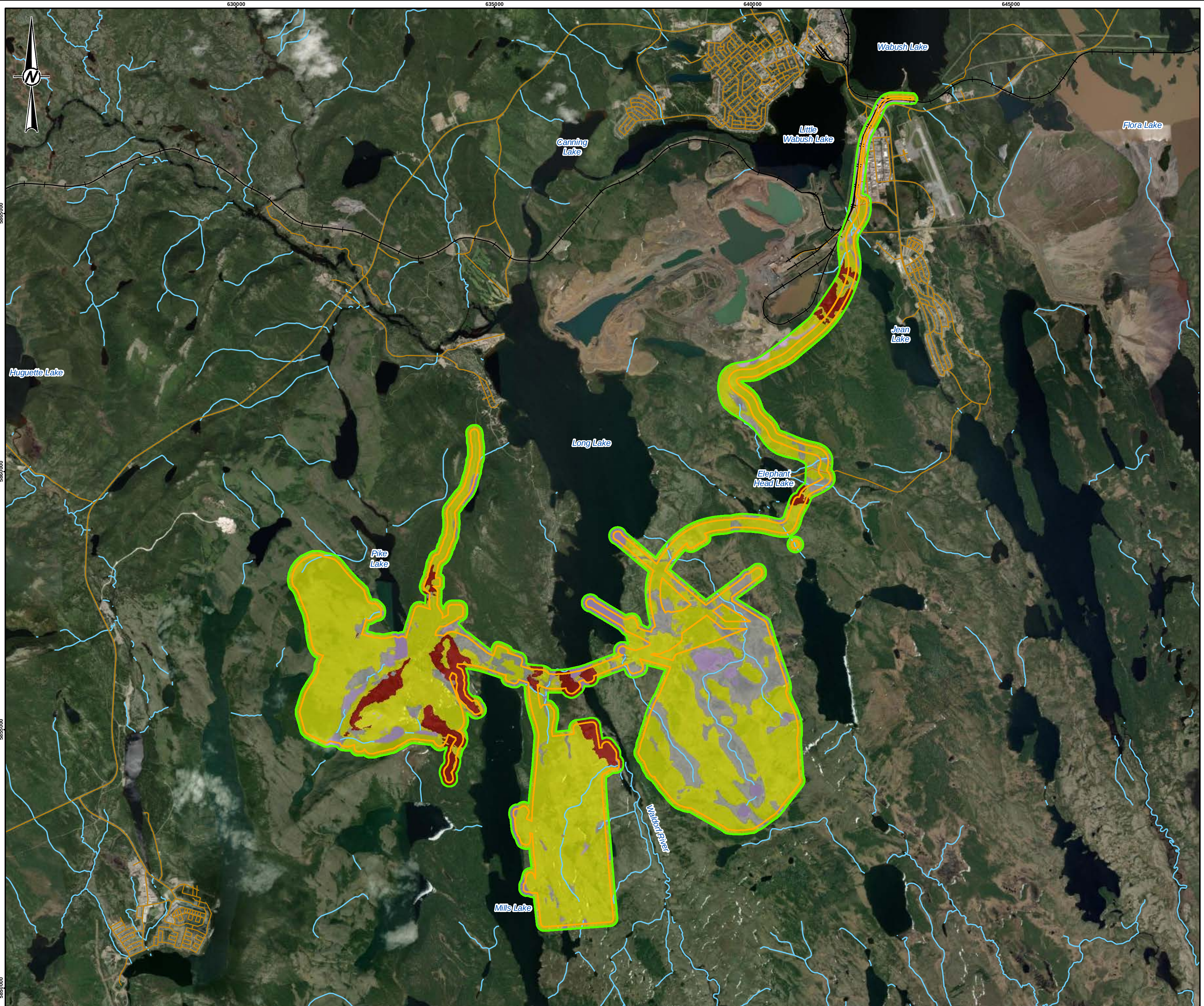
YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	AB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-4

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

25mm

0



LEGEND

- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

WIND EROSION POTENTIAL

- MODERATE
- HIGH
- NOT RATED
- N/A

DRAFT

0 2 4

1:75,000 KILOMETRES

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CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE

SURFACE SOIL WIND EROSION RISK RATINGS IN THE SITE STUDY AREA AND LOCAL STUDY AREA

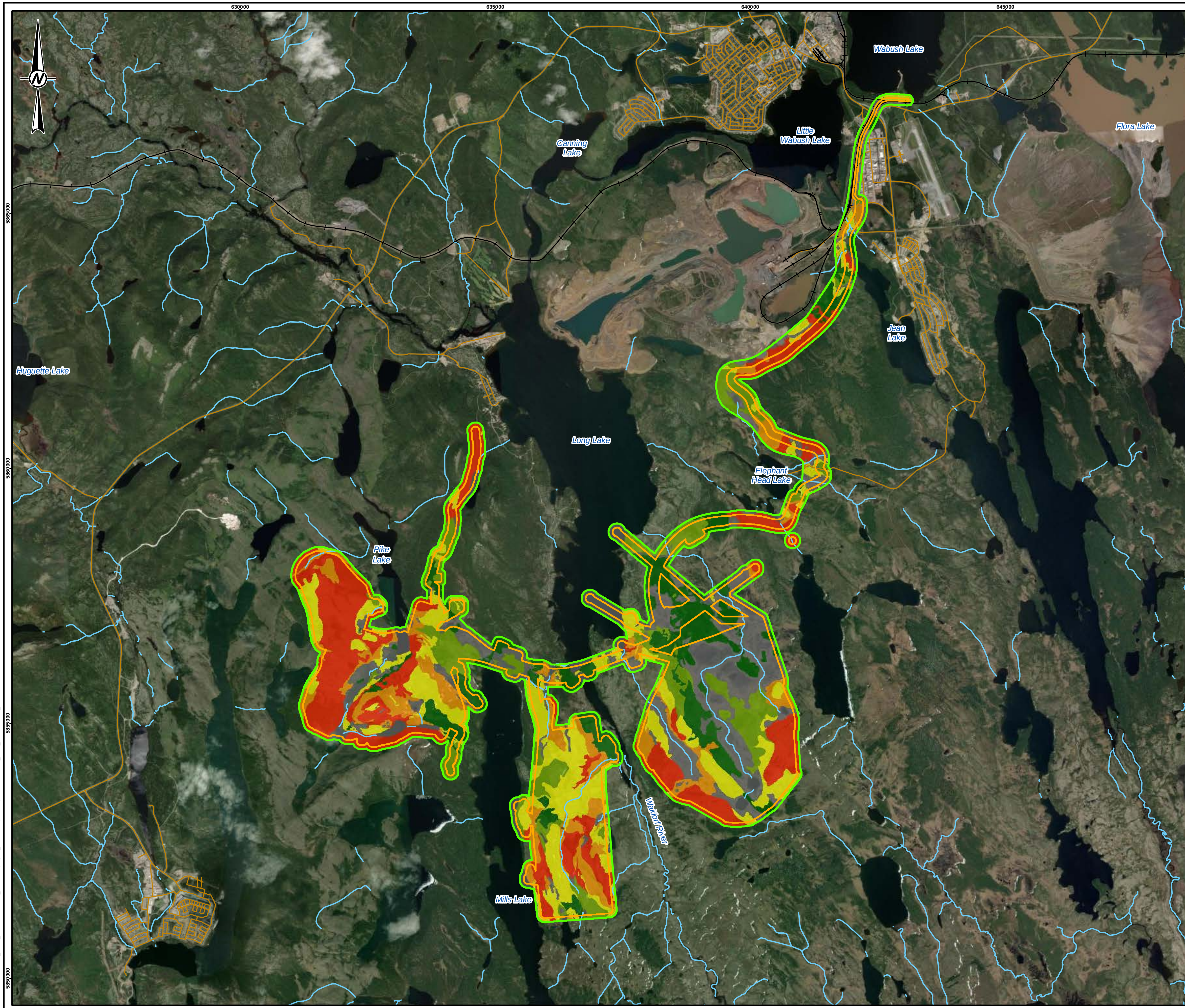
CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	AB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-5

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

25mm 0



LEGEND

- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

SOIL WATER EROSION POTENTIAL

- VERY LOW (<6 t/ha)
- LOW (6-11 t/ha)
- MODERATE (11-22 t/ha)
- HIGH (22-33 t/ha)
- SEVERE (>33 t/ha)
- NOT RATED

DRAFT

0 2 4

1:75,000 KILOMETRES

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

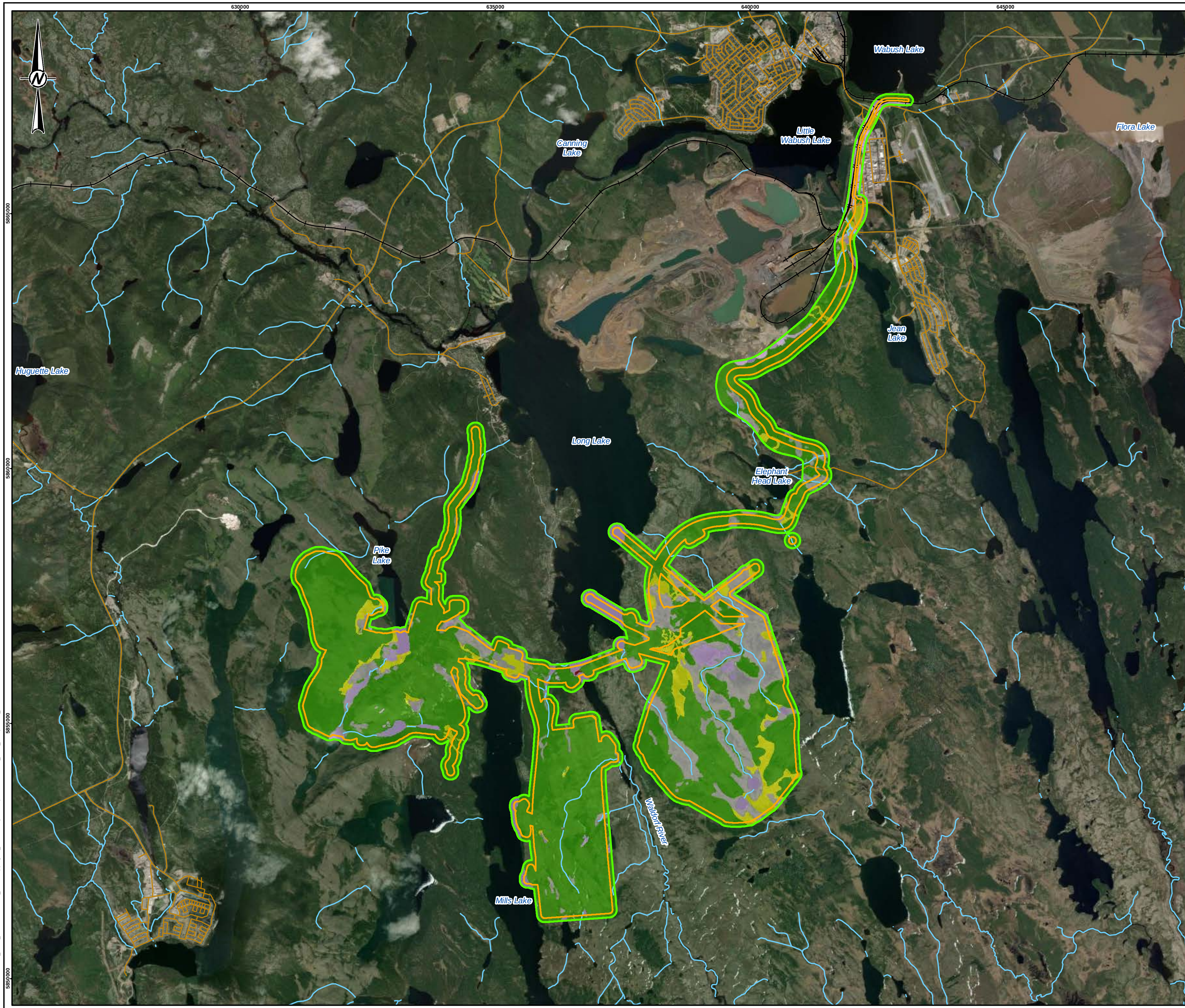
TITLE
SURFACE SOIL WATER EROSION RISK RATINGS IN THE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

wsp

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	AB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-6



LEGEND

- EXISTING RAILWAY
- ROAD
- WATERCOURSE
- LOCAL STUDY AREA
- SITE STUDY AREA

COMPACTION RATING

- LOW
- MODERATE
- HIGH
- NOT RATED
- N/A

DRAFT

0 2 4

1:75,000 KILOMETRES

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PROJECTION: UTM ZONE 19 DATUM: NAD 83

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE MINE PROJECT, WABUSH, NL

TITLE
SURFACE SOIL COMPACTION RISK RATINGS IN THE SITE STUDY AREA AND LOCAL STUDY AREA

CONSULTANT

YYYY-MM-DD	2024-03-14
DESIGNED	AS
PREPARED	AB
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0003092.5894	500	A	A-7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25mm

APPENDIX B

Field Inspection Data and Abbreviation Key

1.0 SOIL AND TERRAIN FIELD SITE DATA

Site Data							Terrain Data								Soil Data						Soil Horizon Data											
Site ID	Easting	Northing	Slope Gradient (%)	Slope Class	Aspect	Slope Position	Surface Expression	Water table / seepage depth (cm from surface)	Surface Material Texture	Surficial Material	Surface Expression	Subsurface Material Texture	Subsurface Material	Subsurface Expression	Geomorphological Processes	Topsoil Thickness (cm)	Upper Subsoil Thickness (cm)	Organic Thickness (cm)	Parent Material	Soil Parent Material Texture	Drainage	Soil Classification	Horizon	Horizon Depth (cm)	Texture	Consistence	Coarse Fragments (%)	Colour	Mottles	Salt Crystals (Presence or Absence)	Effervescense	Comments
K23CB001	633610	5855897	7	4	10	M	H1m	/ 47	dzs	M	u	-	-	-	L	8	20	0	TILL	C5	MW	O.FHP	FH	6-0	-	-	-	-	-	-	-	Seepage present above 50 cm, but feel this is better described as MW drained. Some evidence of coarse subrounded gravels and cobbles in the upper horizons but dominantly gravel
																							Ae	0 - 8	LS	L	10	10YR5/1	-	-	-	
																							Bh	8 - 19	SL	L	5	7.5YR2.5/3	-	-	-	
																							Bfj	19 - 28	SL	L	15	10YR3/3	-	-	-	
																							C	28 - 47	L	VFR	20	7.5YR4/3	-	-	-	
																							Cgj	47 - 120	SL	NST	20	7.5YR4/3	-	-	-	
K23CB002	633066	5856051	2	3		T		/	u	O	b					0	0	130	FNPT		VP	TY.M	Of	0 - 30								Mineral at around 120-130 cm
																							Om	30 - 130								
K23CB003	633104	5856140	5	3		C		/	gs	FG		-	-	-	-	18	12	0	GLFL	C1	W	E.DYB	LF	7 - 0		-	-	-	-	-	-	Sepage of ground water at 85 cm. Ridge immedielty adjacent to organic area.
																							Ae	0 - 11	S	-	-	-	-	-	-	
																							Bm	11 - 23	S	-	-	-	-	-	-	
																							C	23 - 100	S		70	-	-	-	-	
K23CB004	632938	5856033	0			V		/	e	O	v	s	FG	b		0	0	75	FNPT/FLUV		VP	T.F	Of	0 - 75								
																							Cg	75 - 80								
K23CB005	632799	5856117	0	-	-	V		/	zs	M	p	-	-	-	U	0	0	0	TILL		P	R.G	Cg	0 - 15	-	-	-	-	-	-	-	-
K23CB006	632405	5856913	3	3	290	D		/	e	O	b	zs	M	b		0	0	130	FNPT		VP	T.M	Of	0 - 130								
																							Cg	130 - 145	SL	NST	0	2.5Y4/2				
K23CB007	632656	5856313	5	3	20	M	U1h	10 /	sd	M	u	-	-	-	-	10	4	0	TILL	C5	P	O.Gpt	Of	10 - 0	-	-	-	-	-	-	-	Visible surface stone all over area, added C5 as texture
																							Bg	0 - 4	SL	NST	85	7.5YR3/3	-	-	none	
																							Cg	4 - 45	SL	NST	85	2.5Y3/2	-	-	none	
K23CB008	634252	5854730	1	2		V	L1	/	sd	M	p					5	12	0	TILL		W	OT.HP	F	11 - 0	S	VFR		7.5YR4/2				Compacted C horizon, impossible to auger or dig.pH = around 4.2
																							Ae	0 - 5	LS	FR	20	7.5YR4/2				
																							Bhc	5 - 17	LS	FI	50	2.5YR2.5/3				
																							BC	17 - 30	LS	FI	55	10YR3/6			none	
K23CB009	634232	5854709	20	-	-	M	-	/	sd	M	r	-	-	-	-	0		0	TILL		W	O.HFP	F	10 - 0	-	-	-	-	-	-	-	Till feature, upland of site 008. Non detailed site
																							Ae	0 -	-	-	-	-	-	-	-	
																							Bfj	0 -	-	-	-	-	-	-	-	
																							BC	0 -	-	-	-	-	-	-	-	
K23CB010	634003	5855480	7	4	120	M	IUh	/	dzs	M	j					19	8	0	TILL	M4	W	E.DYB	FH	14 - 0								
																							Ae	0 - 5	LS	VFR	5	7.5YR5/2				
																							Bm	5 - 13	SL	FR	10	10YR3/6				
																							BC	13 - 35	FSL	FR	20	2.5Y4/4				
																							C	35 - 100	L	FR	15	2.5Y5/3				
K23CB011	632788	5855296	0	-	-	C	-	/	zsd	M	w	-	-	-	-	14	16	0	TILL		W	E.DYB	LF	4 - 0	-	-	-	-	-	-	-	Bedrock exposed all over the place, a pocket of soils intersperced between rocks
																							Ae	0 - 10	-	-	70	-	-	-	-	
																							B	10 - 26	-	-	70	-	-	-	-	

Site Data								Terrain Data							Soil Data							Soil Horizon Data										Comments
Site ID	Easting	Northing	Slope Gradient (%)	Slope Class	Aspect	Slope Position	Surface Expression	Water table / seepage depth (cm from surface)	Surface Material Texture	Surficial Material	Surface Expression	Subsurface Material Texture	Subsurface Material	Subsurface Expression	Geomorphological Processes	Topsoil Thickness (cm)	Upper Subsoil Thickness (cm)	Organic Thickness (cm)	Parent Material	Soil Parent Material Texture	Drainage	Soil Classification	Horizon	Horizon Depth (cm)	Texture	Consistence	Coarse Fragments (%)	Colour	Mottles	Salt Crystals (Presence or Absence)	Effervescense	
K23CB012	632267	5854981	2	2	-	D	O2	/	hu	O	v	-	M	p	-	0	0	70	FNPT		VP	THU.M	Om	0 - 45	-	-	-	-	-	-	-	Rocks in profile, but no mineral soil - organic has built up around the CFs
																							Oh	45 - 70	-	-	20	-	-	-	-	
K23CB013	632162	5854954	38	7	40	U	-	/	gd	M	a	-	-	-	-	10	11	0	TILL	-	R	E.DYB	FH	5 - 0	-	-	-	-	-	-	-	Assumed till because coarse fragments are subrounded.
																							Ae	0 - 5	S	-	5	10YR4/2	-	-	-	
																							Bm	5 - 16	S	-	50	10YR3/6	-	-	-	
																							C	16 - 75	S	L	50	2.5YR3/4	-	-	-	
K23CB014	632003	5855031	0	1	-	D	-	/	hd	O	v	-	-	-	-	0	0	40	FNPT		VP	T.H	Om	0 - 40	-	-	-	-	-	-	-	Terric Humisol, rock with every step out.
																							R	40 -	-	-	-	-	-	-	-	
K23CB015	632407	5855236	39	7	290	M	-	/	dzs	M	a	-	-	-	-	12	18	0	TILL	-	W	O.HFP	LF	5 - 0	-	-	-	-	-	-	-	
																							Ae	0 - 7	LS	-	25	7.5YR5/1	-	-	-	
																							Bf	7 - 25	LS	-	20	5YR3/4	-	-	-	
																							BC	25 - 42	LS	-	18	10YR4/6	-	-	-	
																							C	42 - 70	SL	-	10	2.5Y4/4	-	-	-	
K23CB016	634292	5855660	3	3	320	L	-	/	du	O	v	zds	M	d	-	0	0	80	FNPT	L11	VP	T.M	Of	0 - 20	-	-	-	-	-	-	-	Sphg sclor, sphg wor
																							Om	20 - 80	-	-	40		-	-	-	
																							Cg	80 - 85	SL	NST	18	2.5Y3/1	-	-	-	
K23CB017	634119	5856176	6	4	190	M	-	/	sd	M	u	-	-	-	-	11	9	0	TILL	C4	W	O.FHP	LF	4 - 0	-	-	-	-	-	-	-	Lots of enormous rocks in area, bedrock or large boulders at surface? Assume bedrock based on outcrops at base of slope.
																							Ae	0 - 7	LS	L	70	10YR4/3	-	-	-	
																							Bhf	7 - 16	LS	L	75	5YR3/3	-	-	-	
																							BC	16 - 22	LS	L	90	10YR3/6	-	-	-	
K23CB018	633982	5856286	4	3	320	M	IUl	50 /	zds	M	b		R	u	L	30	24	0	TILL	C4	I	O.HP	FH	21 - 0								
																							Ae	0 - 9	LS	L	30	10GY5/1				
																							Bh	9 - 33	LS	L	30	7.5YR2.5/2				
																							BCgj	33 - 80	LS	L	30	10YR3/4				
																							Cg	80 - 100	SL	NST	20	2.5Y4/4				
K23CB019	634325	5856587	0		-	T		/	e	O	v	-	M			0	0	100	FNPT	P1	VP	T.F	Of	0 - 100	-	-	-	-	-	-	-	Rocks
K23CB020	634401	5856459	0	1		D		25 /	zs	M	p				U	20	0	0	TILL	M4	P	R.Gpt	Of	20 - 0								
																							Cg	0 - 80	SL	SST	10	10YR3/6				
K23CB021	634200	5857474	0	1	-	D	-	/ 45	dzs	M	p	-	-	-	-	42	45	0	TILL	C4	I	GLE.DYBpt	Of	34 - 12	-	-	-	-	-	-	-	pH = <4.0
																							Oh	12 - 0	-	-	20	-	-	-	-	
																							Ae	0 - 8	LS	L	15	10YR5/1	-	-	-	
																							Bmgj	12 - 57	SL	NST	35	2.5YR2.5/2	-	-	-	
																							Cg	57 - 100	SiL	NST	25	2.5Y4/4	prominent	-	none	
K23CB022	633723	5857897	2	3		M		/	dzs	M	p					3	42	0	TILL	M4	I	O.HP	F	23 - 0								Forested wetland area.
																							Ae	0 - 3	LS		20					
																							Bh	3 - 45	LS		60	7.5YR2.5/3				
																							Cgj	45 - 80	SiL		15	2.5Y3/2				

Site Data								Terrain Data							Soil Data						Soil Horizon Data											
Site ID	Easting	Northing	Slope Gradient (%)	Slope Class	Aspect	Slope Position	Surface Expression	Water table / seepage depth (cm from surface)	Surface Material Texture	Surficial Material	Surface Expression	Subsurface Material Texture	Subsurface Material	Subsurface Expression	Geomorphological Processes	Topsoil Thickness (cm)	Upper Subsoil Thickness (cm)	Organic Thickness (cm)	Parent Material	Soil Parent Material Texture	Drainage	Soil Classification	Horizon	Horizon Depth (cm)	Texture	Consistence	Coarse Fragments (%)	Colour	Mottles	Salt Crystals (Presence or Absence)	Effervescense	Comments
K23CB023	635934	5856131	7	4	170	M	-	/	zds	M	j	-	-	-	-	9	11	0	TILL	C4	R	O.HFP	FH	3 - 0	-	-	-	-	-	-	-	
																							Ae	0 - 6	SL	L	30	10YR6/1	-	-	-	
																							Bf	6 - 17	LS	L	45	5YR3/3	-	-	-	
																							BC	17 - 30	LS	L	30	7.5YR4/6	-	-	-	
																							C	30 - 70	LS	L	70	2.5Y4/3	-	-	-	
K23CB024	635992	5855732	0	1	-	T	-	/	u	O	v	ds	F	-	-	0	0	55	FNPT	P1	VP	T.M	Om	0 - 55	-	-	-	-	-	-	-	Riparian area, more veg over rocks basically.
K23CB025	635960	5855670	2	2	-	V	-	/	d	F	-	-	-	-	-	0	0	0	FLUV		P		R	0 - 20					-	-	-	Non-detailed site
K23CB026	635616	5856138	0	1	-	D	-	/	e	O	b	ds	M	p	-	0	0	75	FNPT/TILL	L11	VP	T.F	Of	0 - 60					-	-	-	
																							Om	60 - 75					-	-	-	
																							Cg	75 - 120	S	NST	10	2.5Y4/2	-	-	-	
K23CB027	634283	5858798	0	1	-	D	-	/	e	O	p	-	-	-	-	0	0	220	FNPT		VP	TY.F	Of	0 - 220	-	-	-	-	-	-	-	Floating root mat, not safe for standing. Probably open water at some point but so much organic accumulation that's it's filled in.
K23CB028	642726	5867267	1	2	-	V	-	/	sz	L	p	-	-	-	-	10	0	0	LACU	M3	MW	O.R	LFH	10 - 0					-	-	-	Adjacent to lake, the pit is holding water but not saturated all the way through.
																							C	0 - 120	L		0	10YR4/4	-	-	-	
K23CB029	642130	5865063	0	1	-	V	-	105 / 100	dzs	M	p	-	-	-	-	20	0	0	TILL	M4	I	GL.R	FH	20 - 0	-	-	-	-	-	-	-	Seepage.
																							C1	0 - 20	L	FR	7	10YR3/4	distinct	-	-	
																							Cgj2	20 - 43	L	FR	7	10YR3/4	distinct	-	-	
																							C3	43 - 120	L	FR	20	10YR3/4		-	-	
K23CB030	641889	5864164	3	3	-	M	-	/	dsz	L	v	dzs	M	p	-	9	0	0	LACU/TILL	L18	W	O.R	FH	9 - 0	-	-	-	-	-	-	-	Based on the proximity of the lake called Lv. Assuming Lac over Till (based on terrain).
																							C	0 - 36	SiL	FR	2	10YR3/4	-	-	-	
																							IIC	36 - 90	SL	FR	15	10YR3/3	-	-	-	
K23CB031	641494	5863311	0	1	-	V	-	/	s	FG	h	-	-	-	-	0	20	0	GLFL	C1	R	O.DYB	Bm	0 - 20	LS	L	10	10YR3/4	-	-	-	Not sure if anthropogenic or borrow pit. Check LiDAR when available. Dark, fine layers of material in BC and C . Reclaimed or glaciofluvial?
																							BC	20 - 35	LFS	L	15	-	-	-	-	
																							C	35 - 120	S	L	15	-	-	-	-	
K23CB032	640972	5859396	6	4	220	M	-	/	zds	M	j	-	-	-	-	7	7	0	TILL	-	R	OT.HFP	F	11 - 0	-	-	-	-	-	-	-	Almost well to rapid.
																							Ae	0 - 7	LS	L	40	10GY6/1	-	-	-	
																							Bfc	7 - 14	SL		45	5YR3/3	-	-	-	
																							BC	14 - 28	LFS	L	40	10YR3/4	-	-	-	
																							C	28 - 70	LS	L	20	2.5Y4/4	-	-	-	
K23CB033	640982	5859640	2	2	340	M	-	/ 80	dzs	M	u	-	-	-	L	4	14	0	TILL	-	MW	O.DYB	F	14 - 0	-	-	-	-	-	-	-	
																							Ae	0 - 4	SL	L	15	10YR6/1	-	-	-	
																							Bm	4 - 18	LS	L	20	7.5YR3/3	-	-	-	
																							BC	18 - 45	LS	L	40	10YR4/3	-	-	-	

Site Data								Terrain Data								Soil Data							Soil Horizon Data									
Site ID	Easting	Northing	Slope Gradient (%)	Slope Class	Aspect	Slope Position	Surface Expression	Water table / seepage depth (cm from surface)	Surface Material Texture	Surficial Material	Surface Expression	Subsurface Material Texture	Subsurface Material	Subsurface Expression	Geomorphological Processes	Topsoil Thickness (cm)	Upper Subsoil Thickness (cm)	Organic Thickness (cm)	Parent Material	Soil Parent Material Texture	Drainage	Soil Classification	Horizon	Horizon Depth (cm)	Texture	Consistence	Coarse Fragments (%)	Colour	Mottles	Salt Crystals (Presence or Absence)	Effervescense	Comments
																							C	45 - 70	LS	L	15	2.5Y3/3	-	-	-	
K23CB034	641196	5860126	3	3	70	M	-	/	e	O	v	ds	M			0	0	80	FNPT/TILL	L11	VP	T.M	Of	0 - 80	-	-	-	-	-	-	-	
																							Cg	80 - 100	SL	NST	4535	2.5Y3/3	prominent			
K23LM001	633107	5856010	12	5	70	M	IUh	/	zds	FG	b	-	M	j	L	18	27	0	GLFL	C1	I	E.DYBpt	Of	15 - 0	-	-	-	-	-	-	-	Entire slope is seepage slope. Full of alder but also lari lar, rodo gro, sphag, pice mar. Many areas look like a fen but with wet mineral soil. pH <4.0
																							Ae	0 - 3	LS	L	2	10YR4/1	-	-	-	
																							Bm	3 - 30	SL	VFR	20	7.5YR2.5/3	-	-	-	
																							C1	30 - 45	SiL	FR	0	10YR4/6	-	-	-	
																							C2	45 - 60	LS	FR	20	10YR3/4	-	-	-	
																							Cgj	60 - 120	SL	VFR	5	2.5Y4/3	-	-	-	
K23LM002	633096	5856128	0	1	-	V	O2	/	u	O	b	zs	M	p	-	0	0	140	FNPT		VP	T.M	Om	0 - 140	-	-	-	-	-	-	-	Almost seems terraced.
																							Cg	140 - 160	SL	NST	2	10Y5/1	-	-	-	
K23LM003	632345	5856854	0	-	-	C	-	/	s	FG	b	-	M	p	-	5	45	0	FLUV		R	O.HFP	Ae	0 - 5	LS	-	-	-	-	-	-	Non-detailed site.
																							Bm	5 - 50	-	-	-	-	-	-	-	
																							C	50 - 70	S	-	-	-	-	-	-	
K23LM004	632409	5856566	2	3	350	U	-	/	zs	M	u	-	-	-	-	11	17	0	TILL	C1	W	O.FHP	FH	5 - 0	-	-	-	-	-	-	-	
																							Ae	0 - 6	SL	VFR	35	10YR7/1	-	-	-	
																							Bh	6 - 14	SL	VFR	50	2.5YR3/4	-	-	-	
																							Bf	14 - 23	LS	VFR	25	7.5YR4/6	-	-	-	
																							BC	23 - 51	LS	VFR	10	10YR5/3	-	-	-	
																							C	51 - 120	LS	VFR	4	10YR4/2	-	-	-	
K23LM005	634103	5854193	15	5	130	M	IUh	/	zsd	M	j	-	-	-	-	10	20	0	TILL	C4	W	E.DYB	F	23 - 0					-	-	-	Step out and auger refusal at step out as well.
																							Ae	0 - 10	LS	VFR	35	10YR5/1	-	-	-	
																							Bm	10 - 30	LS	L	45	10YR3/6	-	-	-	
																							C	30 - 45	LS	VFR	55	10YR4/6			none	
K23LM006	634078	5854955	0	1	-	V	L2	/	ds	M	v	sz	M	p	U	25	0	0	TILL	C4	P	R.Gpt	Of	25 - 0	-	-	-	-	-	-	-	Polygon mapped as well drained but large portion we walked through is low and wet. Standing water with sphagnum, but not organic. Perhaps washed is top horizon till.
																							Cg1	0 - 35	S	NST	25	10YR3/3	-	-	-	
																							Cg2	35 - 75	VFSL	NST	0	10YR4/2	-	-	-	
K23LM007	633917	5855617	10	4	70	M	I3l	/	dzs	M	j	-	-	-	-	12	19	0	TILL	C4	W	E.DYB	FH	8 - 0	-	-	-	-	-	-	-	
																							Ae	0 - 4	LS	VFR	15	7.5YR5/2	-	-	-	
																							Bm	5 - 24	SL	VFR	25	10YR3/6	-	-	-	
																							C	24 - 100	SL	VFR	15	2.5Y4/3	-	-	-	
K23LM008	634433	5856513	2	2	50	M	U1l	/	zsd	M	u	-	-	-	-	10	12	0	TILL	C4	W	O.HFP	FH	4 - 0	-	-	-	-	-	-	-	Site originally collected as 0014 to 008, but changed in the field due to duplicate.
																							Ae	0 - 6	SL	SL	5	7.5YR6/1	-	-	-	
																							Bf	6 - 18	SL	SL	40	5YR3/4	-	-	-	
																							BC	18 - 35	SL	SL	30	10YR4/6	-	-	-	
																							C	35 - 65	SL	SL	60	2.5Y4/4	-	-	-	
K23LM009	632296	5854918	2	2	5	V	L1	/	h	O	v	zs	M	p	L	0	0	75	FNPT	-	VP	T.H	Oh	0 - 75	-	-	20	-	-	-	-	Willow at site.
																							Cg	75 - 85	LS	NST	15	10YR3/2	-	-	-	

Site Data								Terrain Data							Soil Data						Soil Horizon Data											Comments
Site ID	Easting	Northing	Slope Gradient (%)	Slope Class	Aspect	Slope Position	Surface Expression	Water table / seepage depth (cm from surface)	Surface Material Texture	Surficial Material	Surface Expression	Subsurface Material Texture	Subsurface Material	Subsurface Expression	Geomorphological Processes	Topsoil Thickness (cm)	Upper Subsoil Thickness (cm)	Organic Thickness (cm)	Parent Material	Soil Parent Material Texture	Drainage	Soil Classification	Horizon	Horizon Depth (cm)	Texture	Consistence	Coarse Fragments (%)	Colour	Mottles	Salt Crystals (Presence or Absence)	Effervescense	
K23LM010	631908	5855064	4	3	70	M	IUl	/	dsz	M	p					13	0	0	TILL		P	R.G	FH	13 - 0	-	-	-	-	-	-	-	From creek to here is relatively wet with lots of surface stone. Haven't seen much slope. Didn't feel very wet at site, but had mottling and quite reduced colours, plus it was late September so this could be wetter for a good portion of the season.
																							C	0 - 6	SiL	VFR	10	10YR5/3	-	-	-	
																							Cgj	6 - 35	SiL	FR	5	2.5Y4/2	distinct	-	-	
																							Cg	35 - 80	SiL	VFR	20	5GY4/1	-	-	-	
K23LM011	634352	5855672	3	3	260	M	U1h	/	zds	M	p					10	23	0	TILL	C4	W	O.HFP	FH	5 - 0	-	-	-	-	-	-	-	Burned forest area, local let us know that deadfall was harvested following fire.
																							Ae	0 - 5	SL		20	7.5YR4/2	-	-	-	
																							Bf	5 - 28	LS	L	25	5YR3/4	-	-	-	
																							BC	28 - 43	LS	L		10YR3/6	-	-	-	
																							C	43 - 70	LS	L	10	2.5Y4/4	-	-	-	
K23LM012	633973	5856029	0	1		V	O1	/	e	O	p	-	-	-	-	0	0	220	FNPT	P1	VP	TY.F	Of	0 - 220	-	-	-	-	-	-	-	Floating. Lots of likely saturated layers or layers of water
K23LM013	634320	5856565	5	-	-	L	-	48 / 48	zds	M	p	-	-	-	U	33	0	0	TILL	C5	P	R.Gpt	Of	33-7	-	-	-	-	-	-	-	Sampled
																							Om	7-0	-	-	-	-	-	-	-	
																							Cg1	0 - 33	SL	L	15	10YR3/3	-	-	-	
																							Cg2	33 - 60	LS	NST	20	2.5Y3/3	-	-	-	
K23LM014	634365	5856644	0	1	-	V	-	/	e	O	b	zs	M	p		0	0	145	FNPT/TILL	L11	VP	T.F	Of	0 - 145	-	-	-	-	-	-	-	
																							Cg	145 - 160	SL	NST	10	2.5Y4/4	-	-	-	
K23LM015	634290	5857362	13	5	250	M	H1m	/	ds	M	u	-	-	-	-	13	18	0	TILL	C4	R	E.DYB	FH	8 - 0	-	-	-	-	-	-	-	Layers of finer sand in C horizon but coarse fragments seem too angular for FG so called coarse till. For example, there is a 9 cm layer at the top of the C horizon that is fine sand and has no coarse fragments.
																							Ae	0 - 5	SL	L	5	7.5YR6/2	-	-	-	
																							Bm	5 - 23	SL	VFR	25	7.5YR3/4	-	-	-	
																							BC	23 - 30	LVFS	VFR	30	2.5Y4/4	-	-	-	
																							C	30 - 100	S	L	10	2.5Y5/2	-	-	-	
K23LM016	633800	5857730	0	1	-	V	L1	/ 25	zs	M	p	-	-	-	L	39	26	0	TILL	M4	I	O.HP	FH	20 - 0	-	-	-	-	-	-	-	pH relatively high - about 6.6/6.7.
																							Ae	0 - 19	LS	L	15	10YR5/2	-	-	-	
																							Bh	19 - 45	LS	NST	15	7.5YR2.5/3	-	-	-	
																							Cg	45 - 85	SiL	NST	5	2.5Y4/4	-	-	-	
K23LM017	635994	5855855	3	2	100	L	U1l	/	d	M	p	-	-	-	-	0	0	0	TILL	-	I	-	R	0 - 50	-	-	100	-	-	-	-	Three step outs and seems to be feather moss covering boulders. Called non soil due to no mineral soil found and no organic under feather moss layer
K23LM018	635973	5855854	6	4	-	L	-	/	h	O	v	-	M	j	-	0	0	60	FOPT	L11	VP	HU.FO	Oh	0 - 60	-	-	-	-	-	-	-	Rocks under organic
																							R	60 - 70	-	-	-	-	-	-	-	

Site Data							Terrain Data								Soil Data							Soil Horizon Data										Comments
Site ID	Easting	Northing	Slope Gradient (%)	Slope Class	Aspect	Slope Position	Surface Expression	Water table / seepage depth (cm from surface)	Surface Material Texture	Surficial Material	Surface Expression	Subsurface Material Texture	Subsurface Material	Subsurface Expression	Geomorphological Processes	Topsoil Thickness (cm)	Upper Subsoil Thickness (cm)	Organic Thickness (cm)	Parent Material	Soil Parent Material Texture	Drainage	Soil Classification	Horizon	Horizon Depth (cm)	Texture	Consistence	Coarse Fragments (%)	Colour	Mottles	Salt Crystals (Presence or Absence)	Effervescense	
K23LM019	635893	5855860	4	3	120	L	U1h	/	dzs	M	u	-	-	-	-	9	13	0	TILL	C4	W	E.DYB	FH	3 - 0					-	-	-	pH <4.0.
																							Ae	0 - 6	SL	VFR	2	10YR5/1	-	-	-	
																							Bm	6 - 19	LS	L	3	7.5YR4/6	-	-	-	
																							BC	19 - 30	LS	L		2.5Y5/4	-	-	-	
																							C	30 - 80	LS	L	20	2.5Y5/2	-	-	-	
K23LM020	642423	5866843	0	-	-	V	-	/	dsz	M	p	-	-	-	U	7	0	0	TILL	M4	P	R.Gpt	Of	7 - 0	-	-	-	-	-	-	-	Very wet. Upper soil is saturated slop. Could be Ah. Water likely sitting on finer, more compacted till at 30 cm which is prominently mottled.
																							Cg1	0 - 30	SL	NST	0	10YR3/3	-	-	-	
																							Cg2	30 - 75	SL	FR	15	10YR4/2	prominent	-	-	
K23LM021	642257	5865075	0	-	-	V	-	/	e	O	b	-	M	p	-	0	0	120	FNPT		VP	T.F	Of	0 - 120	-	-	-	-	-	-	-	Encountered rocks and sandy mineral soil in 2/3 step outs.
K23LM022	641826	5863930	0	2	-	V	-	/	zsd	M	u	-	-	-	-	12	16	0	TILL	C4	R	E.DYB	FH	5 - 0	-	-	-	-	-	-	-	pH = 4.5. Dystric confirmed
																							Ae	0 - 7	S	L	15	10YR5/1	-	-	-	
																							Bm	7 - 23	LS	L	20	7.5YR3/4	-	-	-	
																							C	23 - 80	LS	L	30	10YR3/3	-	-	-	
K23LM023	641440	5862957	28	6	350	M	H1h	/	s	FG	a	-	-	-	-	15	44	0	GLFL		R	O.FHP	FH	5 - 0	-	-	-	-	-	-	-	-
																							Ae	0 - 10	S	L		10YR5/1	-	-	-	
																							Bfj	10 - 18	S	L	1	10YR4/4	-	-	-	
																							Bh	18 - 54	S	L	2	5YR2.5/2	-	-	-	
																							C	54 - 120	S	L	2	10YR4/6	-	-	-	
K23LM024	641039	5859285	7	4	300	M	IUh	/ 80	zs	M	j	-	-	-	L	0	0	0	TILL	C4	MW	O.R	H	20 - 0	-	-	-	-	-	-	-	Site seems wetter with bog birch and salix making up most of the shrubs. Not much profile development, it any. Soil gets finer with depth (more silt at depth). No reduced colors, high water table, or gleying in profile. Humus layer varies greatly in thickness (12-35 cm). Two step outs and still not developed. Pockets of sand and loamy sand in profile
																							C	0 - 100	SL	VFR	2	10YR3/3	-	-	-	
K23LM025	640925	5859574	3	3	320	M	I1l	/ 70	zds	M	-	-	-	-	L	21	18	0	TILL	C4	MW	E.DYB	FH	14 - 0	-	-	-	-	-	-	-	Seepage at 80 cm so does not affect soil classification. Soil profile generally well drained but bumped to moderately well due to seepage and wet soil at depth
																							Ae	0 - 7	SL	VFR	5	10YR6/1	-	-	-	
																							Bm	7 - 25	LS	L	10	7.5YR4/3	-	-	-	
																							BC	25 - 50	LS	L	20	10YR3/4	-	-	-	
																							C	50 - 90	LS	L	20	10YR4/	-	-	-	

Site Data							Terrain Data								Soil Data							Soil Horizon Data										Comments
Site ID	Easting	Northing	Slope Gradient (%)	Slope Class	Aspect	Slope Position	Surface Expression	Water table / seepage depth (cm from surface)	Surface Material Texture	Surficial Material	Surface Expression	Subsurface Material Texture	Subsurface Material	Subsurface Expression	Geomorphological Processes	Topsoil Thickness (cm)	Upper Subsoil Thickness (cm)	Organic Thickness (cm)	Parent Material	Soil Parent Material Texture	Drainage	Soil Classification	Horizon	Horizon Depth (cm)	Texture	Consistence	Coarse Fragments (%)	Colour	Mottles	Salt Crystals (Presence or Absence)	Effervescense	
K23LM026	641113	5859708	3	3	359	M	I1l	/	u	O	v	sd	M	p	-	0	0	75	FNPT/TILL	L11	VP	T.M	Of	0 - 20	-	-	-	-	-	-	-	Sloping fen. Doesn't look like there have been any trees cut down. No signs of burn.
																							Om	20 - 75	-	-	-	-	-	-	-	
																							Cg	75 - 80	LS		70	-	-	-	-	
K23LM027	641349	5860047	11	4	250	M	IUh	/	sz	M	v	-	R	u	-	15	9	0	TILL	C5	W	E.DYB	FH	9 - 0	-	-	-	-	-	-	-	-
																							Ae	0 - 6	SL	VFR	3	10YR5/1	-	-	-	
																							Bm	6 - 15	SL	VFR	5	7.5YR3/4	-	-	-	
																							C	15 - 30	SL	VFR	8	10YR3/4	-	-	-	
																							R	30 - 31	-	-	-	-	-	-	-	
K23LM030	632605	5856188	0	1	-	V	O1	/	e	O	b	zs	M	p	-	0	0	170	FNPT		VP	TY.F	Of	0 - 150	-	-	-	-	-	-	-	-
																							Om	150 - 170	-	-	-	-	-	-	-	
																							Cg	170 - 185	SiL	NST	0	5GY5/1	-	-	-	

2.0 SOIL ABBREVIATION KEY

Table I-1: Soil Phases

Suffix Applied as Subgroup Modifier	Description
pt	Peaty – an organic horizon (> 17% organic carbon) which is > 10 cm thick

Table I-2: Surface Expression[a]

Surface Expression Code	Description
H1h	Hummocky – high relief
H1m	Hummocky – moderate relief
I1l	Inclined plain – low relief
I3l	Inclined plain – moderate relief
IUl	Inclined Undulating – low relief
IUh	Inclined Undulating – high relief
L1	Level plain
L2	Level and closed basin (depression with raised edges)
O1	Organic – level, flat, horizontal or plateau
O2	Organic - basin
U1h	Undulating – high relief
U1l	Undulating – low relief

a) AGRASID Version 3.0 Soil Landscapes User's Manual (CAESA 2001).

Table I-3: Soil Subgroup Classification[a]

Soil Subgroup Code	Description
E.DYB	Eluviated Dystric Brunisol
GL.DYB	Gleyed Dystric Brunisol
GL.R	Gleyed Regosol
GLE.DYB	Gleyed Eluviated Dystric Brunisol
HU.FO	Humic Folisol
O.DYB	Orthic Dystric Brunisol
O.FHP	Orthic Ferro Humic Podzol
O.G	Orthic Gleysol
O.HP	Orthic Humic Podzol
O.HFP	Orthic Humo-Ferric Podzol
O.R	Orthic Regosol
OT.HFP	Ortstein Ferro-Humic Podzol
OT.HP	Ortstein Humic Podzol
R.G	Rego Gleysol
T.F	Terric Fibrisol
T.H	Terric Humisol
T.M	Terric Mesisol

Table I-3: Soil Subgroup Classification[a]

Soil Subgroup Code	Description
THU.M	Terric Mesic Organic Cryosol
TY.F	Typic Fibrisol
TY.M	Typic Mesisol

a) Canadian System of Soil Classification (SCWG 1998).

Table I-4: Parent Materials[a]

Parent Material Code	Description
ANTH	Anthropogenic
FLUV	Fluvial
FNPT	Fen peat (Sedge Peat)
FNPT/FLUV	Fen peat over Fluvial
FNPT/TILL	Fen peat over Till
FOPT	Forest Peat (Bog Peat)
GLFL	Glaciofluvial
LACU	Lacustrine
LACU/TILL	Lacustrine over Till
TILL	Till (Morainal)

a) Alberta Soil Names File (Generation 4) User's Handbook (ASIC 2016).

Table I-5: Parent Material Type[a]

Parent Material Type Code	Description
C1	Gravel or gravelly coarse textured (S, LS, SL, FSL) materials (includes cobbly and stony variations)
C4	Very coarse textured (S, LS) till
C5	Moderately coarse textured (SL, FSL) till
L11	Undifferentiated peat over coarse textured (S, LS, SL, FSL) undifferentiated materials
L18	Medium textured (L, SiL, VFSL, SCL, CL, SiCL) over coarse textured (S, LS, SL, FSL) undifferentiated materials
M3	Moderately fine textured (CL, SCL, SiCL) sediments deposited by water
M4	Medium textured (L, CL) till
P1	Sphagnum (bog) peat

a) Alberta Soil Names File (Generation 4) User's Handbook (ASIC 2016).

Table I-6: Slope Class[(a)]

Slope Class Code	Description [%]
1	0 to 0.5 (level)
2	0.5 to 2 (nearly level)
3	2 to 5 (very gentle slopes)
4	5 to 9 (gentle slopes)
5	9 to 15 (moderate slopes)
6	15 to 30 (strong slopes)
7	30 to 45 (very strong slopes)

a) Slope classes from the Canadian System of Soil Classification (SCWG 1998).

Table I-7: Drainage Classes[(a)]

Drainage Class Code	Drainage Description
I	Imperfectly
M	Moderately Well
P	Poorly
R	Rapidly
VP	Very Poorly
W	Well
X	Very Rapid

a) Manual for Describing Soils in the Field: 1982 Revised (Expert Committee on Soil Survey 1982).

Table I-8: Slope Position[(a)]

Slope Position Code	Description
C	Crest
D	Depression
L	Lower
M	Middle
T	Toe
U	Upper
V	Level

a) Manual for Describing Soils in the Field: 1982 Revised (Expert Committee on Soil Survey 1982).

Table I-9: Soil Texture(a)

Slope Texture Code	Description
C	Clay
CL	Clay Loam
fSL	Fine Sandy Loam
HC	Heavy Clay
L	Loam
LFS	Lomay Fine Sand
LS	Loamy Sand
LVFS	Loamy Very Fine Sand
S	Sand
SC	Sandy Clay
SCL	Sandy Clay Loam
Si	Silt
SiC	Silty Clay
SiCL	Silty Clay Loam
SiL	Silty Loam
SL	Sandy Loam
VFSL	Very Fine Sandy Loam

a) Manual for Describing Soils in the Field: 1982 Revised (Expert Committee on Soil Survey 1982).

Table I-10: Soil Consistence(a)

Slope Consistence Code	Description
FI	Firm
FR	Friable
L	Loose
NST	Non-sticky
SST	Slightly sticky
ST	Sticky
SL	Structureless
VFR	Very friable

a) Manual for Describing Soils in the Field: 1982 Revised (Expert Committee on Soil Survey 1982).

Table I-11: Horizon Suffixes[a]

Horizon Suffix Code	Description
Mineral Horizons	
e	eluviated – downward loss of clay, iron, aluminum and/or organic matter
g	gleyed – presence of mottling or gray colors indicating permanent or periodic reduction by water
f	iron – enriched with amorphous material, principally Al and Fe combined with om
c	Cemented – ortstien, placic, and duric horizon of Podzolic soils
h	humic - enriched with organic matter
j	modifier of suffixes indicating failure to meet specified limits of other suffixes
m	slightly modified by hydrolysis, oxidation, and/or solution
Organic Horizons	
f	fibric
h	humic
m	mesic

a) Canadian System of Soil Classification (SCWG 1998).

3.0 REFERENCES

ASIC (Alberta Soil Information Centre**)**. 2016. Alberta Soil Names File (Generation 4) User's Handbook. M.D. Bock (ed.). Agriculture and Agri-Food Canada, Science and Technology Branch, Edmonton, AB. 166 pp.

CAESA (Canada – Alberta Environmentally Sustainable Agriculture Agreement). 2001. AGRASID Version 3.0: Soil Landscapes User's Manual. https://www.alberta.ca/caesa-land-system-users-manual.aspx#toc-6.

Expert Committee on Soil Survey. 1982. The Canada Soil Information System (CanSIS): Manual for Describing Soils in the Field, 1982 Revised. Land Resource Research Institute, Research Branch, Agriculture Canada, Ottawa. LRRI Contribution no 82-52. 166 pp.

SCWG (Soil Classification Working Group). 1998. The Canadian System of Soil Classification, 3rd ed. Agriculture and Agri-Food Canada Publication 1646, 187 pp.

APPENDIX C

Photos

Photo C-1: Example of mixed fragments in till (morainal) material.

Photo C-2: Orthic Ferro Humic Podzol (O.FHP) profile at plot K23LM023. Glaciofluvial material, associated with Huguette Lake (HUL) SMU. 29 September 2023

Photo C-3: Orthic Ferro Humic Podzol (O.FHP) pit profile at plot K23LM023. Glaciofluvial material, associated with Huguette Lake (HUL) SMU. 29 September 2023

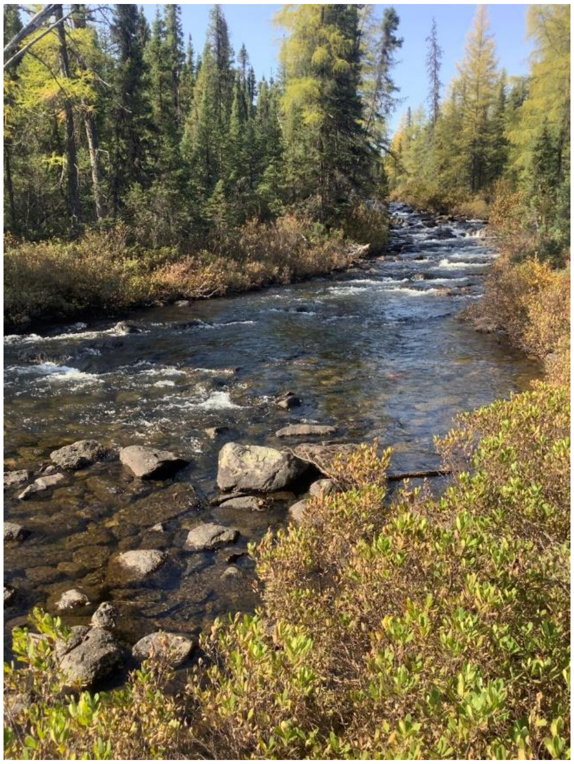

Photo C-4: Example of typical fluvial material from K23CB025. Example of Waldorf River (WDR) SMU. 28 September 2023

Photo C-5: Orthic Regosol (O.R) pit profile at plot K23CB030. Lacustrine material over till, example of material for Jean Lake (JAL) SMU. 29 September 2023

Photo C-6: Orthic Regosol (O.R) material at plot K23CB030. Lacustrine material over till, example of material for Jean Lake (JAL) SMU. 29 September 2023

Photo C-7: Rego Gleysol (R.G) profile at plot K23LM013. Organic accumulation till mineral materials. Example of material profile for Canning Lake (CAL) SMU. 27 September 2023

Photo C-8: Rego Gleysol (R.G) soil pit profile at plot K23LM013. Organic accumulation over till mineral materials. Example of material profile for Canning Lake (CAL) SMU. 27 September 2023

Photo C-9: Terric Fibrisol (T.F) material profile at plot K23CB026. Example of fibric organic material and underlying till material associated with Flora Lake (FLO) SMU. 28 September 2023

Photo C-10: Orthic Humo Ferric Podzol (O.HFP) pit profile at plot K23CB023. Till material, example of material for Javelin Road (JAV) SMU. 28 September 2023

Photo C-11: Example of coarse fragments from plot K23CB023. Till material, example of material for Javelin Road (JAV) SMU. 28 September 2023

Photo C-12: Eluviated Dystric Brunisol (E.DYB) pit profile at plot K23LM023. Till material, example of material for Labrador (LAB) SMU. 26 September 2023

Photo C-13: Example of coarse fragments from plot K23LM010. Till material, example of material for Labrador (LAB) SMU. 26 September 2023

Photo C-14: Eluviated Dystric Brunisol (E.DYB) material profile at plot K23CB011. Shallow till material over bedrock, example of material for Lake Virot (LAV) SMU. 26 September 2023

Photo C-15: Example of bedrock exposure at plot K23CB011. Shallow till material over bedrock, example of material for Lake Virot (LAV) SMU. 26 September 2023

Photo C-16: Terric Mesisol (T.M) material profile at plot K23CB024. Mesic organic material and coarse fragments, example of material for Mills Lake (MIL) SMU. 28 September 2023

Photo C-17: Orthic Humic Podzol (O.HP) material profile at plot K23CB022. Till material, example of material for Wabush (WAB) SMU. 27 September 2023

Photo C-18: Orthic Humic Podzol (O.HP) pit profile at plot K23CB022. Till material, example of material for Wabush (WAB) SMU. 27 September 2023

Photo C-19: Typic Fibrisol (TY.F) material at plot K23CB027. Fibric organic material, example of material for Walshes River (WLR) SMU. 29 September 2023

Photo C-20: Example of terrain material mapped as exposed bedrock (R1), from K23CB011. 26 September 2023

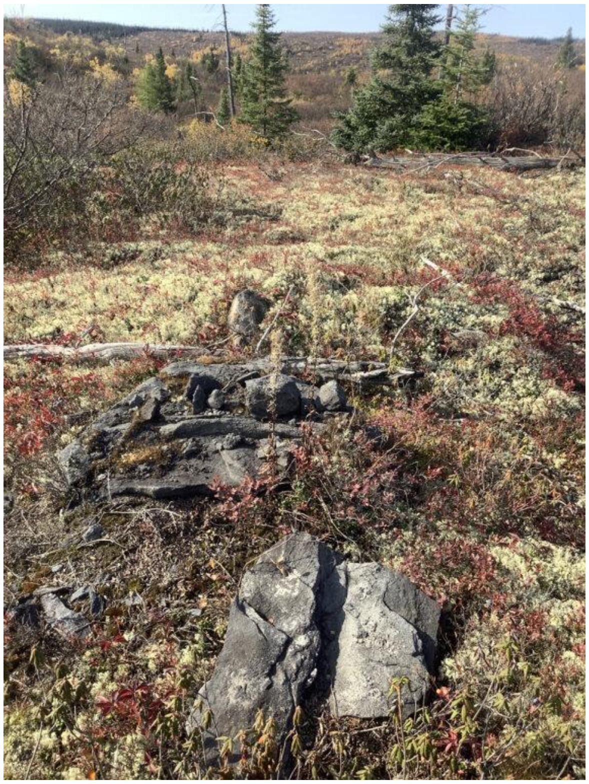

Photo C-21: Example of terrain material mapped as exposed bedrock (R1).

APPENDIX D

Laboratory Analysis Results

Your P.O. #: CA0003092.5894/500
Your Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your C.O.C. #: 1 of 1

Attention: Christiane Brouwer

WSP Canada Inc.
16820-107 AVE
EDMONTON, AB
CANADA T5P 4C3

Report Date: 2023/11/09
Report #: R3424439
Version: 3 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C383989
Received: 2023/10/03, 10:49

Sample Matrix: Soil
Samples Received: 36

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Boron (Hot Water Soluble) (1)	9	2023/10/30	2023/10/30	AB SOP-00034 / AB SOP-00042	EPA 6010d R5 m
Cation/EC Ratio (1)	4	N/A	2023/10/31		Auto Calc
Cation/EC Ratio (1)	13	N/A	2023/11/01		Auto Calc
Cation/EC Ratio (1)	19	N/A	2023/11/02		Auto Calc
Calcium Carbonate Equivalent (1)	36	N/A	2023/11/08	AB SOP-00019	Carter 2nd ed 20.2 m
Cation Exchange Capacity (1, 2)	9	2023/10/18	2023/10/30		Auto Calc
Chloride (Soluble) (1)	4	2023/10/30	2023/10/30	AB SOP-00033 / AB SOP-00020	SM 24-4500-Cl-E m
Chloride (Soluble) (1)	13	2023/10/31	2023/10/31	AB SOP-00033 / AB SOP-00020	SM 24-4500-Cl-E m
Chloride (Soluble) (1)	19	2023/10/31	2023/11/01	AB SOP-00033 / AB SOP-00020	SM 24-4500-Cl-E m
Hexavalent Chromium (1, 3)	2	2023/10/24	2023/10/24	AB SOP-00063	SM 24 3500-Cr B m
Hexavalent Chromium (1, 3)	7	2023/10/26	2023/10/26	AB SOP-00063	SM 24 3500-Cr B m
Conductivity @25C (Soluble) (1)	4	2023/10/30	2023/10/30	AB SOP-00033 / AB SOP-00004	SM 23 2510 B m
Conductivity @25C (Soluble) (1)	32	2023/10/31	2023/11/01	AB SOP-00033 / AB SOP-00004	SM 23 2510 B m
Elements by ICPMS - Soils (1)	8	2023/10/26	2023/10/27	AB SOP-00001 / AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Soils (1)	1	2023/10/27	2023/10/27	AB SOP-00001 / AB SOP-00043	EPA 6020b R2 m
Sum of Cations, Anions (1)	4	N/A	2023/10/31		Auto Calc
Sum of Cations, Anions (1)	13	N/A	2023/11/01		Auto Calc
Sum of Cations, Anions (1)	19	N/A	2023/11/02		Auto Calc
Potassium (Available) (1)	15	2023/11/03	2023/11/04	CAL SOP-00153 / AB SOP-00042	EPA 6010d R5 m
Potassium (Available) (1)	2	2023/11/08	2023/11/08	CAL SOP-00153 / AB SOP-00042	EPA 6010d R5 m
Moisture (1)	11	N/A	2023/10/24	AB SOP-00002	CCME PHC-CWS m
Moisture (1)	10	N/A	2023/10/26	AB SOP-00002	CCME PHC-CWS m
Moisture (1)	13	N/A	2023/10/27	AB SOP-00002	CCME PHC-CWS m

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

BUREAU VERITAS

Your P.O. #: CA0003092.5894/500
Your Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your C.O.C. #: 1 of 1

Attention: Christiane Brouwer

WSP Canada Inc.
16820-107 AVE
EDMONTON, AB
CANADA T5P 4C3

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BUREAU VERITAS JOB #: C383989
Received: 2023/10/03, 10:49

Sample Matrix: Soil
Samples Received: 36

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Available NO3 (N) (1)	17	2023/10/18	2023/11/05		Auto Calc
Phosphorus (Available by ICP) (1)	17	2023/11/03	2023/11/04	CAL SOP-00152 / AB SOP-00042	EPA 6010d R5 m
pH @25C (1:2 Calcium Chloride Extract) (1)	4	2023/10/31	2023/10/31	AB SOP-00033 / AB SOP-00006	SM 24 4500 H+B m
pH @25C (1:2 Calcium Chloride Extract) (1)	32	2023/11/01	2023/11/01	AB SOP-00033 / AB SOP-00006	SM 24 4500 H+B m
Sodium Adsorption Ratio (1)	4	N/A	2023/10/31		Auto Calc
Sodium Adsorption Ratio (1)	13	N/A	2023/11/01		Auto Calc
Sodium Adsorption Ratio (1)	19	N/A	2023/11/02		Auto Calc
Soluble Ions (1)	4	2023/10/30	2023/10/31	AB SOP-00033 / AB SOP-00042	EPA 6010d R5 m
Soluble Ions (1)	32	2023/10/31	2023/11/01	AB SOP-00033 / AB SOP-00042	EPA 6010d R5 m
Sulphur (Available) (1)	2	2023/10/29	2023/10/31	AB SOP-00029 / AB SOP-00042	EPA 6010d R5 m
Sulphur (Available) (1)	15	2023/11/03	2023/11/04	AB SOP-00029 / AB SOP-00042	EPA 6010d R5 m
Soluble Paste (1)	4	2023/10/30	2023/10/30	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Paste (1)	32	2023/10/31	2023/10/31	AB SOP-00033	Carter 2nd ed 15.2 m
Soluble Ions Calculation (1)	11	N/A	2023/10/24		Auto Calc
Soluble Ions Calculation (1)	10	N/A	2023/10/26		Auto Calc
Soluble Ions Calculation (1)	13	N/A	2023/10/27		Auto Calc
Soluble Ions Calculation (1)	1	N/A	2023/10/29		Auto Calc
Soluble Ions Calculation (1)	1	N/A	2023/10/30		Auto Calc
Total Organic Carbon LECO Method (1)	2	N/A	2023/10/26	CAL SOP-00243	LECO 203-821-498 m
Total Organic Carbon LECO Method (1)	10	N/A	2023/10/27	CAL SOP-00243	LECO 203-821-498 m
Total Organic Carbon LECO Method (1)	2	N/A	2023/10/30	CAL SOP-00243	LECO 203-821-498 m
Texture by Hydrometer (1)	20	N/A	2023/10/29	AB SOP-00030	Carter 2nd ed 55.3 m
Texture by Hydrometer (1)	16	N/A	2023/10/30	AB SOP-00030	Carter 2nd ed 55.3 m
Texture Class (1)	20	N/A	2023/10/29		Auto Calc
Texture Class (1)	16	N/A	2023/10/30		Auto Calc
Theoretical Gypsum Requirement (1, 4)	4	N/A	2023/10/31		Auto Calc

Your P.O. #: CA0003092.5894/500
Your Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your C.O.C. #: 1 of 1

Attention: Christiane Brouwer

WSP Canada Inc.
16820-107 AVE
EDMONTON, AB
CANADA T5P 4C3

Report Date: 2023/11/09
Report #: R3424439
Version: 3 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C383989
Received: 2023/10/03, 10:49

Sample Matrix: Soil
Samples Received: 36

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Theoretical Gypsum Requirement (1, 4)	13	N/A	2023/11/01		Auto Calc
Theoretical Gypsum Requirement (1, 4)	19	N/A	2023/11/02		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) Sample(s) analyzed using accredited methodologies and have been subjected to Bureau Veritas's standard validation process for the submitted matrix however this is not accredited for this matrix.
(3) Some soil samples may react with the Cr(VI) spike reducing it to Cr(III). These samples are highly unlikely to contain native hexavalent chromium. Thus a failed spike recovery does not invalidate a negative result on the native sample.
(4) TGR calculation is based on a theoretical SAR of 4. Salt Contamination and Assessment and remediation guideline 2001 recommended SAR is ranging 4-8. TGR is reported in tonnes/ha.

Your P.O. #: CA0003092.5894/500
Your Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your C.O.C. #: 1 of 1

Attention: Christiane Brouwer

WSP Canada Inc.
16820-107 AVE
EDMONTON, AB
CANADA T5P 4C3

Report Date: 2023/11/09
Report #: R3424439
Version: 3 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C383989
Received: 2023/10/03, 10:49

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Melissa McIntosh, Customer Solutions Representative
Email: melissa.mcintosh@bureauveritas.com
Phone# (780) 577-7100
==
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CBZ802		CBZ803		CBZ804		
Sampling Date		2023/09/25		2023/09/25		2023/09/25		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23CB001AE0-8**	**RDL**	**K23CB001BF8-19**	**RDL**	**K23CB001BFJ19-28**	**RDL**	**QC Batch**
Calculated Parameters								
Anion Sum	meq/L	0.16	N/A	0.0000	N/A	0.0000	N/A	B159229
Cation Sum	meq/L	0.83	N/A	0.39	N/A	0.28	N/A	B159229
Cation/EC Ratio	N/A	14	0.10	10	0.10	11	0.10	B159104
Calculated Calcium (Ca)	mg/kg	<0.82	0.82	<0.49	0.49	<0.35	0.35	B159247
Calculated Magnesium (Mg)	mg/kg	<0.55	0.55	<0.32	0.32	<0.23	0.23	B159247
Calculated Sodium (Na)	mg/kg	4.9	1.4	2.4	0.81	1.3	0.59	B159247
Calculated Potassium (K)	mg/kg	<0.71	0.71	<0.42	0.42	<0.31	0.31	B159247
Calculated Chloride (Cl)	mg/kg	<5.5	5.5	<3.2	3.2	<2.3	2.3	B159247
Calculated Sulphate (SO4)	mg/kg	4.1	2.7	<1.6	1.6	<1.2	1.2	B159247
Soluble Parameters								
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	<10	10	B179775
Soluble Conductivity	dS/m	0.058	0.020	0.039	0.020	0.026	0.020	B180158
Soluble (CaCl2) pH	pH	3.36	N/A	4.13	N/A	4.41	N/A	B172589
Sodium Adsorption Ratio	N/A	NC	0.10	NC	0.10	NC	0.10	B159242
Soluble Calcium (Ca)	mg/L	<1.5	1.5	<1.5	1.5	<1.5	1.5	B179706
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	B179706
Soluble Sodium (Na)	mg/L	8.9	2.5	7.3	2.5	5.6	2.5	B179706
Soluble Potassium (K)	mg/L	<1.3	1.3	<1.3	1.3	<1.3	1.3	B179706
Saturation %	%	55	N/A	32	N/A	23	N/A	B172586
Soluble Sulphate (SO4)	mg/L	7.5	5.0	<5.0	5.0	<5.0	5.0	B179706
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	NC (1)	0.20	NC (1)	0.20	B159268

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CBZ805			CBZ806		
Sampling Date		2023/09/25			2023/09/25		
COC Number		1 of 1			1 of 1		
	UNITS	**K23CB001C28-47**	**RDL**	**QC Batch**	**K23CB001CGJ47-120**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	meq/L	0.0000	N/A	B159229	0.11	N/A	B159229
Cation Sum	meq/L	0.27	N/A	B159229	0.40	N/A	B159229
Cation/EC Ratio	N/A	9.8	0.10	B159104	9.3	0.10	B159104
Calculated Calcium (Ca)	mg/kg	<0.33	0.33	B159247	0.31	0.28	B159247
Calculated Magnesium (Mg)	mg/kg	<0.22	0.22	B159247	<0.19	0.19	B159247
Calculated Sodium (Na)	mg/kg	1.3	0.55	B159247	1.3	0.47	B159247
Calculated Potassium (K)	mg/kg	<0.29	0.29	B159247	<0.24	0.24	B159247
Calculated Chloride (Cl)	mg/kg	<2.2	2.2	B159247	<1.9	1.9	B159247
Calculated Sulphate (SO4)	mg/kg	<1.1	1.1	B159247	0.95	0.94	B159247
Soluble Parameters							
Soluble Chloride (Cl)	mg/L	<10	10	B179061	<10	10	B179775
Soluble Conductivity	dS/m	0.028	0.020	B179745	0.043	0.020	B180158
Soluble (CaCl2) pH	pH	4.59	N/A	B172604	4.86	N/A	B172589
Sodium Adsorption Ratio	N/A	NC	0.10	B159242	1.5	0.10	B159242
Soluble Calcium (Ca)	mg/L	<1.5	1.5	B179305	1.7	1.5	B179706
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	B179305	<1.0	1.0	B179706
Soluble Sodium (Na)	mg/L	5.7	2.5	B179305	6.9	2.5	B179706
Soluble Potassium (K)	mg/L	<1.3	1.3	B179305	<1.3	1.3	B179706
Saturation %	%	22	N/A	B172600	19	N/A	B172586
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	B179305	5.1	5.0	B179706
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	B159268	<0.20	0.20	B159268

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CBZ807			CBZ808		
Sampling Date		2023/09/26			2023/09/26		
COC Number		1 of 1			1 of 1		
	UNITS	**K23CB010AE0-5**	**RDL**	**QC Batch**	**K23CB010BM5-13**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	meq/L	0.32	N/A	B159229	0.0000	N/A	B159229
Cation Sum	meq/L	1.3	N/A	B159229	0.50	N/A	B159229
Cation/EC Ratio	N/A	15	0.10	B159104	11	0.10	B159104
Calculated Calcium (Ca)	mg/kg	0.63	0.61	B159250	<0.50	0.50	B159250
Calculated Magnesium (Mg)	mg/kg	<0.41	0.41	B159250	<0.33	0.33	B159250
Calculated Sodium (Na)	mg/kg	5.2	1.0	B159250	3.4	0.83	B159250
Calculated Potassium (K)	mg/kg	<0.53	0.53	B159250	<0.43	0.43	B159250
Calculated Chloride (Cl)	mg/kg	<4.1	4.1	B159250	<3.3	3.3	B159250
Calculated Sulphate (SO4)	mg/kg	6.2	2.0	B159250	<1.7	1.7	B159250
Soluble Parameters							
Soluble Chloride (Cl)	mg/L	<10	10	B179061	<10	10	B179061
Soluble Conductivity	dS/m	0.082	0.020	B179745	0.045	0.020	B179745
Soluble (CaCl2) pH	pH	3.20	N/A	B172604	4.25	N/A	B172604
Sodium Adsorption Ratio	N/A	2.8	0.10	B159242	NC	0.10	B159242
Soluble Calcium (Ca)	mg/L	1.5	1.5	B179305	<1.5	1.5	B179305
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	B179305	<1.0	1.0	B179305
Soluble Sodium (Na)	mg/L	13	2.5	B179305	10	2.5	B179305
Soluble Potassium (K)	mg/L	<1.3	1.3	B179305	<1.3	1.3	B179305
Saturation %	%	41	N/A	B172600	33	N/A	B172600
Soluble Sulphate (SO4)	mg/L	15	5.0	B179305	<5.0	5.0	B179305
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	B159268	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CBZ809			CBZ810		
Sampling Date		2023/09/26			2023/09/26		
COC Number		1 of 1			1 of 1		
	UNITS	**K23CB010BC13-35**	**RDL**	**QC Batch**	**K23CB010C35-100**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	meq/L	0.0000	N/A	B159229	0.0000	N/A	B159233
Cation Sum	meq/L	0.36	N/A	B159229	0.34	N/A	B159233
Cation/EC Ratio	N/A	11	0.10	B159104	7.7	0.10	B159104
Calculated Calcium (Ca)	mg/kg	<0.41	0.41	B159250	<0.26	0.26	B159250
Calculated Magnesium (Mg)	mg/kg	<0.27	0.27	B159250	<0.17	0.17	B159250
Calculated Sodium (Na)	mg/kg	2.0	0.68	B159250	1.3	0.43	B159250
Calculated Potassium (K)	mg/kg	<0.35	0.35	B159250	<0.23	0.23	B159250
Calculated Chloride (Cl)	mg/kg	<2.7	2.7	B159250	<1.7	1.7	B159250
Calculated Sulphate (SO4)	mg/kg	<1.4	1.4	B159250	<0.87	0.87	B159250
Soluble Parameters							
Soluble Chloride (Cl)	mg/L	<10	10	B179061	<10	10	B179061
Soluble Conductivity	dS/m	0.032	0.020	B179745	0.044	0.020	B179854
Soluble (CaCl2) pH	pH	4.42	N/A	B172604	4.98	N/A	B172604
Sodium Adsorption Ratio	N/A	NC	0.10	B159244	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	B179305	<1.5	1.5	B179305
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	B179305	<1.0	1.0	B179305
Soluble Sodium (Na)	mg/L	7.4	2.5	B179305	7.6	2.5	B179305
Soluble Potassium (K)	mg/L	<1.3	1.3	B179305	<1.3	1.3	B179305
Saturation %	%	27	N/A	B172600	17	N/A	B172600
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	B179305	<5.0	5.0	B179305
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	B159269	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CBZ811			CBZ812		
Sampling Date		2023/09/27			2023/09/27		
COC Number		1 of 1			1 of 1		
	UNITS	**K23LM013CG10-33**	**RDL**	**QC Batch**	**K23LM013CG233-60**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	meq/L	0.23	N/A	B159233	0.12	N/A	B159233
Cation Sum	meq/L	1.3	N/A	B159233	0.62	N/A	B159233
Cation/EC Ratio	N/A	12	0.10	B159104	10	0.10	B159104
Calculated Calcium (Ca)	mg/kg	4.1	0.72	B159250	1.5	0.41	B159250
Calculated Magnesium (Mg)	mg/kg	1.2	0.48	B159250	0.43	0.27	B159250
Calculated Sodium (Na)	mg/kg	7.3	1.2	B159250	1.3	0.68	B159250
Calculated Potassium (K)	mg/kg	<0.62	0.62	B159250	<0.35	0.35	B159250
Calculated Chloride (Cl)	mg/kg	<4.8	4.8	B159250	<2.7	2.7	B159250
Calculated Sulphate (SO4)	mg/kg	5.3	2.4	B159250	1.5	1.4	B159250
Soluble Parameters							
Soluble Chloride (Cl)	mg/L	<10	10	B179775	<10	10	B179061
Soluble Conductivity	dS/m	0.11	0.020	B180158	0.060	0.020	B179745
Soluble (CaCl2) pH	pH	5.40	N/A	B172589	5.43	N/A	B172604
Sodium Adsorption Ratio	N/A	1.2	0.10	B159244	0.47	0.10	B159244
Soluble Calcium (Ca)	mg/L	8.6	1.5	B179706	5.4	1.5	B179305
Soluble Magnesium (Mg)	mg/L	2.5	1.0	B179706	1.6	1.0	B179305
Soluble Sodium (Na)	mg/L	15	2.5	B179706	4.9	2.5	B179305
Soluble Potassium (K)	mg/L	<1.3	1.3	B179706	<1.3	1.3	B179305
Saturation %	%	48	N/A	B172586	27	N/A	B172600
Soluble Sulphate (SO4)	mg/L	11	5.0	B179706	5.6	5.0	B179305
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	B159269	<0.20	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA014		CCA015			CCA016		
Sampling Date		2023/09/27		2023/09/27			2023/09/27		
COC Number		1 of 1		1 of 1			1 of 1		
	UNITS	**K23LM015AE0-5**	**RDL**	**K23LM015BM5-23**	**RDL**	**QC Batch**	**K23LM015BC23-30**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	meq/L	0.29	N/A	0.0000	N/A	B159233	0.0000	N/A	B159233
Cation Sum	meq/L	1.4	N/A	0.16	N/A	B159233	0.16	N/A	B159233
Cation/EC Ratio	N/A	17	0.10	NC	0.10	B159104	NC	0.10	B159104
Calculated Calcium (Ca)	mg/kg	1.3	0.85	<0.58	0.58	B159250	<0.48	0.48	B159250
Calculated Magnesium (Mg)	mg/kg	<0.57	0.57	<0.39	0.39	B159250	<0.32	0.32	B159250
Calculated Sodium (Na)	mg/kg	6.6	1.4	1.2	0.97	B159250	1.1	0.80	B159250
Calculated Potassium (K)	mg/kg	0.88	0.73	<0.50	0.50	B159250	<0.41	0.41	B159250
Calculated Chloride (Cl)	mg/kg	<5.7	5.7	<3.9	3.9	B159250	<3.2	3.2	B159250
Calculated Sulphate (SO4)	mg/kg	7.9	2.8	<1.9	1.9	B159250	<1.6	1.6	B159250
Soluble Parameters									
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	B179775	<10	10	B179061
Soluble Conductivity	dS/m	0.086	0.020	<0.020	0.020	B180158	<0.020	0.020	B179745
Soluble (CaCl2) pH	pH	3.11	N/A	4.65	N/A	B172589	4.78	N/A	B172604
Sodium Adsorption Ratio	N/A	2.2	0.10	NC	0.10	B159244	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	2.2	1.5	<1.5	1.5	B179706	<1.5	1.5	B179305
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	<1.0	1.0	B179706	<1.0	1.0	B179305
Soluble Sodium (Na)	mg/L	12	2.5	3.2	2.5	B179706	3.4	2.5	B179305
Soluble Potassium (K)	mg/L	1.6	1.3	<1.3	1.3	B179706	<1.3	1.3	B179305
Saturation %	%	56	N/A	39	N/A	B172586	32	N/A	B172600
Soluble Sulphate (SO4)	mg/L	14	5.0	<5.0	5.0	B179706	<5.0	5.0	B179305
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	NC (1)	0.20	B159269	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Edmonton: 4326 76 Avenue NW T6B 2H8 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA017		CCA018		CCA023		
Sampling Date		2023/09/27		2023/09/27		2023/09/28		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	K23LM015C30-100	RDL	K23CB020CG0-80	RDL	K23CB023AE0-6	RDL	QC Batch
Calculated Parameters								
Anion Sum	meq/L	0.0000	N/A	0.25	N/A	0.14	N/A	B159233
Cation Sum	meq/L	0.15	N/A	0.57	N/A	0.88	N/A	B159233
Cation/EC Ratio	N/A	NC	0.10	9.8	0.10	15	0.10	B159104
Calculated Calcium (Ca)	mg/kg	<0.39	0.39	<0.37	0.37	<0.59	0.59	B159250
Calculated Magnesium (Mg)	mg/kg	<0.26	0.26	<0.25	0.25	<0.39	0.39	B159250
Calculated Sodium (Na)	mg/kg	0.75	0.64	3.2	0.62	4.6	0.98	B159250
Calculated Potassium (K)	mg/kg	<0.33	0.33	<0.32	0.32	<0.51	0.51	B159250
Calculated Chloride (Cl)	mg/kg	<2.6	2.6	<2.5	2.5	<3.9	3.9	B159250
Calculated Sulphate (SO4)	mg/kg	<1.3	1.3	2.9	1.2	2.7	2.0	B159250
Soluble Parameters								
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	<10	10	B179775
Soluble Conductivity	dS/m	<0.020	0.020	0.058	0.020	0.059	0.020	B180158
Soluble (CaCl2) pH	pH	4.72	N/A	5.09	N/A	3.44	N/A	B172589
Sodium Adsorption Ratio	N/A	NC	0.10	NC	0.10	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	<1.5	1.5	<1.5	1.5	B179706
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	B179706
Soluble Sodium (Na)	mg/L	2.9	2.5	13	2.5	12	2.5	B179706
Soluble Potassium (K)	mg/L	<1.3	1.3	<1.3	1.3	<1.3	1.3	B179706
Saturation %	%	26	N/A	25	N/A	39	N/A	B172586
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	12	5.0	6.9	5.0	B179706
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	NC (1)	0.20	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA024			CCA025		
Sampling Date		2023/09/28			2023/09/28		
COC Number		1 of 1			1 of 1		
	UNITS	**K23CB023BF6-17**	**RDL**	**QC Batch**	**K23CB023BC17-30**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	meq/L	0.0000	N/A	B159233	0.0000	N/A	B159233
Cation Sum	meq/L	0.16	N/A	B159233	0.0060	N/A	B159233
Cation/EC Ratio	N/A	NC	0.10	B159104	NC	0.10	B159214
Calculated Calcium (Ca)	mg/kg	<0.57	0.57	B159250	<0.49	0.49	B159250
Calculated Magnesium (Mg)	mg/kg	<0.38	0.38	B159250	<0.32	0.32	B159250
Calculated Sodium (Na)	mg/kg	1.1	0.95	B159250	<0.81	0.81	B159250
Calculated Potassium (K)	mg/kg	<0.50	0.50	B159250	<0.42	0.42	B159250
Calculated Chloride (Cl)	mg/kg	<3.8	3.8	B159250	<3.2	3.2	B159250
Calculated Sulphate (SO4)	mg/kg	<1.9	1.9	B159250	<1.6	1.6	B159250
Soluble Parameters							
Soluble Chloride (Cl)	mg/L	<10	10	B179775	<10	10	B179061
Soluble Conductivity	dS/m	<0.020	0.020	B180158	<0.020	0.020	B179745
Soluble (CaCl2) pH	pH	4.49	N/A	B172589	5.20	N/A	B172604
Sodium Adsorption Ratio	N/A	NC	0.10	B159244	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	B179706	<1.5	1.5	B179305
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	B179706	<1.0	1.0	B179305
Soluble Sodium (Na)	mg/L	2.9	2.5	B179706	<2.5	2.5	B179305
Soluble Potassium (K)	mg/L	<1.3	1.3	B179706	<1.3	1.3	B179305
Saturation %	%	38	N/A	B172586	32	N/A	B172600
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	B179706	<5.0	5.0	B179305
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	B159269	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA121			CCA019		CCA020		
Sampling Date		2023/09/28			2023/09/27		2023/09/27		
COC Number		1 of 1			1 of 1		1 of 1		
	UNITS	**K23CB023C30-70**	**RDL**	**QC Batch**	**K23CB017AE0-9**	**RDL**	**K23CB017BMGJ9-33**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	meq/L	0.0000	N/A	B159233	0.21	N/A	0.11	N/A	B159233
Cation Sum	meq/L	0.20	N/A	B159233	0.86	N/A	0.65	N/A	B159233
Cation/EC Ratio	N/A	9.1	0.10	B159216	13	0.10	11	0.10	B159104
Calculated Calcium (Ca)	mg/kg	<0.32	0.32	B159250	<0.45	0.45	<0.42	0.42	B159250
Calculated Magnesium (Mg)	mg/kg	<0.21	0.21	B159250	<0.30	0.30	<0.28	0.28	B159250
Calculated Sodium (Na)	mg/kg	0.92	0.53	B159250	4.1	0.75	3.1	0.70	B159250
Calculated Potassium (K)	mg/kg	<0.28	0.28	B159250	<0.39	0.39	<0.36	0.36	B159250
Calculated Chloride (Cl)	mg/kg	<2.1	2.1	B159250	<3.0	3.0	<2.8	2.8	B159250
Calculated Sulphate (SO4)	mg/kg	<1.1	1.1	B159250	3.0	1.5	1.5	1.4	B159250
Soluble Parameters									
Soluble Chloride (Cl)	mg/L	<10	10	B179775	<10	10	<10	10	B179775
Soluble Conductivity	dS/m	0.022	0.020	B180158	0.069	0.020	0.057	0.020	B180158
Soluble (CaCl2) pH	pH	5.03	N/A	B172589	3.57	N/A	3.76	N/A	B172589
Sodium Adsorption Ratio	N/A	NC	0.10	B159244	NC	0.10	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	B179706	<1.5	1.5	<1.5	1.5	B179706
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	B179706	<1.0	1.0	<1.0	1.0	B179706
Soluble Sodium (Na)	mg/L	4.3	2.5	B179706	14	2.5	11	2.5	B179706
Soluble Potassium (K)	mg/L	<1.3	1.3	B179706	<1.3	1.3	<1.3	1.3	B179706
Saturation %	%	21	N/A	B172586	30	N/A	28	N/A	B172586
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	B179706	10	5.0	5.4	5.0	B179706
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	B159269	NC (1)	0.20	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA021		CCA022			CCA122		
Sampling Date		2023/09/27		2023/09/27			2023/09/29		
COC Number		1 of 1		1 of 1			1 of 1		
	UNITS	**K23CB017BCGJ33-80**	**RDL**	**K23CB017CG80-100**	**RDL**	**QC Batch**	**K23CB028C0-120**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	meq/L	0.0000	N/A	0.0000	N/A	B159233	0.23	N/A	B159233
Cation Sum	meq/L	0.51	N/A	0.28	N/A	B159233	0.95	N/A	B159233
Cation/EC Ratio	N/A	12	0.10	9.4	0.10	B159104	11	0.10	B159216
Calculated Calcium (Ca)	mg/kg	<0.37	0.37	<0.30	0.30	B159250	0.88	0.43	B159250
Calculated Magnesium (Mg)	mg/kg	<0.25	0.25	<0.20	0.20	B159250	0.69	0.29	B159250
Calculated Sodium (Na)	mg/kg	2.3	0.61	1.2	0.50	B159250	3.9	0.72	B159250
Calculated Potassium (K)	mg/kg	<0.32	0.32	<0.26	0.26	B159250	<0.37	0.37	B159250
Calculated Chloride (Cl)	mg/kg	<2.5	2.5	<2.0	2.0	B159250	<2.9	2.9	B159250
Calculated Sulphate (SO4)	mg/kg	<1.2	1.2	<1.0	1.0	B159250	3.2	1.4	B159250
Soluble Parameters									
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	B179061	<10	10	B177198
Soluble Conductivity	dS/m	0.042	0.020	0.029	0.020	B179745	0.084	0.020	B177200
Soluble (CaCl2) pH	pH	3.98	N/A	4.59	N/A	B172604	5.78	N/A	B173622
Sodium Adsorption Ratio	N/A	NC	0.10	NC	0.10	B159244	1.4	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	<1.5	1.5	B179305	3.1	1.5	B177109
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	<1.0	1.0	B179305	2.4	1.0	B177109
Soluble Sodium (Na)	mg/L	9.2	2.5	5.8	2.5	B179305	14	2.5	B177109
Soluble Potassium (K)	mg/L	<1.3	1.3	<1.3	1.3	B179305	<1.3	1.3	B177109
Saturation %	%	25	N/A	20	N/A	B172600	29	N/A	B173597
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	<5.0	5.0	B179305	11	5.0	B177109
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	NC (1)	0.20	B159269	<0.20	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA127		CCA128		CCA129		
Sampling Date		2023/09/29		2023/09/29		2023/09/29		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23LM023AE0-10**	**RDL**	**K23LM023BM10-18**	**RDL**	**K23LM023BH18-54**	**RDL**	**QC Batch**
Calculated Parameters								
Anion Sum	meq/L	0.17	N/A	0.0000	N/A	0.0000	N/A	B159233
Cation Sum	meq/L	0.84	N/A	0.27	N/A	0.035	N/A	B159233
Cation/EC Ratio	N/A	18	0.10	11	0.10	NC	0.10	B159216
Calculated Calcium (Ca)	mg/kg	0.62	0.57	<0.57	0.57	<0.59	0.59	B159250
Calculated Magnesium (Mg)	mg/kg	<0.38	0.38	<0.38	0.38	<0.39	0.39	B159250
Calculated Sodium (Na)	mg/kg	1.7	0.96	1.4	0.95	<0.98	0.98	B159250
Calculated Potassium (K)	mg/kg	<0.50	0.50	<0.50	0.50	<0.51	0.51	B159250
Calculated Chloride (Cl)	mg/kg	<3.8	3.8	<3.8	3.8	<3.9	3.9	B159250
Calculated Sulphate (SO4)	mg/kg	3.2	1.9	<1.9	1.9	<2.0	2.0	B159250
Soluble Parameters								
Soluble Chloride (Cl)	mg/L	<10	10	<10	10	<10	10	B179775
Soluble Conductivity	dS/m	0.048	0.020	0.025	0.020	<0.020	0.020	B180158
Soluble (CaCl2) pH	pH	3.25	N/A	3.96	N/A	4.46	N/A	B172589
Sodium Adsorption Ratio	N/A	0.95	0.10	NC	0.10	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	1.6	1.5	<1.5	1.5	<1.5	1.5	B179706
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	B179706
Soluble Sodium (Na)	mg/L	4.4	2.5	3.7	2.5	<2.5	2.5	B179706
Soluble Potassium (K)	mg/L	<1.3	1.3	<1.3	1.3	<1.3	1.3	B179706
Saturation %	%	38	N/A	38	N/A	39	N/A	B172586
Soluble Sulphate (SO4)	mg/L	8.3	5.0	<5.0	5.0	<5.0	5.0	B179706
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	NC (1)	0.20	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

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Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA130			CCA123		CCA124		
Sampling Date		2023/09/29			2023/09/29		2023/09/29		
COC Number		1 of 1			1 of 1		1 of 1		
	UNITS	**K23LM023C54-120**	**RDL**	**QC Batch**	**K23LM020CG10-30**	**RDL**	**K23LM020CG230-75**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	meq/L	0.0000	N/A	B159233	2.4	N/A	1.6	N/A	B159233
Cation Sum	meq/L	0.15	N/A	B159233	4.4	N/A	2.6	N/A	B159233
Cation/EC Ratio	N/A	6.1	0.10	B159216	10	0.10	10	0.10	B159216
Calculated Calcium (Ca)	mg/kg	<0.47	0.47	B159255	20	0.93	5.1	0.55	B159250
Calculated Magnesium (Mg)	mg/kg	<0.31	0.31	B159255	6.1	0.62	2.2	0.37	B159250
Calculated Sodium (Na)	mg/kg	0.93	0.78	B159255	26	1.6	11	0.92	B159250
Calculated Potassium (K)	mg/kg	<0.40	0.40	B159255	2.4	0.81	0.72	0.48	B159250
Calculated Chloride (Cl)	mg/kg	<3.1	3.1	B159255	42	6.2	13	3.7	B159250
Calculated Sulphate (SO4)	mg/kg	<1.6	1.6	B159255	14	3.1	11	1.8	B159250
Soluble Parameters									
Soluble Chloride (Cl)	mg/L	<10	10	B179775	67	10	35	10	B177198
Soluble Conductivity	dS/m	0.024	0.020	B180158	0.43	0.020	0.25	0.020	B177200
Soluble (CaCl2) pH	pH	4.76	N/A	B172589	6.53	N/A	6.22	N/A	B173622
Sodium Adsorption Ratio	N/A	NC	0.10	B159244	1.7	0.10	1.7	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	B179706	33	1.5	14	1.5	B177109
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	B179706	9.8	1.0	5.9	1.0	B177109
Soluble Sodium (Na)	mg/L	3.0	2.5	B179706	42	2.5	31	2.5	B177109
Soluble Potassium (K)	mg/L	<1.3	1.3	B179706	3.9	1.3	1.9	1.3	B177109
Saturation %	%	31	N/A	B172586	62	N/A	37	N/A	B173597
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	B179706	22	5.0	29	5.0	B177109
Theoretical Gypsum Requirement	tonnes/ha	NC (1)	0.20	B159269	<0.20	0.20	<0.20	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CCA125			CCA126		
Sampling Date		2023/09/29			2023/09/29		
COC Number		1 of 1			1 of 1		
	UNITS	**K23CB030C0-36**	**RDL**	**QC Batch**	**K23CB030IIC36-100**	**RDL**	**QC Batch**
Calculated Parameters							
Anion Sum	meq/L	0.0000	N/A	B159233	0.0000	N/A	B159233
Cation Sum	meq/L	0.43	N/A	B159233	0.39	N/A	B159233
Cation/EC Ratio	N/A	10	0.10	B159216	10	0.10	B159216
Calculated Calcium (Ca)	mg/kg	<0.59	0.59	B159250	<0.34	0.34	B159250
Calculated Magnesium (Mg)	mg/kg	0.45	0.39	B159250	<0.22	0.22	B159250
Calculated Sodium (Na)	mg/kg	2.5	0.98	B159250	1.9	0.56	B159250
Calculated Potassium (K)	mg/kg	<0.51	0.51	B159250	<0.29	0.29	B159250
Calculated Chloride (Cl)	mg/kg	<3.9	3.9	B159250	<2.2	2.2	B159250
Calculated Sulphate (SO4)	mg/kg	<2.0	2.0	B159250	<1.1	1.1	B159250
Soluble Parameters							
Soluble Chloride (Cl)	mg/L	<10	10	B177198	<10	10	B179061
Soluble Conductivity	dS/m	0.042	0.020	B177200	0.039	0.020	B179745
Soluble (CaCl2) pH	pH	4.23	N/A	B173622	4.87	N/A	B172604
Sodium Adsorption Ratio	N/A	1.3	0.10	B159244	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	B177109	<1.5	1.5	B179305
Soluble Magnesium (Mg)	mg/L	1.2	1.0	B177109	<1.0	1.0	B179305
Soluble Sodium (Na)	mg/L	6.4	2.5	B177109	8.7	2.5	B179305
Soluble Potassium (K)	mg/L	<1.3	1.3	B177109	<1.3	1.3	B179305
Saturation %	%	39	N/A	B173597	22	N/A	B172600
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	B177109	<5.0	5.0	B179305
Theoretical Gypsum Requirement	tonnes/ha	<0.20	0.20	B159269	NC (1)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) NC = Not Calculable as Calcium and Magnesium were not detected.

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Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

SOIL SALINITY 4 (SOIL)

Bureau Veritas ID		CBZ932			CBZ933		CBZ934		
Sampling Date		2023/09/29			2023/09/29		2023/09/29		
COC Number		1 of 1			1 of 1		1 of 1		
	UNITS	**K23CB031BM0-20**	**RDL**	**QC Batch**	**K23CB031BC20-35**	**RDL**	**K23CB031C35-120**	**RDL**	**QC Batch**
Calculated Parameters									
Anion Sum	meq/L	0.0000	N/A	B159233	0.0000	N/A	0.0000	N/A	B159233
Cation Sum	meq/L	0.27	N/A	B159233	0.21	N/A	0.28	N/A	B159233
Cation/EC Ratio	N/A	11	0.10	B159104	9.6	0.10	9.3	0.10	B159104
Calculated Calcium (Ca)	mg/kg	<0.43	0.43	B159250	<0.46	0.46	<0.41	0.41	B159250
Calculated Magnesium (Mg)	mg/kg	<0.29	0.29	B159250	<0.31	0.31	<0.27	0.27	B159250
Calculated Sodium (Na)	mg/kg	1.8	0.72	B159250	1.5	0.77	1.8	0.68	B159250
Calculated Potassium (K)	mg/kg	<0.38	0.38	B159250	<0.40	0.40	<0.36	0.36	B159250
Calculated Chloride (Cl)	mg/kg	<2.9	2.9	B159250	<3.1	3.1	<2.7	2.7	B159250
Calculated Sulphate (SO4)	mg/kg	<1.4	1.4	B159250	<1.5	1.5	<1.4	1.4	B159250
Soluble Parameters									
Soluble Chloride (Cl)	mg/L	<10	10	B179775	<10	10	<10	10	B179061
Soluble Conductivity	dS/m	0.025	0.020	B180158	0.022	0.020	0.031	0.020	B179745
Soluble (CaCl2) pH	pH	5.11	N/A	B172589	5.97 (1)	N/A	6.11	N/A	B172604
Sodium Adsorption Ratio	N/A	NC	0.10	B159244	NC	0.10	NC	0.10	B159244
Soluble Calcium (Ca)	mg/L	<1.5	1.5	B179706	<1.5	1.5	<1.5	1.5	B179305
Soluble Magnesium (Mg)	mg/L	<1.0	1.0	B179706	<1.0	1.0	<1.0	1.0	B179305
Soluble Sodium (Na)	mg/L	6.1	2.5	B179706	4.8	2.5	6.5	2.5	B179305
Soluble Potassium (K)	mg/L	<1.3	1.3	B179706	<1.3	1.3	<1.3	1.3	B179305
Saturation %	%	29	N/A	B172586	31	N/A	27	N/A	B172600
Soluble Sulphate (SO4)	mg/L	<5.0	5.0	B179706	<5.0	5.0	<5.0	5.0	B179305
Theoretical Gypsum Requirement	tonnes/ha	NC (2)	0.20	B159269	NC (2)	0.20	NC (2)	0.20	B159269

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Duplicate exceeds acceptance criteria due to sample non homogeneity.
(2) NC = Not Calculable as Calcium and Magnesium were not detected.

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NPKS (AVAILABLE)

Bureau Veritas ID		CBZ802	CBZ803	CBZ804	CBZ811		
Sampling Date		2023/09/25	2023/09/25	2023/09/25	2023/09/27		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	K23CB001AE0-8	K23CB001BF8-19	K23CB001BFJ19-28	K23LM013CG10-33	RDL	QC Batch
Calculated Parameters							
Available (NH4F) Nitrate (N)	mg/kg	<4.0	<4.0	<4.0	<4.0	4.0	B159237
Nutrients							
Available (NH4F) Phosphorus (P)	mg/kg	4.8	16	5.9	2.9	1.0	B185001
Available (NH4OAc) Potassium (K)	mg/kg	10	6.9	<2.0	8.7	2.0	B184961
Available (CaCl2) Sulphur (S)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	B184966

RDL = Reportable Detection Limit

Bureau Veritas ID		CCA014	CCA015	CCA018	CCA023	CCA024		
Sampling Date		2023/09/27	2023/09/27	2023/09/27	2023/09/28	2023/09/28		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	K23LM015AE0-5	K23LM015BM5-23	K23CB020CG0-80	K23CB023AE0-6	K23CB023BF6-17	RDL	QC Batch
Calculated Parameters								
Available (NH4F) Nitrate (N)	mg/kg	<4.0	<4.0	11	<4.0	<4.0	4.0	B159237
Nutrients								
Available (NH4F) Phosphorus (P)	mg/kg	3.3	5.0	2.8	6.0	6.5	1.0	B185001
Available (NH4OAc) Potassium (K)	mg/kg	16	12	7.9	5.6	3.4	2.0	B184961
Available (CaCl2) Sulphur (S)	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	B184966

RDL = Reportable Detection Limit

Bureau Veritas ID		CCA019	CCA020	CCA127	CCA128		
Sampling Date		2023/09/27	2023/09/27	2023/09/29	2023/09/29		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	K23CB017AE0-9	K23CB017BMGJ9-33	K23LM023AE0-10	K23LM023BM10-18	RDL	QC Batch
Calculated Parameters							
Available (NH4F) Nitrate (N)	mg/kg	<4.0	<4.0	<4.0	<4.0	4.0	B159237
Nutrients							
Available (NH4F) Phosphorus (P)	mg/kg	6.3	5.8	3.6	7.4	1.0	B185001
Available (NH4OAc) Potassium (K)	mg/kg	<2.0	4.1	2.3	<2.0	2.0	B184961
Available (CaCl2) Sulphur (S)	mg/kg	<2.0	<2.0	<2.0	<2.0	2.0	B184966

RDL = Reportable Detection Limit

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NPKS (AVAILABLE)

Bureau Veritas ID		CCA129		CCA123	CCA125		
Sampling Date		2023/09/29		2023/09/29	2023/09/29		
COC Number		1 of 1		1 of 1	1 of 1		
	UNITS	K23LM023BH18-54	QC Batch	K23LM020CG10-30	K23CB030C0-36	RDL	QC Batch
Calculated Parameters							
Available (NH4F) Nitrate (N)	mg/kg	<4.0	B159237	<4.0	<4.0	4.0	B159237
Nutrients							
Available (NH4F) Phosphorus (P)	mg/kg	8.4	B185001	<1.0	2.3	1.0	B185010
Available (NH4OAc) Potassium (K)	mg/kg	<2.0	B184961	41	32	2.0	B184944
Available (CaCl2) Sulphur (S)	mg/kg	<2.0	B184966	3.9	<2.0	2.0	B175753
RDL = Reportable Detection Limit							

Bureau Veritas ID		CBZ932		
Sampling Date		2023/09/29		
COC Number		1 of 1		
	UNITS	K23CB031BM0-20	RDL	QC Batch
Calculated Parameters				
Available (NH4F) Nitrate (N)	mg/kg	<4.0	4.0	B159237
Nutrients				
Available (NH4F) Phosphorus (P)	mg/kg	4.2	1.0	B185001
Available (NH4OAc) Potassium (K)	mg/kg	3.4	2.0	B184961
Available (CaCl2) Sulphur (S)	mg/kg	<2.0	2.0	B184966
RDL = Reportable Detection Limit				

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
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Sampler Initials: CB

CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		CBZ802	CBZ806			CCA014		
Sampling Date		2023/09/25	2023/09/25			2023/09/27		
COC Number		1 of 1	1 of 1			1 of 1		
	UNITS	**K23CB001AE0-8**	**K23CB001CGJ47-120**	**RDL**	**QC Batch**	**K23LM015AE0-5**	**RDL**	**QC Batch**
Elements								
Soluble (Hot water) Boron (B)	mg/kg	<0.10	<0.10	0.10	B173288	<0.30	0.30	B173288
Hex. Chromium (Cr 6+)	mg/kg	<0.080	<0.080	0.080	B168250	<0.080	0.080	B172489
Total Antimony (Sb)	mg/kg	<0.50	<0.50	0.50	B172824	<0.50	0.50	B172824
Total Arsenic (As)	mg/kg	<1.0	<1.0	1.0	B172824	<1.0	1.0	B172824
Total Barium (Ba)	mg/kg	140	45	1.0	B172824	11	1.0	B172824
Total Beryllium (Be)	mg/kg	<0.40	<0.40	0.40	B172824	<0.40	0.40	B172824
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	0.050	B172824	<0.050	0.050	B172824
Total Chromium (Cr)	mg/kg	96	37	1.0	B172824	8.8	1.0	B172824
Total Cobalt (Co)	mg/kg	8.6	5.7	0.50	B172824	0.91	0.50	B172824
Total Copper (Cu)	mg/kg	1.5	10	1.0	B172824	<1.0	1.0	B172824
Total Lead (Pb)	mg/kg	2.2	3.0	0.50	B172824	4.3	0.50	B172824
Total Mercury (Hg)	mg/kg	<0.050	<0.050	0.050	B172824	<0.050	0.050	B172824
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	0.40	B172824	<0.40	0.40	B172824
Total Nickel (Ni)	mg/kg	36	15	1.0	B172824	1.7	1.0	B172824
Total Selenium (Se)	mg/kg	<0.50	<0.50	0.50	B172824	<0.50	0.50	B172824
Total Silver (Ag)	mg/kg	<0.20	<0.20	0.20	B172824	<0.20	0.20	B172824
Total Thallium (Tl)	mg/kg	0.23	0.11	0.10	B172824	<0.10	0.10	B172824
Total Tin (Sn)	mg/kg	<1.0	<1.0	1.0	B172824	<1.0	1.0	B172824
Total Uranium (U)	mg/kg	0.43	0.34	0.20	B172824	<0.20	0.20	B172824
Total Vanadium (V)	mg/kg	51	20	1.0	B172824	16	1.0	B172824
Total Zinc (Zn)	mg/kg	33	14	10	B172824	<10	10	B172824
RDL = Reportable Detection Limit								

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Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		CCA017	CCA023	CCA121		CCA122		
Sampling Date		2023/09/27	2023/09/28	2023/09/28		2023/09/29		
COC Number		1 of 1	1 of 1	1 of 1		1 of 1		
	UNITS	**K23LM015C30-100**	**K23CB023AE0-6**	**K23CB023C30-70**	**QC Batch**	**K23CB028C0-120**	**RDL**	**QC Batch**
Elements								
Soluble (Hot water) Boron (B)	mg/kg	<0.10	<0.10	<0.10	B173288	<0.10	0.10	B174216
Hex. Chromium (Cr 6+)	mg/kg	<0.080	<0.080	<0.080	B172489	<0.080	0.080	B172489
Total Antimony (Sb)	mg/kg	<0.50	<0.50	<0.50	B172824	<0.50	0.50	B173997
Total Arsenic (As)	mg/kg	<1.0	<1.0	1.1	B172824	3.2	1.0	B173997
Total Barium (Ba)	mg/kg	33	5.6	30	B172824	110	1.0	B173997
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	B172824	0.44	0.40	B173997
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	<0.050	B172824	0.10	0.050	B173997
Total Chromium (Cr)	mg/kg	24	4.3	25	B172824	77	1.0	B173997
Total Cobalt (Co)	mg/kg	4.4	<0.50	6.7	B172824	15	0.50	B173997
Total Copper (Cu)	mg/kg	7.8	<1.0	10	B172824	18	1.0	B173997
Total Lead (Pb)	mg/kg	3.6	3.0	4.0	B172824	9.1	0.50	B173997
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	B172824	<0.050	0.050	B173997
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	B172824	1.8	0.40	B173997
Total Nickel (Ni)	mg/kg	10	<1.0	10	B172824	32	1.0	B173997
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	B172824	<0.50	0.50	B173997
Total Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	B172824	<0.20	0.20	B173997
Total Thallium (Tl)	mg/kg	<0.10	<0.10	<0.10	B172824	0.28	0.10	B173997
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	B172824	<1.0	1.0	B173997
Total Uranium (U)	mg/kg	0.25	<0.20	0.28	B172824	1.2	0.20	B173997
Total Vanadium (V)	mg/kg	12	6.5	15	B172824	49	1.0	B173997
Total Zinc (Zn)	mg/kg	12	<10	11	B172824	47	10	B173997
RDL = Reportable Detection Limit								

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Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

CCME REGULATED METALS - SOILS (SOIL)

Bureau Veritas ID		CCA127	CCA130		
Sampling Date		2023/09/29	2023/09/29		
COC Number		1 of 1	1 of 1		
	UNITS	K23LM023AE0-10	K23LM023C54-120	RDL	QC Batch
Elements					
Soluble (Hot water) Boron (B)	mg/kg	<0.10	<0.10	0.10	B173288
Hex. Chromium (Cr 6+)	mg/kg	<0.080	<0.080	0.080	B172489
Total Antimony (Sb)	mg/kg	<0.50	<0.50	0.50	B172824
Total Arsenic (As)	mg/kg	<1.0	<1.0	1.0	B172824
Total Barium (Ba)	mg/kg	5.2	19	1.0	B172824
Total Beryllium (Be)	mg/kg	<0.40	<0.40	0.40	B172824
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	0.050	B172824
Total Chromium (Cr)	mg/kg	2.1	10	1.0	B172824
Total Cobalt (Co)	mg/kg	1.2	3.6	0.50	B172824
Total Copper (Cu)	mg/kg	1.4	4.2	1.0	B172824
Total Lead (Pb)	mg/kg	0.59	2.2	0.50	B172824
Total Mercury (Hg)	mg/kg	<0.050	<0.050	0.050	B172824
Total Molybdenum (Mo)	mg/kg	0.45	0.61	0.40	B172824
Total Nickel (Ni)	mg/kg	1.3	7.9	1.0	B172824
Total Selenium (Se)	mg/kg	<0.50	<0.50	0.50	B172824
Total Silver (Ag)	mg/kg	<0.20	<0.20	0.20	B172824
Total Thallium (Tl)	mg/kg	<0.10	<0.10	0.10	B172824
Total Tin (Sn)	mg/kg	<1.0	<1.0	1.0	B172824
Total Uranium (U)	mg/kg	<0.20	0.27	0.20	B172824
Total Vanadium (V)	mg/kg	10	7.7	1.0	B172824
Total Zinc (Zn)	mg/kg	<10	14	10	B172824
RDL = Reportable Detection Limit					

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RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		CBZ802	CBZ803	CBZ804	CBZ805		
Sampling Date		2023/09/25	2023/09/25	2023/09/25	2023/09/25		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23CB001AE0-8**	**K23CB001BF8-19**	**K23CB001BFJ19-28**	**K23CB001C28-47**	**RDL**	**QC Batch**
Elements							
Cation exchange capacity	cmol+/Kg	<10	N/A	N/A	N/A	10	B158518
Soil Properties							
Calcium Carbonate Equivalent	%	<0.60	<0.60	<0.60	<0.60	0.60	B182890

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CBZ806	CBZ807	CBZ808	CBZ809		
Sampling Date		2023/09/25	2023/09/26	2023/09/26	2023/09/26		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23CB001CGJ47-120**	**K23CB010AE0-5**	**K23CB010BM5-13**	**K23CB010BC13-35**	**RDL**	**QC Batch**
Soil Properties							
Calcium Carbonate Equivalent	%	<0.60	<0.60	<0.60	<0.60	0.60	B182890

RDL = Reportable Detection Limit

Bureau Veritas ID		CBZ810	CBZ811	CBZ812	CCA014		
Sampling Date		2023/09/26	2023/09/27	2023/09/27	2023/09/27		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23CB010C35-100**	**K23LM013CG10-33**	**K23LM013CG233-60**	**K23LM015AE0-5**	**RDL**	**QC Batch**
Elements							
Cation exchange capacity	cmol+/Kg	N/A	15	N/A	<10	10	B158518
Soil Properties							
Calcium Carbonate Equivalent	%	<0.60	<0.60	<0.60	<0.60	0.60	B182890

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA015		CCA016	CCA017	CCA018		
Sampling Date		2023/09/27		2023/09/27	2023/09/27	2023/09/27		
COC Number		1 of 1		1 of 1	1 of 1	1 of 1		
	UNITS	**K23LM015BM5-23**	**QC Batch**	**K23LM015BC23-30**	**K23LM015C30-100**	**K23CB020CG0-80**	**RDL**	**QC Batch**
Elements								
Cation exchange capacity	cmol+/Kg	N/A	B158518	N/A	N/A	<10	10	B158518
Soil Properties								
Calcium Carbonate Equivalent	%	<0.60	B182890	<0.60	<0.60	<0.60	0.60	B182895

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
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Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		CCA023	CCA024	CCA025	CCA121	CCA019		
Sampling Date		2023/09/28	2023/09/28	2023/09/28	2023/09/28	2023/09/27		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23CB023AE0-6**	**K23CB023BF6-17**	**K23CB023BC17-30**	**K23CB023C30-70**	**K23CB017AE0-9**	**RDL**	**QC Batch**
Elements								
Cation exchange capacity	cmol+/Kg	<10	N/A	N/A	N/A	<10	10	B158518
Soil Properties								
Calcium Carbonate Equivalent	%	<0.60	<0.60	<0.60	<0.60	<0.60	0.60	B182895

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA020	CCA021	CCA022	CCA122		
Sampling Date		2023/09/27	2023/09/27	2023/09/27	2023/09/29		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23CB017BMGJ9-33**	**K23CB017BCGJ33-80**	**K23CB017CG80-100**	**K23CB028C0-120**	**RDL**	**QC Batch**
Soil Properties							
Calcium Carbonate Equivalent	%	<0.60	<0.60	<0.60	<0.60	0.60	B182895

RDL = Reportable Detection Limit

Bureau Veritas ID		CCA127	CCA128	CCA129	CCA130		
Sampling Date		2023/09/29	2023/09/29	2023/09/29	2023/09/29		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23LM023AE0-10**	**K23LM023BM10-18**	**K23LM023BH18-54**	**K23LM023C54-120**	**RDL**	**QC Batch**
Elements							
Cation exchange capacity	cmol+/Kg	<10	N/A	N/A	N/A	10	B158518
Soil Properties							
Calcium Carbonate Equivalent	%	<0.60	<0.60	<0.60	<0.60	0.60	B182895

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA123	CCA124	CCA125	CCA126		
Sampling Date		2023/09/29	2023/09/29	2023/09/29	2023/09/29		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23LM020CG10-30**	**K23LM020CG230-75**	**K23CB030C0-36**	**K23CB030IIC36-100**	**RDL**	**QC Batch**
Elements							
Cation exchange capacity	cmol+/Kg	15	N/A	<10	N/A	10	B158518
Soil Properties							
Calcium Carbonate Equivalent	%	0.72	<0.60	<0.60	<0.60	0.60	B182895

RDL = Reportable Detection Limit
N/A = Not Applicable

RESULTS OF CHEMICAL ANALYSES OF SOIL

Bureau Veritas ID		CBZ932	CBZ933	CBZ934		
Sampling Date		2023/09/29	2023/09/29	2023/09/29		
COC Number		1 of 1	1 of 1	1 of 1		
	UNITS	**K23CB031BM0-20**	**K23CB031BC20-35**	**K23CB031C35-120**	**RDL**	**QC Batch**
Soil Properties						
Calcium Carbonate Equivalent	%	<0.60	<0.60	<0.60	0.60	B182890
RDL = Reportable Detection Limit						

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		CBZ802		CBZ803	CBZ804		
Sampling Date		2023/09/25		2023/09/25	2023/09/25		
COC Number		1 of 1		1 of 1	1 of 1		
	UNITS	**K23CB001AE0-8**	**QC Batch**	**K23CB001BF8-19**	**K23CB001BFJ19-28**	**RDL**	**QC Batch**
Physical Properties							
% sand by hydrometer	%	80	B175329	71	56	2.0	B175438
% silt by hydrometer	%	15	B175329	21	34	2.0	B175438
Clay Content	%	5.6	B175329	7.4	9.5	2.0	B175438
Texture	N/A	LOAMY SAND	B158560	SANDY LOAM	SANDY LOAM	N/A	B158560
Moisture	%	13	B168082	15	14	0.30	B168082

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CBZ805		CBZ806		CBZ807		
Sampling Date		2023/09/25		2023/09/25		2023/09/26		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23CB001C28-47**	**QC Batch**	**K23CB001CGJ47-120**	**QC Batch**	**K23CB010AE0-5**	**RDL**	**QC Batch**
Physical Properties								
% sand by hydrometer	%	51	B176202	63	B175329	85	2.0	B176202
% silt by hydrometer	%	40	B176202	32	B175329	7.2	2.0	B176202
Clay Content	%	8.9	B176202	4.8	B175329	7.4	2.0	B176202
Texture	N/A	LOAM	B158560	SANDY LOAM	B158560	LOAMY SAND	N/A	B158560
Moisture	%	9.5	B168082	7.8	B168082	16	0.30	B168082

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CBZ808		CBZ809	CBZ810		
Sampling Date		2023/09/26		2023/09/26	2023/09/26		
COC Number		1 of 1		1 of 1	1 of 1		
	UNITS	**K23CB010BM5-13**	**QC Batch**	**K23CB010BC13-35**	**K23CB010C35-100**	**RDL**	**QC Batch**
Physical Properties							
% sand by hydrometer	%	60	B175438	54	53	2.0	B176202
% silt by hydrometer	%	30	B175438	34	34	2.0	B176202
Clay Content	%	10	B175438	12	13	2.0	B176202
Texture	N/A	SANDY LOAM	B158560	SANDY LOAM	LOAM	N/A	B158560
Moisture	%	15	B168082	13	9.5	0.30	B168082

RDL = Reportable Detection Limit
N/A = Not Applicable

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Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		CBZ811		CBZ812		CCA014		
Sampling Date		2023/09/27		2023/09/27		2023/09/27		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23LM013CG10-33**	**QC Batch**	**K23LM013CG233-60**	**QC Batch**	**K23LM015AE0-5**	**RDL**	**QC Batch**
Physical Properties								
% sand by hydrometer	%	76	B175873	81	B176202	70	2.0	B175177
% silt by hydrometer	%	17	B175873	17	B176202	24	2.0	B175177
Clay Content	%	6.9	B175873	2.2	B176202	5.6	2.0	B175177
Texture	N/A	SANDY LOAM	B158560	LOAMY SAND	B158560	SANDY LOAM	N/A	B158560
Moisture	%	29	B168082	14	B168082	20	0.30	B172107

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA015	CCA016		CCA017		
Sampling Date		2023/09/27	2023/09/27		2023/09/27		
COC Number		1 of 1	1 of 1		1 of 1		
	UNITS	**K23LM015BM5-23**	**K23LM015BC23-30**	**QC Batch**	**K23LM015C30-100**	**RDL**	**QC Batch**
Physical Properties							
% sand by hydrometer	%	67	65	B175438	78	2.0	B175329
% silt by hydrometer	%	26	28	B175438	20	2.0	B175329
Clay Content	%	7.1	7.7	B175438	2.1	2.0	B175329
Texture	N/A	SANDY LOAM	SANDY LOAM	B158560	LOAMY SAND	N/A	B158560
Moisture	%	16	13	B172107	7.7	0.30	B172107

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA018		CCA023		CCA024		
Sampling Date		2023/09/27		2023/09/28		2023/09/28		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23CB020CG0-80**	**QC Batch**	**K23CB023AE0-6**	**QC Batch**	**K23CB023BF6-17**	**RDL**	**QC Batch**
Physical Properties								
% sand by hydrometer	%	62	B176202	72	B175329	83	2.0	B176202
% silt by hydrometer	%	33	B176202	24	B175329	15	2.0	B176202
Clay Content	%	4.9	B176202	4.8	B175329	2.2	2.0	B176202
Texture	N/A	SANDY LOAM	B159261	SANDY LOAM	B159264	LOAMY SAND	N/A	B159264
Moisture	%	14	B172107	14	B172107	11	0.30	B172107

RDL = Reportable Detection Limit
N/A = Not Applicable

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Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

PHYSICAL TESTING (SOIL)

Bureau Veritas ID		CCA025		CCA121		CCA019		
Sampling Date		2023/09/28		2023/09/28		2023/09/27		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23CB023BC17-30**	**QC Batch**	**K23CB023C30-70**	**QC Batch**	**K23CB017AE0-9**	**RDL**	**QC Batch**
Physical Properties								
% sand by hydrometer	%	82	B175438	77	B175177	75	2.0	B176202
% silt by hydrometer	%	10	B175438	20	B175177	20	2.0	B176202
Clay Content	%	7.9	B175438	2.4	B175177	4.3	2.0	B176202
Texture	N/A	LOAMY SAND	B159264	LOAMY SAND	B159264	LOAMY SAND	N/A	B159264
Moisture	%	11	B172627	7.3	B171930	17	0.30	B172107

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA020		CCA021	CCA022		
Sampling Date		2023/09/27		2023/09/27	2023/09/27		
COC Number		1 of 1		1 of 1	1 of 1		
	UNITS	**K23CB017BMGJ9-33**	**QC Batch**	**K23CB017BCGJ33-80**	**K23CB017CG80-100**	**RDL**	**QC Batch**
Physical Properties							
% sand by hydrometer	%	78	B175177	78	74	2.0	B175438
% silt by hydrometer	%	18	B175177	14	19	2.0	B175438
Clay Content	%	4.8	B175177	7.6	6.7	2.0	B175438
Texture	N/A	LOAMY SAND	B159264	LOAMY SAND	SANDY LOAM	N/A	B159264
Moisture	%	18	B172107	15	15	0.30	B172107

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA122		CCA127		CCA128		
Sampling Date		2023/09/29		2023/09/29		2023/09/29		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23CB028C0-120**	**QC Batch**	**K23LM023AE0-10**	**QC Batch**	**K23LM023BM10-18**	**RDL**	**QC Batch**
Physical Properties								
% sand by hydrometer	%	41	B176202	88	B175329	92	2.0	B176202
% silt by hydrometer	%	40	B176202	6.8	B175329	3.4	2.0	B176202
Clay Content	%	19	B176202	4.8	B175329	4.4	2.0	B176202
Texture	N/A	LOAM	B159264	SAND	B159264	SAND	N/A	B159264
Moisture	%	15	B171930	11	B171930	9.0	0.30	B171930

RDL = Reportable Detection Limit
N/A = Not Applicable

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PHYSICAL TESTING (SOIL)

Bureau Veritas ID		CCA129		CCA130		CCA123		
Sampling Date		2023/09/29		2023/09/29		2023/09/29		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23LM023BH18-54**	**QC Batch**	**K23LM023C54-120**	**QC Batch**	**K23LM020CG10-30**	**RDL**	**QC Batch**
Physical Properties								
% sand by hydrometer	%	92	B175438	95	B175329	54	2.0	B176202
% silt by hydrometer	%	3.5	B175438	2.9	B175329	36	2.0	B176202
Clay Content	%	4.9	B175438	2.2	B175329	10	2.0	B176202
Texture	N/A	SAND	B159264	SAND	B159264	SANDY LOAM	N/A	B159264
Moisture	%	9.1	B171930	4.6	B171930	45	0.30	B171930

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CCA124		CCA125	CCA126		
Sampling Date		2023/09/29		2023/09/29	2023/09/29		
COC Number		1 of 1		1 of 1	1 of 1		
	UNITS	**K23LM020CG230-75**	**QC Batch**	**K23CB030C0-36**	**K23CB030IIC36-100**	**RDL**	**QC Batch**
Physical Properties							
% sand by hydrometer	%	53	B175873	26	70	2.0	B176202
% silt by hydrometer	%	29	B175873	52	18	2.0	B176202
Clay Content	%	17	B175873	23	12	2.0	B176202
Texture	N/A	SANDY LOAM	B159264	SILT LOAM	SANDY LOAM	N/A	B159264
Moisture	%	22	B171930	19	11	0.30	B171930

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas ID		CBZ932		CBZ933		CBZ934		
Sampling Date		2023/09/29		2023/09/29		2023/09/29		
COC Number		1 of 1		1 of 1		1 of 1		
	UNITS	**K23CB031BM0-20**	**QC Batch**	**K23CB031BC20-35**	**QC Batch**	**K23CB031C35-120**	**RDL**	**QC Batch**
Physical Properties								
% sand by hydrometer	%	93	B175177	87	B176202	95	2.0	B175438
% silt by hydrometer	%	4.5	B175177	11	B176202	<2.0	2.0	B175438
Clay Content	%	2.4	B175177	2.2	B176202	4.8	2.0	B175438
Texture	N/A	SAND	B158560	SAND	B158560	SAND	N/A	B158560
Moisture	%	5.3	B172107	N/A	N/A	N/A	0.30	N/A

RDL = Reportable Detection Limit
N/A = Not Applicable

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

MISCELLANEOUS (SOIL)

Bureau Veritas ID		CBZ802		CBZ803	CBZ811		CCA014		
Sampling Date		2023/09/25		2023/09/25	2023/09/27		2023/09/27		
COC Number		1 of 1		1 of 1	1 of 1		1 of 1		
	UNITS	**K23CB001AE0-8**	**QC Batch**	**K23CB001BF8-19**	**K23LM013CG10-33**	**QC Batch**	**K23LM015AE0-5**	**RDL**	**QC Batch**
Misc. Inorganics									
Total Organic Carbon (C)	%	0.64	B172755	1.7	2.4	B169509	1.5	0.050	B172755
RDL = Reportable Detection Limit									

Bureau Veritas ID		CCA015	CCA018	CCA023	CCA024	CCA019		
Sampling Date		2023/09/27	2023/09/27	2023/09/28	2023/09/28	2023/09/27		
COC Number		1 of 1	1 of 1	1 of 1	1 of 1	1 of 1		
	UNITS	**K23LM015BM5-23**	**K23CB020CG0-80**	**K23CB023AE0-6**	**K23CB023BF6-17**	**K23CB017AE0-9**	**RDL**	**QC Batch**
Misc. Inorganics								
Total Organic Carbon (C)	%	1.4	0.67	0.59	1.3	0.61	0.050	B172755
RDL = Reportable Detection Limit								

Bureau Veritas ID		CCA020	CCA127		CCA123	CCA125		
Sampling Date		2023/09/27	2023/09/29		2023/09/29	2023/09/29		
COC Number		1 of 1	1 of 1		1 of 1	1 of 1		
	UNITS	**K23CB017BMGJ9-33**	**K23LM023AE0-10**	**QC Batch**	**K23LM020CG10-30**	**K23CB030C0-36**	**RDL**	**QC Batch**
Misc. Inorganics								
Total Organic Carbon (C)	%	0.70	0.49	B172755	3.3	0.37	0.050	B175910
RDL = Reportable Detection Limit								

Bureau Veritas ID		CBZ932		
Sampling Date		2023/09/29		
COC Number		1 of 1		
	UNITS	**K23CB031BM0-20**	**RDL**	**QC Batch**
Misc. Inorganics				
Total Organic Carbon (C)	%	0.24	0.050	B172755
RDL = Reportable Detection Limit				

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Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

GENERAL COMMENTS

Sample CBZ802 [K23CB001AE0-8] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CBZ803 [K23CB001BF8-19] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CBZ804 [K23CB001BFJ19-28] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CBZ811 [K23LM013CG10-33] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CBZ932 [K23CB031BM0-20] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA014 [K23LM015AE0-5] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA015 [K23LM015BM5-23] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA018 [K23CB020CG0-80] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA019 [K23CB017AE0-9] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA020 [K23CB017BMGJ9-33] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA023 [K23CB023AE0-6] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA024 [K23CB023BF6-17] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA123 [K23LM020CG10-30] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA125 [K23CB030C0-36] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA127 [K23LM023AE0-10] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA128 [K23LM023BM10-18] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

Sample CCA129 [K23LM023BH18-54] : Sample was analyzed past method specified hold time for Available NO2 (N); NO2 (N) + NO3 (N).

CCME REGULATED METALS - SOILS (SOIL) Comments

Sample CCA014 [K23LM015AE0-5] Boron (Hot Water Soluble): Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

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Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
B168082	BAS	Method Blank	Moisture	2023/10/24	<0.30		%	
B168082	BAS	RPD [CBZ807-01]	Moisture	2023/10/24	2.6		%	20
B168250	JTH	Matrix Spike	Hex. Chromium (Cr 6+)	2023/10/24		93	%	75 - 125
B168250	JTH	Spiked Blank	Hex. Chromium (Cr 6+)	2023/10/24		102	%	80 - 120
B168250	JTH	Method Blank	Hex. Chromium (Cr 6+)	2023/10/24	<0.080		mg/kg	
B168250	JTH	RPD	Hex. Chromium (Cr 6+)	2023/10/24	NC		%	35
B169509	PL	QC Standard	Total Organic Carbon (C)	2023/10/26		87	%	75 - 125
B169509	PL	Spiked Blank	Total Organic Carbon (C)	2023/10/26		93	%	80 - 120
B169509	PL	Method Blank	Total Organic Carbon (C)	2023/10/26	<0.050		%	
B169509	PL	RPD	Total Organic Carbon (C)	2023/10/26	8.7		%	35
B171930	BAS	Method Blank	Moisture	2023/10/26	<0.30		%	
B171930	BAS	RPD [CCA121-01]	Moisture	2023/10/26	1.4		%	20
B172107	TLP	Method Blank	Moisture	2023/10/27	<0.30		%	
B172107	TLP	RPD [CCA018-01]	Moisture	2023/10/27	8.8		%	20
B172489	JTH	Matrix Spike	Hex. Chromium (Cr 6+)	2023/10/26		98	%	75 - 125
B172489	JTH	Spiked Blank	Hex. Chromium (Cr 6+)	2023/10/26		105	%	80 - 120
B172489	JTH	Method Blank	Hex. Chromium (Cr 6+)	2023/10/26	<0.080		mg/kg	
B172489	JTH	RPD	Hex. Chromium (Cr 6+)	2023/10/27	NC		%	35
B172586	DPL	QC Standard	Saturation %	2023/10/31		102	%	75 - 125
B172586	DPL	RPD [CBZ806-01]	Saturation %	2023/10/31	1.6		%	12
B172589	HAP	QC Standard	Soluble (CaCl2) pH	2023/11/01		98	%	97 - 103
B172589	HAP	Spiked Blank	Soluble (CaCl2) pH	2023/11/01		101	%	97 - 103
B172589	HAP	RPD [CBZ806-01]	Soluble (CaCl2) pH	2023/11/01	1.9		%	N/A
B172600	DPL	QC Standard	Saturation %	2023/10/31		101	%	75 - 125
B172600	DPL	RPD [CBZ933-01]	Saturation %	2023/10/31	0.55		%	12
B172604	HAP	QC Standard	Soluble (CaCl2) pH	2023/11/01		98	%	97 - 103
B172604	HAP	Spiked Blank	Soluble (CaCl2) pH	2023/11/01		101	%	97 - 103
B172604	HAP	RPD [CBZ933-01]	Soluble (CaCl2) pH	2023/11/01	4.2		%	N/A
B172627	BAS	Method Blank	Moisture	2023/10/27	<0.30		%	
B172627	BAS	RPD	Moisture	2023/10/27	1.1		%	20
B172755	PL	QC Standard	Total Organic Carbon (C)	2023/10/27		102	%	75 - 125
B172755	PL	Spiked Blank	Total Organic Carbon (C)	2023/10/27		97	%	80 - 120
B172755	PL	Method Blank	Total Organic Carbon (C)	2023/10/27	<0.050		%	
B172755	PL	RPD	Total Organic Carbon (C)	2023/10/27	27		%	35
B172824	KH2	Matrix Spike [CBZ806-01]	Total Antimony (Sb)	2023/10/27		90	%	75 - 125
			Total Arsenic (As)	2023/10/27		82	%	75 - 125
			Total Barium (Ba)	2023/10/27		125	%	75 - 125
			Total Beryllium (Be)	2023/10/27		87	%	75 - 125
			Total Cadmium (Cd)	2023/10/27		87	%	75 - 125
			Total Chromium (Cr)	2023/10/27		94	%	75 - 125
			Total Cobalt (Co)	2023/10/27		87	%	75 - 125
			Total Copper (Cu)	2023/10/27		86	%	75 - 125
			Total Lead (Pb)	2023/10/27		90	%	75 - 125
			Total Mercury (Hg)	2023/10/27		85	%	75 - 125
			Total Molybdenum (Mo)	2023/10/27		93	%	75 - 125
			Total Nickel (Ni)	2023/10/27		91	%	75 - 125
			Total Selenium (Se)	2023/10/27		82	%	75 - 125
			Total Silver (Ag)	2023/10/27		88	%	75 - 125
			Total Thallium (Tl)	2023/10/27		92	%	75 - 125
			Total Tin (Sn)	2023/10/27		92	%	75 - 125
			Total Uranium (U)	2023/10/27		87	%	75 - 125
			Total Vanadium (V)	2023/10/27		90	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2023/10/27		82	%	75 - 125
B172824	KH2	QC Standard	Total Antimony (Sb)	2023/10/27		100	%	14 - 183
			Total Arsenic (As)	2023/10/27		102	%	53 - 147
			Total Barium (Ba)	2023/10/27		97	%	80 - 119
			Total Cadmium (Cd)	2023/10/27		98	%	71 - 129
			Total Chromium (Cr)	2023/10/27		100	%	59 - 141
			Total Cobalt (Co)	2023/10/27		99	%	58 - 142
			Total Copper (Cu)	2023/10/27		111	%	83 - 117
			Total Lead (Pb)	2023/10/27		106	%	79 - 121
			Total Molybdenum (Mo)	2023/10/27		104	%	67 - 134
			Total Nickel (Ni)	2023/10/27		105	%	78 - 122
			Total Silver (Ag)	2023/10/27		108	%	46 - 154
			Total Tin (Sn)	2023/10/27		98	%	67 - 133
			Total Uranium (U)	2023/10/27		93	%	77 - 123
			Total Vanadium (V)	2023/10/27		104	%	79 - 121
			Total Zinc (Zn)	2023/10/27		96	%	79 - 122
B172824	KH2	Spiked Blank	Total Antimony (Sb)	2023/10/27		89	%	80 - 120
			Total Arsenic (As)	2023/10/27		87	%	80 - 120
			Total Barium (Ba)	2023/10/27		88	%	80 - 120
			Total Beryllium (Be)	2023/10/27		87	%	80 - 120
			Total Cadmium (Cd)	2023/10/27		88	%	80 - 120
			Total Chromium (Cr)	2023/10/27		91	%	80 - 120
			Total Cobalt (Co)	2023/10/27		91	%	80 - 120
			Total Copper (Cu)	2023/10/27		90	%	80 - 120
			Total Lead (Pb)	2023/10/27		88	%	80 - 120
			Total Mercury (Hg)	2023/10/27		94	%	80 - 120
			Total Molybdenum (Mo)	2023/10/27		91	%	80 - 120
			Total Nickel (Ni)	2023/10/27		90	%	80 - 120
			Total Selenium (Se)	2023/10/27		86	%	80 - 120
			Total Silver (Ag)	2023/10/27		90	%	80 - 120
			Total Thallium (Tl)	2023/10/27		87	%	80 - 120
			Total Tin (Sn)	2023/10/27		90	%	80 - 120
			Total Uranium (U)	2023/10/27		94	%	80 - 120
			Total Vanadium (V)	2023/10/27		90	%	80 - 120
			Total Zinc (Zn)	2023/10/27		84	%	80 - 120
B172824	KH2	Method Blank	Total Antimony (Sb)	2023/10/27	<0.50		mg/kg	
			Total Arsenic (As)	2023/10/27	<1.0		mg/kg	
			Total Barium (Ba)	2023/10/27	<1.0		mg/kg	
			Total Beryllium (Be)	2023/10/27	<0.40		mg/kg	
			Total Cadmium (Cd)	2023/10/27	<0.050		mg/kg	
			Total Chromium (Cr)	2023/10/27	<1.0		mg/kg	
			Total Cobalt (Co)	2023/10/27	<0.50		mg/kg	
			Total Copper (Cu)	2023/10/27	<1.0		mg/kg	
			Total Lead (Pb)	2023/10/27	<0.50		mg/kg	
			Total Mercury (Hg)	2023/10/27	<0.050		mg/kg	
			Total Molybdenum (Mo)	2023/10/27	<0.40		mg/kg	
			Total Nickel (Ni)	2023/10/27	<1.0		mg/kg	
			Total Selenium (Se)	2023/10/27	<0.50		mg/kg	
			Total Silver (Ag)	2023/10/27	<0.20		mg/kg	
			Total Thallium (Tl)	2023/10/27	<0.10		mg/kg	
			Total Tin (Sn)	2023/10/27	<1.0		mg/kg	
			Total Uranium (U)	2023/10/27	<0.20		mg/kg	

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Sampler Initials: CB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Vanadium (V)	2023/10/27	<1.0		mg/kg	
			Total Zinc (Zn)	2023/10/27	<10		mg/kg	
B172824	KH2	RPD [CBZ806-01]	Total Antimony (Sb)	2023/10/27	NC		%	30
			Total Arsenic (As)	2023/10/27	NC		%	30
			Total Barium (Ba)	2023/10/27	3.1		%	35
			Total Beryllium (Be)	2023/10/27	NC		%	30
			Total Cadmium (Cd)	2023/10/27	NC		%	30
			Total Chromium (Cr)	2023/10/27	8.2		%	30
			Total Cobalt (Co)	2023/10/27	1.1		%	30
			Total Copper (Cu)	2023/10/27	0.15		%	30
			Total Lead (Pb)	2023/10/27	1.5		%	35
			Total Mercury (Hg)	2023/10/27	NC		%	35
			Total Molybdenum (Mo)	2023/10/27	NC		%	35
			Total Nickel (Ni)	2023/10/27	0.32		%	30
			Total Selenium (Se)	2023/10/27	NC		%	30
			Total Silver (Ag)	2023/10/27	NC		%	35
			Total Thallium (Tl)	2023/10/27	1.5		%	30
			Total Tin (Sn)	2023/10/27	NC		%	35
			Total Uranium (U)	2023/10/27	3.8		%	30
			Total Vanadium (V)	2023/10/27	5.2		%	30
			Total Zinc (Zn)	2023/10/27	6.4		%	30
B173288	VSC	Matrix Spike	Soluble (Hot water) Boron (B)	2023/10/30		102	%	75 - 125
B173288	VSC	Spiked Blank	Soluble (Hot water) Boron (B)	2023/10/30		98	%	80 - 120
B173288	VSC	Method Blank	Soluble (Hot water) Boron (B)	2023/10/30	<0.10		mg/kg	
B173288	VSC	RPD	Soluble (Hot water) Boron (B)	2023/10/30	6.5		%	35
B173597	DPL	QC Standard	Saturation %	2023/10/30		103	%	75 - 125
B173597	DPL	RPD	Saturation %	2023/10/30	2.7		%	12
			Saturation %	2023/10/30	1.4		%	12
B173622	HAP	QC Standard	Soluble (CaCl2) pH	2023/10/31		99	%	97 - 103
B173622	HAP	Spiked Blank	Soluble (CaCl2) pH	2023/10/31		100	%	97 - 103
B173622	HAP	RPD	Soluble (CaCl2) pH	2023/10/31	1.8		%	N/A
B173997	JAB	Matrix Spike	Total Antimony (Sb)	2023/10/27		99	%	75 - 125
			Total Arsenic (As)	2023/10/27		105	%	75 - 125
			Total Barium (Ba)	2023/10/27		NC	%	75 - 125
			Total Beryllium (Be)	2023/10/27		101	%	75 - 125
			Total Cadmium (Cd)	2023/10/27		104	%	75 - 125
			Total Chromium (Cr)	2023/10/27		111	%	75 - 125
			Total Cobalt (Co)	2023/10/27		99	%	75 - 125
			Total Copper (Cu)	2023/10/27		96	%	75 - 125
			Total Lead (Pb)	2023/10/27		100	%	75 - 125
			Total Mercury (Hg)	2023/10/27		97	%	75 - 125
			Total Molybdenum (Mo)	2023/10/27		105	%	75 - 125
			Total Nickel (Ni)	2023/10/27		98	%	75 - 125
			Total Selenium (Se)	2023/10/27		106	%	75 - 125
			Total Silver (Ag)	2023/10/27		99	%	75 - 125
			Total Thallium (Tl)	2023/10/27		103	%	75 - 125
			Total Tin (Sn)	2023/10/27		107	%	75 - 125
			Total Uranium (U)	2023/10/27		95	%	75 - 125
			Total Vanadium (V)	2023/10/27		135 (1)	%	75 - 125
			Total Zinc (Zn)	2023/10/27		106	%	75 - 125
B173997	JAB	QC Standard	Total Antimony (Sb)	2023/10/27		114	%	14 - 183
			Total Arsenic (As)	2023/10/27		124	%	53 - 147

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Barium (Ba)	2023/10/27		103	%	80 - 119
			Total Cadmium (Cd)	2023/10/27		108	%	71 - 129
			Total Chromium (Cr)	2023/10/27		100	%	59 - 141
			Total Cobalt (Co)	2023/10/27		100	%	58 - 142
			Total Copper (Cu)	2023/10/27		116	%	83 - 117
			Total Lead (Pb)	2023/10/27		115	%	79 - 121
			Total Molybdenum (Mo)	2023/10/27		110	%	67 - 134
			Total Nickel (Ni)	2023/10/27		108	%	78 - 122
			Total Silver (Ag)	2023/10/27		114	%	46 - 154
			Total Tin (Sn)	2023/10/27		111	%	67 - 133
			Total Uranium (U)	2023/10/27		91	%	77 - 123
			Total Vanadium (V)	2023/10/27		107	%	79 - 121
			Total Zinc (Zn)	2023/10/27		113	%	79 - 122
B173997	JAB	Spiked Blank	Total Antimony (Sb)	2023/10/27		100	%	80 - 120
			Total Arsenic (As)	2023/10/27		104	%	80 - 120
			Total Barium (Ba)	2023/10/27		96	%	80 - 120
			Total Beryllium (Be)	2023/10/27		101	%	80 - 120
			Total Cadmium (Cd)	2023/10/27		100	%	80 - 120
			Total Chromium (Cr)	2023/10/27		99	%	80 - 120
			Total Cobalt (Co)	2023/10/27		99	%	80 - 120
			Total Copper (Cu)	2023/10/27		101	%	80 - 120
			Total Lead (Pb)	2023/10/27		101	%	80 - 120
			Total Mercury (Hg)	2023/10/27		105	%	80 - 120
			Total Molybdenum (Mo)	2023/10/27		98	%	80 - 120
			Total Nickel (Ni)	2023/10/27		99	%	80 - 120
			Total Selenium (Se)	2023/10/27		108	%	80 - 120
			Total Silver (Ag)	2023/10/27		97	%	80 - 120
			Total Thallium (Tl)	2023/10/27		103	%	80 - 120
			Total Tin (Sn)	2023/10/27		99	%	80 - 120
			Total Uranium (U)	2023/10/27		100	%	80 - 120
			Total Vanadium (V)	2023/10/27		99	%	80 - 120
			Total Zinc (Zn)	2023/10/27		105	%	80 - 120
B173997	JAB	Method Blank	Total Antimony (Sb)	2023/10/27	<0.50		mg/kg	
			Total Arsenic (As)	2023/10/27	<1.0		mg/kg	
			Total Barium (Ba)	2023/10/27	<1.0		mg/kg	
			Total Beryllium (Be)	2023/10/27	<0.40		mg/kg	
			Total Cadmium (Cd)	2023/10/27	<0.050		mg/kg	
			Total Chromium (Cr)	2023/10/27	<1.0		mg/kg	
			Total Cobalt (Co)	2023/10/27	<0.50		mg/kg	
			Total Copper (Cu)	2023/10/27	<1.0		mg/kg	
			Total Lead (Pb)	2023/10/27	<0.50		mg/kg	
			Total Mercury (Hg)	2023/10/27	<0.050		mg/kg	
			Total Molybdenum (Mo)	2023/10/27	<0.40		mg/kg	
			Total Nickel (Ni)	2023/10/27	<1.0		mg/kg	
			Total Selenium (Se)	2023/10/27	<0.50		mg/kg	
			Total Silver (Ag)	2023/10/27	<0.20		mg/kg	
			Total Thallium (Tl)	2023/10/27	<0.10		mg/kg	
			Total Tin (Sn)	2023/10/27	<1.0		mg/kg	
			Total Uranium (U)	2023/10/27	<0.20		mg/kg	
			Total Vanadium (V)	2023/10/27	<1.0		mg/kg	
			Total Zinc (Zn)	2023/10/27	<10		mg/kg	
B173997	JAB	RPD	Total Antimony (Sb)	2023/10/27	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Arsenic (As)	2023/10/27	3.4		%	30
			Total Barium (Ba)	2023/10/27	3.1		%	35
			Total Beryllium (Be)	2023/10/27	5.4		%	30
			Total Cadmium (Cd)	2023/10/27	1.7		%	30
			Total Chromium (Cr)	2023/10/27	3.8		%	30
			Total Cobalt (Co)	2023/10/27	0.57		%	30
			Total Copper (Cu)	2023/10/27	3.4		%	30
			Total Lead (Pb)	2023/10/27	2.1		%	35
			Total Mercury (Hg)	2023/10/27	NC		%	35
			Total Molybdenum (Mo)	2023/10/27	4.4		%	35
			Total Nickel (Ni)	2023/10/27	5.0		%	30
			Total Selenium (Se)	2023/10/27	NC		%	30
			Total Silver (Ag)	2023/10/27	NC		%	35
			Total Thallium (Tl)	2023/10/27	4.1		%	30
			Total Tin (Sn)	2023/10/27	NC		%	35
			Total Uranium (U)	2023/10/27	1.1		%	30
			Total Vanadium (V)	2023/10/27	3.1		%	30
			Total Zinc (Zn)	2023/10/27	4.0		%	30
B174216	VSC	Matrix Spike	Soluble (Hot water) Boron (B)	2023/10/30		101	%	75 - 125
B174216	VSC	Spiked Blank	Soluble (Hot water) Boron (B)	2023/10/30		98	%	80 - 120
B174216	VSC	Method Blank	Soluble (Hot water) Boron (B)	2023/10/30	<0.10		mg/kg	
B174216	VSC	RPD	Soluble (Hot water) Boron (B)	2023/10/30	10		%	35
B175177	RDL	QC Standard	% sand by hydrometer	2023/10/29		99	%	75 - 125
			% silt by hydrometer	2023/10/29		105	%	75 - 125
			Clay Content	2023/10/29		97	%	75 - 125
B175177	RDL	RPD	% sand by hydrometer	2023/10/29	7.0		%	30
			% silt by hydrometer	2023/10/29	6.7		%	30
			Clay Content	2023/10/29	0.49		%	30
B175329	RDL	QC Standard	% sand by hydrometer	2023/10/29		102	%	75 - 125
			% silt by hydrometer	2023/10/29		124	%	75 - 125
			Clay Content	2023/10/29		80	%	75 - 125
B175329	RDL	RPD	% sand by hydrometer	2023/10/29	0.59		%	30
			% silt by hydrometer	2023/10/29	4.3		%	30
			Clay Content	2023/10/29	3.5		%	30
B175438	RDL	QC Standard	% sand by hydrometer	2023/10/29		94	%	75 - 125
			% silt by hydrometer	2023/10/29		95	%	75 - 125
			Clay Content	2023/10/29		110	%	75 - 125
B175438	RDL	RPD	% sand by hydrometer	2023/10/29	1.3		%	30
			% silt by hydrometer	2023/10/29	12		%	30
			Clay Content	2023/10/29	7.3		%	30
B175753	HQV	Matrix Spike	Available (CaCl2) Sulphur (S)	2023/10/31		97	%	75 - 125
B175753	HQV	QC Standard	Available (CaCl2) Sulphur (S)	2023/10/31		103	%	75 - 125
B175753	HQV	Spiked Blank	Available (CaCl2) Sulphur (S)	2023/10/31		98	%	80 - 120
B175753	HQV	Method Blank	Available (CaCl2) Sulphur (S)	2023/10/31	<2.0		mg/kg	
B175753	HQV	RPD	Available (CaCl2) Sulphur (S)	2023/10/31	13		%	35
B175873	RDL	QC Standard	% sand by hydrometer	2023/10/30		100	%	75 - 125
			% silt by hydrometer	2023/10/30		98	%	75 - 125
			Clay Content	2023/10/30		102	%	75 - 125
B175873	RDL	RPD	% sand by hydrometer	2023/10/30	5.1		%	30
			% silt by hydrometer	2023/10/30	0.042		%	30
			Clay Content	2023/10/30	2.9		%	30
B175910	PL	QC Standard	Total Organic Carbon (C)	2023/10/30		100	%	75 - 125

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Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
B175910	PL	Spiked Blank	Total Organic Carbon (C)	2023/10/30		102	%	80 - 120
B175910	PL	Method Blank	Total Organic Carbon (C)	2023/10/30	<0.050		%	
B175910	PL	RPD [CCA125-01]	Total Organic Carbon (C)	2023/10/30	23		%	35
B176202	RDL	QC Standard	% sand by hydrometer	2023/10/30		101	%	75 - 125
			% silt by hydrometer	2023/10/30		94	%	75 - 125
			Clay Content	2023/10/30		104	%	75 - 125
B176202	RDL	RPD [CBZ933-01]	% sand by hydrometer	2023/10/30	1.1		%	30
			% silt by hydrometer	2023/10/30	0.45		%	30
			Clay Content	2023/10/30	NC		%	30
B177109	PL	Matrix Spike	Soluble Calcium (Ca)	2023/10/31		103	%	75 - 125
			Soluble Magnesium (Mg)	2023/10/31		104	%	75 - 125
			Soluble Sodium (Na)	2023/10/31		97	%	75 - 125
			Soluble Potassium (K)	2023/10/31		100	%	75 - 125
B177109	PL	QC Standard	Soluble Calcium (Ca)	2023/10/31		111	%	75 - 125
			Soluble Magnesium (Mg)	2023/10/31		109	%	75 - 125
			Soluble Sodium (Na)	2023/10/31		105	%	75 - 125
			Soluble Potassium (K)	2023/10/31		122	%	75 - 125
			Soluble Sulphate (SO4)	2023/10/31		100	%	75 - 125
B177109	PL	Spiked Blank	Soluble Calcium (Ca)	2023/10/31		107	%	80 - 120
			Soluble Magnesium (Mg)	2023/10/31		107	%	80 - 120
			Soluble Sodium (Na)	2023/10/31		101	%	80 - 120
			Soluble Potassium (K)	2023/10/31		103	%	80 - 120
B177109	PL	Method Blank	Soluble Calcium (Ca)	2023/10/31	<1.5		mg/L	
			Soluble Magnesium (Mg)	2023/10/31	<1.0		mg/L	
			Soluble Sodium (Na)	2023/10/31	<2.5		mg/L	
			Soluble Potassium (K)	2023/10/31	<1.3		mg/L	
			Soluble Sulphate (SO4)	2023/10/31	<5.0		mg/L	
B177109	PL	RPD	Soluble Calcium (Ca)	2023/10/31	3.3		%	30
			Soluble Magnesium (Mg)	2023/10/31	3.6		%	30
			Soluble Sodium (Na)	2023/10/31	6.6		%	30
			Soluble Potassium (K)	2023/10/31	7.0		%	30
			Soluble Sulphate (SO4)	2023/10/31	0.17		%	30
B177198	EBO	Matrix Spike	Soluble Chloride (Cl)	2023/10/30		102	%	75 - 125
B177198	EBO	QC Standard	Soluble Chloride (Cl)	2023/10/30		95	%	75 - 125
B177198	EBO	Spiked Blank	Soluble Chloride (Cl)	2023/10/30		102	%	80 - 120
B177198	EBO	Method Blank	Soluble Chloride (Cl)	2023/10/30	<10		mg/L	
B177198	EBO	RPD	Soluble Chloride (Cl)	2023/10/30	NC		%	30
B177200	EBO	QC Standard	Soluble Conductivity	2023/10/30		95	%	75 - 125
B177200	EBO	Spiked Blank	Soluble Conductivity	2023/10/30		97	%	90 - 110
B177200	EBO	Method Blank	Soluble Conductivity	2023/10/30	<0.020		dS/m	
B177200	EBO	RPD	Soluble Conductivity	2023/10/30	0		%	20
B179061	ZI	Matrix Spike [CBZ933-01]	Soluble Chloride (Cl)	2023/10/31		99	%	75 - 125
B179061	ZI	QC Standard	Soluble Chloride (Cl)	2023/10/31		88	%	75 - 125
B179061	ZI	Spiked Blank	Soluble Chloride (Cl)	2023/10/31		101	%	80 - 120
B179061	ZI	Method Blank	Soluble Chloride (Cl)	2023/10/31	<10		mg/L	
B179061	ZI	RPD [CBZ933-01]	Soluble Chloride (Cl)	2023/10/31	NC		%	30
B179305	PL	Matrix Spike [CBZ933-01]	Soluble Calcium (Ca)	2023/11/01		102	%	75 - 125
			Soluble Magnesium (Mg)	2023/11/01		101	%	75 - 125
			Soluble Sodium (Na)	2023/11/01		98	%	75 - 125
			Soluble Potassium (K)	2023/11/01		100	%	75 - 125
B179305	PL	QC Standard	Soluble Calcium (Ca)	2023/11/01		94	%	75 - 125
			Soluble Magnesium (Mg)	2023/11/01		92	%	75 - 125

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Soluble Sodium (Na)	2023/11/01		97	%	75 - 125
			Soluble Potassium (K)	2023/11/01		113	%	75 - 125
			Soluble Sulphate (SO4)	2023/11/01		94	%	75 - 125
B179305	PL	Spiked Blank	Soluble Calcium (Ca)	2023/11/01		101	%	80 - 120
			Soluble Magnesium (Mg)	2023/11/01		101	%	80 - 120
			Soluble Sodium (Na)	2023/11/01		98	%	80 - 120
			Soluble Potassium (K)	2023/11/01		99	%	80 - 120
B179305	PL	Method Blank	Soluble Calcium (Ca)	2023/11/01	<1.5		mg/L	
			Soluble Magnesium (Mg)	2023/11/01	<1.0		mg/L	
			Soluble Sodium (Na)	2023/11/01	<2.5		mg/L	
			Soluble Potassium (K)	2023/11/01	<1.3		mg/L	
			Soluble Sulphate (SO4)	2023/11/01	<5.0		mg/L	
B179305	PL	RPD [CBZ933-01]	Soluble Calcium (Ca)	2023/11/01	NC		%	30
			Soluble Magnesium (Mg)	2023/11/01	NC		%	30
			Soluble Sodium (Na)	2023/11/01	8.1		%	30
			Soluble Potassium (K)	2023/11/01	NC		%	30
			Soluble Sulphate (SO4)	2023/11/01	NC		%	30
B179706	PL	Matrix Spike [CBZ806-01]	Soluble Calcium (Ca)	2023/11/01		97	%	75 - 125
			Soluble Magnesium (Mg)	2023/11/01		101	%	75 - 125
			Soluble Sodium (Na)	2023/11/01		100	%	75 - 125
			Soluble Potassium (K)	2023/11/01		100	%	75 - 125
B179706	PL	QC Standard	Soluble Calcium (Ca)	2023/11/01		106	%	75 - 125
			Soluble Magnesium (Mg)	2023/11/01		109	%	75 - 125
			Soluble Sodium (Na)	2023/11/01		114	%	75 - 125
			Soluble Potassium (K)	2023/11/01		115	%	75 - 125
			Soluble Sulphate (SO4)	2023/11/01		108	%	75 - 125
B179706	PL	Spiked Blank	Soluble Calcium (Ca)	2023/11/01		97	%	80 - 120
			Soluble Magnesium (Mg)	2023/11/01		100	%	80 - 120
			Soluble Sodium (Na)	2023/11/01		98	%	80 - 120
			Soluble Potassium (K)	2023/11/01		99	%	80 - 120
B179706	PL	Method Blank	Soluble Calcium (Ca)	2023/11/01	<1.5		mg/L	
			Soluble Magnesium (Mg)	2023/11/01	<1.0		mg/L	
			Soluble Sodium (Na)	2023/11/01	<2.5		mg/L	
			Soluble Potassium (K)	2023/11/01	<1.3		mg/L	
			Soluble Sulphate (SO4)	2023/11/01	<5.0		mg/L	
B179706	PL	RPD [CBZ806-01]	Soluble Calcium (Ca)	2023/11/01	2.7		%	30
			Soluble Magnesium (Mg)	2023/11/01	NC		%	30
			Soluble Sodium (Na)	2023/11/01	6.0		%	30
			Soluble Potassium (K)	2023/11/01	NC		%	30
			Soluble Sulphate (SO4)	2023/11/01	1.0		%	30
B179745	EBO	QC Standard	Soluble Conductivity	2023/11/01		91	%	75 - 125
B179745	EBO	Spiked Blank	Soluble Conductivity	2023/11/01		98	%	90 - 110
B179745	EBO	Method Blank	Soluble Conductivity	2023/11/01	<0.020		dS/m	
B179745	EBO	RPD [CBZ933-01]	Soluble Conductivity	2023/11/01	NC		%	20
B179775	ZI	Matrix Spike [CBZ806-01]	Soluble Chloride (Cl)	2023/11/01		102	%	75 - 125
B179775	ZI	QC Standard	Soluble Chloride (Cl)	2023/11/01		98	%	75 - 125
B179775	ZI	Spiked Blank	Soluble Chloride (Cl)	2023/11/01		101	%	80 - 120
B179775	ZI	Method Blank	Soluble Chloride (Cl)	2023/11/01	<10		mg/L	
B179775	ZI	RPD [CBZ806-01]	Soluble Chloride (Cl)	2023/11/01	NC		%	30
B179854	EBO	QC Standard	Soluble Conductivity	2023/11/01		98	%	75 - 125
B179854	EBO	Spiked Blank	Soluble Conductivity	2023/11/01		101	%	90 - 110
B179854	EBO	Method Blank	Soluble Conductivity	2023/11/01	<0.020		dS/m	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
B180158	EBO	QC Standard	Soluble Conductivity	2023/11/01		101	%	75 - 125
B180158	EBO	Spiked Blank	Soluble Conductivity	2023/11/01		98	%	90 - 110
B180158	EBO	Method Blank	Soluble Conductivity	2023/11/01	<0.020		dS/m	
B180158	EBO	RPD [CBZ806-01]	Soluble Conductivity	2023/11/01	6.1		%	20
B182890	EH2	QC Standard	Calcium Carbonate Equivalent	2023/11/08		104	%	75 - 125
B182890	EH2	Spiked Blank	Calcium Carbonate Equivalent	2023/11/08		104	%	80 - 120
B182890	EH2	Method Blank	Calcium Carbonate Equivalent	2023/11/08	<0.60		%	
B182890	EH2	RPD	Calcium Carbonate Equivalent	2023/11/08	16		%	35
B182895	EH2	QC Standard	Calcium Carbonate Equivalent	2023/11/08		104	%	75 - 125
B182895	EH2	Spiked Blank	Calcium Carbonate Equivalent	2023/11/08		102	%	80 - 120
B182895	EH2	Method Blank	Calcium Carbonate Equivalent	2023/11/08	<0.60		%	
B182895	EH2	RPD [CCA016-01]	Calcium Carbonate Equivalent	2023/11/08	NC		%	35
B184944	KKC	Matrix Spike [CCA125-01]	Available (NH4OAc) Potassium (K)	2023/11/08		100	%	75 - 125
B184944	KKC	Spiked Blank	Available (NH4OAc) Potassium (K)	2023/11/08		96	%	80 - 120
B184944	KKC	Method Blank	Available (NH4OAc) Potassium (K)	2023/11/08	<2.0		mg/kg	
B184944	KKC	RPD [CCA125-01]	Available (NH4OAc) Potassium (K)	2023/11/08	1.7		%	35
B184961	HQV	Matrix Spike [CCA023-01]	Available (NH4OAc) Potassium (K)	2023/11/04		94	%	75 - 125
B184961	HQV	Spiked Blank	Available (NH4OAc) Potassium (K)	2023/11/04		94	%	80 - 120
B184961	HQV	Method Blank	Available (NH4OAc) Potassium (K)	2023/11/04	<2.0		mg/kg	
B184961	HQV	RPD [CCA023-01]	Available (NH4OAc) Potassium (K)	2023/11/04	NC		%	35
B184966	HQV	Matrix Spike [CCA023-01]	Available (CaCl2) Sulphur (S)	2023/11/04		94	%	75 - 125
B184966	HQV	QC Standard	Available (CaCl2) Sulphur (S)	2023/11/04		99	%	75 - 125
B184966	HQV	Spiked Blank	Available (CaCl2) Sulphur (S)	2023/11/04		95	%	80 - 120
B184966	HQV	Method Blank	Available (CaCl2) Sulphur (S)	2023/11/04	<2.0		mg/kg	
B184966	HQV	RPD [CCA023-01]	Available (CaCl2) Sulphur (S)	2023/11/04	NC		%	35
B185001	HQV	Matrix Spike [CCA023-01]	Available (NH4F) Phosphorus (P)	2023/11/04		98	%	75 - 125
B185001	HQV	Spiked Blank	Available (NH4F) Phosphorus (P)	2023/11/04		93	%	80 - 120
B185001	HQV	Method Blank	Available (NH4F) Phosphorus (P)	2023/11/04	<1.0		mg/kg	
B185001	HQV	RPD [CCA023-01]	Available (NH4F) Phosphorus (P)	2023/11/04	0.11		%	35
B185010	HQV	Matrix Spike [CCA125-01]	Available (NH4F) Phosphorus (P)	2023/11/04		95	%	75 - 125
B185010	HQV	Spiked Blank	Available (NH4F) Phosphorus (P)	2023/11/04		95	%	80 - 120
B185010	HQV	Method Blank	Available (NH4F) Phosphorus (P)	2023/11/04	<1.0		mg/kg	
B185010	HQV	RPD [CCA125-01]	Available (NH4F) Phosphorus (P)	2023/11/04	3.1		%	35

N/A = Not Applicable

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

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Bureau Veritas Job #: C383989
Report Date: 2023/11/09

WSP Canada Inc.
Client Project #: CA0003092.5894/TASK 500
Site Location: KAMI, LABRADOR
Your P.O. #: CA0003092.5894/500
Sampler Initials: CB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Maria Magdalena Florescu, Ph.D., P.Chem., QP, Inorganics Manager

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

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* eCOC to Resubmit

CHAIN OF CUSTODY RECORD
ENV COC - 00013v2

Page 1 of

Invoice Information — Invoice to (requires report)		Report Information (if differs from invoice)		Project Information	
Company:	WSP	Company:		Quotation #:	
Contact Name:	Christine Brauer	Contact Name:		P.O. #/ AFE#:	03-Oct-23 10:49
Street Address:		Street Address:		Project #:	Melissa McIntosh
City: / Prov: / Postal Code:		City: / Prov: / Postal Code:		Site #:	
Phone:	587 532 9780	Phone:		Site Location:	C383989
Email:	christiane.brouwer@wsp.com	Email:		Site Location Province:	OO3 ins-bay
Copies:		Copies:		Sampled By:	

LAB USE ONLY - PLACE STICKER HERE: 383989

Rush Confirmation #:

Regulatory Criteria

AT1 — CCME — Drinking Water - Canada — Drinking Water - Manitoba — Saskatchewan — Drinking Water - Alberta — Other

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Analyses: 1 FIELD FILTERED; 2 FIELD PRESERVED; 3 LAB FILTRATION REQUIRED; 4 BTEX F1; 5 VOCs; 6 BTEX F1-F2; 7 BTEX F1-F4; 8 Routine water; 9 Regulated metals - total; 10 Regulated metals - dissolved; 11 Mercury - total; 12 Mercury - dissolved; 13 Salinity 4; 14 Sieve (75 micron); 15 Texture (% sand, silt, clay); 16 Basic class II landfill; 17–20; 21 # OF CONTAINERS SUBMITTED; 22 HOLD - DO NOT ANALYZE

Regular Turnaround Time (TAT): 5 to 7 Day; 10 Day
Rush Turnaround Time (TAT) Surcharges apply: Same Day; 1 Day; 2 Day; 3 Day; 4 Day
Date Required: YY MM DD

#	Sample Identification	YY	MM	DD	HH	MM	Matrix	1–22	Comments
1	K23CB001 Ae 0-8	23	09	25					
2	K23CB001 Bf 8-19	23	09	25					
3	K23CB001 Bf, 19-28	23	09	25					
4	K23CB001 C~~g~~ 28-47	23	09	25					
5	K23CB001 Cg 47-120	23	09	25					
6	K23CB010 Ae 0-5	23	09	26					
7	K23CB010 Bm 5-13	23	09	26					
8	K23CB010 BC 13-35	23	09	26					
9	K23CB010 C 35-100	23	09	26					
10	~~K23CB009 Bfc 5-17~~	~~23~~	~~09~~	~~26~~					
11	K23LM013Cg1 0-33			27					
12	K23LM013Cg2 33-60			27					

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY	Yes	No	°C 1 / 2 / 3	LAB USE ONLY	Yes	No	°C 1 / 2 / 3	LAB USE ONLY	Yes	No	°C 1 / 2 / 3	Temperature reading by:
Seal present		✓	4 / 4 / 4	Seal present	✓		20 / 20 / 20	Seal present	✓		21 / 21 / 20	
Seal intact		✓		Seal intact	✓			Seal intact	✓			
Cooling media present		✓		Cooling media present		✓		Cooling media present		✓		

	Relinquished by: (Signature/ Print)	YY	MM	DD	HH	MM	Received by: (Signature/ Print)	YY	MM	DD	HH	MM	Special instructions
1							[signature]	23	10	03	10	49	
2							@ ATRAVERGin	2023	10	04	09	00	

eCOC: W73809

Expected TAT:	Standard TAT
Expected Arrival:	2023/10/17 10:00
Submitted By:	
Submitted To:	Calgary ENV: 4000 19th St NE

Invoice Information

Attn: ACCOUNTS PAYABLE
WSP Canada Inc.
16820-107 AVE
EDMONTON , AB , T5P 4C3
Email to:
capayablesinvoice@wsp.com

Report Information

Attn: Christiane Brouwer
WSP Canada Inc.
16820-107 AVE
EDMONTON , AB , T5P 4C3
Email to:
christiane.brouwer@wsp.com

Project Information

Quote #:	C21799, C20106
PO/AFE#:	CA0003092.5894/500
Project #:	CA0003092.5894/Task 500
Site Location:	Kami, Labrador

Analytical Summary

A: Standard TAT

Client Sample ID	Clnt Ref	Sampling Date/Time	Matrix	#Cont	CCME Regulated Metals - Soils	NPKS (AVAILABLE)	SOIL SALINITY 4	Calcium Carbonate Equivalent	Cation Exchange Capacity	Moisture	Texture by Hydrometer	Texture Class	Total Organic Carbon LECO Method	Set Number
K23CB001Ae0-8	1	2023/09/25	SOIL	1	A	A	A	A	A	A	A	A	A	1
K23CB001Bf8-19	2	2023/09/25	SOIL	1		A	A	A		A	A	A	A	2
K23CB001Bfj19-28	3	2023/09/25	SOIL	1		A	A	A		A	A	A		3
K23CB001C28-47	4	2023/09/25	SOIL	1			A	A		A	A	A		4
K23CB001Cgj47-120	5	2023/09/25	SOIL	1	A		A	A		A	A	A		5
K23CB010Ae0-5	6	2023/09/26	SOIL	1			A	A		A	A	A		4
K23CB010Bm5-13	7	2023/09/26	SOIL	1			A	A		A	A	A		4
K23CB010BC13-35	8	2023/09/26	SOIL	1			A	A		A	A	A		4
K23CB010C35-100	9	2023/09/26	SOIL	1			A	A		A	A	A		4
K23LM013Cg10-33	10	2023/09/27	SOIL	1		A	A	A	A	A	A	A	A	6
K23LM013Cg233-60	11	2023/09/27	SOIL	1			A	A		A	A	A		4
K23LM015Ae0-5	12	2023/09/27	SOIL	1	A	A	A	A	A	A	A	A	A	1
K23LM015Bm5-23	13	2023/09/27	SOIL	1		A	A	A		A	A	A	A	2
K23LM015BC23-30	14	2023/09/27	SOIL	1			A	A		A	A	A		4
K23LM015C30-100	15	2023/09/27	SOIL	1	A		A	A		A	A	A		5
K23CB020Cg0-80	16	2023/09/27	SOIL	1		A	A	A	A	A	A	A	A	6
K23CB023Ae0-6	17	2023/09/28	SOIL	1	A	A	A	A	A	A	A	A	A	1
K23CB023Bf6-17	18	2023/09/28	SOIL	1		A	A	A		A	A	A	A	2
K23CB023BC17-30	19	2023/09/28	SOIL	1			A	A		A	A	A		4
K23CB023C30-70	20	2023/09/28	SOIL	1	A		A	A		A	A	A		5
K23CB017Ae0-9	21	2023/09/29	SOIL	1		A	A	A	A	A	A	A	A	6
K23CB017Bmgj9-33	22	2023/09/29	SOIL	1		A	A	A		A	A	A	A	2
K23CB017BCgj33-80	23	2023/09/29	SOIL	1			A	A		A	A	A		4
K23CB017Cg80-100	24	2023/09/29	SOIL	1			A	A		A	A	A		4
K23CB028C0-120	25	2023/09/29	SOIL	1	A		A	A		A	A	A		5
K23LM023Ae0-10	26	2023/09/29	SOIL	1	A	A	A	A	A	A	A	A	A	1
K23LM023Bm10-18	27	2023/09/29	SOIL	1		A	A	A		A	A	A		3
K23LM023Bh18-54	28	2023/09/29	SOIL	1		A	A	A		A	A	A		3
K23LM023C54-120	29	2023/09/29	SOIL	1	A		A	A		A	A	A		5
K23LM020Cg10-30	30	2023/09/29	SOIL	1		A	A	A	A	A	A	A	A	6
K23LM020Cg230-75	31	2023/09/29	SOIL	1			A	A		A	A	A		4
K23CB030C0-36	32	2023/09/29	SOIL	1		A	A	A	A	A	A	A	A	6
K23CB030IIC36-100	33	2023/09/29	SOIL	1			A	A		A	A	A		4

eCOC: W73809

Expected TAT:	Standard TAT
Expected Arrival:	2023/10/17 10:00
Submitted By:	
Submitted To:	Calgary ENV: 4000 19th St NE

A: Standard TAT

Client Sample ID	Clnt Ref	Sampling Date/Time	Matrix	#Cont	CCME Regulated Metals - Soils	NPKS (AVAILABLE)	SOIL SALINITY 4	Calcium Carbonate Equivalent	Cation Exchange Capacity	Moisture	Texture by Hydrometer	Texture Class	Total Organic Carbon LECO Method	Set Number
K23CB031Bm0-20	34	2023/09/29	SOIL	1		A	A	A			A	A	A	7
K23CB031BC20-35	35	2023/09/29	SOIL	1			A	A			A	A		8
K23CB031C35-120	36	2023/09/29	SOIL	1			A	A			A	A		8

Deadlines are estimates only and are subject to change. Please refer to your Job Confirmation report for final due dates.

Submission Information

# of Samples: 36

Sample Set Listing

Set 1 (4 samples)	Set 2 (4 samples)	Set 3 (3 samples)	Set 4 (12 samples)	Set 5 (5 samples)	Set 6 (5 samples)	Set 7 (1 sample)	Set 8 (2 samples)
K23CB001Ae0-8	K23CB001Bf8-19	K23CB001Bfj19-28	K23CB001C28-47	K23CB001Cgj47-120	K23LM013Cg10-33	K23CB031Bm0-20	K23CB031BC20-35
K23LM015Ae0-5	K23LM015Bm5-23	K23LM023Bm10-18	K23CB010Ae0-5	K23LM015C30-100	K23CB020Cg0-80		K23CB031C35-120
K23CB023Ae0-6	K23CB023Bf6-17	K23LM023Bh18-54	K23CB010Bm5-13	K23CB023C30-70	K23CB017Ae0-9		
K23LM023Ae0-10	K23CB017Bmgj9-33		K23CB010BC13-35	K23CB028C0-120	K23LM020Cg10-30		
			K23CB010C35-100	K23LM023C54-120	K23CB030C0-36		
			K23LM013Cg233-60				
			K23LM015BC23-30				
			K23CB023BC17-30				
			K23CB017BCgj33-80				
			K23CB017Cg80-100				
			K23LM020Cg230-75				
			K23CB030IIC36-100				

APPENDIX E

Soil Metal Concentrations

Analysis	Units	K23CB001AE0-8	K23CB001CGJ47-120	K23CB001CGJ47-120 Lab-Dup	K23LM015AE0-5	K23LM015C30-100	K23CB023AE0-6	K23CB023C30-70	K23CB028C0-120	K23LM023AE0-10	K23LM023C54-120	CCME Soil Quality Guidelines(a)
Soluble (Hot water) Boron (B)	mg/kg	<0.10	<0.10	N/A	<0.30	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2
Total Antimony (Sb)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	20
Total Arsenic (As)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	3.2	<1.0	<1.0	12
Total Barium (Ba)	mg/kg	140	45	47	11	33	5.6	30	110	5.2	19	500
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	0.44	<0.40	<0.40	4
Total Cadmium (Cd)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.10	<0.050	<0.050	10
Total Chromium (Cr)	mg/kg	96	37	40	8.8	24	4.3	25	77	2.1	10	64
Total Cobalt (Co)	mg/kg	8.6	5.7	5.8	0.91	4.4	<0.50	6.7	15	1.2	3.6	50
Total Copper (Cu)	mg/kg	1.5	10	10	<1.0	7.8	<1.0	10	18	1.4	4.2	63
Total Hex. Chromium (Cr 6+)	mg/kg	<0.080	<0.080	N/A	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080	0.4
Total Lead (Pb)	mg/kg	2.2	3.0	3.0	4.3	3.6	3.0	4.0	9.1	0.59	2.2	140
Total Mercury (Hg)	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	7
Total Molybdenum (Mo)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	1.8	0.45	0.61	10
Total Nickel (Ni)	mg/kg	36	15	15	1.7	10	<1.0	10	32	1.3	7.9	45
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1
Total Silver (Ag)	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	20
Total Thallium (Tl)	mg/kg	0.23	0.11	0.11	<0.10	<0.10	<0.10	<0.10	0.28	<0.10	<0.10	1
Total Tin (Sn)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	50
Total Uranium (U)	mg/kg	0.43	0.34	0.35	<0.20	0.25	<0.20	0.28	1.2	<0.20	0.27	23
Total Vanadium (V)	mg/kg	51	20	21	16	12	6.5	15	49	10	7.7	130
Total Zinc (Zn)	mg/kg	33	14	15	<10	12	<10	11	47	<10	14	250

a) All guidelines are set at agricultural levels.

Red cell = Exceeds CCME Soil Quality Guidelines.

APPENDIX F

Soil Suitability for Reclamation Calculations

Sample ID	Soil Map Unit	Horizon	Depth (cm)	pH	EC (dS/m)	SAR	Saturation (%)	Texture	CaCO3 Equivalent (%)	% Organic Carbon	Moist Consistency	Coarse Fragment Content (%)	Rating	Final Overall Rating	Limiting Factors
K23CB001AE0-8	JAV	Ae	0-8	3.36	0.06	0	55.0	LOAMY SAND	<0.60	0.64	Loose	10	Unsuitable	Unsuitable	Very low pH, coarse texture, low organic carbon, consistency
K23CB001BF8-19		Bf	8-19	4.13	0.039	0	32.0	SANDY LOAM	0.6	1.7	Loose	5	Poor		Low pH, low organic carbon, consistency
K23CB001BFJ19-28		Bfj	19-28	4.41	0.026	0	23.0	SANDY LOAM	0.6		Loose	15	Poor		Low pH, low saturation, consistency, coarse fragment content
K23CB001C28-47		C	28-47	4.59	0.028	0	22.0	LOAM	0.6		Very Friable	20	Fair		Low pH, Low saturation
K23CB001CGJ47-120		Cgj	47-120	4.86	0.043	1.5	19	SANDY LOAM	0.6		Very Friable	20	Poor		Low pH, Low saturation, high coarse fragment content
K23CB010AE0-5	LAB	Ae	0-5	3.2	0.082	2.8	41.0	LOAMY SAND	<0.60		Very Friable	5	Unsuitable	Unsuitable	Very low pH, coarse texture, low organic carbon, consistency
K23CB010BM5-13		Bm	5-13	4.25	0.045	0	33.0	SANDY LOAM	0.6		Friable	10	Poor		Low pH
K23CB010BC13-35		BC	13-35	4.42	0.032	0	27	SANDY LOAM	0.6		Friable	20	Poor		Low pH, Low saturation, high coarse fragment content
K23CB010C35-100		C	35-100	4.98	0.044	0	17.0	LOAM	0.6		Friable	15	Poor		Low pH, Low saturation
K23CB018AE0-9	WAB	Ae	0-9	3.57	0.069	0	30.0	LOAMY SAND	<0.60	0.61	Loose	30	Poor	Poor	Low pH, coarse texture, low organic carbon, consistency , high coarse fragment content
K23CB018BMGJ9-33		Bmgj	9-33	3.76	0.057	0	28.0	LOAMY SAND	0.6	0.7	Loose	30	Poor		Low pH, low saturation, coarse texture, low organic carbon, consistency , high coarse fragment content
K23CB018BCGJ33-80		BCgj	33-80	3.98	0.042	0	25.0	LOAMY SAND	0.6		Loose	30	Poor		Low pH, low saturation, coarse texture, consistency, high coarse fragment content
K23CB018CG80-100		Cg	80-100	4.59	0.029	0	20.0	SANDY LOAM	0.6		Loose	20	Fair		Low pH, low saturation, consistency, high coarse fragment content
K23CB020CG0-80	CAL	Cg	0-80	5.09	0.058	0	25.0	SANDY LOAM	<0.60	0.67	Very Friable	10	Fair	Fair	Low saturation, low organic carbon
K23CB023AE0-6	JAV	Ae	0-6	3.44	0.059	0	39	SANDY LOAM	<0.60	0.59	Loose	30	Unsuitable	Unsuitable	Very low pH, Low organic carbon, consistency, coarse fragment content
K23CB023BF6-17		Bfj	6-17	4.49	0.02	0	38	LOAMY SAND	0.6	1.3	Loose	45	Poor		Low pH, corase texture, low organic carbon, consistency, coarse fragment content
K23CB023BC17-30		BC	17-30	5.2	0.02	0	32	LOAMY SAND	0.6		Loose	30	Poor		Coarse texture, consistency, high coarse fragment content
K23CB023C30-70		C	30-100	5.03	0.022	0	21.0	LOAMY SAND	0.6		Loose	70	Unsuitable		Low saturation, coarse texture, consistency, high coarse fragment content
K23CB028C0-120	JAL	Cg	0-120	5.78	0.084	1.4	29.0	LOAM	<0.60		Loose	0	Fair	Fair	Low saturation, consistency
K23CB030C0-36	JAL	C	0-36	4.23	0.042	1.3	39.0	SILT LOAM	<0.60	0.37	Friable	1	Poor	Poor	Low pH, low organic carbon,
K23CB030IIC36-100		IIC	36-100	4.87	0.39	0	22.0	SANDY LOAM	0.6		Friable	15	Fair		Low pH, Low saturation, high coarse fragment content
K23CB031BM0-20	HUL	Bm	0-20	5.11	0.025	0	29	SAND	0.6	0.24	Loose	10	Poor	Poor	Low saturation, coarse texture, low organic carbon, consistency
K23CB031BC20-35		BC	20-35	5.97	0.22	0	31.0	SAND	0.6		Loose	15	Poor		Coarse texture, high coarse fragments, consistency

Sample ID	Soil Map Unit	Horizon	Depth (cm)	pH	EC (dS/m)	SAR	Saturation (%)	Texture	CaCO3 Equivalent (%)	% Organic Carbon	Moist Consistency	Coarse Fragment Content (%)	Rating	Final Overall Rating	Limiting Factors
K23CB031C35-120		C	35-120	6.11	0.031	0	27.0	SAND	0.6		Loose	15	Poor		low saturation, coarse texture, consistency, high coarse fragment content
K23LM013CG10-33	CAL	Cg1	0-33	5.4	0.110	1.1	48.0	SANDY LOAM	<0.60	2.4	Loose	15	Fair	Poor	Low organic carbon, consistency
K23LM013CG233-60		Cgj	33-60	5.43	0.06	0.47	27.0	LOAMY SAND	0.6		Loose	20	Poor		Low saturation, coarse texture, high coarse fragment content, consistency
K23LM015AE0-5	LAB	Ae	0-5	3.11	0.09	2.2	56.0	SANDY LOAM	<0.60	1.5	Loose	5	Unsuitable	Unsuitable	Very low pH, low organic carbon, consistency
K23LM015BM5-23		Bm	5-23	4.65	0.02	0	39.0	SANDY LOAM	0.6	0.64	Very Friable	25	Poor		Low pH, high coarse fragment content, low organic carbon
K23LM015BC23-30		BC	23-30	4.78	0.02	0	32.0	SANDY LOAM	0.6		Very Friable	30	Poor		Low pH, high coarse fragment content, low organic carbon
K23LM015C30-100		C	30-100	4.72	0.02	0	26.0	LOAMY SAND	0.6		Loose	10	Poor		Low pH, low saturation, coarse texture, consistency, high coarse fragment content
K23LM020CG10-30	CAL	Cg	10-30	6.53	0.430	1.7	62.0	SANDY LOAM	<0.8	3.3	Very Friable	0	Fair	Fair	High saturation, low organic carbon,
K23LM020CG230-75		Cg2	30-75	6.22	0.25	1.7	37.0	SANDY LOAM	0.6		Loose	15	Fair		Consistency, coarse fragment content
K23LM023AE0-10	HUL	Ae	0-10	3.25	0.048	0.95	38.0	SAND	<0.60	0.49	Loose	0	Unsuitable	Unsuitable	Very low pH, coarse texture, low organic carbon, consistency
K23LM023BM10-18		Bm	10-18	3.96	0.025	0	38	SAND	0.6		Loose	1	Poor		Low pH, coarse texture, consistency
K23LM023BH18-54		Bh	18-54	4.46	0.02	0	39.0	SAND	0.6		Loose	2	Poor		Low pH, coarse texture, consistency
K23LM023C54-120		C	54-120	4.76	0.024	0	31.0	SAND	0.6		Loose	2	Poor		Low pH, coarse texture, consistency

Colour Ratings Legend:

- Good
- Fair
- Poor
- Unsuitable

Note: Reclamation suitability ratings are only displayed for sites with sampled data for analysis

CHAMPION IRON

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REPORT

Fish and Fish Habitat Baseline Report

Kami Iron Ore Mine Project

Submitted to:

Champion Iron Mines Ltd.
1155 René-Lévesque Blvd. West
Suite 3300
Montréal, QC H3B 3X7

Submitted by:

WSP Canada Inc.
25 York St.
Suite 700
Toronto, ON M5J 2V5

1-416-487-5256

April 2024

Distribution List

Champion Iron Mines Ltd.

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EXECUTIVE SUMMARY

The Kamistiatusset (Kami) Iron Ore Mine Project (the Project) is a proposed iron ore mine in Newfoundland and Labrador. The Project site is located approximately seven kilometres southwest of the Town of Wabush, ten kilometres south of the Town of Labrador City, and five kilometres northeast of Ville de Fermont, Québec.

The Project was originally proposed by the Alderon Iron Ore Corporation (Alderon) and underwent a provincial and federal environmental impact assessment from 2011 to 2013, including a comprehensive baseline program that was completed in 2011 and 2012. The Project was released from the provincial and federal EA process in 2014. In 2021, Champion Iron Mines Ltd. (Champion) completed the acquisition of the Project from Alderon.

Building off the previously completed baseline field program, WSP Canada Inc. (WSP) was retained by Champion Iron Mines (Champion) to complete a fish and fish habitat baseline program to provide context from which Project environmental effects to fish and fish habitat could be evaluated.

Previous sampling programs took place in 2011 (Stantec) and 2012 (AMEC). The purpose of the 2023 sampling program was to characterize baseline conditions according to the new Project footprint prior to any future mine development on the property. Results of the 2011, 2012 and 2023 baseline studies will be used to support the environmental assessment of the Project and will assist in quantifying the potential harmful alteration, disruption or destruction (HADD) of fish habitat. As stated in the previous draft guidelines for Alderon, baseline surveys should be conducted in accordance with direction as provided by DFO and shall be designed to:

- contribute to the development of mitigation measures and fish habitat compensation plans for the Project;
- contribute to the development of a conceptual reclamation and closure plan;
- provide necessary baseline data into support of on-going monitoring programs that assess the effectiveness of mitigation measures and compensation plan; and
- provide necessary baseline data to support assessment of effects on the recreational, commercial and Aboriginal fisheries and their habitats.

The Fisheries Act provides protection to fish and fish habitat by protecting the fish community and the productivity of the habitat that supports them. The trigger for authorization is any undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat (HADD) as determined by DFO. The available results of these surveys (2011, 2012 and 2023) are provided within this baseline report.

Lacustrine/Pond Habitat

A total of 18 ponds and lakes within and near the proposed Project footprint were surveyed, characterized and/or quantified in terms of fish species presence and fish habitat using DFO guidelines. One pond (RP01) is located within the direct footprint of the Rose Pit and two ponds (RP04 and RP05) may be within the direct footprint of other proposed infrastructure. One other pond (SC11) may also be

affected by the rail route. The others are either in proximity to proposed Project features or are downstream of proposed Project features and/or activities.

Riverine/Stream Habitat

A total of five general areas were surveyed, characterized and quantified in terms of stream habitat and fish species presence using DFO guidelines; the Rose Pit, the Pike Lake outflows, the Tailings Management Facility (TMF), the Mine Rock Stockpile and proposed crossing (rail, road, conveyor) locations. The Rose Pit has a total of seven streams, of which two would be within the direct footprint of the proposed pit area. The TMF has a total of three streams which would all have at least a portion within the footprint. The Mine Rock Stockpile has a total of four streams that would be within the footprint and there are a total of 11 proposed stream crossings associated with rail, road and/or conveyors.

Fish Species Presence and Abundance

Numerous waterbodies and streams have been surveyed for fish species presence and abundance since 2011, with effort focused on the Rose Pit, TMF, and large receiving waterbodies located downstream of the project. A total of 14 species have been confirmed, or are thought to be found, within the study area (Table ES-1).

Table ES-1: Species Present Within the Kami Project

Common Name	Scientific Name	Present in Riverine Habitats	Present in Lacustrine Habitats
Brook Trout	*Salvelinus fontinalis*	•	•
Burbot	*Lota lota*	•	•
Lake Chub	*Couesius plumbeus*	•	•
Lake Trout[1,2]	*Salvelinus namaycush*		•
Lake Whitefish	*Coregonus clupeaformis*		•
Longnose Dace	*Rhinichthys cataractae*	•	•
Longnose Sucker	*Catostomus catostomus*	•	•
Ouananiche[1]	*Salmo salar*		
Northern Pike	*Esox lucius*	•	•
Pearl Dace	*Margariscus nachtriebi*	•	•
Round Whitefish	*Prosopium cylindraceum*		•
Sculpin[3]	*Cottis bairdii/C.ognatus*	•	•
White Sucker	*Catostomus commersonii*	•	•

1 Species not observed throughout field surveys, but were indicated as present in area by local anglers and are likely present based on literature review.

2 Species not observed throughout field surveys, however, remains from angling were observed

3 Two species of Sculpin likely present. Field identification is difficult, therefore Mottled and Slimy Sculpin are recorded as Sculpin (*Cottis sp.*)

Throughout the lacustrine habitat surveys, relative abundance has generally been relatively low, with catch-per-unit-efforts typically being less than 10 fish/net-night, with overall CPUEs ranging from 1.0 to 326.0 fish/net-night. Overall, Lake Chub have been the most abundant species captured throughout the study area, primarily due to high catch rates in Rose Pond during 2011.

Brook Trout were the most abundant species captured in riverine sampling locations, and they were found in all stations since 2011, with the exceptions of; Stream RP01-PLS in 2011, and Streams RP02, WR02 and WR04 in 2012. There were no fish captured in WR02 and WR04 at this time. The highest abundance estimates obtained in 2012 were Brook Trout in Streams TI01 and TI02, located within the TMF.

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APPENDICES

1.0 INTRODUCTION

The Kamistiatusset (Kami) Iron Ore Mine Project (the Project) is a proposed iron ore mine in Newfoundland and Labrador. The Project site is located approximately seven kilometres southwest of the Town of Wabush, ten kilometres south of the Town of Labrador City, and five kilometres northeast of Ville de Fermont, Québec (Figure 1-1).

The Project was originally proposed by the Alderon Iron Ore Corporation (Alderon) and underwent a provincial and federal environmental impact assessment from 2011 to 2013, including a comprehensive baseline program that was completed in 2011 and 2012. The Project was released from the provincial and federal EA process in 2014. In 2021, Champion Iron Mines Ltd. (Champion) completed the acquisition of the Project from Alderon.

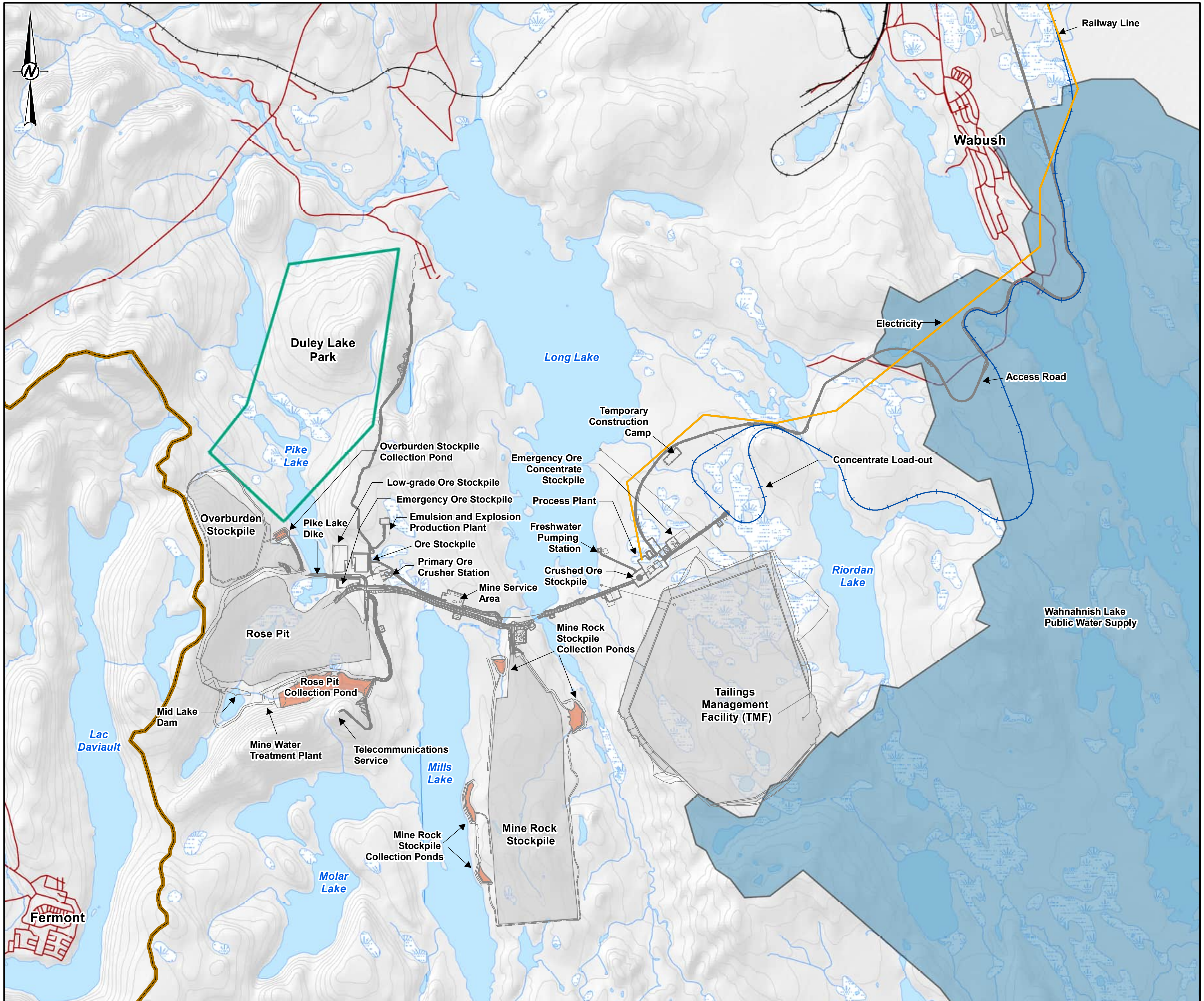
Champion is proposing several optimizations to the Project design proposed by Alderon through the previous EIS. These proposed optimizations include updates to the Project's water management strategy and modernization of the proposed ore handling, conveyance, and processing. Champion's objective for the Kami Project is to produce high purity (>67.5%) iron ore concentrate, which can be used as direct reduction pellet feed for electric arc furnaces in the green steel supply chain. Champion is planning to submit a Project Registration to the Newfoundland and Labrador Environmental Assessment Division of the Department of Environment and Climate Change in 2024.

To support the Project Registration and assessment of effects from the revised Project design optimizations, Champion has commissioned the services of WSP Canada Inc. (WSP) to complete a comprehensive baseline field program that documents the existing natural and socio-economic environments in the anticipated area of the Project. The fish and fish habitat baseline report represents a component of the comprehensive baseline program and was undertaken to provide context from which effects to fish and fish habitat could be evaluated.

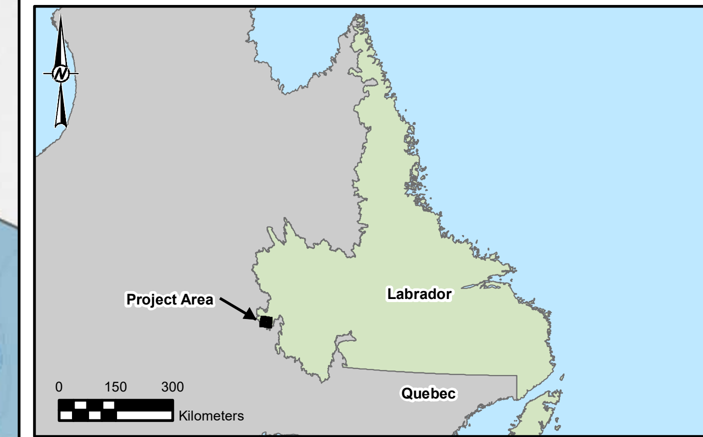
1.1 Overview of the Kami Iron Ore Mine

Figure 1-1 outlines some of the main components of the Project site including:

- Open Pit (Rose Pit);
- Mine rock stockpile;
- Ore stockpiles (operational, low-grade and emergency);
- Tailings management facility (TMF);
- Overburden stockpile;
- Processing infrastructure including crushing and concentrating;
- Ancillary infrastructure to support the mine and process plant.



KEY MAP



SCALE 1:20,000,000

LEGEND

PROJECT DATA	BASEMAP INFORMATION
Proposed Infrastructure	Duley Lake Park
Proposed Infrastructure	Existing Railway
Electricity	Existing Road
Proposed Railway	River/Stream
Proposed Sedimentation Pond	Contour
	Bog/Wetland
	Waterbody
	Labrador/Quebec Boundary
	Public Water Supply

0 625 1,250 2,500

1:60,000 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT
CHAMPION IRON MINES LTD.

PROJECT
KAMI IRON ORE MINE PROJECT (KAMI PROJECT)
WABUSH, NL

TITLE
PROJECT LOCATION AND SITE LAYOUT

CONSULTANT

YYYY-MM-DD	2024-04-23
DESIGNED	----
PREPARED	####
REVIEWED	SPC
APPROVED	HJ

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 1-1

2.0 STUDY AREA

Baseline fish and fish habitat surveys have been completed for the Project since 2011, with sampling programs being completed by Stantec (Stantec 2012), AMEC (AMEC 2012) and WSP in 2023. Field surveys in 2023 were focused on locations identified as data gaps from previous baseline programs (Stantec 2012, AMEC 2012), which primarily include downstream receiving environments. In 2023, the field sampling program took place between July 26 and August 5 by two field staff. There have been numerous areas sampled throughout this time. Between 2011 and 2023, site layouts have been adjusted, and sampling areas have been identified to gain suitable coverage of aquatic habitats and target all potentially impacted fish habitat. Table 2-1 presents a list of coordinates for areas where fish and fish habitat surveys have been undertaken. These locations are also presented on **Figure 2-1**, in relation to proposed Project infrastructure.

Table 2-1: Coordinates for Various Locations Sampled Between 2011 and 2023

Habitat Type and Sampling Completed	Year Sampled	Waterbody/ Watercourse Name	Coordinate (19 U)	
			Northing	Easting
Lacustrine ▪ Fish community and abundance surveys ▪ Habitat Surveys ▪ Bathymetric Surveys	2011	D01	5853236	633085
		D02	5849437	633755
		M01	5850222	634761
		M02	5849785	634651
		Pike Lake South	5857869	632888
		Rose Pond (RP01)	5855668	632273
		RP02[1]	5854767	632040
		RP03[1]	5854070	631464
		RP04[1]	5854967	633873
		RP05[1]	5854983	633635
	2012	Pike Lake South	5857869	632888
		Pike Gully	5859195	632693
		Rose Pond[1]	5855668	632273
		Tailings Pond[1]	5853410	639846
	2023	Long Lake	5860305	636605
		Mills Lake	5853747	635116
		Pike Lake North	5860355	632126
		Riordan Lake	5865554	641410
Riverine[2] ▪ Habitat surveys ▪ Electrofishing for species presence, relative abundance	2011[3]	M01-M02	-	-
		M02-ML	-	-
		PLN S1	5861786	631872
		PLN S2	5862884	631914
		PLN S3	5863181	632369
		PLS S1	5858891	632918
		PLS S2	5859688	632271
		RP1-PLS	5856076	632671

Habitat Type and Sampling Completed	Year Sampled	Waterbody/ Watercourse Name	Coordinate (19 U)	
			Northing	Easting
		RP2-RP1	5855226	632070
		RP3-RP2	5854253	631572
		RP4-RP2	5854800	632348
		RP5-RP4	5854951	633332
		RSD	5851559	631972
		TDA01	5855225	638217
		TDA02	5856735	639861
	2012	RP01	5855222	632078
		RP02	5855296	631582
		TDA01[4]	5853974	638905
		TDA02[4]	5856339	639760
		TDA03	5855365	639156
		TDA04[4]	5855897	640241
		WR01	5855862	636018
		WR02	5854129	637038
		WR03	5853001	636344
		WR04	5853236	637229
		Pike Lake South Outflow	5861799	631910
	2023	Long Lake Inflow	5856139	636355

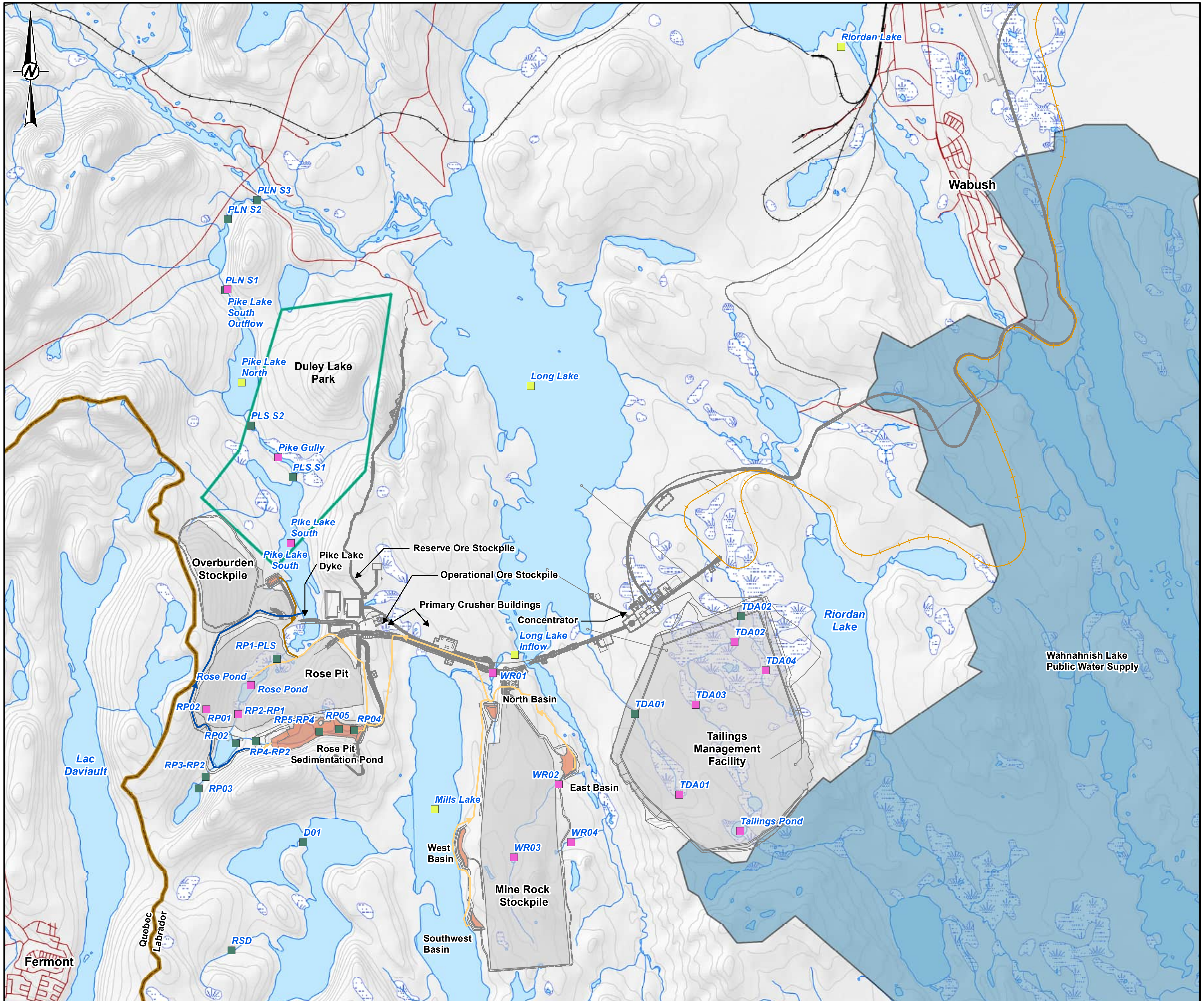
Note Coordinates indicate a general area where surveys have been completed (i.e. a single point within a waterbody, not specific net locations).
All coordinates are presented in UTM NAD83, Zone 19U
2011 Sampling completed by Stantec (2012).
2012 Sampling completed by Amec Foster Wheeler (2012).

1 Habitat Surveys and bathymetry not completed.

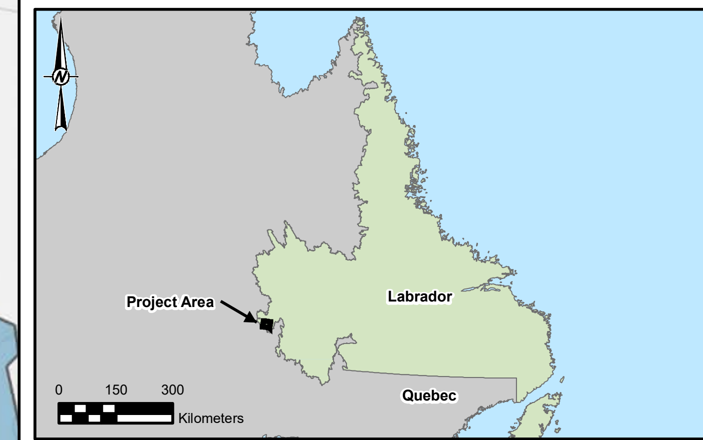
2 Coordinates indicate electrofishing stations.

3 Several electrofishing stations were completed in each stream. Coordinate is an approximate near the middle of the surveyed area.

4 Approximate location



KEY MAP



SCALE 1:20,000,000

PROJECT DATA

Sample Location (by year)

- 2011
- 2012
- 2023
- Proposed Infrastructure
- Proposed Railway
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Sedimentation Pond

OTHER MAP DATA

- Public Water Supply

BASEMAP INFORMATION

- Duley Lake Park
- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE PROJECT
WABUSH, NL

TITLE
SAMPLE LOCATIONS FROM 2011, 2012 AND 2023

CONSULTANT

YYYY-MM-DD	2024-03-25
DESIGNED	----
PREPARED	JMA
REVIEWED	MG
APPROVED	MC

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	2-1

3.0 RATIONALE AND OBJECTIVES

The purpose of the sampling program is to characterize baseline conditions of the site prior to any future mine development on the property. Results of the baseline study will be used to support the assessment of potential effects from the proposed Kami Project and will provide the necessary data to quantify the potential harmful alteration, disruption, or destruction of fish habitat. Baseline surveys were conducted in accordance with direction as provided by DFO and are designed to:

- Contribute to the development of mitigation measures and fish habitat compensation plans for the Project;
- Contribute to the development of a conceptual reclamation and closure plan;
- Provide necessary baseline data into support of on-going monitoring programs that assess the effectiveness of mitigation measures and compensation plan; and
- Provide necessary baseline data to support assessment of effects on the recreational, commercial, and Aboriginal fisheries and their habitats.

In general, baseline studies are conducted to obtain additional data for use in determining the potential for significant effects on a valued ecosystem component due to the proposed undertaking, and to provide the necessary baseline information for monitoring programs. The objectives of the 2023 Fish and Fish Habitat Baseline Study were to:

- Identify the gaps in the 2011/2012 baseline surveys in accordance with the actual Project components.
- Determine fish presence, population estimates, and fish species composition in watercourse waterbodies likely to be affected by the Project. Fishing methods include fyke net trapping and gillnetting of lacustrine (lake or pond) habitat and index (qualitative) electrofishing of stream habitat.
- Conduct bathymetric surveys of lacustrine habitat likely to be affected by the Project. Classify lacustrine habitat and generate habitat maps depicting depth, substrate, presence of aquatic vegetation, and extent of the littoral zone.
- Collect baseline data regarding fisheries (recreational, commercial, and Aboriginal) within the study area.

4.0 METHODS

Provided below is a summary of the methodologies that were employed during 2023 field surveys. Methodologies used in the previous baseline surveys are still valid to characterize the aquatic habitat and the fish species/abundances present. Therefore, the same methods were used throughout this program to provide consistent data and characterization.

4.1 Fisheries Literature Review and Interviews

Literature reviews of available, published information on regional limnology, regional hydrology, fish and fisheries have been completed and relevant data consolidated. In addition, interviews were carried out in 2012 with residents of the Labrador City/Wabush and Fermont areas to determine target sport fish species and the areas in which locals fished.

4.2 Riverine Habitat Surveys

Stream surveys were conducted throughout several watercourses within the project area by AMEC (2012). The methods used to classify and quantify the aquatic habitat were based on standardized DFO methodologies such as DFO (2012), Scruton & Gibson, (1995) and Sooley et al. (1998). Survey data collection consisted of a series of measurements for each habitat reach including:

- Channel dimensions (channel width, wetted width, ice scour height);
- Substrate composition (percentage of each class of substrate found within the stream bed, e.g., cobble, gravel, aquatic vegetation);
- Instream features (discharge, water depths and velocity);
- Riparian vegetation (dominant species, percent cover, instream woody debris); and
- Upstream and downstream photos at each transect.

A general habitat description was also used to classify each section of stream with similar habitat features (e.g., pool, riffle, run) and the quantity of each in the surveyed section of the stream.

4.3 Riverine Fish Population Surveys

Riverine fish populations were assessed with electrofishing, through a combination of quantitative and index (qualitative) stations. Numerous quantitative electrofishing stations were completed in 2012 (Section 4.3.1), while index was completed in 2011 and 2023 (Section 4.3.2). Each method collects information on species presence and biometrics (i.e., lengths and weights).

4.3.1 Quantitative Electrofishing surveys

Fish populations in selected watercourse were assessed with quantitative electrofishing by AMEC (2012). Each electrofishing station was blocked off using barrier nets at the upstream and downstream boundaries. The isolated area was then electrofished with a minimum of four sweeps, or until the last sweep had a total catch of less than half of the previous sweep.

Abundance and biomass estimates were calculated using the Zippen removal method using the Fisheries Stock Assessment (FSA) package (Ogle 2016) for R (R Core Team 2020). This approach was applied to abundance and biomass of all species combined, and then estimates were calculated based on the proportion of the total catch for each species. This approach helps to overcome any issues associated with low catch rates of some species.

4.3.2 Index Electrofishing Surveys

Index electrofishing stations were completed in 2012 and 2023 at selected sites. Electrofishing in 2023 was completed using a Smith-Root LR24 backpack electrofisher. A single electrofishing site was completed in Long Lake inflow on August 5, 2023. Rather than blocking an area of habitat with barrier nets and completing multiple passes, a single pass of at least 400 seconds was completed. All fish collected were identified to species, numerated, measured, weighed, and live release downstream of further electrofishing. Abundance and biomass catch-per-unit-effort (CPUE) was then calculated and standardized to 300 seconds of electrofishing effort. This allows for comparison across years and locations, where applicable.

4.3.3 Fish Biometrics

Each fish captured during electrofishing was processed following the completion of each sweep. Processing included:

- Identification to species;
- Measuring to nearest millimeter (fork length or total length for Burbot and Sculpin); and,
- Weighing to nearest 0.1 gram.

Length (L) and weight (W) data was then used to calculated Fulton's Condition Factor (K; Peterson & Harmon, 2005), which is length-weight relationship:

$$K = \frac{(W \times 10^5)}{L^3}$$

Smaller fish often have errors associated with the calculation of condition factors. Likewise, instrument error can also affect the data. In order to account for this, two conditions were considered:

- Fish smaller than 80mm in length were removed from estimates of fish condition as slight errors in the weights of these individuals could skew the estimates.
- Ranges were calculated using three standard deviations of the mean for each species and values outside of the calculated range were removed from further analysis as they most likely included errors in length and/or weight measures. This was completed separately for each species in order to account for varying body types.

4.4 Lacustrine Habitat Surveys

Bathymetric surveys were completed in numerous waterbodies by Stantec in 2011, AMEC in 2012 and WSP in 2023. All surveys were completed in 2012 (AMEC 2012) and 2023 utilized a differential GPS sonar unit attached to a Zodiac style inflatable boat. The unit links GPS and sonar technology in a digital environment so that depths and location are digitally mapped. The Lowrance sonar/GPS unit was set up in the field to collect combined positional and depth data once every second. The boat was generally moving at a rate of less than 2 metres per second (m/s) for optimal coverage. The unit has been tested using known survey pin locations for positional accuracy and has been recorded at being less than one metre. The error associated with sonar depth detection has been given as 1 centimetre (cm); however, weather conditions such as wave height and variable water temperatures can also affect this slightly.

Shoreline surveys were also completed in select waterbodies in order to quantify substrate coverage within the littoral zone. This information, while summarized to present a classification of habitat, will be utilized for habitat quantifications, as part of the offsetting process.

4.5 Lacustrine Fish Community Surveys

Lacustrine fish populations were assessed in several waterbodies between 2011 and 2023, using a combination of fyke nets and gillnets (Table 4-1). For both surveys, fyke nets were installed for a minimum of 16 hours, to cover the dawn and dusk periods when fish are most active. Gillnets were primarily utilized to determine deep water species presence (i.e. Lake Trout or Lake Whitefish), with live release being desired. Therefore, gillnets were checked at regular intervals to avoid mortalities as much as possible. Regardless of capture technique, all fish were identified to species, weighed and measured, as discussed in Section 4.3.3.

Additionally, during 2012, population estimates were calculated using a mark-recapture study in Pike Lake South and Pike Gully. In each of these waterbodies, all Brook Trout and Northern Pike captured were marked with a small clip at the top of the caudal fin to identify recaptures. All fish, regardless of being marked, were then live released near the capture area, and during subsequent net checks, any recaptures were weighed, measured and noted as a recapture (Section 4.3.3). Population estimates and confidence intervals were calculated using the Schnabel multiple mark-recapture method (Ricker 1977, Ogle 2016).

Table 4-1: Netting Effort for all Lakes Sampled Between 2011 and 2023

Year	Waterbody	Fyke Net Effort (net-nights)	Gillnet Effort (hours tended sets)[1]
2011[1]	RP01	2	4.0
	RP02	2	4.0
	RP03	2	4.0
	RP04	2	4.0
	RP05	2	4.0
	D01	2	4.0
	D02	2	4.0
	M01	2	4.0
	M02	2	4.0
	Pike Lake South	5	4.0
2012[2]	Pike Lake South	24	0.0

Year	Waterbody	Fyke Net Effort (net-nights)	Gillnet Effort (hours tended sets)[1]
	Pike Gully	6	0.0
	Rose Pond	25	0.0
	Tailings Pond	10	0.0
2023[3]	Long Lake	10	0.5
	Riordan Lake	5	0.3
	Mills Lake	10	0.3
	Pike Lake North	10	0.5

1 Gillnets were deployed for short durations, approximately 2 hours sets in 2011, and 15-20-minute sets in 2023.

2 Source: Stantec (2012)

3 Source: AMEC (2012)

4 Sampling completed by WSP

5.0 STUDY RESULTS

5.1 Regional Fisheries

There are no commercial fisheries within the Project area, therefore, fisheries are focused on recreational fishing within the area. Based on interviews conducted in 2012 with residents of Labrador City, Wabush and Fermont the target fish species include Lake Trout, Brook Trout, Lake Whitefish, Burbut, Northern Pike and Ouananiche (AMEC 2012). Fisheries are pursued throughout the region with activity tending to be centered in accessible streams, ponds and lakes near the towns of Labrador City and Wabush, cabins in the area, and along the highway and rail lines. Specifically, the main areas that are fished include Long Lake, Shabogamo Lake, Waldorf River, Mills Lake, Ossokmanuan Reservoir, Panchia Lake, Lobstick Lake, Ashuanipi Lake, unnamed lakes, ponds and rivers south of Wabush. Fermont fishers reported use of Lac Daviault and Lac Carheil.

5.2 Fish Species Present

Various waterbodies and watercourses have been sampled throughout the study area since 2011, with several differing gear types. Table 5-1 presents a summary of the species which have been confirmed as present within Project area, as well as those anecdotally observed, and likely present based on literature review.

Table 5-1: Summary of Species Present Throughout the 2011 to 2023 Studies

Common Name	Scientific Name	Present in Riverine Habitats	Present in Lacustrine Habitats
Brook Trout	*Salvelinus fontinalis*	•	•
Burbot	*Lota lota*	•	•
Lake Chub	*Couesius plumbeus*	•	•
Lake Trout[1,2]	*Salvelinus namaycush*		•
Lake Whitefish	*Coregonus clupeaformis*		•
Longnose Dace	*Rhinichthys cataractae*	•	•
Longnose Sucker	*Catostomus catostomus*	•	•
Ouananiche[1]	*Salmo salar*		
Northern Pike	*Esox lucius*	•	•
Pearl Dace	*Margariscus nachtriebi*	•	•
Round Whitefish	*Prosopium cylindraceum*		•
Sculpin[3]	*Cottis bairdii/C.ognatus*	•	•
White Sucker	*Catostomus commersonii*	•	•

1 Species not observed throughout field surveys,but were indicated as present in area by local anglers and are likely present based on literature review.

2 Species not observed throughout field surveys, however, remains from angling were observed

3 Two species of Sculpin likely present. Field identification is difficult, therefore Mottled and Slimy Sculpin are recorded as Sculpin (*Cottis sp.*)

5.3 Riverine Fish Surveys

Electrofishing surveys were completed in several watercourses throughout the Project Area during 2011, 2012 and 2023. Throughout the course of the baseline studies, the intended outcomes of electrofishing surveys varied, based on requirements of the *Fisheries Act*. Species presence was the main focus of surveys in 2011 and 2023, with population estimates being the main focus of the 2012 surveys for select areas. As a result, the electrofishing method, and data collection has varied between sampling years. Riverine fish capture data is presented in Appendix B.

5.3.1 2011 Riverine Fish Surveys

Several electrofishing stations were completed in 2011 (Stantec 2012). Brook Trout were the most abundant species observed and were caught at every sampling location, with the exception of RP1-PLS. Longnose and White Suckers were much less abundant in the tributaries (Table 5-2).

The information on effort (time) or sweep-catch patterns were not made available to WSP, therefore standardization for comparison across years, or calculations of population estimates are not possible. However, these surveys still offer information on species presence in the study area.

Table 5-2: Summary of Total Catches for Each Species in 2011 Electrofishing Stations.

Sample Location	Brook Trout	Burbot	Lake Chub	Longnose Dace	Longnose Sucker	Pearl Dace	Sculpin	White Sucker
M01-M02	2	-	-	-	-	-	-	-
M02-ML	22	-	-	4	-	-	-	-
PLN S1	1	4	36	4	-	-	3	4
PLN S2	3	1	1	3	-	-	-	-
PLN S3	13	-	-	22	-	-	3	-
PLS S1	5	6	7	7	-	1	-	1
PLS S2	9	2	1	18	-	26	14	5
RP1-PLS	-	1	12	-	-	-	1	2
RP2-RP1	3	-	7	-	-	-	4	-
RP3-RP2	7	2	5	-	-	1	1	-
RP4-RP2	10	-	-	-	-	-	-	1
RP5-RP4	2		1		-	1	-	-
RSD	16	-	-	-	-	-	-	-
SC01	2		1	2	-	-	1	-
SC03	23	1	-	-	-	-	-	-
SC04	7	-	-	-	-	-	1	-
SC05	24	-	-	-	-	-	2	-
SC06	9		1	4	-	4	1	-
SC07	36	-	-	-	-	-	-	-
SC09	3	7	25	4	2	1	5	1

Sample Location	Brook Trout	Burbot	Lake Chub	Longnose Dace	Longnose Sucker	Pearl Dace	Sculpin	White Sucker
SC10	1	-	-	-	-	1	-	-
TDA01	23	-	-	-	-	-	-	-
TDA02	127	-	-	-	-	2	12	-
Total	348	24	97	68	2	37	48	14

Source Stantec 2012

5.3.2 2012 Riverine Fish Surveys

Several quantitative electrofishing stations were completed throughout the study area in 2012, which included smaller streams in the Rose Pit, the TMF and the Mine Rock Stockpile. Throughout all the stations, Brook Trout were the most abundant species, and were found in all areas with the exception of RP02, WR02 and WR04 (Table 5-3). There were no fish observed in WR02 and WR04

Table 5-3: Population and biomass estimates for quantitative electrofishing stations completed in 2012.

Site	Species	Abundance			Biomass (g)		
		Total Catch	Estimate[1]	Confidence Interval [2]	Total Biomass	Estimate[3]	Confidence Interval [2]
RP01	Brook Trout	3	2.5	0.8-4.2	126.2	126.2	84.3-105.2
	Lake Chub	7	5.8	1.9-9.7	15.2	15.2	10.1-12.7
	Northern Pike	2	0.8	0.3-1.4	169.1	169.1	112.9-140.9
RP02	Lake Chub	1	1.3	0.7-1.9	9.4	12.1	12.0-12.1
	White Sucker	2	2.6	1.4-3.7	65.7	84.2	83.8-84.7
TI01	Brook Trout	17	9.4	8.9-10.0	371	206.6	205.7-207.5
	Sculpin	7	3.9	3.7-4.1	19	10.6	10.5-10.6
TI02	Brook Trout	14	10.0	9.6-10.4	300.8	214.9	214.2-215.6
TI03	Brook Trout	10	7.3	4.6-9.9	370.6	279.1	261.3-296.9
TI04	Brook Trout	7	4.7	3.9-5.5	45.6	30.8	30.7-30.9
WR01	Brook Trout	4	3.2	1.7-4.7	13.9	11.1	11.0-11.3
WR02	No fish were captured.						
WR03	Brook Trout	35	23.6	19.7-27.5	195.3	125.0	121.0-129.0
WR04	No fish were captured.						

Source AMEC 2012

[1] Fish/habitat unit (100m2)

[2] 95% Confidence Interval

[3] Grams/habitat unit ($100m^2$)

5.3.3 2023 Riverine Fish Surveys

Two index electrofishing stations were completed in Long Lake Outflow on August 4, 2023. White Sucker and Sculpin were the most abundant species observed within Long Lake Inflow, while Brook Trout and White Sucker yielded the most biomass (Table 5-4).

Table 5-4: 2023 Electrofishing Catch-Per-Unit-Effort In Long Lake Inflow (Mills Lake Outflow)

Station Number	Species	Abundance		Biomass (g)	
		Total Catch	CPUE (fish/300 seconds)	Total Catch	CPUE (grams/300 seconds)
LL-01	Brook Trout	3	2.24	136.1	101.57
	Lake Chub	4	2.99	30.5	22.76
	Longnose Dace	2	1.49	8.7	6.49
	Sculpin	10	7.46	25.6	19.10
	White Sucker	4	2.99	80.9	60.37
LL-02	Brook Trout	3	2.12	111.1	78.61
	Burbot	3	2.12	70.8	50.09
	Lake Chub	6	4.25	32.5	23.00
	Longnose Dace	10	7.08	36	25.47
	Longnose Sucker	7	4.95	40.4	28.58
	Sculpin	10	7.08	26.3	18.61
	White Sucker	19	13.44	89.4	63.25

CPUE = catch per unit effort

5.4 Lacustrine Habitat Surveys

Lacustrine habitat surveys were conducted in numerous waterbodies throughout the study area since 2011, including several small ponds in the Rose Pit, the TMF and numerous larger lakes located downstream of the proposed Kami Project. Below is a summary of the lake habitat surveys completed to date.

5.4.1 2011 Lacustrine Habitat Surveys

Five small waterbodies (<12ha in total surface area per waterbody) within the Rose Pit were surveyed for fish habitat in 2011 (Stantec 2012). Muck made up the majority of the substrate coverage in all of the waterbodies, with the expectation of RP04, where sand was the most dominant (Table 5-5). Mean depths within the ponds ranged from 0.7 m in Rose Pond to 9.0 m in RP04. Figure 5-1 through Figure 5-5 presents the bathymetric survey data for each waterbody surveyed in 2011.

Table 5-5: 2011 Habitat Survey Data From Various Waterbodies in the Proposed Rose Pit

Waterbody	Surficial Area ,(m^2)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Rose Pond (RP01)	87,387	1.4	-	0.7	0	1	1	0	0	0	98
RP02	106,825	2.5	-	4.3	0	9	5	4	0	14	68
RP03	117,145	2.1	-	2.2	0	10	1	0	0	1	89
RP04	92,221	4.8	-	9.0	0	13	9	0	0	56	23
RP05	25,296	2.6	-	2.4	0	3	5	6	3	34	50

Source Stantec 2012

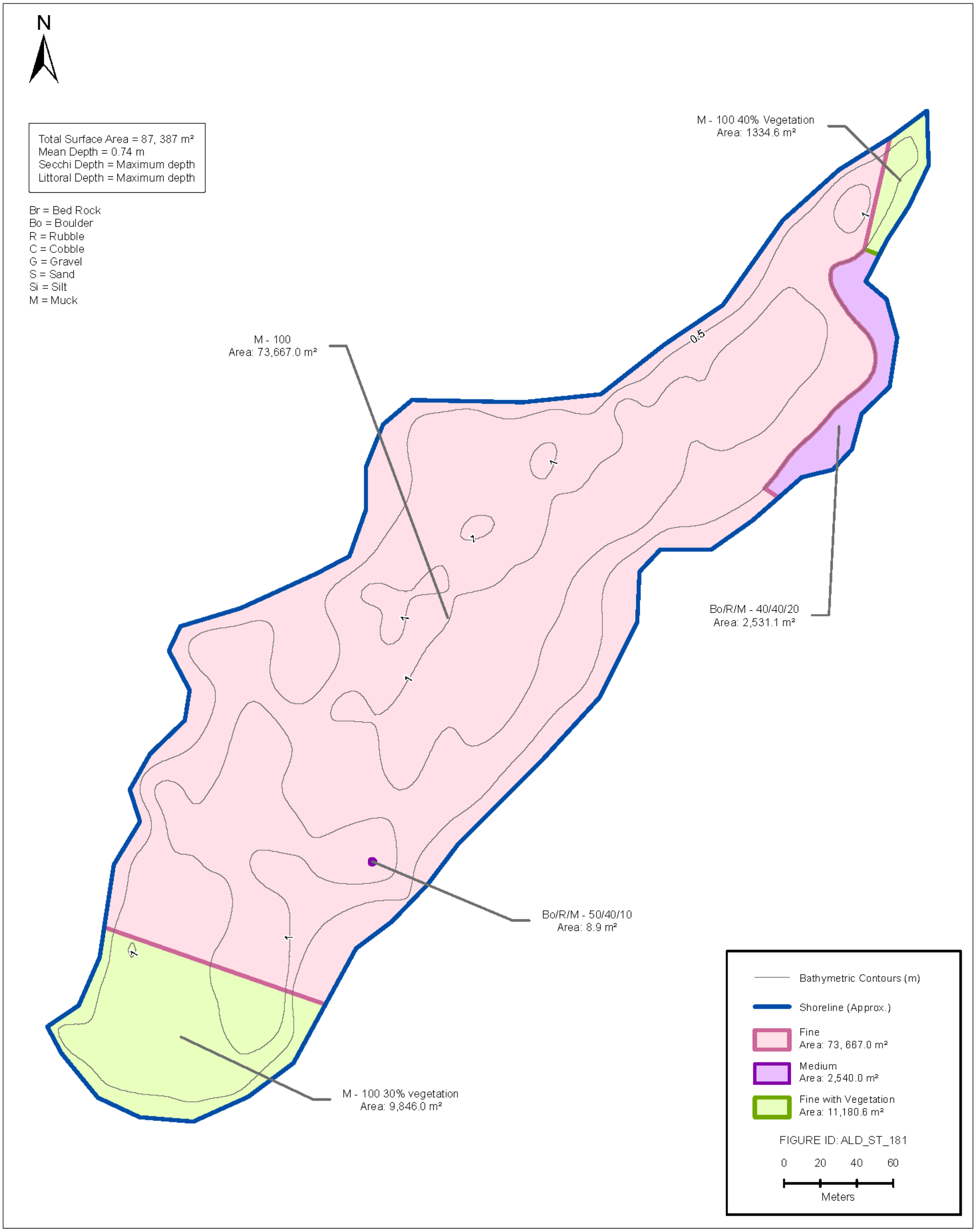


Figure 5-1: Bathymetric Map of Rose Pond (RP01)

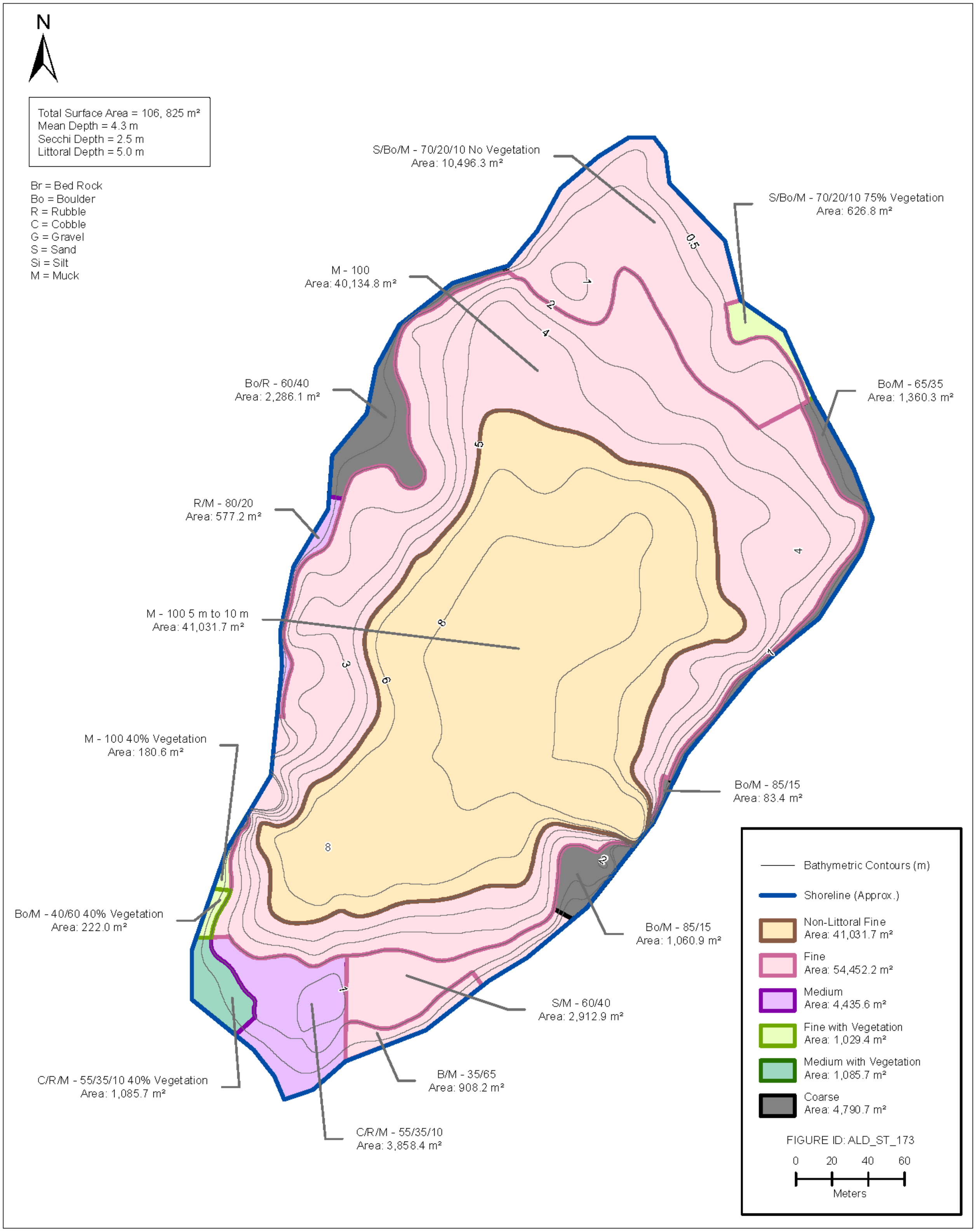


Figure 5-2: Bathymetric Map of RP02

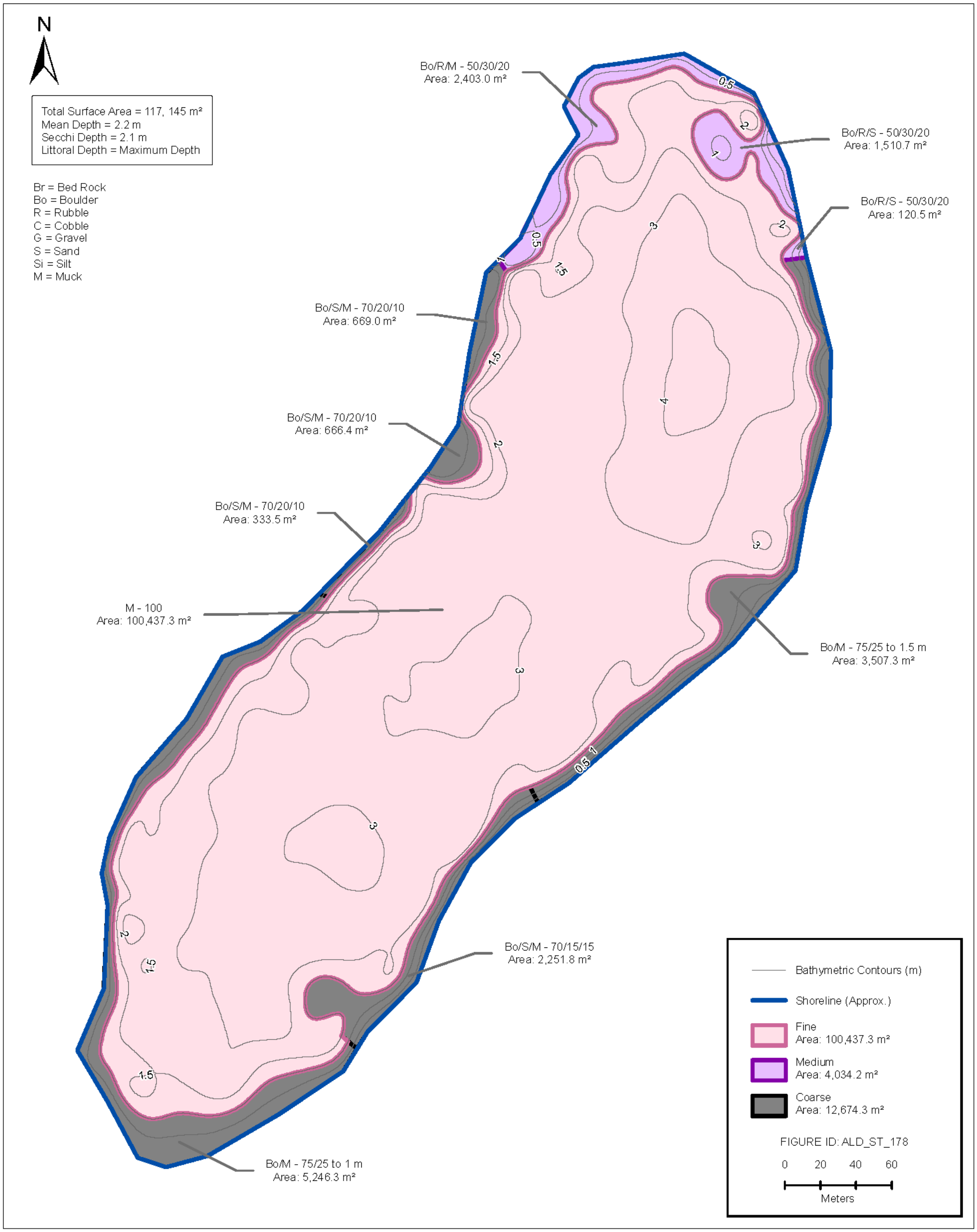


Figure 5-3: Bathymetric Map of RP03

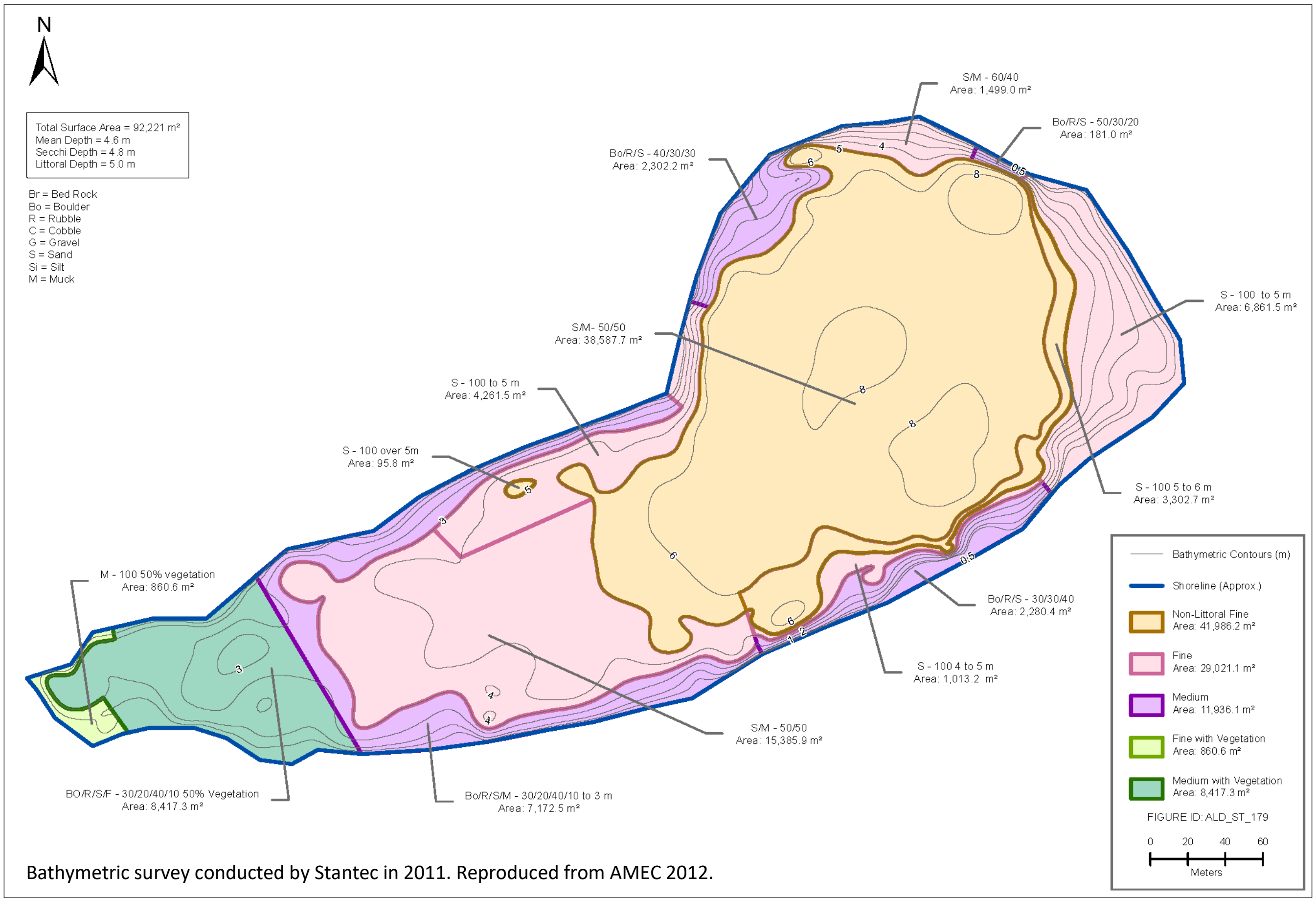


Figure 5-4: Bathymetric Map for RP04

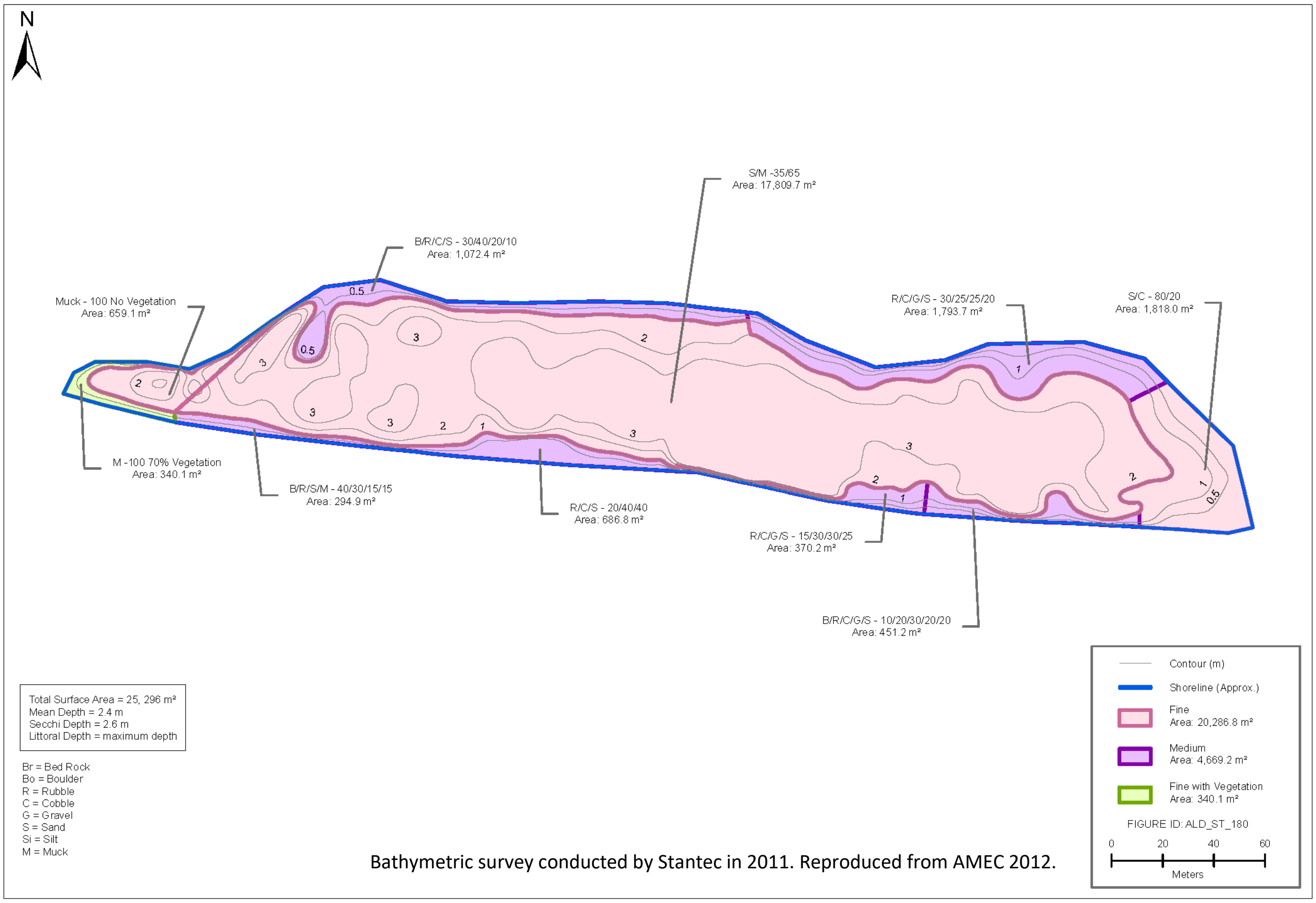


Figure 5-5: Bathymetric Map for RP05

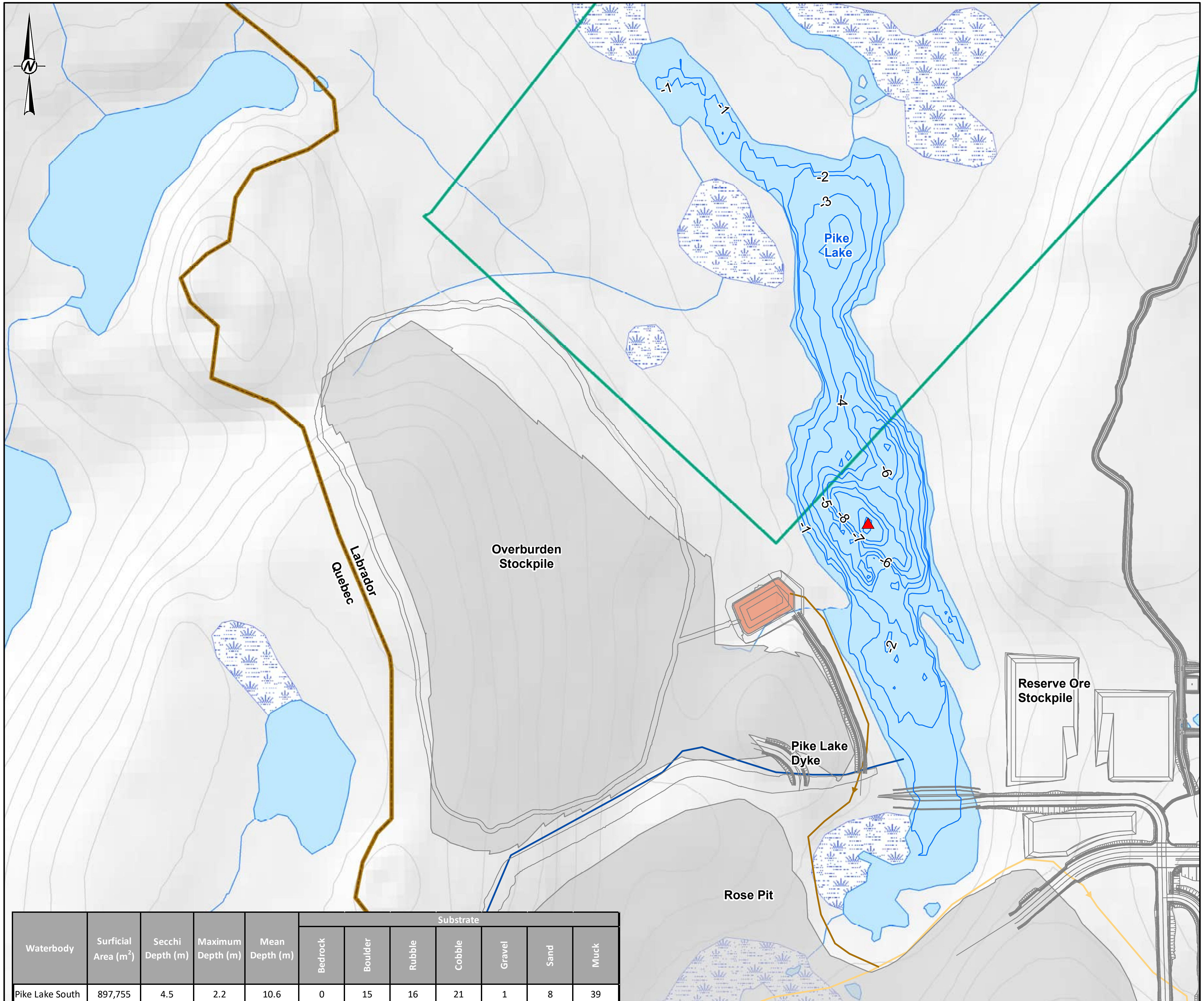
5.4.2 2012 Lacustrine Habitat Surveys

Field surveys were completed in 2012 to quantify the lacustrine habitat present in Pike Lake South and Pike Gully (Table 5-6). Muck was the most abundant substrate present in each waterbody. Bathymetric surveys were completed in Pike Lake South in 2023 (Figure 5-6), which showed a maximum depth of 10.6m with a mean depth of 2.2m. Bathymetric surveys were not completed in Pike Gully due to shallow water depths throughout the waterbody.

Table 5-6: Habitat Survey Data from Pike Lake South and Pike Gully

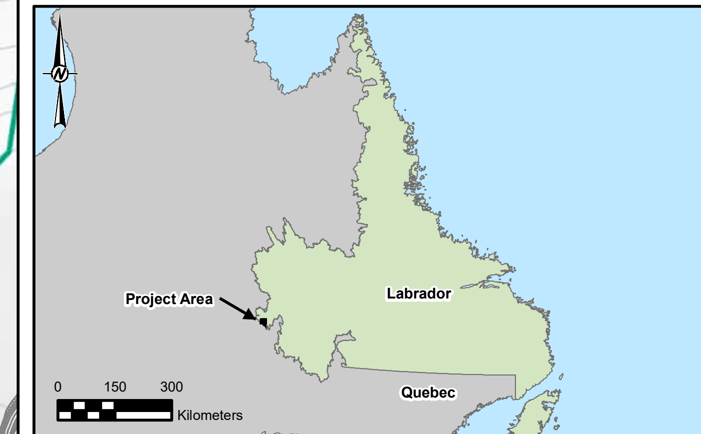
Waterbody	Surficial Area (m^2)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Pike Lake South	897,755	4.5	2.2	10.6	0	15	16	21	1	8	39
Pike Gully	40,846	-	-	-	0	30	12	0	0	5	53

Source AMEC 2012



Waterbody	Surficial Area (m^2)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Pike Lake South	897,755	4.5	2.2	10.6	0	15	16	21	1	8	39

KEY MAP



SCALE 1:20,000,000

PROJECT DATA

- Deepest Point in Lake
- Bathymetry (m)
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Railway
- Proposed Infrastructure
- Proposed Sedimentation Pond

BASEMAP INFORMATION

- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

0 137.5 275 550

1:12,753 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE PROJECT
WABUSH, NL

TITLE

2023 PIKE LAKE SOUTH BATHYMETRY

CONSULTANT

wsp

YYYY-MM-DD	2024-03-25
DESIGNED	----
PREPARED	JMA
REVIEWED	HJ
APPROVED	SPC

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 5-6

5.4.3 2023 Lacustrine Habitat Surveys

Habitat surveys and bathymetric surveys were completed in Long Lake, Mills Lake, Pike Lake North and Riordan Lake in July into August 2023. Table 5-7 presents a summary of the habitat present in each lake surveyed.

Long Lake is a large lake, with a surface area just over 11 km^2, which is heavily used by residents for boating and recreational fishing and has a number of cabins along the shoreline, a public boat launch a cordoned off swimming area. The shoreline was noted as having predominantly coarse material, boulder and rubble, with area of bedrock outcrops. There were also areas of primarily sandy beaches, mostly around built up areas and the boat launch. There was aquatic vegetation noted near the inflow and outflow. Long Lake had a maximum measured depth of 55 m, and a mean depth of 17.6 m (Figure 5-7).

Mills Lake has a surface area of 4.9 km^2 and drains into Long Lake from the southwest. Shoreline substrate composition was predominantly boulder and rubble with isolated bedrock outcrops. There were no significant areas of aquatic vegetation noted during the survey. Mills Lake had a maximum measured depth of 26 m, with a mean depth of 13.5 m (Figure 5-8).

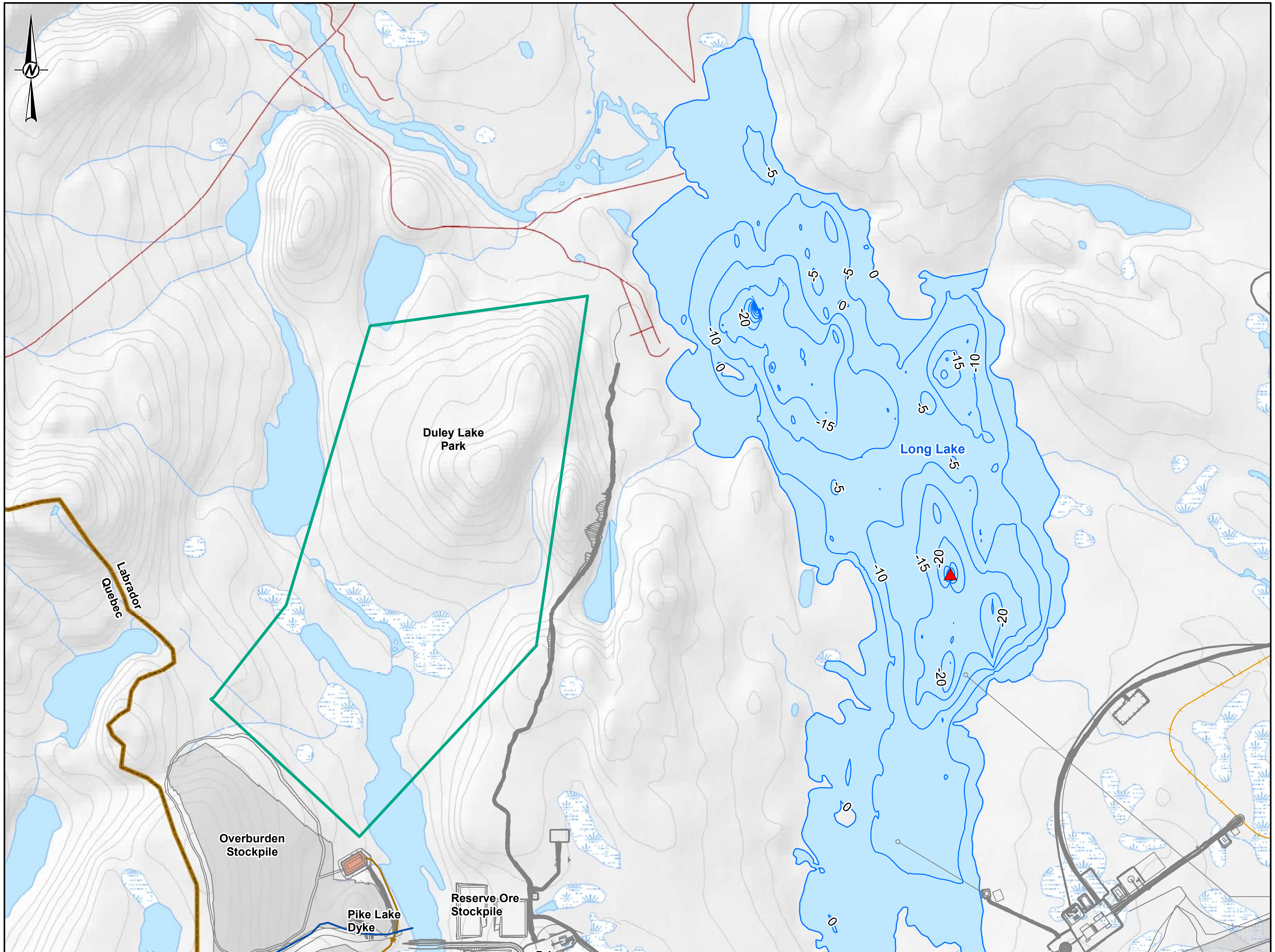
Pike Lake North has a surface area of just over 0.5 $km^{2,}$ is located downstream of the Project, with water flowing from Pike Lake South and Rose Pond. Shoreline substrate was predominantly rubble and boulder. There was aquatic vegetation near the inflow and outflow. Pike Lake North had a maximum measure depth of 10 m, with a mean of 8.2 m (Figure 5-9).

Riordan Lake has a surface area of 1.1 km^2 and is located to the east of the TMF. Shoreline substrate was primarily boulder. Riordan Lake had a maximum measured depth of 15 m, with a mean depth of 4.0 m (Figure 5-10). At the time of survey, there was an apparent algal bloom in Riordan Lake, creating low visibility within the water column.

Table 5-7: 2023 Habitat Survey Data from Long Lake, Mills Lake, Pike Lake North and Riordan Lake

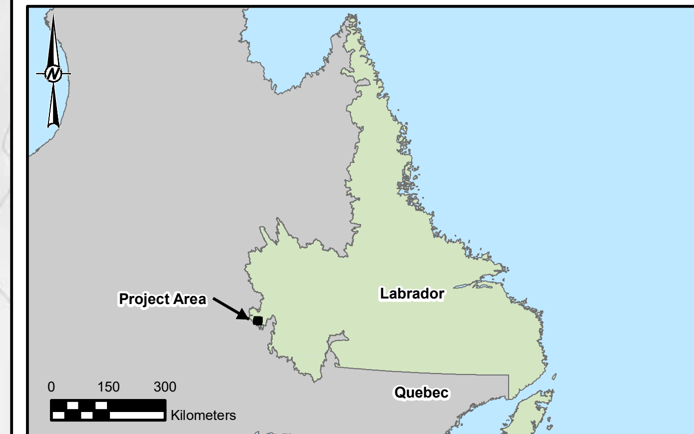
Waterbody	Surficial Area (m^2)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Shoreline Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Long Lake	11,112,572	5.0	55	17.6	35	25	15	15	5	10	0
Mills Lake	4,907,772	7.2	26	13.5	10	30	20	10	10	5	15
Pike Lake North	530,102	6.6	10	8.2	5	25	35	15	10	5	5
Riordan Lake	1,197,480	4.1	15	4.0	5	30	15	15	5	15	15

Additionally, depth surveys were completed in Molar Lake (Figure 5-11) and Daviault Lake (Figure 5-12). Surveys were completed in these areas in order to aid in planning water sampling programs within the area. Habitat surveys were not completed in these lakes.



Waterbody	Surficial Area (m²)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Shoreline Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Long Lake	11,112,572	5	55	17.6	35	25	15	15	5	10	0

KEY MAP



SCALE 1:20,000,000

PROJECT DATA

- Deepest Point in Lake
- Bathymetry (m)
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Railway
- Proposed Infrastructure
- Proposed Sedimentation Pond

BASEMAP INFORMATION

- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

0 335 670 1,340

1:32,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE PROJECT
WABUSH, NL

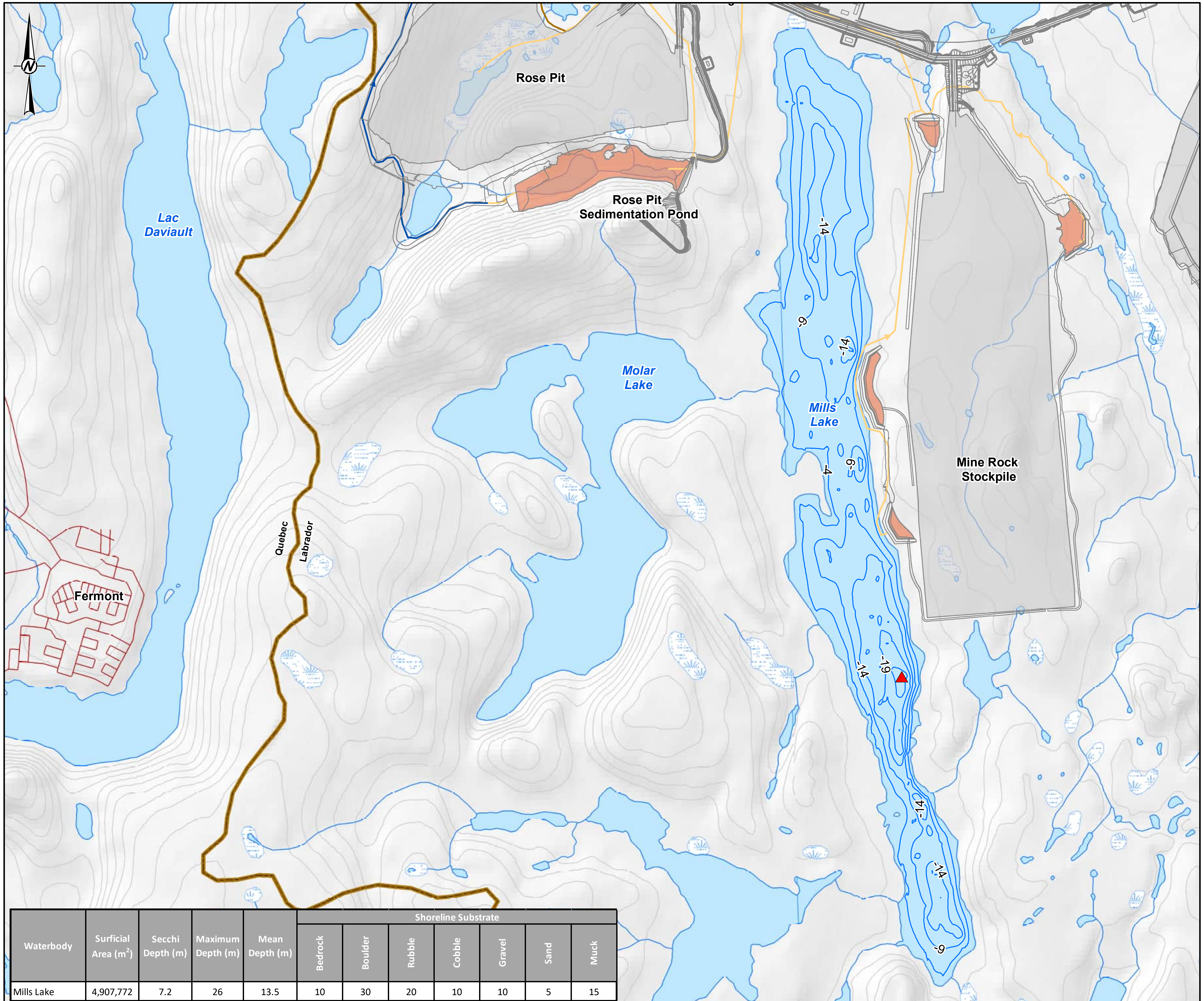
TITLE

2023 LONG LAKE BATHYMETRY

CONSULTANT

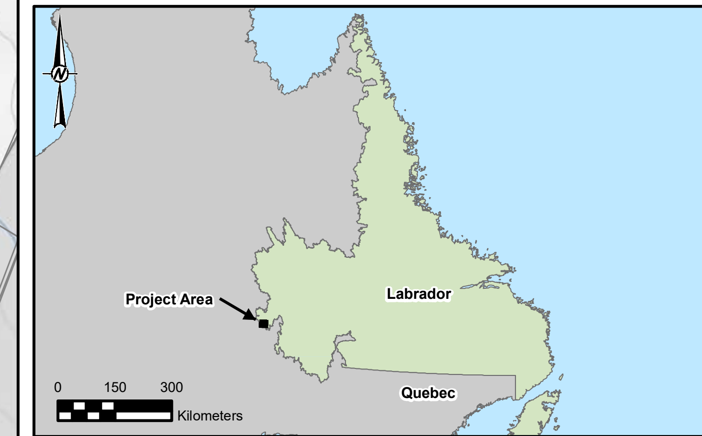
YYYY-MM-DD	2024-03-25
DESIGNED	----
PREPARED	JMA
REVIEWED	SPC
APPROVED	HJ

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 5-7



Waterbody	Surficial Area (m^2)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Shoreline Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Mills Lake	4,907,772	7.2	26	13.5	10	30	20	10	10	5	15

KEY MAP



SCALE 1:20,000,000

PROJECT DATA

- Deepest Point in Lake
- Bathymetry (m)
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Railway
- Proposed Infrastructure
- Proposed Sedimentation Pond

BASEMAP INFORMATION

- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

0 335 670 1,340

1:32,000 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE PROJECT
WABUSH, NL

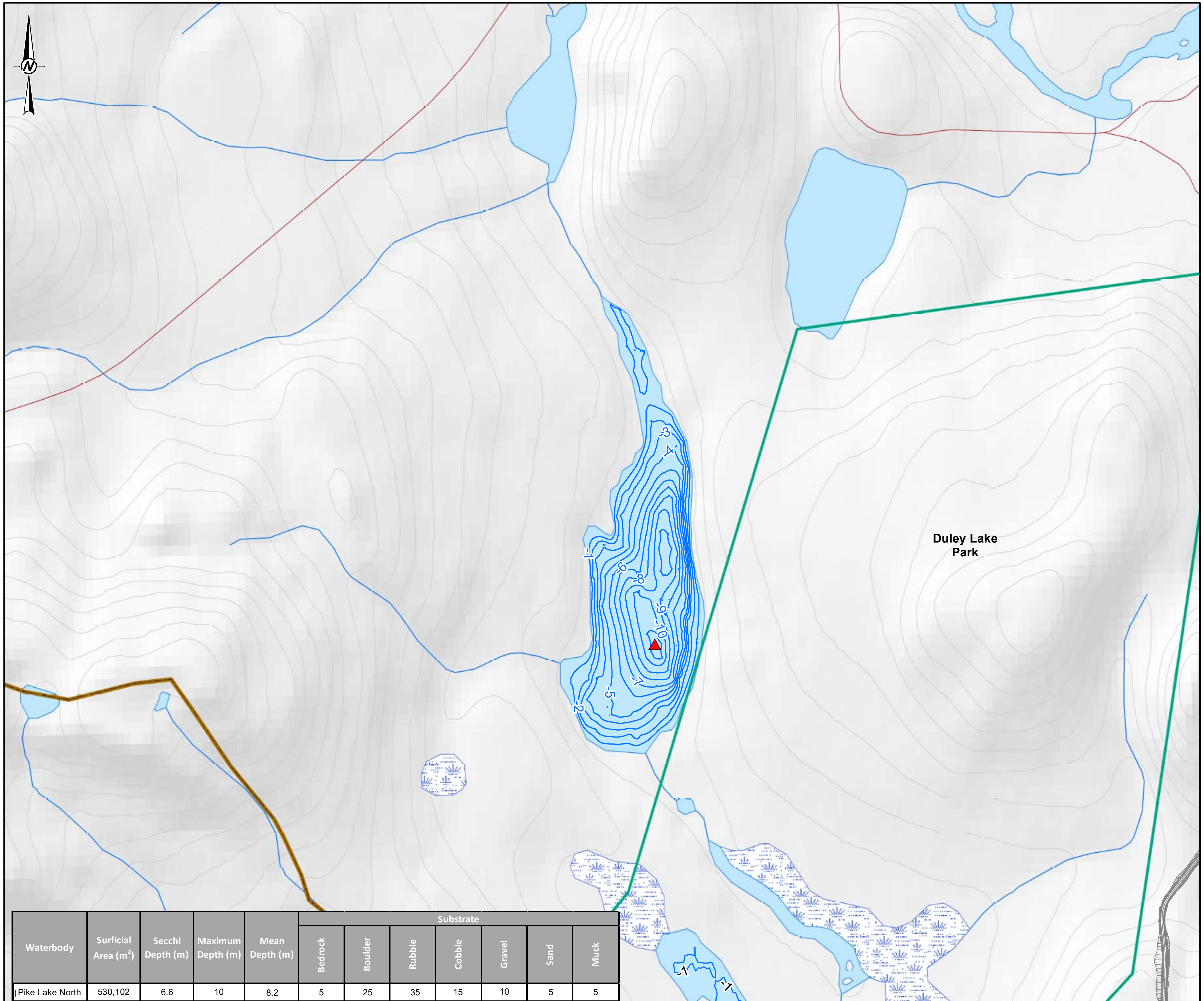
TITLE
2023 MILLS LAKE BATHYMETRY

CONSULTANT

wsp

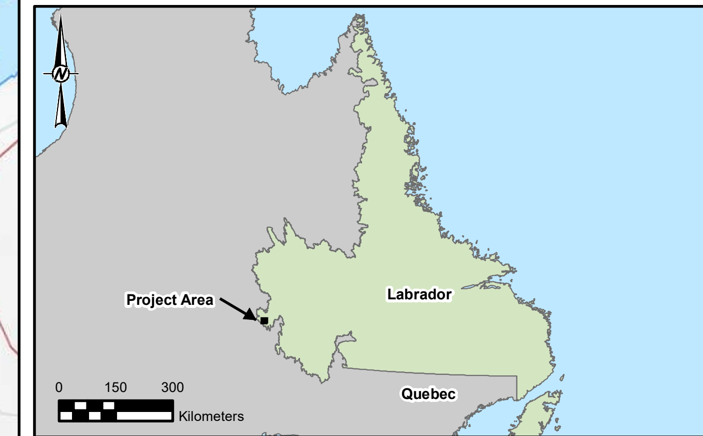
YYYY-MM-DD	2024-03-25
DESIGNED	----
PREPARED	JMA
REVIEWED	SPC
APPROVED	HJ

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 5-8



Waterbody	Surficial Area (m^2)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Pike Lake North	530,102	6.6	10	8.2	5	25	35	15	10	5	5

KEY MAP



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PROJECT DATA

- Deepest Point in Lake
- Bathymetry (m)
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Railway
- Proposed Infrastructure
- Proposed Sedimentation Pond

BASEMAP INFORMATION

- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

0 160 320 640

1:15,000 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT
CHAMPION IRON MINES

PROJECT
KAMI IRON ORE PROJECT
WABUSH, NL

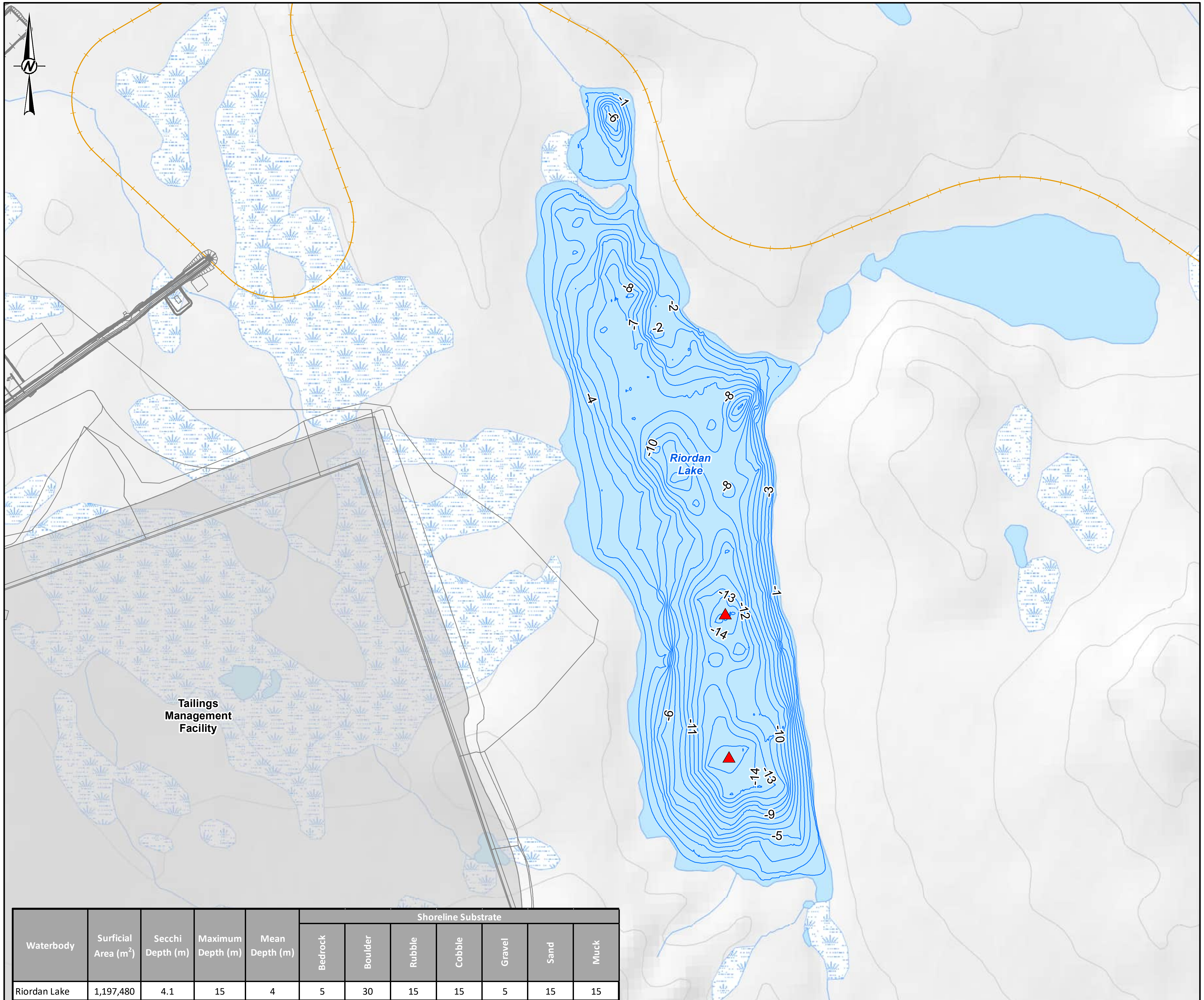
TITLE
2023 PIKE LAKE NORTH BATHYMETRY

CONSULTANT

wsp

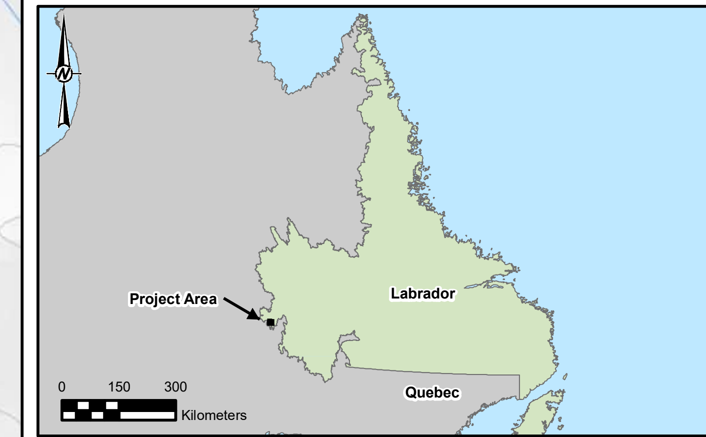
YYYY-MM-DD	2024-03-27
DESIGNED	----
PREPARED	JMA
REVIEWED	HJ
APPROVED	SPC

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 5-9



Waterbody	Surficial Area (m^2)	Secchi Depth (m)	Maximum Depth (m)	Mean Depth (m)	Shoreline Substrate						
					Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Muck
Riordan Lake	1,197,480	4.1	15	4	5	30	15	15	5	15	15

KEY MAP



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PROJECT DATA

- Deepest Point in Lake
- Bathymetry (m)
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Railway
- Proposed Infrastructure
- Proposed Sedimentation Pond

BASEMAP INFORMATION

- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

0 165 330 660

1:15,553 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE PROJECT
WABUSH, NL

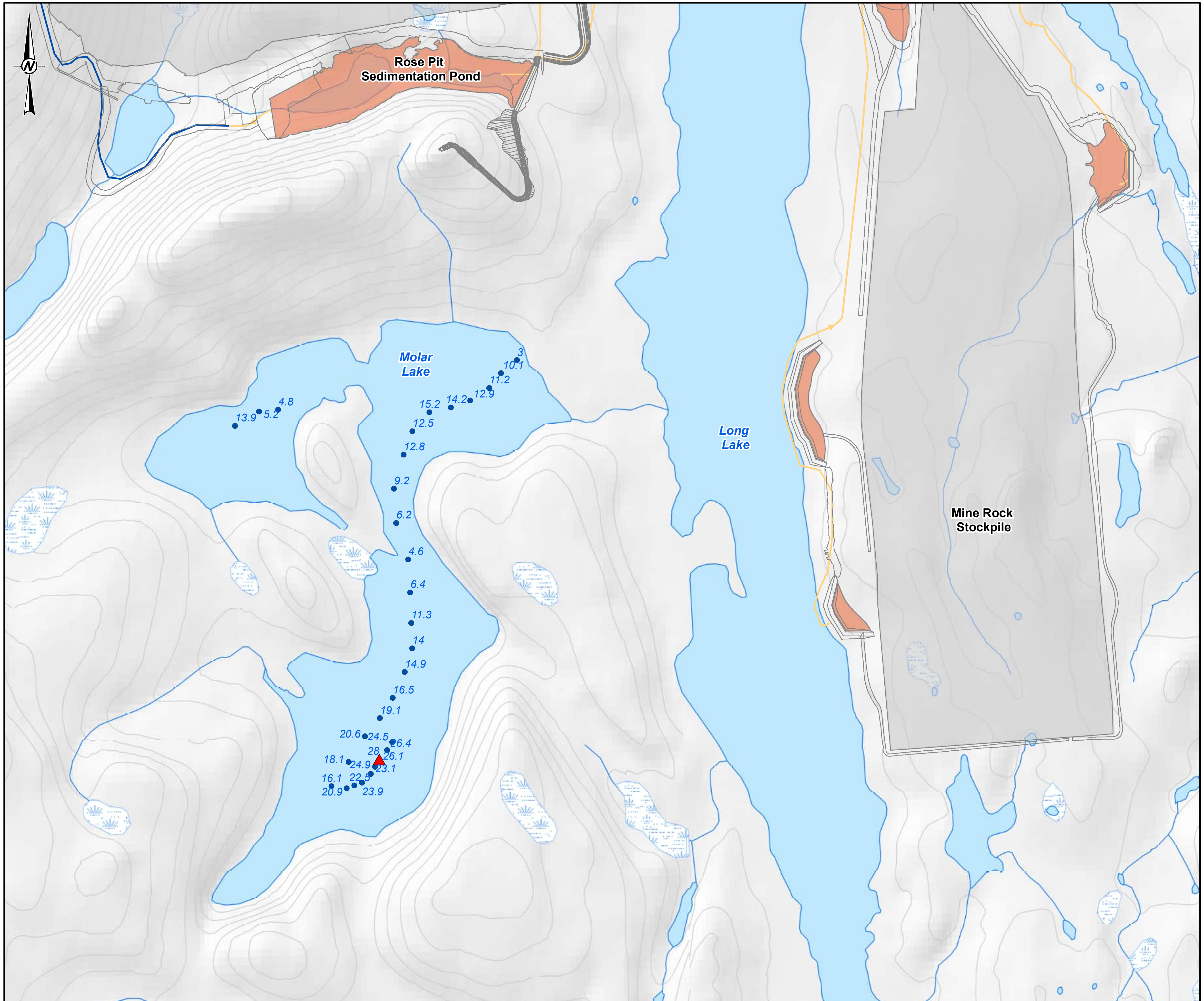
TITLE

2023 RIORDAN LAKE BATHYMETRY

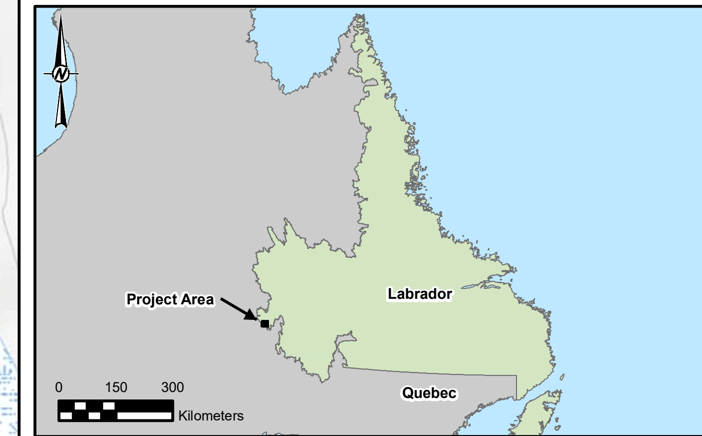
CONSULTANT

YYYY-MM-DD	2024-03-25
DESIGNED	----
PREPARED	JMA
REVIEWED	SPC
APPROVED	HJ

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 5-10



KEY MAP



SCALE 1:20,000,000

PROJECT DATA

- Deepest Point in Lake
- Depth Location
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Railway
- Proposed Infrastructure
- Proposed Sedimentation Pond

BASEMAP INFORMATION

- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

0 225 450 900

1:21,244 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE PROJECT
WABUSH, NL

TITLE

2023 MOLAR LAKE DEPTH SURVEY

CONSULTANT

wsp

YYYY-MM-DD	2024-03-25
DESIGNED	----
PREPARED	JMA
REVIEWED	SPC
APPROVED	HJ

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 5-11

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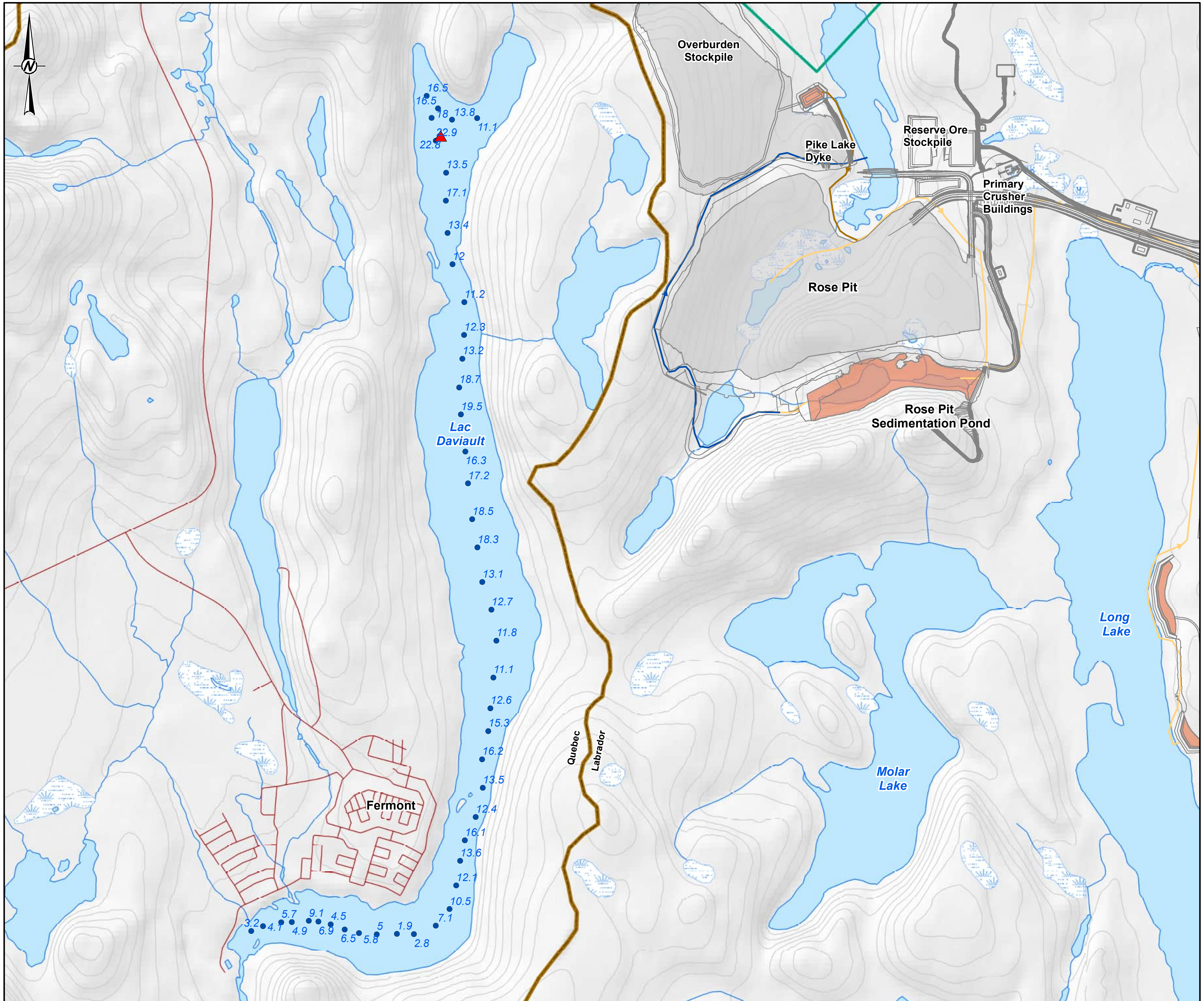
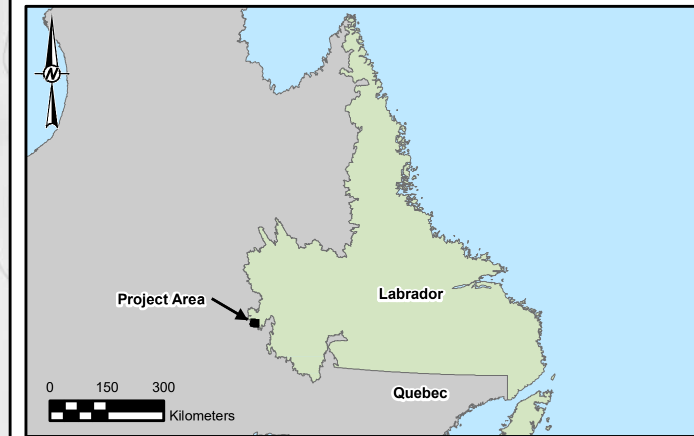
25mm



KEY MAP



SCALE 1:20,000,000

PROJECT DATA

- Deepest Point in Lake
- Depth Location
- Proposed Infrastructure
- Proposed Railway
- Contact Water
- Non-Contact Water
- Treated Water
- Proposed Infrastructure
- Proposed Sedimentation Pond

BASEMAP INFORMATION

- Existing Railway
- River/Stream
- Existing Road
- Contour
- Bog/Wetland
- Waterbody
- Labrador/Quebec Boundary

0 335 670 1,340

1:32,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - NEWFOUNDLAND AND LABRADOR
2. IMAGERY CREDITS:
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 19N

CLIENT

CHAMPION IRON MINES

PROJECT

KAMI IRON ORE PROJECT
WABUSH, NL

TITLE

2023 LAKE DAVIAULT DEPTH SURVEY

CONSULTANT

wsp

YYYY-MM-DD	2024-03-25
DESIGNED	----
PREPARED	JMA
REVIEWED	SPC
APPROVED	HJ

PROJECT NO.	CONTROL	REV.	FIGURE
TE23930010	0001	A	Figure 5-12

5.5 Riverine Habitat Surveys

Numerous watercourses were surveyed during 2011, with additional sites selected for survey in 2012. No stream habitat surveys were completed in 2023. Provided below is a summary of the habitat classifications in each watercourses surveyed. Detailed riverine habitat survey data is presented in Appendix A.

5.5.1 2011 Riverine Habitat Surveys

Stantec completed numerous watercourse surveys in 2011, including several in the proposed Rose Pit (Table 5-8 through Table 5-13), downstream of the proposed Rose Pit (Table 5-14 through Table 5-18) and within the proposed Tailings Management Facility (Table 5-19 and Table 5-20). Throughout all the watercourses, Pool (71 reaches) was the most dominant habitat type observed, followed by Run (51 reaches), Riffle (47 reaches) and Steady (36 reaches). Rapids was the least dominant habitat type observe, accounting for only 10 reaches.

5.5.1.1 Rose Pit Streams

Stream RP01-PLS is the lower portion of the Rose Pit drainage and consists of stream habitat between Pond RP01 and Pike Lake South (PLS). It is approximately 450 m in length and contains 53.65 units of riverine fish habitat. Channel widths range from 2 m to 35 m and water depths between 0.18 m to 0.95 m. Water velocities during surveys ranged between 0 m/s to 0.29 m/s. Table 5-8 presents a summary of habitat characteristics present within Steam RP01-PLS.

Table 5-8: Summary of 2011 Habitat Surveys Completed in Stream RP01-PLS

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	-	-	-	-	0	30	15	10	0	0	45	0	Pool
2	25	-	-	-	-	0	30	15	10	0	0	45	0	Pool
3	25	2.4	0.34	0.29	-	0	30	15	10	0	0	45	0	Pool
4	25	4.1	0.18	0.26	-	0	30	50	20	0	0	0	0	Rapids
5	25	2.5	0.25	0.28	-	0	30	50	20	0	0	0	0	Rapids
6	25	-	-	-	-	0	0	15	15	10	0	60	0	Pool
7	25	-	0.80	0.00	-	0	0	15	15	10	0	60	0	Pool
8	25	-	-	-	-	0	0	0	0	0	0	100	0	Pool
9	25	-	0.90	0.01	-	0	0	0	0	0	0	100	0	Pool
10	25	-	-	-	-	0	0	0	0	0	0	100	0	Pool
11	25	-	0.95	0.00	-	0	0	0	0	0	0	100	0	Pool
12	25	-	-	-	-	0	0	0	0	0	0	100	0	Pool
13	25	-	0.85	0.09	-	0	0	0	0	0	0	100	0	Pool
14	25	-	-	-	-	0	30	10	0	0	0	60	0	Pool
15	25	-	0.80	0.03	-	0	30	10	0	0	0	60	0	Pool

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
16	25	-	-	-	-	0	30	10	0	0	0	60	0	Pool
17	25	-	0.65	0.03	-	0	30	10	0	0	0	60	0	Pool
18	25	-	-	-	-	0	30	10	0	0	0	60	0	Pool
19	25	4.2	0.77	0.05	-	0	30	10	0	0	0	60	0	Pool

Source Stantec 2012

- Indicates no data was available

[1] Slope was not measured in the field in 2011

[2] Habitat type determined in the field

Stream RP02-RP01 is located between Pond RP02 and RP01 and is approximately 300 m in length and contains 7.33 units of fish habitat. Stream section RP02-RP01 drains from Pond RP02 in a general northeast direction into Pond RP01. There are four ponds located upstream of this section of stream (RP02, RP03, RP04 and RP05) and their associated interconnecting stream sections. Channel widths ranged from 0.8m to 4.9 m and depths ranged from 0.02m to 0.74 m. Mean water velocities were low and ranged from 0.00 m/s to 0.14 m/s. Table 5-9 presents a summary of habitat characteristics as well as the habitat classification present within Stream RP02-RP01.

Table 5-9: Summary of 2011 Habitat Surveys Completed in Stream RP02-RP01

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	4.9	-	0.44	-	0	0	0	0	0	0	100	0	Pool
2	25	3.2	0.80	0.67	-	0	0	0	0	0	0	100	0	Pool
3	25	3.6	0.90	0.74	-	0	0	0	0	0	0	100	0	Pool
4	25	2.7	0.68	0.49	-	0	0	15	15	0	0	70	0	Pool
5	25	2.0	0.50	0.19	-	0	0	15	15	0	0	70	0	Steady
6	25	1.4	0.35	0.25	-	0	15	15	0	0	0	70	0	Pool
7	25	1.9	0.48	0.53	-	0	15	15	0	0	0	70	0	Pool
8	25	3.7	0.93	0.27	-	0	0	5	20	0	0	75	0	Pool
9	25	2.1	0.53	0.27	-	0	0	5	20	0	0	75	0	Pool
10	25	2.0	0.50	0.27	-	0	0	30	20	0	0	50	0	Pool
11	25	1.0	0.25	0.02	-	0	0	30	20	0	0	50	0	Steady

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
12	25	0.8	0.20	0.02	-	0	5	5	0	0	0	90	0	Steady
13	25	1.5	0.38	0.02	-	0	5	5	0	0	0	90	0	Steady

Source Stantec 2012

- Indicates no data was available

1 Slope was not measured in the field in 2011

2 Habitat type determined in the field

Stream section RP03-RP02 is located between Pond RP03 and RP02 and is approximately 300 m in length and contains 5.60 units of fish habitat. Stream RP03-RP02 drains from Pond RP03 in a general northeast direction into Pond RP02. Pond RP03 is a headwater pond for the southern portion of the watershed and contains no inflow. Channel widths ranged from 0.8 m to 3.9 m and depths ranged from 0.04 m to 0.58 m. Mean water velocities were low and ranged from 0.00 m/s to 0.24 m/s. Table 5-10 presents a summary of habitat characteristics present within Stream RP03-RP02.

Table 5-10: Summary of 2011 Habitat Surveys Completed in Stream RP03-RP02

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	-	-	-	-	0	0	0	0	0	0	100	0	Steady
2	25	3.9	0.98	0.46	-	0	0	0	0	0	0	100	0	Pool
3	25	1.1	0.28	0.23	-	0	0	0	0	0	0	100	0	Pool
4	25	0.9	0.23	0.10	-	0	0	20	30	40	0	10	0	Riffle
5	25	2.6	0.65	0.18	-	0	0	20	30	40	0	10	0	Riffle
6	25	1.1	0.28	0.07	-	0	0	10	50	20	0	20	0	Riffle
7	25	1.8	0.45	0.10	-	0	0	10	50	20	0	20	0	Riffle
8	25	0.9	0.23	0.17	-	0	40	30	0	10	20	0	0	Run
9	25	0.8	0.20	0.07	-	0	40	30	0	10	20	0	0	Run
10	25	1.9	0.48	0.19	-	0	10	10	0	0	0	80	0	Steady

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
11	25	2.0	0.50	0.13	-	0	10	10	0	0	0	80	0	Steady
12	25	-	-	-	-	0	10	10	0	0	0	80	0	Steady
13	25	3.4	0.85	0.44	-	0	10	10	0	0	0	80	0	Pool

Source Stantec 2012

- Indicates no data was available

1 Slope was not measured in the field in 2011

2 Habitat type determined in the field

Stream section RP05-RP04 is located between Pond RP05 and RP04 and is approximately 100 m in length and contains 1.83 units of fish habitat. Stream RP05-RP04 drains from Pond RP05 in a westerly direction into Pond RP04. Pond RP05 is a headwater pond for the eastern portion of the watershed and based upon mapping contains a small inflow from the north (TRIB1). Field surveys indicated that TRIB 1 is only comprised pockets of standing water with no interconnecting flow. Channel widths in stream RP05-RP04 ranged from 1.4 m to 2.6 m and mean depths ranged from 0.09 m to 0.52 m. Mean water velocities were low and ranged from 0.01 m/s to 0.08 m/s. Table 5-11 presents a summary of habitat characteristics for each reach surveyed.

Table 5-11: Summary Of 2011 Habitat Surveys Completed in Stream RP05-RP04

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	2.6	-	0.52	-	0	0	0	0	0	0	100	0	Pool
2	25	1.4	0.35	0.25	-	0	0	0	0	0	0	100	0	Steady
3	25	2.1	0.53	0.09	-	0	0	0	0	0	0	100	0	Pool
4	25	1.9	0.48	0.11	-	0	20	25	50	0	0	5	0	Run
5	25	1.9	0.48	0.13	-	0	20	25	50	0	0	5	0	Run

Source Stantec (2012)

- Indicates no data was available

2 Habitat type determined in the field

Stream section RP04-RP02 is located between Pond RP04 and RP02 and is approximately 550 m in length and contains 8.44 units of fish habitat. Stream RP04-RP02 drains from Pond RP04 in a westerly direction into Pond RP02. There is a single stream section (RP05-RP04) and a single pond (RP05) located upstream of RP04. Channel widths ranged from 0.4 m to 4.9 m and depths ranged from 0.09m to 0.42 m. Mean water velocities were low and ranged from 0.00 m/s to 0.35 m/s. Table 5-12 presents a summary of the habitat surveyed withing Stream RP04-RP02.

Table 5-12: Summary of 2011 Habitat Surveys Completed In Stream RP04-RP02

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	1.1	-	0.13	-	0	0	0	0	15	50	35	0	Pool
2	25	0.9	0.23	0.20	-	0	0	0	0	15	50	35	0	Steady
3	25	0.7	0.18	0.28	-	0	0	0	0	15	50	35	0	Steady
4	25	1.1	0.28	0.13	-	0	0	10	10	0	80	0	0	Pool
5	25	0.5	0.13	0.09	-	0	0	10	10	0	80	0	0	Steady
6	25	1.4	0.35	0.19	-	0	0	40	45	15	0	0	0	Run
7	25	0.8	0.20	0.08	-	0	0	40	45	15	0	0	0	Run
8	25	0.9	0.23	0.31	-	0	0	20	40	20	20	0	0	Riffle
9	25	0.5	0.13	0.17	-	0	0	20	40	20	20	0	0	Riffle
10	25	1.4	0.35	0.21	-	0	0	40	30	20	0	10	0	Riffle
11	25	0.8	0.20	0.25	-	0	0	40	30	20	0	10	0	Riffle
12	25	1.1	0.28	0.23	-	0	0	30	35	20	15	0	0	Riffle
13	25	2.0	0.50	0.22	-	0	0	30	35	20	15	0	0	Riffle
14	25	1.1	0.28	0.15	-	0	0	25	55	10	10	0	0	Riffle
15	25	1.3	0.33	0.09	-	0	0	25	55	10	10	0	0	Riffle
16	25	0.4	0.10	0.14	-	0	0	40	60	0	0	0	0	Riffle
17	25	1.4	0.35	0.20	-	0	0	40	60	0	0	0	0	Steady
18	25	0.9	0.23	0.19	-	-	-	-	-	-	-	-	0	Steady
19	25	-	-	-	-	-	-	-	-	-	-	-	0	-
20	25	4.9	1.23	0.42	-	0	0	0	0	0	0	100	0	Pool
21	25	2.0	0.49	0.12	-	0	0	0	0	0	0	100	0	Steady
22	25	4.2	1.05	0.39	-	0	0	0	0	0	0	100	0	Pool
23	25	2.5	0.63	0.42	-	0	0	0	0	0	0	100	0	Pool

Source: Stantec 2012

- Indicates no data available

1 Slope was not measured in the field in 2011

2 Habitat type determined in the field

Steam RSD is located upstream of the proposed Kami Project (Rose Pit and Mine Rock Stockpile). It is approximately 1,000m in length and contains 9.6 habitat units. Wetted widths ranged from 0.3 m to 2.1 m (Table 5-13). Means depths within each reach ranged from 0.06 to 0.81m, with velocities ranging from 0.00 to 0.56m/s. Table 5-13 presents a summary of the habitat surveys in Stream RSD.

Table 5-13: Summary of 2011 Habitat Surveys Completed In Stream RSD

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	1.8	-	0.81	-	0	0	0	0	0	10	90	0	Pool
2	25	1.5	0.38	0.38	-	0	0	0	0	0	10	90	0	Pool
3	25	1.0	0.25	0.36	-	0	0	0	0	0	10	90	0	Pool
4	25	1.4	0.35	0.24	-	0	0	0	0	0	0	100	0	Pool
5	25	1.2	0.30	0.23	-	0	0	0	0	0	0	100	0	Pool
6	25	1.1	0.28	0.20	-	0	0	0	0	0	0	100	0	Pool
7	25	1.3	0.33	0.16	-	0	0	0	0	0	0	100	0	Steady
8	25	1.4	0.35	0.32	-	0	20	20	0	30	30	0	0	Riffle
9	25	1.2	0.30	0.16	-	0	20	20	0	30	30	0	0	Riffle
10	25	1.0	0.25	0.31	-	0	30	0	0	0	40	30	0	Pool
11	25	0.7	0.18	0.23	-	0	30	0	0	0	40	30	0	Pool
12	25	1.0	0.25	0.24	-	0	30	0	0	0	50	20	0	Pool
13	25	0.3	0.08	0.26	-	0	30	0	0	0	50	20	0	Pool
14	25	1.1	0.28	0.27	-	0	40	30	0	0	30	0	0	Run
15	25	0.8	0.20	0.06	-	0	40	30	0	0	30	0	0	Rapids
16	25	0.9	0.23	0.35	-	0	30	40	10	0	20	0	0	Run
17	25	1.1	0.28	0.09	-	0	30	40	10	0	20	0	0	Riffle
18	25	1.0	0.25	0.25	-	0	0	40	30	0	30	0	0	Pool
19	25	-	-	-	-	0	0	40	30	0	30	0	0	Riffle
20	25	-	-	-	-	0	0	30	0	0	30	40	0	Steady
21	25	0.8	0.20	0.18	-	0	0	30	0	0	30	40	0	Steady
22	25	0.6	0.15	0.43	-	0	0	20	20	0	60	0	0	Pool
23	25	1.2	0.30	0.31	-	0	0	20	20	0	60	0	0	Pool
24	25	1.3	0.33	0.17	-	0	20	30	30	0	20	0	0	Run
25	25	1.5	0.38	0.23	-	0	20	30	30	0	20	0	0	Run
26	25	2.1	0.53	0.13	-	0	0	10	30	0	60	0	0	Steady
27	25	0.6	0.15	0.67	-	0	0	10	30	0	60	0	0	Pool
28	25	1.5	0.38	0.13	-	0	0	20	20	20	40	0	0	Pool
29	25	1.9	0.48	0.11	-	0	0	20	20	20	40	0	0	Pool
30	25	0.8	0.20	0.13	-	0	0	15	40	30	15	0	0	Riffle
31	25	1.7	0.43	0.20	-	0	0	15	40	30	15	0	0	Riffle
32	25	0.7	0.18	0.12	-	0	5	15	30	30	20	0	0	Riffle
33	25	0.7	0.18	0.27	-	0	5	15	30	30	20	0	0	Riffle
34	25	0.6	0.15	0.09	-	0	0	20	40	40	0	0	0	Riffle
35	25	1.2	0.30	0.16	-	0	0	20	40	40	0	0	0	Riffle

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
36	25	1.5	0.38	0.15	-	0	0	60	20	0	10	10	0	Run
37	25	-	-	-	-	0	0	60	20	0	10	10	0	Run
38	25	-	-	-	-	0	0	20	30	0	20	30	0	Steady
39	25	1.0	0.25	0.09	-	0	0	20	30	0	20	30	0	Steady
40	25	0.5	0.13	0.11	-	0	0	40	50	0	10	0	0	Run
41	25	-	-	-	-	0	0	40	50	0	10	0	0	Run
42	-	1.8	-	0.81	-	0	0	0	0	0	10	90	0	Pool
43	25	1.5	0.38	0.38	-	0	0	0	0	0	10	90	0	Pool
44	25	1.0	0.25	0.36	-	0	0	0	0	0	10	90	0	Pool
45	25	1.4	0.35	0.24	-	0	0	0	0	0	0	100	0	Pool
46	25	1.2	0.30	0.23	-	0	0	0	0	0	0	100	0	Pool
47	25	1.1	0.28	0.20	-	0	0	0	0	0	0	100	0	Pool
48	25	1.3	0.33	0.16	-	0	0	0	0	0	0	100	0	Steady
49	25	1.4	0.35	0.32	-	0	20	20	0	30	30	0	0	Riffle
50	25	1.2	0.30	0.16	-	0	20	20	0	30	30	0	0	Riffle
51	25	1.0	0.25	0.31	-	0	30	0	0	0	40	30	0	Pool
52	25	0.7	0.18	0.23	-	0	30	0	0	0	40	30	0	Pool
53	25	1.0	0.25	0.24	-	0	30	0	0	0	50	20	0	Pool
54	25	0.3	0.08	0.26	-	0	30	0	0	0	50	20	0	Pool
55	25	1.1	0.28	0.27	-	0	40	30	0	0	30	0	0	Run
56	25	0.8	0.20	0.06	-	0	40	30	0	0	30	0	0	Rapids
57	25	0.9	0.23	0.35	-	0	30	40	10	0	20	0	0	Run
58	25	1.1	0.28	0.09	-	0	30	40	10	0	20	0	0	Riffle
59	25	1.0	0.25	0.25	-	0	0	40	30	0	30	0	0	Pool
60	25	-	-	-	-	0	0	40	30	0	30	0	0	Riffle

Source Stantec 2012

- Indicates data is unavailable

[1] Slope was not measured in the field in 2011

[2] Habitat type determined in the field

5.5.1.2 *Stream Downstream of the Rose Pit*

Stream section PLS-S1 runs northerly between Pike Lake North and Pike Lake South. It is approximately 100 m in length and has 7.45 units of riverine habitat. Channel widths ranged from 3.1 m to 11.8 m and mean depths at measured transects ranged from 0.13 m to 0.63 m. Mean water velocities ranged from 0.12 m/s to 0.32 m/s. Table 5-14 presents a summary of the habitat surveys in Stream PLS-S1.

Table 5-14: Summary of 2011 Habitat Surveys Completed In Stream PLS-S1

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	7.4	-	0.13	-	0	10	40	40	0	10	0	0	Run
2	50	3.1	1.55	0.19	-	0	10	40	40	0	10	0	0	Run
3	50	11.8	5.90	0.63	-	0	20	30	0	0	0	50	0	Pool

Source Stantec 2012

- Indicates data is not available

[1] Slope was not measured in the field in 2011

[2] Habitat type determined in the field

Stream section PLS-S2 runs northerly between Pike Lake North and Pike Lake South. It is approximately 420 m in length and has 17.57 units of riverine habitat. Channel widths ranged from 2.7 m to 6.7 m and mean depths measured at transects ranged from 0.18 m to 0.45 m. Mean water velocities ranged from 0.0 m/s to 0.32 m/s. Table 5-15 presents a summary of the habitat within Stream PLS-S2.

Table 5-15: Summary of 2011 Habitat Surveys Completed in Stream PLS-S2

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	4.1	-	0.20	-	0	40	30	30	0	0	0	0	Run
2	50	3.5	1.75	0.31	-	0	40	30	30	0	0	0	0	Run
3	50	4.6	2.30	0.23	-	0	60	40	0	0	0	0	0	Rapids
4	50	5.0	2.50	0.28	-	0	45	45	0	5	5	0	0	Rapids
5	50	6.7	3.35	0.33	-	0	50	25	25	0	0	0	0	Run
6	90	3.2	2.88	0.27	-	-	-	-	-	-	-	-	0	Pool
7	50	4.0	2.00	0.51	-	0	80	20	0	0	0	0	0	Run
8	50	2.7	1.35	0.18	-	0	80	20	0	0	0	0	0	Run
9	30	4.8	1.44	0.45	-	0	50	20	0	0	0	30	0	Run

Source Stantec 2012

- Indicates data is not available

[1] Slope was not measured in the field in 2011

[2] Habitat type determined in the field

Stream PLN-S1 is the main outflow of Pike Lake North. It flows north and empties into the Walsh River. It is approximately 425 m in length and has 22.68 units of riverine habitat. Channel widths ranged from 3.1 m to 11.8m and mean depths ranged from 0.18 m to 0.47 m. Mean water velocities ranged from 0.07 m/s to 0.68 m/s. Table 5-16 presents a summary of the habitat present in Stream PLN-S1.

Table 5-16: Summary of 2011 Habitat Surveys Completed in Stream PLN-S1

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	4.9	-	0.25	-	0	60	30	0	5	5	0	0	Run
2	50	3.1	1.55	0.18	-	0	40	30	0	20	10	0	0	Run
3	50	0.4	0.20	0.47	-	0	40	30	10	10	10	0	0	Run
4	50	11.8	5.90	0.23	-	0	30	20	0	10	15	25	0	Riffle
5	50	7.0	3.50	0.25	-	0	50	30	15	5	0	0	0	Run
6	50	6.1	3.05	0.27	-	0	70	30	0	0	0	0	0	Run
7	50	3.5	1.75	0.23	-	0	65	20	0	10	5	0	0	Run
8	50	6.9	3.45	0.19	-	0	60	30	0	5	5	0	0	Run
9	50	4.1	2.05	0.27		0	60	25	0	5	10	0	0	Run
10	25	4.5	1.13	0.23	-	0	60	25	0	5	10	0	0	Run

Source Stantec 2012

- Indicates data is not available

1 Slope was not measured in the field in 2011

2 Habitat type determined in the field

Stream PLN-S2 runs in a northerly direction between two small waterbodies north of Pike Lake North. It is approximately 50 m in length and has 5.10 units of riverine habitat. Channel widths ranged from 6.4 m to 14 m and mean depths ranged from 0.15 m to 0.24 m. Mean water velocities ranged from 0.08 m/s to 0.27 m/s. Table 5-17 presents a summary of the habitat present in Stream PLN-S2.

Table 5-17: Summary of 2011 Habitat Surveys Completed In Stream PLN-S2

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	6.4	-	0.24	-	0	50	40	0	5	5	0	0	Run
2	50	14.0	7.00	0.15	-	0	50	40	0	5	5	0	0	Run

Source Stantec 2012

- Indicates data is not available

1 Slope was not measured in the field in 2011

2 Habitat type determined in the field

Stream PLN-S3 runs in a northerly direction and into Walsh River. It is approximately 385 m in length and has 24.65 units of riverine habitat. Channel widths ranged from 4.1 m to 14.2 m and mean depths along transects ranged from 0.21 to 0.35 m. Mean water velocities ranged from 0.02 m/s to 0.64 m/s. Table 5-18 presents a summary of the habitat in Stream PLN-S3.

Table 5-18: Summary of 2011 Habitat Surveys Completed in Stream PLN-S3

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	4.1	-	0.32	-	0	10	5	40	30	15	0	0	Run
2	50	5.4	2.70	0.31	-	0	10	5	40	30	15	0	0	Run
3	50	5.5	2.75	0.21	-	0	20	25	30	20	5	0	0	Riffle
4	25	6.9	1.73	0.23	-	0	15	25	25	25	10	0	0	Riffle
5	100	4.3	4.30	0.35	-	-	-	-	-	-	-	-	0	Run
6	50	7.1	3.55	0.25	-	0	60	20	0	15	5	0	0	Rapids
7	75	6.2	4.65	0.35	-	-	-	-	-	-	-	-	0	Steady
8	15	14.2	2.13	0.34	-	0	25	30	20	15	10	0	0	Pool

Source Stantec 2012

- Indicates data is not available

1 Slope was not measured in the field in 2011

2 Habitat type determined in the field

5.5.1.3 Tailings Management Facility

Stream TDA01 is the most westerly of the stream sections within the TMF. It flows in a north-northwest direction into Long Lake. Stream TDA01 does not have a headwater pond, nor are there any ponds located along its length. It is approximately 2,800 m in length and contains 28.25 units of riverine fish habitat. Channel widths ranged from 0.5 m to 2.2 m and depths ranged from 0.10m to 0.96 m. Water velocities ranged from 0.0 m/s to 0.78 m/s. Table 5-19 presents a summary of the habitat present in Stream TDA01.

Table 5-19: Summary of 2011 Habitat Surveys Completed in Stream TD01.

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	-	-	0.00	-	0	20	30	0	10	10	0	0	Steady
2	150	0.6	0.90	0.66	-	0	20	30	0	10	10	0	0	Riffle
3	50	1.8	0.90	0.23	-	10	30	30	0	5	10	10	0	Rapids
4	100	1.4	1.40	0.17	-	10	35	10	0	20	25	10	0	Riffle
5	100	0.9	0.90	0.18	-	0	25	30	0	30	15	0	0	Rapids
6	150	0.5	0.75	-	-	0	0	0	0	0	0	0	0	Steady
7	150	0.8	1.20	0.16	-	0	0	10	15	40	30	0	0	Riffle
8	150	0.6	0.90	0.43	-	0	15	15	0	30	30	0	0	Pool
9	150	1.4	2.10	0.47	-	0	10	0	0	40	30	0	0	Pool
10	150	0.5	0.75	0.51	-	0	15	0	0	20	20	0	0	Pool
11	150	1.2	1.80	0.40	-	0	10	0	0	20	20	0	0	Pool
12	150	0.7	1.05	0.95	-	0	5	0	0	15	15	0	0	Pool
13	150	0.7	1.05	0.28	-	0	10	0	0	10	10	0	0	Pool
14	150	1.3	1.95	0.61	-	0	0	0	0	10	10	0	0	Pool
15	150	1.0	1.50	0.17	-	0	5	0	0	10	10	0	0	Steady
16	150	2.2	3.30	0.75	-	0	5	0	0	5	5	0	0	Pool
17	150	1.5	2.25	0.34	-	0	0	0	0	10	10	0	0	Pool
18	150	1.3	1.95	0.22	-	0	0	10	0	20	20	0	0	Pool
19	150	0.6	0.90	0.32	-	0	20	0	0	20	15	0	0	Pool
20	150	0.7	1.05	0.16	-	0	10	0	0	10	20	0	0	Steady
21	150	1.1	1.65	0.11	-	10	10	0	0	30	10	10	0	Steady

1 Slope was not measured in the field in 2011

2 Habitat type determined in the field

Stream TDA02 is located to the east of TDA02 and is the longest stream section within the TMF which flows in a general northwest direction into Long Lake. Stream TDA02 has a headwater pond (SW1) and has an additional pond (SW2) located a short distance downstream of SW1. It is approximately 6,800 m in length and contains 172.15 units of riverine fish habitat. Channel widths ranged from 0.7-5.5 m and mean depths measured at transects ranged from 0.01 m to 0.67 m. Mean water velocities ranged from 0.0 m/s to 0.51 m/s. Table 5-20 presents a summary of the habitat present in Stream TDA02.

Table 5-20: Summary of 2011 Habitat Surveys Completed In Stream TDA02

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	-	3.4	-	0.41	-	0	50	30	20	0	0	0	0	Run
2	150	3.5	5.25	0.23	-	0	60	35	5	0	0	0	0	Run
3	100	4.7	4.70	0.32	-	0	30	20	20	10	20	0	0	Riffle
4	100	3.1	3.10	0.38	-	0	25	25	20	12	18	0	0	Riffle
5	100	3.3	3.30	0.33	-	0	18	25	22	15	20	0	0	Riffle
6	100	4.1	4.10	0.45	-	0	10	30	20	20	20	0	0	Riffle
7	100	3.1	3.10	0.48	-	5	15	25	25	15	15	0	0	Riffle
8	150	3.7	5.55	0.24	-	0	25	25	20	20	10	0	0	Run
9	150	3.9	5.85	0.40	-	10	50	35	0	0	5	0	0	Run
10	150	4.7	7.05	0.17	-	0	30	30	20	10	10	0	0	Riffle
11	150	3.2	4.80	0.27	-	0	40	30	0	15	15	0	0	Riffle
12	150	4.2	6.30	0.67	-	0	30	30	20	15	5	0	0	Run
13	150	1.6	2.40	0.65	-	0	60	20	0	0	15	5	0	Run
14	150	3.5	5.25	0.36	-	0	60	20	0	10	10	0	0	Run
15	150	3.2	4.80	0.24	-	0	30	20	25	20	5	0	0	Rapids
16	150	5.5	8.25	0.14	-	0	40	30	10	20	0	0	0	Rapids
17	150	3.8	5.70	0.38	-	0	20	20	35	15	10	0	0	Riffle
18	150	4.7	7.05	0.46	-	0	0	0	5	60	35	0	0	Riffle
19	150	3.4	5.10	0.43	-	0	10	0	0	50	40	0	0	Riffle
20	150	3.2	4.80	0.44	-	0	20	30	0	10	10	30	0	Riffle
21	150	3.4	5.10	0.41	-	0	0	0	0	50	50	0	0	Pool
22	100	2.9	2.90	0.25	-	0	30	23	22	25	0	0	0	Run
23	100	2.7	2.70	0.16	-	0	30	30	22	18	0	0	0	Run
24	100	-	-	-	-	0	15	15	25	40	5	0	0	Run
25	150	2.0	3.00	0.07	-	0	0	0	30	60	10	0	0	Riffle
26	150	2.1	3.15	0.29	-	0	20	20	20	20	20	0	0	Riffle
27	150	1.5	2.25	0.09	-	0	10	30	20	20	20	0	0	Riffle
28	150	1.7	2.55	0.21	-	0	0	0	20	30	40	10	0	Steady
29	150	1.4	2.10	0.28	-	0	0	0	0	0	40	60	0	Steady
30	150	1.2	1.80	0.19	-	0	5	0	0	0	50	45	0	Pool
31	150	0.7	1.05	0.42	-	0	0	20	20	20	30	10	0	Steady
32	150	1.6	2.40	0.19	-	0	20	15	15	20	30	0	0	Riffle
33	150	2.4	3.60	0.01	-	0	5	0	0	15	40	40	0	Steady
34	150	0.9	1.35	0.20	-	0	0	0	0	30	40	30	0	Steady
35	150	2.2	3.30	0.55	-	0	0	0	0	30	40	30	0	Pool

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)[1]	Substrate (%Coverage)								Habitat Type[2]
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
36	150	1.9	2.85	0.15	-	0	0	0	0	30	40	30	0	Steady
37	150	1.2	1.80	0.07	-	0	30	0	0	30	40	0	0	Riffle
38	150	1.6	2.40	0.17	-	0	30	20	30	20	0	0	0	Run
39	150	2.1	3.15	0.16	-	0	30	30	30	10	0	0	0	Run
40	150	1.5	2.25	0.09	-	0	20	20	10	10	20	20	0	Riffle
41	150	1.7	2.55	0.17	-	0	20	30	30	20	0	0	0	Steady
42	150	1.5	2.25	0.15	-	0	5	30	0	15	50	0	0	Steady
43	150	1.1	1.65	0.16	-	0	20	20	0	40	0	20	0	Steady
44	150	1.8	2.70	0.08	-	0	0	20	20	40	20	0	0	Riffle
45	150	1.7	2.55	0.17	-	0	0	50	30	20	0	0	0	Run
46	150	1.5	2.25	0.18	-	0	0	30	30	40	0	0	0	Run
47	150	1.3	1.95	0.20	-	0	50	30	10	5	5	0	0	Run
48	150	1.5	2.25	0.18	-	0	0	0	0	0	0	100	0	Pool

Source Stantec 2012

- Indicates data is not available

[1] Slope was not measured in the field in 2011

[2] Habitat type determined in the field

5.5.2 2012 Riverine Habitat Surveys

Additional riverine habitat surveys were completed in 2012, focused primarily on four small streams, AD01 through AD04, located within the Mine Rock Stockpile (AMEC 2012). Stream AD01 drains from the northern most portion of the Mine Rock Stockpile and empties into the outflow of Mills Lake. Streams AD02, AD03 and AD04 drain the remainder of the Mine Rock Stockpile to the east, into Waldorf River. The majority of the habitat surveyed were pools (13 reaches), dominated by sand, fine material and aquatic vegetation (Table 5-21 through Source AMEC 2012

Table 5-24). Steady (six reaches) and run (five reaches) habitat were the only other habitat types surveyed, and were only found in AD02 and AD04. Detailed descriptions of each stream surveyed are presented in AMEC's baseline report (AMEC 2012).

Table 5-21: Summary of habitat surveys completed in stream AD01, 2012.

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)	Substrate (%Coverage)								Habitat Type
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	100	0.8	0.21	0.33	0.08	0	0	0	0	0	0	20	80	Pool
2	100	0.7	0.38	0.11	0.80	0	0	0	0	0	0	20	80	Pool
3	100	1.2	0.25	0.09	0.55	0	0	0	0	0	0	20	80	Pool
4	100	0.3	0.33	0.00	1.60	0	0	0	0	0	0	20	80	Pool
5	100	0.5	0.21	0.00	0.85	0	0	0	0	0	0	5	95	Pool

Source AMEC 2012

Table 5-22: Summary of habitat surveys completed in stream AD02, 2012.

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)	Substrate (%Coverage)								Habitat Type
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	100	0.3	0.04	0.27	0.00	0	0	0	10	40	30	20	0	Pool
2	100	0.4	0.04	0.03	1.21	0	0	0	10	30	50	10	0	Steady
3	100	0.4	0.04	0.00	6.34	0	0	0	5	20	35	40	0	Run
4	100	0.2	0.06	0.00	4.79	0	0	0	0	0	60	40	0	Run
5	100	0.4	0.03	-	7.66	0	0	0	5	10	60	25	0	Run
6	100	0.6	0.08	0.00	1.17	0	0	0	0	5	25	70	0	Steady
7	100	0.8	0.03	0.04	2.22	0	0	0	10	10	40	40	0	Steady
8	100	0.9	0.04	0.00	1.33	0	0	0	10	25	30	35	0	Steady
9	44	0.4	0.10	0.00	3.17	0	0	0	0	5	30	65	0	Steady

Source AMEC 2012

Table 5-23: Summary of habitat surveys completed in stream AD03, 2012.

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)	Substrate (%Coverage)								Habitat Type
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	100	0.5	0.11	0.19	0.0	0	0	0	0	2	20	75	0	Pool
2	100	0.4	0.14	0.04	0.0	0	0	0	0	0	40	60	0	Pool
3	120	0.7	0.09	0.05	0.0	0	0	0	0	0	50	50	0	Pool

Source AMEC 2012

Table 5-24: Summary of habitat surveys completed in stream AD04, 2012.

Reach	Length (m)	Wetted Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Slope (%)	Substrate (%Coverage)								Habitat Type
						Bedrock	Boulder	Rubble	Cobble	Gravel	Sand	Fines	Aq. Vegetation	
1	100	0.2	0.10	0.01	0.30	0	0	0	0	0	30	70	0	Pool
2	100	0.9	0.02	0.15	2.42	0	0	0	0	0	60		0	Steady
3	43	0.9	0.09	0.08	16.76	0	0	0	0	0	60		0	Run
4	100	0.7	0.05	0.08	0.00	0	0	0	0	0	60	40	0	Pool
5	100	0.7	0.05	0.00	0.26	0	0	0	0	0	60	30	0	Pool
6	100	0.6	0.03	0.43	1.38	0	0	0	0	0	40	25	0	Pool
7	100	0.4	0.05	0.00	6.13	0	0	0	0	0	40	15	0	Run
8	120	0.2	0.04	0.00	1.40	0	0	0	0	0	40	60	0	Pool

Source AMEC 2012

5.6 Lacustrine Fish Surveys

Fish community have been sampled in several waterbodies since 2011, utilizing a combination of fyke nets, gillnets and minnow traps. Similar to electrofishing surveys, discussed in Section 5.4, the intended outcome of lacustrine fish surveys has varied throughout the years of baseline assessment, with species presence and relative abundance being the focus in 2011 and 2023, with select population estimates being undertaken during 2012.

Rose Pond (RP01) sampled in 2011 had the highest total abundance throughout the baseline sampling program, with 326 fish/net-night. This pond was sampled again in 2012, however, catches at this time were significantly lower, with 2.50 fish/net-night (Figure 5-13). In general, most waterbodies sampled had relatively low CPUEs, typically less than 10 fish/net-night.

Below is a summary of the species presence and catch-per-unit-effort during each sampling year since 2011. Individual catch data since 2011 is presented in Appendix C, while high level biometric summaries, including length-weight relationships and length distributions are presented in Appendix D.

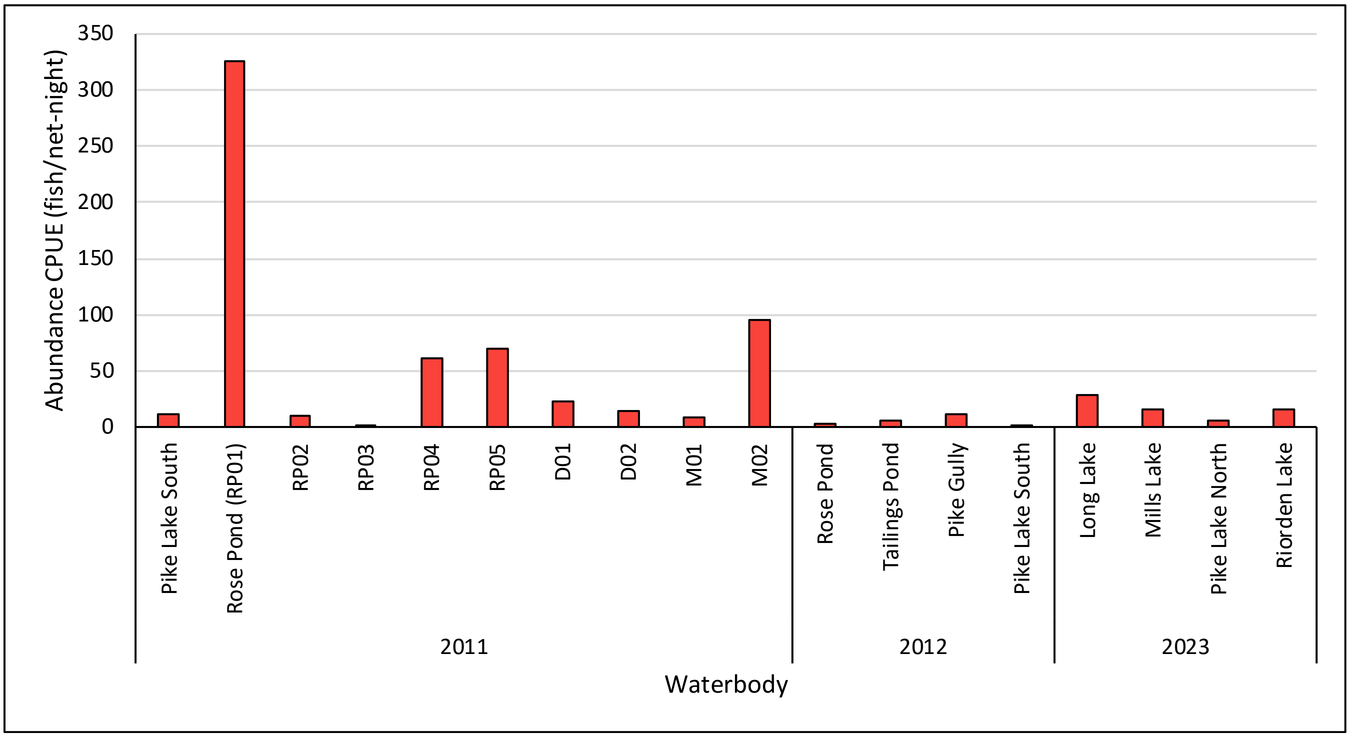


Figure 5-13: Overall Fyke Net Abundance Catch-Per-Unit-Effort in all Waterbodies Sampled Since 2011

5.6.1 2011 Lacustrine Fish Surveys

Baseline fish and fish habitat surveys were completed in 2011 (Stantec 2012), in various areas throughout the Project Area, with effort concentrated around the Rose Pit, and the Rose Pit Sedimentation Pond (Figure 1-1). Fish species presence and relative abundance was assessed using a combination of fyke nets and tended gillnets. Lake Chub were the most abundant species observed in 2011 (878 total captures; Table 5-25), while Northern Pike yielded the most biomass (5,126.1 total grams; Figure 5-14 through Figure 5-17). For fyke net, Rose Pond (RP01) had the highest abundance CPUE, with 326 fish/net-night, while Pond M02 had the highest biomass CPUE, with 2,312 g/net-night.

Table 5-25: Summary of 2011 Fyke Net Abundance Catch-Per-Unit-Effort and Biomass from Various Locations Throughout the Project Area

Waterbody	Species	Abundance		Biomass	
		Total Catch	CPUE (fish/net-night)	Total Catch (g)	CPUE (grams/net-night)
Pike Lake South	Burbot	2	1.00	1.2	0.60
	Lake Chub	7	3.50	18.6	9.30

Waterbody	Species	Abundance		Biomass	
		Total Catch	CPUE (fish/net-night)	Total Catch (g)	CPUE (grams/net-night)
	Northern Pike	3	1.50	2,405.5	1,202.75
	Sculpin	10	5.00	11.6	5.80
	Total	22	11.00	2,436.9	1,218.45
Rose Pond (RP01)	Burbot	1	0.50	38.0	19.00
	Lake Chub	639	319.50	1,919.7	959.85
	Northern Pike	1	0.50	126.5	63.25
	White Sucker	11	5.50	808.1	404.05
	Total	652	326.00	2,892.3	1,446.15
RP02	Lake Chub	6	3.00	24.4	12.20
	Northern Pike	2	1.00	1,195.0	597.50
	Sculpin	13	6.50	23.0	11.50
	Total	21	10.50	1,242.4	621.20
RP03	Northern Pike	2	1.00	2,594.1	1,297.07
	Total	2	1.00	2,594.1	1,297.07
RP04	Brook Trout	2	1.00	198.7	99.35
	Burbot	9	4.50	606.0	303.00
	Lake Chub	40	20.00	386.8	193.38
	Pearl Dace	29	14.50	198.3	99.15
	Sculpin	1	0.50	0.5	0.25
	White Sucker	41	20.50	1,089.0	544.49
	Total	122	61.00	2,479.2	1,239.62
RP05	Burbot	2	1.00	50.3	25.15
	Lake Chub	95	47.50	856.7	428.35
	Pearl Dace	33	16.50	168.6	84.30
	Sculpin	1	0.50	1.5	0.75
	White Sucker	9	4.50	110.4	55.20
	Total	140	70.00	1,187.5	593.75
D01	Brook Trout	2	1.00	46.7	23.35
	Burbot	13	6.50	198.1	99.05
	Lake Chub	12	6.00	27.4	13.70
	Longnose Sucker	10	5.00	504.2	252.10
	Pearl Dace	2	1.00	4.7	2.35
	Round Whitefish	2	1.00	59.3	29.65
	Sculpin	3	1.50	2.0	1.00
	White Sucker	2	1.00	58.2	29.10
	Total	46	23.00	900.6	450.30
D02	Brook Trout	1	88.10	46.7	23.35
	Burbot	2	150.80	198.1	99.05
	Lake Chub	2	11.00	27.4	13.70

Waterbody	Species	Abundance		Biomass	
		Total Catch	CPUE (fish/net-night)	Total Catch (g)	CPUE (grams/net-night)
	Longnose Dace	1	0.60	504.2	252.10
	Longnose Sucker	12	622.70	4.7	2.35
	Pearl Dace	9	11.10	59.3	29.65
	Sculpin	1	30.00	2.0	1.00
	Total	28	914.30	842.4	421.20
M01	Brook Trout	19	9.50	1,271.0	635.50
	Total	19	9.50	1,271.0	635.50
M02	Brook Trout	20	10.00	755.2	377.59
	Burbot	10	5.00	256.8	128.40
	Lake Chub	83	41.50	433.7	216.85
	Lake Trout	1	0.50	2,801.5	1,400.77
	Pearl Dace	77	38.50	377.6	188.79
	Total	191	95.50	4,624.8	2,312.39

Source Stantec 2012

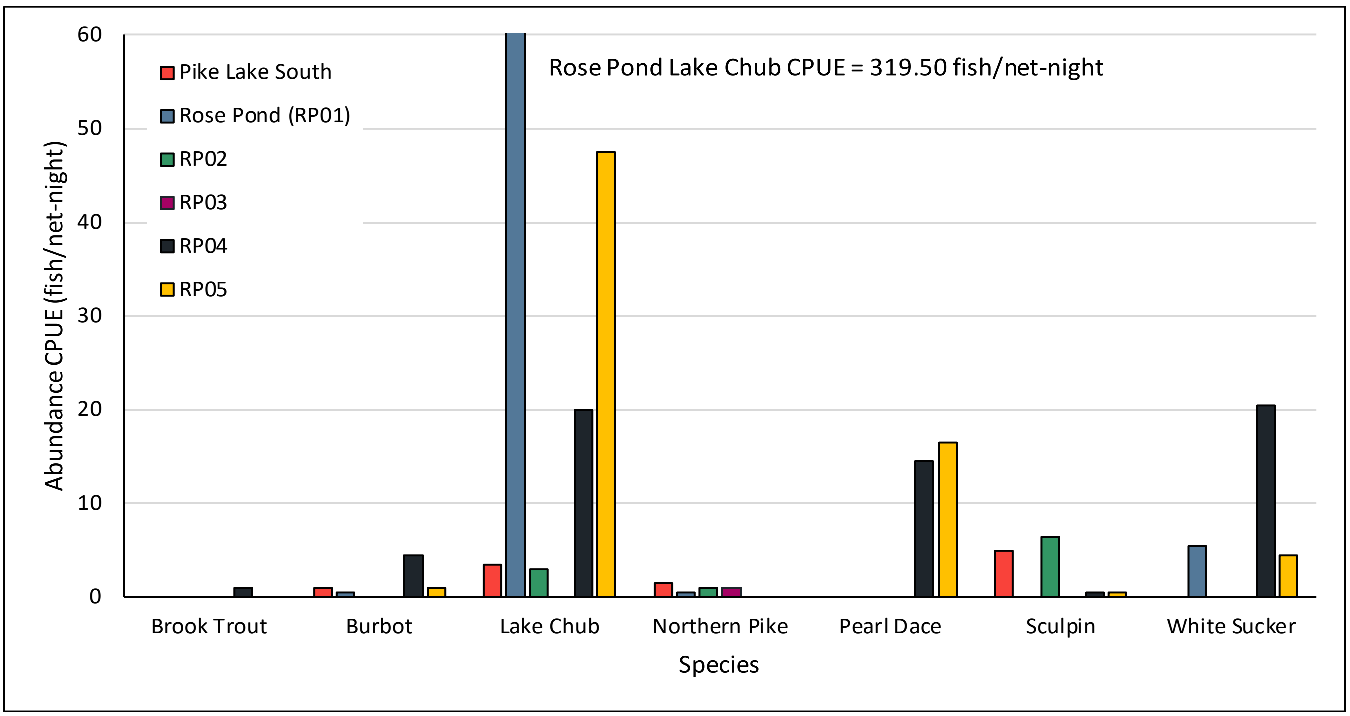


Figure 5-14: 2011 Fyke Net Abundance Catch-Per-Unit-Effort (Fish/Net-Night) For Waterbodies Sampled In The Rose Pit

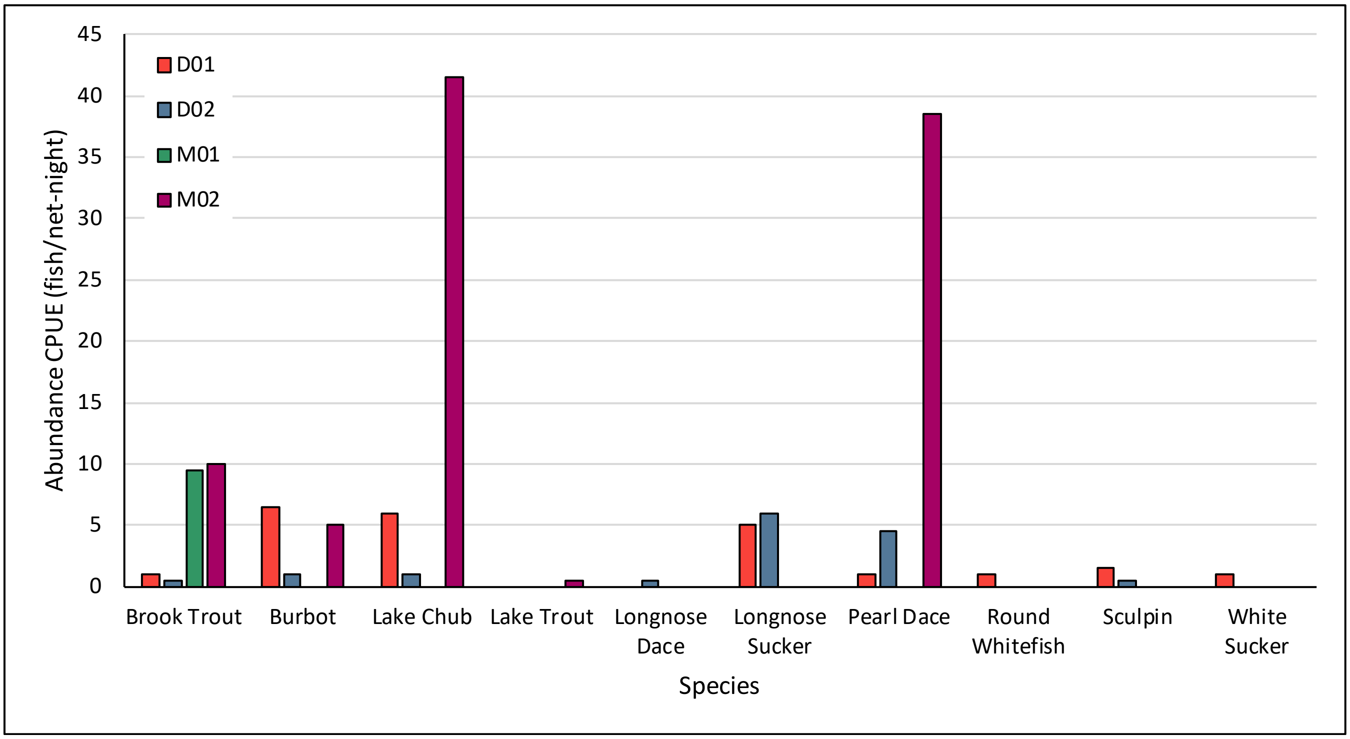


Figure 5-15: 2011 Fyke Net Abundance Catch-Per-Unit-Effort (Fish/Net-Night) in Ponds D01, D02, M01 and M02

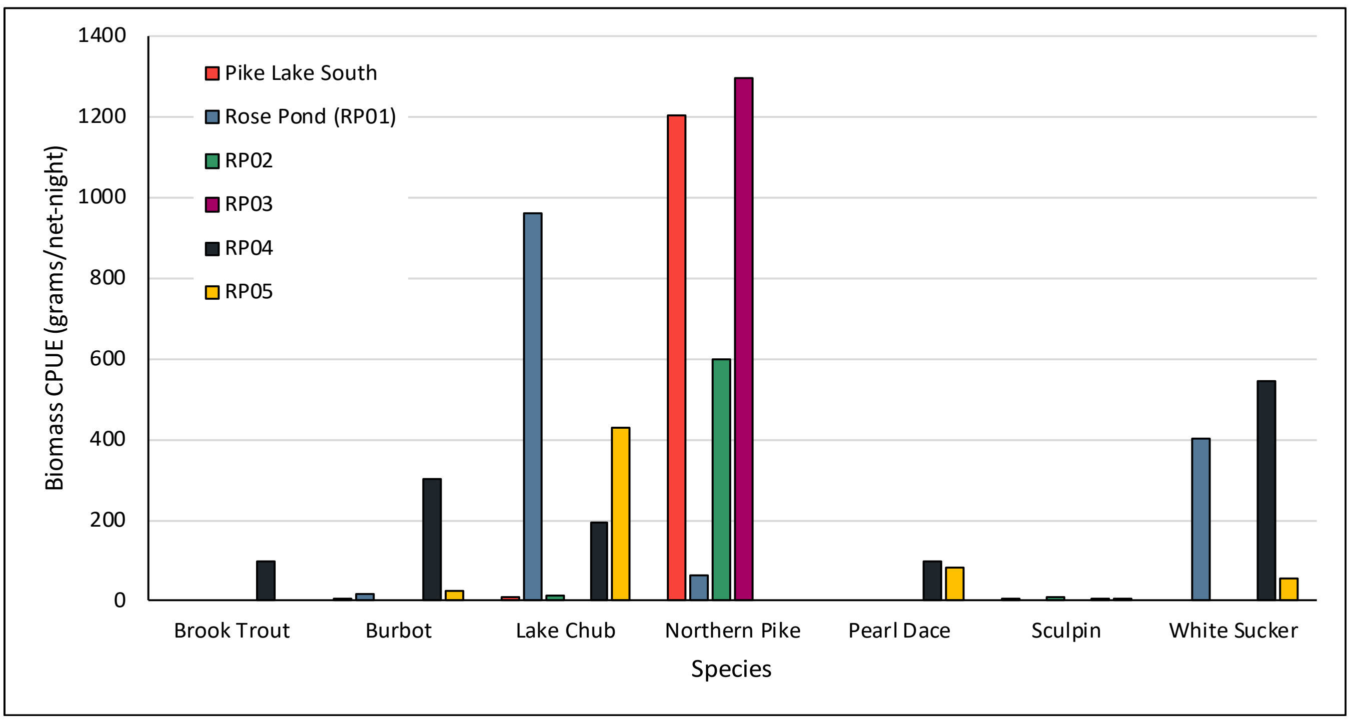


Figure 5-16: 2011 Fyke Net Biomass Catch-Per-Unit-Effort (Grams/Net-Night) for Waterbodies Sampled in the Rose Pit

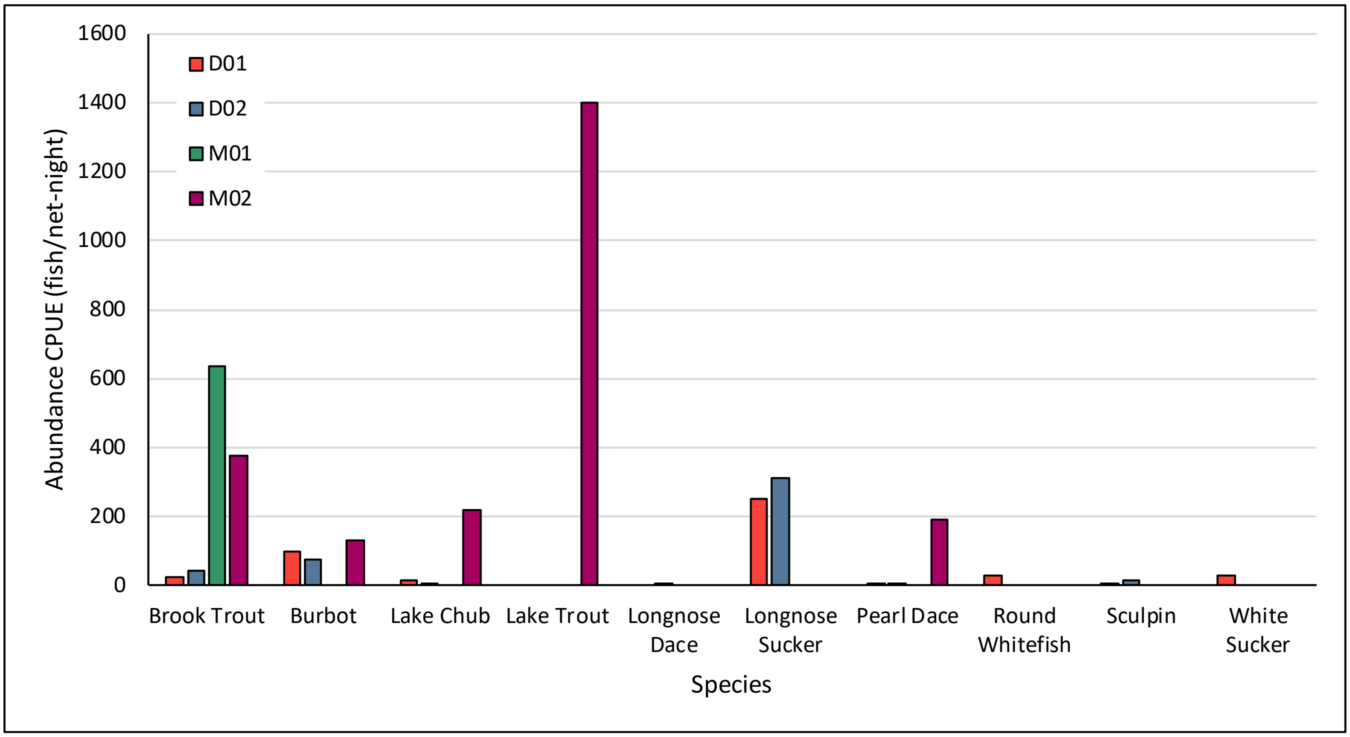


Figure 5-17: 2011 Fyke Net Biomass Catch-Per-Unit-Effort (Grams/Net-Night) in Ponds D01, D02, M01 and M02

Tended gill nets were deployed in each pond sampled during 2011. Brook Trout, Lake Trout, Northern Pike, Round Whitefish and White Sucker were the only species captured with gillnets (Table 5-26). Overall, Pond RP05 had the highest abundance CPUE (4.5 fish/net-hour) and the highest biomass CPUE (1,444.75 gram/net-night).

Table 5-26: Summary of 2011 Gill Net Abundance Catch-Per-Unit-Effort and Biomass from Various Locations Throughout the Project Area

Waterbody	Species	Abundance		Biomass	
		Total Catch	CPUE (fish/hour)	Total Catch (g)	CPUE (grams/hour)
Pike Lake South	Northern Pike	1	0.25	2,980.7	745.18
	White Sucker	1	0.25	17.6	4.40
	Total	2	0.50	2,998.3	749.58
Rose Pond (RP01)	Total	0	0.00	0.0	0.00
RP02	Northern Pike	1	0.25	1,338.4	334.6
	Total	1	0.25	1,338.4	334.6
RP03	Northern Pike	2	0.50	3,123.0	780.75
	Total	2	0.50	3,123.0	780.75
RP04	White Sucker	3	0.75	2,394.7	598.68
	Total	3	0.75	2,394.7	598.68

Waterbody	Species	Abundance		Biomass	
		Total Catch	CPUE (fish/hour)	Total Catch (g)	CPUE (grams/hour)
RP05	Brook Trout	7	1.75	1,790.2	447.55
	White Sucker	11	2.75	3,988.8	997.20
	Total	18	4.50	5,779.0	1,444.75
D01	Lake Trout	2	0.50	1,463.8	365.95
	Round Whitefish	5	1.25	1,259.0	314.75
	Total	7	1.75	2,722.8	680.70
D02	Brook Trout	1	0.25	703.1	175.78
	Total	1	0.25	703.1	175.78
M01	Brook Trout	2	0.50	104.1	26.03
	Total	2	0.50	104.1	26.03
M02	Brook Trout	5	1.25	340.4	85.1
	Total	5	1.25	340.4	85.1

Source Stantec 2012

5.6.2 2012 Lacustrine Fish Surveys

Fish populations were assessed in 2012 (AMEC 2012), with efforts again focused on the proposed Rose Pit. Sampling was completed in Rose Pond, Pike Gully and in Pike Lake South. Additional effort was completed within the Tailings Pond. Throughout 2012, White Sucker and Northern Pike were the most abundant species observed (Table 5-27 and Figure 5-18 and they yielded the highest biomass Table 5-28 and Figure 5-19). Pike Gully had the highest abundance CPUE (11.33 fish/net-night) and biomass CPUE (2,291.34 gram/net-night) of any of the waterbodies sampled in 2012, primarily due to high catch rates of White Sucker.

Table 5-27: Summary Of 2012 Fyke Net Abundance and Biomass Catch-Per-Unit-Effort From Pike Lake South, Pike Gully, Rose Pond And Tailings Management Facility

Waterbody	Species	Abundance		Biomass	
		Total Catch[1]	CPUE (fish/net-night)	Total Catch (g)[2]	CPUE (grams/net-night)
Pike Lake South	Burbot	31	1.29	68.3	2.85
	Lake Chub	1	0.04	4.6	0.19
	Northern Pike	14	0.58	7,090.4	295.43
	Sculpin	3	0.13	12.5	0.52
	Total	49	2.04	7,175.8	298.99
Pike Gully	Burbot	2	0.33	16.5	2.75
	Northern Pike	3	0.50	202.0	33.67
	White Sucker	63	10.50	13,529.5	2,254.92
	Total	68	11.33	13,748.0	2,291.34
Rose Pond	Brook Trout	6	0.24	1794.4	71.78

Waterbody	Species	Abundance		Biomass	
		Total Catch[1]	CPUE (fish/net-night)	Total Catch (g)[2]	CPUE (grams/net-night)
	Burbot	3	0.12	32.9	1.32
	Lake Chub	2	0.08	11.2	0.45
	Northern Pike	42	1.68	7677.6	307.11
	Sculpin	3	0.12	8.0	0.32
	White Sucker	7	0.28	1509.1	60.36
	Total	63	2.52	11,033.2	441.34
Tailings Pond	Brook Trout	7	1.40	253.2	50.64
	Lake Chub	49	9.80	314.5	62.89
	Total	56	11.20	567.7	113.53

Source AMEC 2012

[1] Total catch and CPUEs include all fish captured, including recaptures.

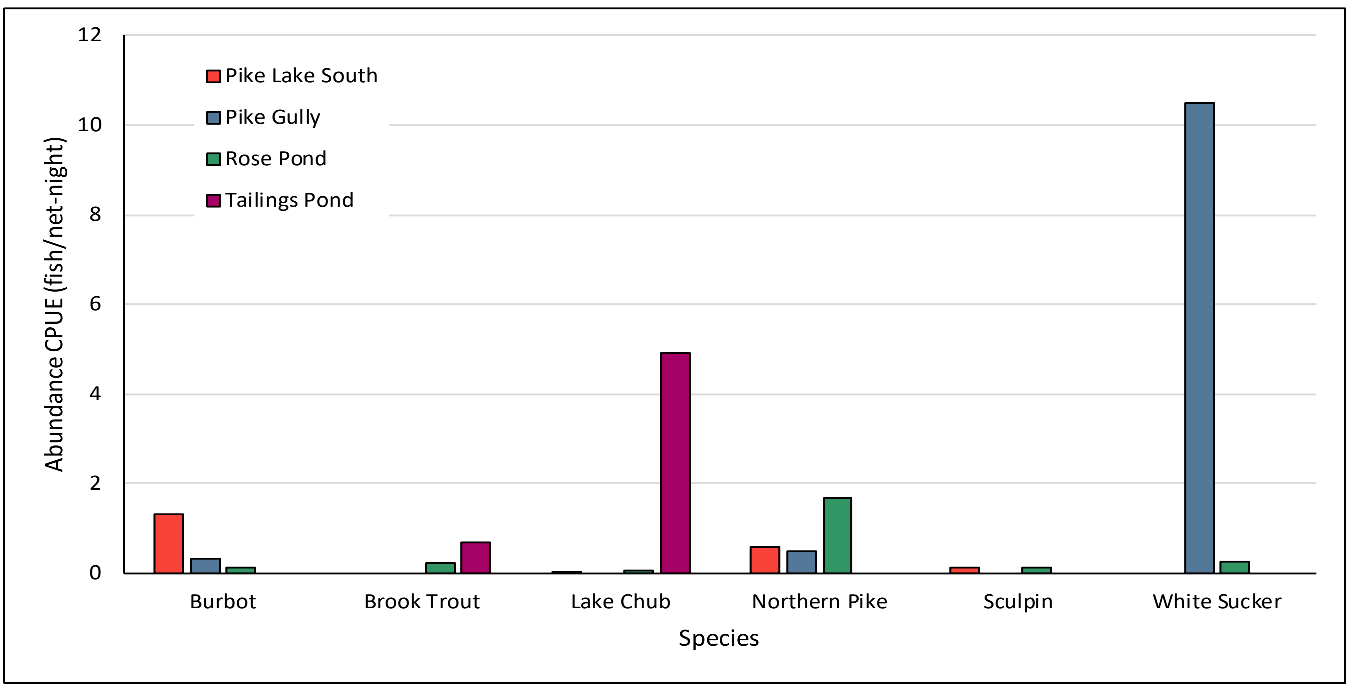


Figure 5-18: 2012 Fyke Net Abundance Catch-Per-Unit-Effort (Fish/Net-Night) Pike Lake South, Pike Gully, Rose Pond and Tailings Pond

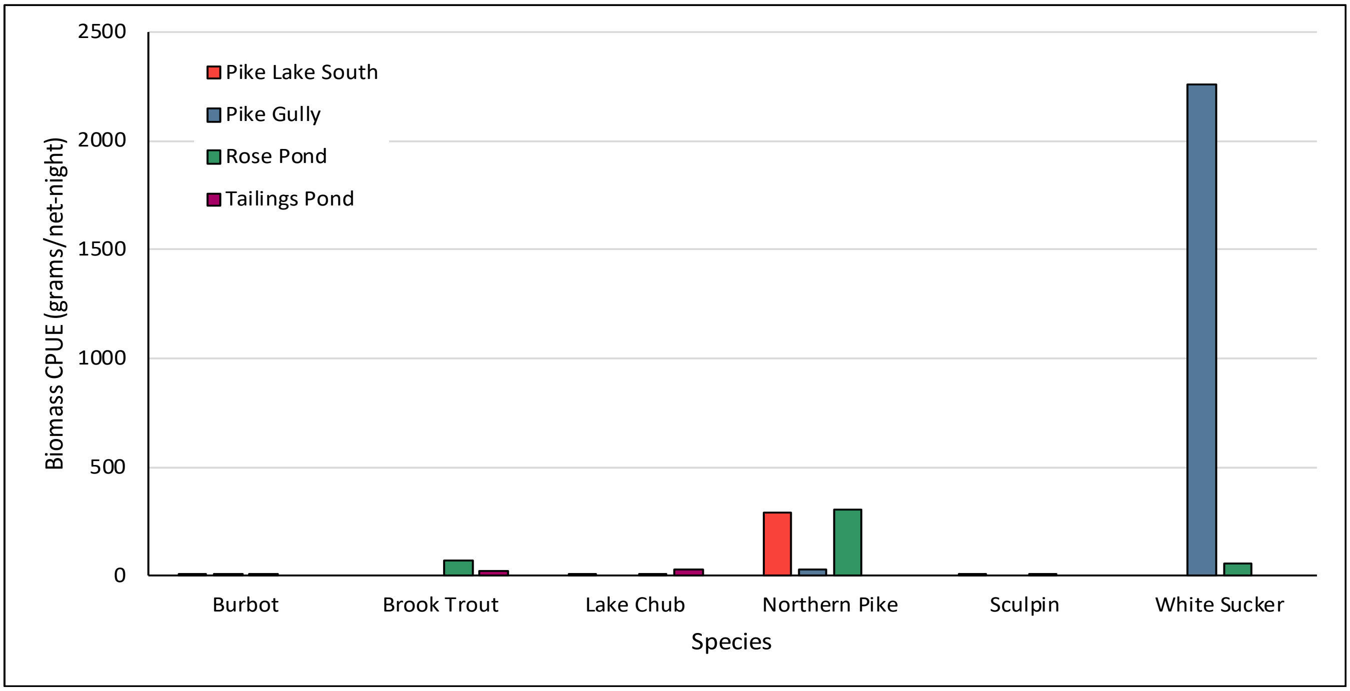


Figure 5-19: 2012 Fyke Net Biomass Catch-Per-Unit-Effort (Grams/Net-Night) Pike Lake South, Pike Gully, Rose Pond And Tailings Pond

Population estimates were also completed for Brook Trout and Northern Pike in each of the waterbodies sampled in 2012. Northern Pike were more abundant with a total of 59 caught than Brook Trout in each waterbody, except Tailings Pond (Table 5-28). Rose Pond had the highest Northern Pike abundance estimate with 128 Northern Pike.

Table 5-28: Summary of Number of Fish Caught and Population Estimates from 2012 in Pike Lake South, Pike Gully, Rose Pond and Tailings Pond

Waterbody	Species	Total Catch	Total Recaptures	Population Estimate[1]	95% Confidence Interval
Pike Lake South	Brook Trout	0	0	-	-
	Northern Pike	14	1	38	11-73
Pike Gully	Brook Trout	0	0	-	-
	Northern Pike	3	3[2]	3[3]	-[3]
Rose Pond	Brook Trout	6	0[2]	6	2-12
	Northern Pike	42	4	128	57-306
Tailings Pond	Brook Trout	7	0[2]	8	2-16
	Northern Pike	0	0	-	-

Source AMEC 2012

1 Estimates based on Schnabel method in FSA Package (Ogle 2016) for R (R Core Team 2020)

2 No recaptures observed. One recaptured assumed on last day to complete calculations.

3 Low catch rates resulted in poor estimates. Total catch is presented as estimate and confidence intervals are not presented.

5.6.3 2023 Lacustrine Fish Surveys

Fish survey effort in 2023 was focused on Long Lake, Mills Lake, Pike Lake North and Riordan Lake, larger waterbodies downstream of the project footprint, which are all interest to the general public. Long Lake and Mills Lake were both identified during the 2012 Regional Fisheries Surveys as waterbodies frequented by local recreational fishers (Section 5.1).

Overall, abundance CPUE was highest in Long Lake, with 28.50 fish/net-night, while biomass CPUE was highest in Pike Lake North, with 1,035.85 grams/net-night (Table 5-29). Lake Chub were the most abundant species observed during 2023 with 203 observed (Figure 5-20), while White Sucker yielded the most biomass with 12,408.4g caught (Figure 5-20: 2023 Fyke Net Abundance Catch-Per-Unit-Effort (Fish/Net-Night) in Long Lake, Mills Lake, Pike Lake North and Riordan Lake

). Long Lake had the highest abundance CPUE (28.5 fish/net-night) of the waterbodies sampled in 2023, while Pike Lake North had the highest biomass CPUE (1,035.85 g/net-night).

Tended gillnets were deployed in each waterbody sampled in 2023 for 15 to 20-minute sets. There were no fish captured in Long Lake or Riordan Lake with tended gillnets. A total of two Round Whitefish were captured in Mills Lake. Seven Lake Whitefish and four White Sucker were captured in Pike Lake North.

Table 5-29: Summary of 2023 Fyke Net Catch-Per-Unit-Effort In Long Lake, Mills Lake, Pike Lake North and Riordan Lake

Waterbody	Species	Abundance		Biomass	
		Total Catch	CPUE (fish/net-night)	Total Catch (g)	CPUE (grams/net-night)
Long Lake	Burbot	4	0.40	41.0	4.10
	Lake Chub	36	3.60	246.2	24.62
	Longnose Sucker	111	11.10	1,520.6	152.06
	Round Whitefish	1	0.10	2.5	0.25
	Sculpin	9	0.90	14.6	1.46
	White Sucker	124	12.40	1,688.7	169.87
	Total	285	28.50	3,513.6	351.36
Mills Lake	Brook Trout	3	0.3	715.7	71.57
	Burbot	12	1.2	1,095.60	109.56
	Lake Chub	35	3.50	155.7	15.57
	Longnose Dace	3	0.30	11.3	1.13
	Longnose Sucker	81	8.10	1,911.8	191.18
	Sculpin	30	3.00	69.0	6.90
	Total	164	16.4	3,959.1	395.91
Pike Lake North	Burbot	3	0.30	30.8	3.08
	Lake Chub	1	0.10	8.3	0.83
	Northern Pike	11	1.10	67.9	6.79

Waterbody	Species	Abundance		Biomass	
		Total Catch	CPUE (fish/net-night)	Total Catch (g)	CPUE (grams/net-night)
	Sculpin	8	0.80	10.8	1.08
	White Sucker	31	3.10	10,240.7	1,024.07
	Total	54	5.40	10,358.5	1,035.85
Riordan Lake	Brook Trout	1	0.20	2.6	0.52
	Burbot	11	2.20	644.7	128.94
	Lake Chub	56	11.20	485.2	97.05
	Longnose Dace	6	1.20	34.7	6.94
	Longnose Sucker	2	0.40	285.5	57.10
	Sculpin	1	0.20	4.4	0.88
	White Sucker	4	0.80	479.0	95.80
	Total	81	16.20	1,936.1	387.23

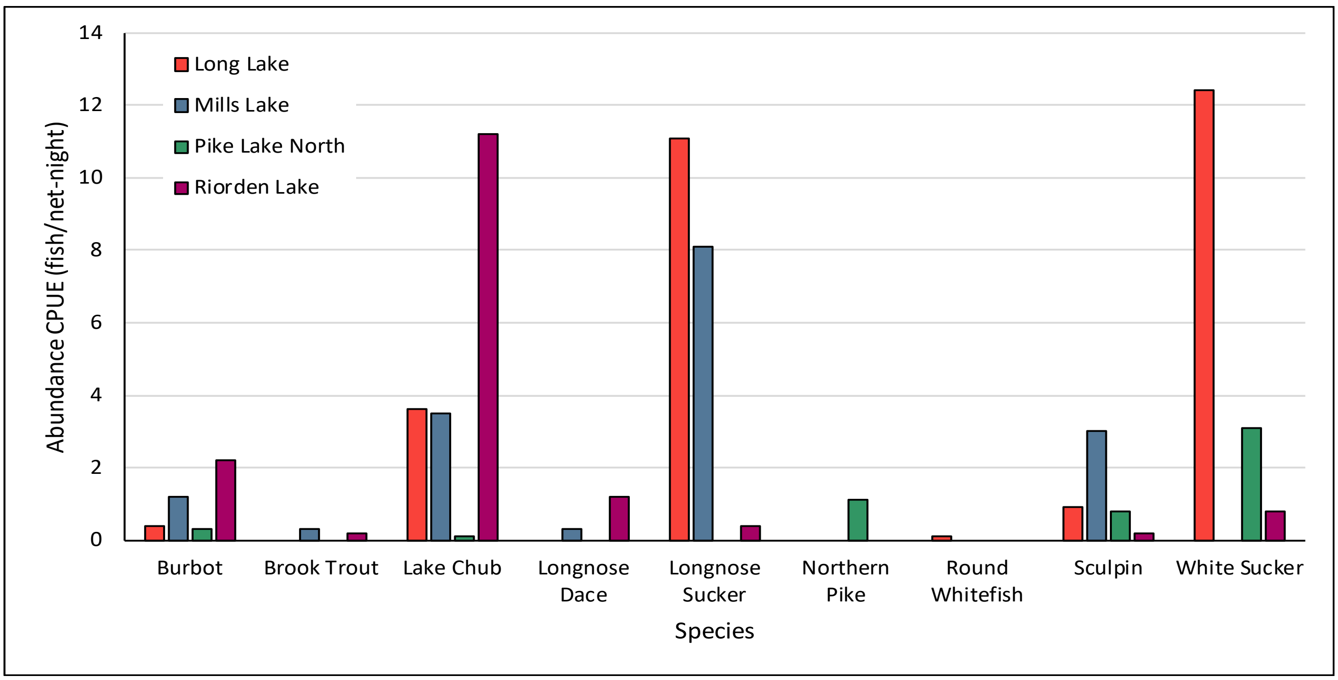


Figure 5-20: 2023 Fyke Net Abundance Catch-Per-Unit-Effort (Fish/Net-Night) in Long Lake, Mills Lake, Pike Lake North and Riordan Lake

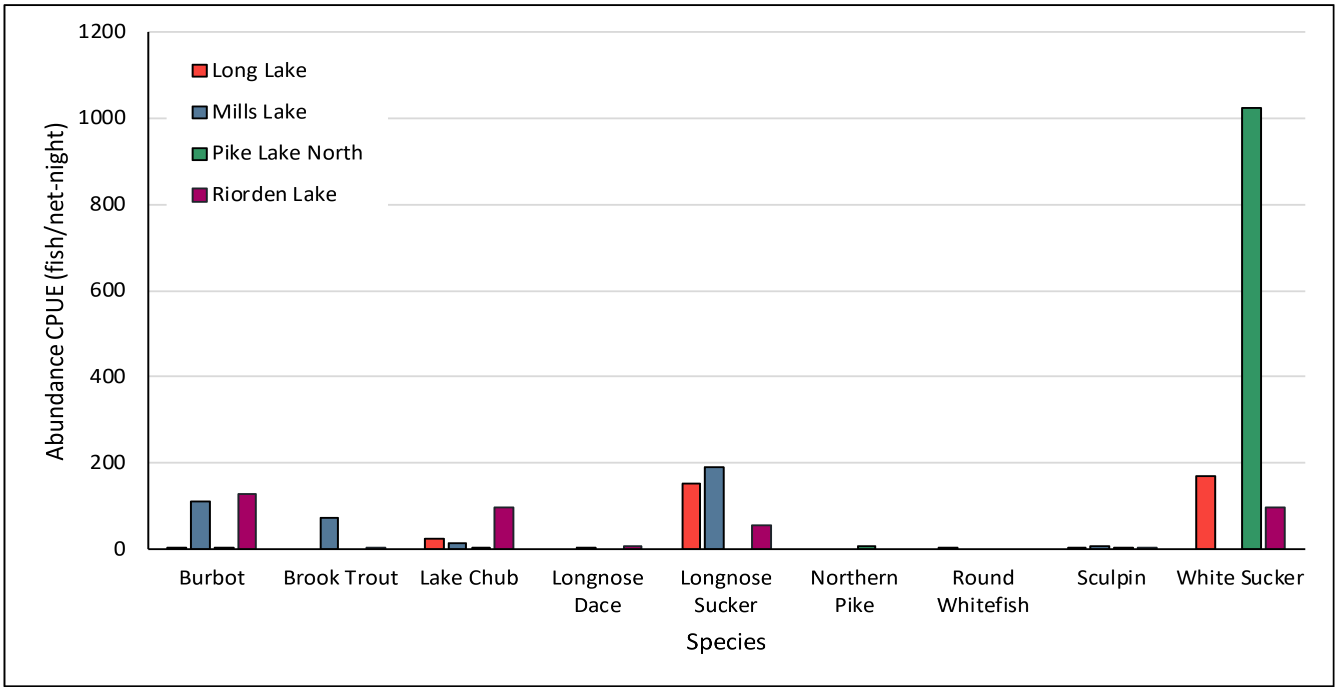


Figure 5-21: Fyke net biomass CPUE (grams/net-night) in Long Lake, Mills Lake, Pike Lake North and Riordan Lake, 2023

6.0 KEY FINDINGS

In 2023, field surveys were conducted to collect fish and fish habitat data in relation to the proposed infrastructure for the Kami Project. A total of 4 lakes and 1 stream were visited for fish habitat assessment and fish surveys (fish community surveys and abundance) in 2023. Brook Trout, Burbot, Lake Chub, Longnose Dace, Longnose Sucker, Northern Pike, Round Whitefish, Sculpin sp. and White Sucker were caught in lakes in 2023. Brook Trout, Burbot, Lake Chub, Longnose Dace, Longnose Sucker, Sculpin sp. and White Sucker were caught in Long Lake Outflow, the only stream surveyed for fish community in 2023.

The 2023 data was combined with the data collected in 2011 by Stantec and 2012 by AMEC and presented in previous sections. Overall, 18 ponds/lakes and 18 streams were surveyed for fish habitat assessment and 34 streams were surveyed for fish community and abundance between 2011 and 2023.

Signature Page

WSP Canada Inc.

Matthew Gosse, B.Sc.
Biologist

Marie-Claire Robataille, M.Sc
Biologist

MG/MCR/JMC

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APPENDIX A

Riverine Habitat Survey Data

Site	Sampling Sub-section	Distance (m)	Stream Width	Velocity (m/s) 25%	50%	75%	Depth (cm) 25%	50%	75%	Substrate Composition (%) BR	B	R	C	G	S	F	Aquatic Vegetation (%)	Riparian S	G	T	Comment
		0	15.4	1.46	0.569	0.048	18	21	10												
		25	6	0.86	1.203	0.259	46	24	28												
SC01	0 to 50	50	6.6	0.156	1.656	0.287	14	46	14	0	10	50	30	10	0	0	0	5	35	60	Survey area begins under pond habitat and transitions into a rapid/riffle area.
		50	6.6	0.156	1.656	0.287	14	46	14												
		75	6.7	0.16	1.017	0.458	46	58	28												
SC01	50 to 100	100	17	0.084	0.214	0.136	26	48	69	0	20	35	15	5	25	0	0	15	15	70	Flow type is rapids that transitions into wide run.
		100	17	0.084	0.214	0.136	26	48	69												
		125	18.5	0.127	0.136	0.129	86	68	38												
SC01	100 to 150	150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	15	5	5	5	70	0	0	20	20	60	Habitat is wide run to steady transitioning into pond habitat.
		0	33	0.064	0.094	0	48	90	82												
		25	33	0.108	0.131	0.099	45	72	88												
SC02	0 to 50	50	23	0	0.023	0.018	24	58	118	0	5	0	10	10	70	5	5	15	60	25	Habitat transitions from lake habitat to stream like at constriction point and peninsula area.
		50	23	0	0.023	0.018	24	58	118												
		75	21	0.109	0.1	0.065	66	162	105												
SC02	50 to 100	100	23	0.062	0.113	0.3	48	85	127	0	5	0	5	15	70	5	5	30	55	15	Stream like habitat continues on the eastern shoreline and transitions into lake habitat on western portion influenced by peninsula and delta area.
		0	1.8	0.077	0.121	0	24	24	22												
		25	0.8	0.042	0.025	0.119	28	20	10												
SC03	0 to 50	50	1.2	0	0.135	0.066	12	6	16	20	30	20	0	10	20	0	5	30	65	5	Flow type is narrow steady transitioning into mostly riffle with a few runs and small chutes. Steep banks with some undercuts.
		50	1.2	0	0.135	0.066	12	6	16												
		75	2.1	0.026	0.104	0.054	16	16	12												
SC03	50 to 100	100	1.5	0	0.064	0	17	31	28	0	40	0	0	30	30	0	0	30	45	20	Flow type is slow runs divided by riffles.
		100	1.5	0	0.064	0	17	31	28												
		125	0.4	0.987	0	0	15	14	8												
SC03	100 to 150	150	0.7	0.491	0.466	0	6	18	13	0	30	20	0	30	20	0	5	50	45	5	Flow type is riffle / run with a few small pools. Steep, mossy banks with a lot of overhanging vegetation.
		150	0.7	0.491	0.466	0	6	18	13												
		175	0.8	0.061	0.131	0.301	20	16	18												
SC03	150 to 200	200	1	0	0.029	0	26	26	31	0	20	40	0	30	10	0	0	45	45	10	Channel narrow and heavily meandering with steep banks.
		0	3.1	0.075	0.142	0.318	60	65	62												
		25	3.3	0.541	0.297	0.194	34	38	29												
SC04	0 to 50	50	3.2	0.425	0.107	0.654	20	44	34	0	30	20	20	10	20	0	0	60	0	40	Flow type is slow deep runs separated by riffles.
		50	3.2	0.425	0.107	0.654	20	44	34												
		75	3.4	0.247	0.168	0.435	38	45	18												
SC04	50 to 100	100	2.7	0.203	0.099	0.839	25	35	40	0	20	30	20	15	15	0	0	40	0	60	Flow type is runs separated by short riffles.
		100	2.7	0.203	0.099	0.839	25	35	40												
		125	3.9	0.486	0.235	0.373	22	25	22												
SC04	100 to 150	150	3.4	0.449	0.333	0.306	32	44	23	0	25	30	15	10	20	0	0	45	10	45	Flow type is riffle / run.
		150	3.4	0.449	0.333	0.306	32	44	23												
		175	2.9	0.138	0.297	0.387	46	37	32												
SC04	150 to 200	200	3.6	0.379	0.209	0.206	39	38	34	0	10	20	30	20	20	0	0	40	20	40	Deep slow flat with intermittent riffles. Stream enters a wide open recent burn area.
		200	3.6	0.379	0.209	0.206	39	38	34												
		225	5.2	0.134	0.164	0.297	46	54	34												
SC04	200 to 250	250	2.5	0.19	0.345	0.283	40	62	72	0	10	25	25	20	20	0	0	40	40	20	Deep slow flat with intermittent riffles.
		250	2.5	0.19	0.345	0.283	40	62	72												
		275	3.4	0.162	0.317	0.394	35	20	39												
SC04	250 to 300	300	3.1	0.131	0.18	0.11	80	88	95	0	10	30	20	20	20	0	0	40	60	0	Runs with intermittent riffles.
		300	3.1	0.131	0.18	0.11	80	88	95												
		325	2.4	0.263	0.266	0.385	52	45	30												
SC04	300 to 350	350	2.4	0.268	0.414	0.164	26	44	48	10	10	30	30	10	10	0	0	40	60	0	Deep slow flat with intermittent riffles.
		350	2.4	0.263	0.266	0.385	52	45	30												
		375	4.9	0.24	0.23	0.18	42	50	45												
SC04	350 to 400	400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	20	20	20	20	20	0	0	30	55	15	Deep slow flat with intermittent riffles.
		0	2.9	0.029	0.047	0.021	24	26	26												
		25	2.7	0.028	0.035	0.055	28	14	12												
SC05	0 to 50	50	3.6	0	0.014	0.019	40	36	32	0	35	20	20	25	0	0	0	80	15	5	Flow type flats /pools separated by short riffles.
		50	3.6	0	0.014	0.019	40	36	32												
		75	2.2	0.077	0.102	0.131	14	12	12												
SC05	50 to 100	100	2.4	0.02	0	0	20	20	20	0	25	25	25	25	0	0	0	75	15	10	Flow type is long flat separated by short boulder /rubble riffles.
		100	2.4	0.02	0	0	20	20	20												
		125	3.5	0.03	0.04	0	26	32	20												
SC05	100 to 150	150	2.1	0.038	0.015	0.007	26	16	11	0	30	30	25	15	0	0	10	70	15	15	Flow type is flat /riffle. Some emergent vegetation along bank margins.
		150	2.1	0.038	0.015	0	26	16	11												
		175	2.7	0.461	0.216	0.122	6	4	6												
SC05	150 to 200	200	3.6	0	0.455	0	10	12	10	0	30	30	20	20	0	0	0	65	25	10	Flow type is riffle or riffle /run. Steep banks with some deep undercuts.
		0	3	0.065	0.13	0.186	54	56	60												
		25	3.2	0.322	0.84	0.352	14	30	22												
SC06	0 to 50	50	3	0.576	0.738	0.086	20	31	8	0	5	15	50	20	10	0	0	40	15	45	Flow type is steep riffle becoming moderately fast run.
		50	3	0.576	0.738	0.086	20	31	8												
		75	3.1	0.188	1.044	0	8	28	16												
SC06	50 to 100	100	3.8	0.663	0.91	0.37	14	16	10	0	5	15	40	35	5	0	0	40	10	50	Flow type is mostly riffle with some drops over fallen woody debris.
		100	4	0.175	1.101	0.061	20	14	16												
		125	2.8	0.156	0.342	0.09	26	24	14												
SC06	100 to 150	150	3	0.498	0.779	0.27	10	10	14	0	90	0	5	5	0	0	0	0	60	40	Rapidly varied-non uniform flow along the channel with steep sections.
		150	3	0.498	0.779	0.27	10	10	14												
		175	2.2	0.83	0.215	0.03	36	38	26												
SC06	150 to 200	200	1	0.748	0.673	0.528	34	34	36	0	50	0	25	15	10	0	0	0	90	10	Rapidly varied-non uniform flow along the channel, large boulders and debris present.
		200	1	0.748	0.673	0.528	34	34	36												
		225	3.4	0.708	0.06	0.06	25	25	18												
SC06	200 to 250	250	1.5	0.458	1.113	1.07	25	32	32	0	60	0	30	10	0	0	0	70	20	10	Predominant flow regime comprised of pools and riffles.
		250	1.5	0.458	1.113	1.07	25	32	32												
		275	4	0.134	0.165	0.01	62	48	37												
SC06	250 to 300	300	3	0.227	0.455	0.377	16	20	20	0	100	0	0	0	0	0	0	75	20	5	Predominant flow regime comprised of pools and riffles.
		300	3	0.227	0.455	0.377	16	20	20												
		325	3.8	0.706	0.298	0.162	16	18	14												
SC06	300 to 350	350	3.5	0.106	0.348	0.177	14	28	20	0	100	0	0	0	0	0	0	80	10	10	Predominant flow regime comprised of pools and riffles with wider channel sections.
		350	3.5	0.106	0.348	0.177	14	28	20												
		375	5	0.222	0.157	0.129	30	22	16												
SC06	350 to 400	400	5	0.257	0.278	0.499	16	14	10	0	95	0	0	5	0	0	0	70	20	10	Predominant flow regime comprised of pools and riffles with wider channel sections.
		0	2.1	0.05	0.04	0.012	27	24	16												
		25	2	0.115	0.03	0.028	8	10	12												
SC07	0 to 50	50	0.8	0.161	0.089	0.069	10	12	14	0	10	30	20	20	20	0	5	35	55	10	Flow type is slow run / flat with some riffles. Deep undercut banks. Flows through black spruce moss forest.
		50	0.8	0.161	0.089	0.069	10	12	14												
		75	2.3	0.088	0.044	0.155	20	20	10												
SC07	50 to 100	100	1.1	0.155	0.125	0.187	8	10	9	0	30	20	30	15	5	0	0	15	70	15	Flow type is slow run / flat with some riffles. Deep undercut banks. Flows through black spruce moss forest.
		100	1.1	0.155	0.125	0.187	8	10	9												
		125	2.5	0.074	0	0.2	14	6	6												
SC07	100 to 150	150	1.3	0.347	0.038	0.001	18	14	8	0	20	30	20	10	20	0	0	45	45	10	Flow type is slow run / flat with some riffles. Deep undercut banks. Flows through black spruce moss forest.
		150	1.3	0.347	0.038	0	18	14	8												
		175	1.7	0.013	0.104	0.275	20	24	22												
SC07	150 to 200	200	2	0.14	0.105	0.103	10	12	15	0	15	30	20	10	25	0	5	40	40	20	Flow type is slow run / flat with some riffles. Deep undercut banks. Stream narrows in places with undercut banks and some underground flow.
		200	2	0.14	0.105	0.103	10	12	15												
		225	1.3	0.065	0.031	0.044	28	33	20												
SC07	200 to 250	250	1.9	0.067	0	0	25	29	24	0	30	10	0	0	60	0	0	20	75	5	Flow type is slow run / flat with some riffles. Deep undercut banks. Flows through black spruce moss forest.
		250	1.9	0.067	0	0	25	29	24												
		275	1.6	0.042	0.035	0.023	31	44	42												
SC07	250 to 300	300	1.5	0.047	0.136	0.051	27	44	30	0	10	20	20	0	0	50	15	45	45	10	Flow type is slow run / flat with some riffles. Deep undercut banks. Flows through black spruce moss forest.
		300	1.5	0.047	0.136	0.051	27	44	30												
		325	2.2	0.064	0	0.061	27	31	24												
SC07	300 to 350	350	1.4	0.126	0	0.062	21	9	14	0	20	10	0	0	0	70	20	60	15	25	Flow type is slow run / flat with some riffles. Deep undercut banks. Flows through black spruce moss forest.

Site	Sampling Sub-section	Distance (m)	Stream Width	Velocity (m/s) 25%	50%	75%	Depth (cm) 25%	50%	75%	Substrate Composition (%) BR	B	R	C	G	S	F	Aquatic Vegetation (%)	Riparian S	G	T	Comment
		0	0.5	0.323	0.187	0.021	12	10	10												
		25	0.6	0.097	0.146	0.034	32	28	22												
SC08	0 to 50	50	0.7	0.117	0.065	0.175	20	20	20	0	0	0	60	10	30	0	0	0	0	100	Flow is steady running on dense vegetation\alders.
		50	0.7	0.117	0.065	0.175	20	20	20												
		75	0.9	0.037	0.193	0.085	14	12	12												
SC08	50 to 100	100	1.2	0.073	0.03	0.089	20	18	18	0	10	0	0	0	70	20	0	0	0	100	Flow is steady running on dense vegetation\alders.
		100	1.2	0.073	0.03	0.089	20	18	18												
		125	0.8	0.133	0.295	0.048	16	18	11												
SC08	100 to 150	150	0.6	0.091	0.141	0	22	25	25	0	0	0	0	0	90	10	0	30	45	25	Flow is steady running on dense vegetation\alders.
		150	0.6	0.091	0.141	0	22	25	25												
		175	0.6	0.183	0.121	0.01	13	14	12												
SC08	150 to 200	200	0.7	0.098	0.207	0.146	5	4	4	0	60	0	0	0	40	0	0	50	45	5	Flow is steady with dense vegetation\grass on banks.
		200	0.7	0.098	0.207	0.146	5	4	4												
		225	0.5	0.106	0.078	0.208	14	8	10												
SC08	200 to 250	250	0.6	0.058	0.058	0	10	10	12	0	60	0	0	0	40	0	0	50	45	5	Flow is steady with dense vegetation\grass on banks.
		250	0.6	0.058	0.058	0	10	10	12												
		275	0.2	0.163	0.147	0	14	14	12												
SC08	250 to 300	300	0.7	0.233	0.244	0.093	15	14	12	0	0	0	0	0	50	50	0	50	45	5	Flow is steady with dense vegetation\grass on banks.
		300	0.7	0.233	0.244	0.093	15	14	12												
		325	1	0.11	0.331	0.074	8	12	16												
SC08	300 to 350	350	0.6	0.125	0.116	0	12	14	8	0	0	0	0	0	80	20	0	35	40	25	Flow is steady with dense vegetation\grass on banks.
		350	0.6	0.125	0.116	0	12	14	8												
		375	0.5	0.126	0.131	0.131	20	18	14												
SC08	350 to 400	400	0.4	0.229	0.288	0.156	8	9	9	0	0	0	0	0	60	40	0	20	40	40	Flow is steady with dense vegetation\grass on banks.
		0	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		25	23	0.586	0.014	0.32	32	20	40												
SC09	0 to 50	50	11.9	0	0.819	0.492	46	46	50	0	30	30	25	15	0	0	0	80	5	15	Bottom 25m too deep to wade. Flow type is rapids (fast and wide river).
		50	11.9	0	0.819	0.492	46	46	50												
		75	10	1.311	0.109	0.48	40	34	N/A												
SC09	50 to 100	100	10.8	1.021	1.012	1.031	44	58	34	0	35	25	25	15	0	0	0	90	0	10	Flow type is fast wide rapids. Far side of river (last 3m left downstream bank) across too fast to safely wade.
		100	10.8	1.021	1.012	1.031	44	58	34												
		125	15.1	1.45	0.984	0	40	22	12												
SC09	100 to 150	150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	40	30	30	0	0	0	0	90	5	5	Flow type is fast, wide rapids. 50 m upstream falls on existing roadway.
		150	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		175	22.5	0	0.521	0.38	30	80	70												
SC09	150 to 200	200	15.1	0.852	0.604	0.753	50	50	52	0	15	20	20	15	30	0	0	95	0	5	Flow type is run with riffle / rapids at top end.
		0	1.8	0.051	0.039	0	94	90	80												
		25	2.1	0.055	0.03/0.01	0	97	1	1												
SC10	0 to 50	50	2.3	0.053	0.037	0.024	78	92	98	0	0	0	0	0	0	100	15	10	85	5	Flow type is slow moving flat / steady through wide bog area.
		50	2.3	0.053	0.037	0.024	78	92	98												
		75	2.6	0	0.00/0.06	0	98	1	92												
SC10	50 to 100	100	2.3	0.046	0.036	0.025	96	86	85	0	0	0	0	0	0	100	20	5	95	0	Flow type is slow moving flat / steady through wide bog area.
		100	2.3	0.046	0.036	0.025	96	86	85												
		125	1.7	0.093	0.085	0.019	81	70	69												
SC10	100 to 150	150	2.5	0.043	0.038	0.033	78	80	80	0	0	0	0	0	0	100	20	5	90	5	Flow type is slow moving flat / steady through wide bog area.
		150	2.5	0.043	0.038	0.033	78	80	80												
		175	1.8	0.075	0.075	0.059	90	90	86												
SC10	150 to 200	200	2.8	0.049	0.049	0.053	67	63	61	0	0	0	0	0	0	100	15	5	95	0	Flow type is slow moving flat / steady through wide bog area.
		0	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		25	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	0 to 50	50	2.4	0.264	0.411	0.199	27	40	36	0	30	15	10	0	0	45	15	50	50	0	Flow type is riffle becoming deep run / steady.
		50	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		75	4.1	0.131	0.449	0.2	20	16	18												
RP1-PLS	50 to 100	100	2.5	0.159	0.089	0.58	20	30	26	0	30	50	20	0	0	0	5	70	30	0	Flow type is fast moving riffle.
		100	2.5	0.159	0.089	0.58	20	30	26												
		125	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	100 to 150	150	N/A	0	N/A	N/A	80	N/A	N/A	0	0	15	15	10	0	60	40	20	80	0	Log jam at 320 m downstream. Flow type changes from marsh / pool to riffle / run below log jam.
		150	N/A	0	N/A	N/A	80	N/A	N/A												
		175	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	150 to 200	200	N/A	0.005	N/A	N/A	90	N/A	N/A	0	0	0	0	0	0	100	20	10	90	0	Flow type is pond / marsh area. Beaver dam at bottom end.
		200	N/A	0.005	N/A	N/A	90	N/A	N/A												
		225	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	200 to 250	250	N/A	0	N/A	N/A	95	N/A	N/A	0	0	0	0	0	0	100	10	10	90	0	Flow type is pond / marsh area.
		250	N/A	0	N/A	N/A	95	N/A	N/A												
		275	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	250 to 300	300	N/A	0.085	N/A	N/A	85	N/A	N/A	0	0	0	0	0	0	100	10	10	90	0	Flow type is steady through marsh area.
		300	N/A	0.085	N/A	N/A	85	N/A	N/A												
		325	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	300 to 350	350	N/A	0.03	N/A	N/A	80	N/A	N/A	0	30	10	0	0	0	60	10	10	90	0	Flow type is steady through marsh area.
		350	N/A	0.03	N/A	N/A	80	N/A	N/A												
		375	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	350 to 400	400	N/A	0	0.054	N/A	70	60	N/A	0	30	10	0	0	0	60	20	10	90	0	Flow type is steady through marsh area.
		400	N/A	0	0.054	N/A	70	60	N/A												
		425	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RP1-PLS	400 to 450	450	4.2	0.038	0.052	0.053	81	82	68	0	30	10	0	0	0	60	10	10	90	0	Flow type is steady through marsh area.
		0	4.9	0.033	0.046	0.041	44	44	44												
		25	3.2	0.072	0.062	0.026	80	70	52												
RP2-RP1	0 to 50	50	3.6	0.053	0	0.012	74	80	68	0	0	0	0	0	0	100	0	50	50	0	Flow type is flat. Lake effect at bottom end of site.
		50	3.6	0.053	0	0.012	74	80	68												
		75	2.7	0.025	0.043	0.029	54	50	44												
RP2-RP1	50 to 100	100	2	0.185	0.059	0.164	18	20	18	0	0	15	15	0	0	70	0	35	60	5	Flow type is slow run.
		100	2	0.185	0.059	0.164	18	20	18												
		125	1.4	0	0.199	0.142	26	24	26												
RP2-RP1	100 to 150	150	1.9	0.029	0.078	0.128	60	64	36	0	15	15		0	0	70	0	40	55	5	Flow type is run and pool with some riffle.
		150	1.9	0.029	0.078	0.128	60	64	36												
		175	3.7	0.047	0.056	0.188	18	38	24												
RP2-RP1	150 to 200	200	2.1	0.087	0.056	0.019	34	28	18	0	0	5	20	0	0	75	0	40	50	10	Undercut banks, deeper pools and runs with steep banks. Some riffle.
		200	2.1	0.087	0.056	0.019	34	28	18												
		225	2	0.127	0.034	0.05	28	34	18												
RP2-RP1	200 to 250	250	1	NA	NA	NA	2	2	2	0	0	30	20	0	0	50	0	55	40	5	Flow predominantly underground and braided. Flow type is riffle, run and pool when above ground.
		250	1	NA	NA	NA	2	2	2												
		275	0.8	NA	NA	NA	2	2	2												
RP2-RP1	250 to 300	300	1.5	NA	NA	NA	2	2	2	0	5	5	0	0	0	90	0	60	35	5	Most of stream section is underground. Above ground sections are too shallow for stream flows.
		0	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		25	3.9	0.03	0.019	0	58	50	30												
RP3-RP2	0 to 50	50	1.1	0.038	0.047	0.021	16	22	32	0	0	0	0	0	0	100	0	25	65	10	Becomes marsh-like. Downstream of 275 m is under lake effect.
		50	1.1	0.038	0.047	0.021	16	22	32												
		75	0.9	0.154	0.32	N/A	10	10	N/A												
RP3-RP2	50 to 100	100	2.6	0.078	0.052	0.018	20	20	14	0	0	20	30	40	0	10	0	50	40	10	Flow type is run / chute with three small pools.
		100	2.6	0.078	0.052	0.018	20	20	14												
		125	1.1	0.095	0	0.37	6	6	10												
RP3-RP2	100 to 150	150	1.8	0.01	0.153	0.059	10	10	10	0	0	10	50	20	0	20	0	50	45	5	Flow type is riffle / run or cascade / run with a few small pools.
		150	1.8	0.01	0.153	0.059	10	10	10												
		175	0.9	0.046	0.038	0.033	16	16	18												
RP3-RP2	150 to 200	200	0.8	0.218	0	0.089	8	9	4	0	40	30	0	10	20	0	0	45	45	10	Flow type is riffle / run with a few small pools.
		200	0.8	0.218	0	0.089	8	9	4												
		225	1.9	0.03	0	0.35	22	22	14												
RP3-RP2	200 to 250	250	2	0	0.015	0.032	10	20	10	0	10	10	0	0	0	80	0	65	30	5	Flow type is slow run, with a few riffle/cascades and small pools. Channel goes underground at end of section at times.

Site	Sampling Sub-section	Distance (m)	Stream Width	Velocity (m/s) 25%	50%	75%	Depth (cm) 25%	50%	75%	Substrate Composition (%) BR	B	R	C	G	S	F	Aquatic Vegetation (%)	Riparian S	G	T	Comment
		250	2	0	0.015	0.032	10	20	10												
		275	NA	N/A	N/A	N/A	N/A	N/A	N/A												
RP3-RP2	250 to 300	300	3.4	0	0.586	0	46	44	42	0	10	10	0	0	0	80	0	55	5	40	Old beaver dam at outflow of RP03. Stream divided into series of small, slow channels.
		0	2.6	0.03	0.013	0.022	58	58	40												
		25	1.4	0.179	0.074	0	22	28	24												
RP5-RP4	0 to 50	50	2.1	0.251	0	0	8	10	9	0	0	0	0	0	0	100	30	45	50	5	Flow type is run / flat. Below 75 m becomes wide, slow, marsh area with extensive emergent aquatic vegetation.
		50	2.1	0.251	0	0	8	10	9												
		75	1.9	0.035	0.065	0	14	6	12												
RP5-RP4	50 to 100	100	1.9	0.021	0.018	0	18	10	12	0	20	25	50	0	0	5	0	55	25	20	Flow type is riffle / run with a few pools. Channel heavily overgrown with shrubs and goes underground at times.
		0	1.1	0.072	0.061	0.059	10	14	16												
		25	0.9	0.246	0.111	0.145	20	20	20												
RP4-RP2	0 to 50	50	0.7	0.302	0.049	0.086	28	26	30	0	0	0	0	15	50	35	0	70	20	10	Stream slows and widens at inflow to RP03.
		50	0.7	0.302	0.049	0.086	28	26	30												
		75	1.1	0.347	0.275	0	12	14	12												
RP4-RP2	50 to 100	100	0.5	0.331	0.13	0.073	6	10	10	0	0	10	10	0	80	0	0	60	5	35	Flow type is run with the occasional small drop. Channel is narrow with steep undercut banks. Channel goes underground at times.
		100	0.5	0.331	0.13	0.073	6	10	10												
		125	1.4	0	0	0	24	12	20												
RP4-RP2	100 to 150	150	0.8	0.419	0.34	0	10	10	3	0	0	40	45	15	0	0	0	60	25	15	Flow type is run or chute / run. Stream underground for ~30m of section.
		150	0.8	0.419	0.34	0	10	10	3												
		175	0.9	0	0.086	0.334	32	34	28												
RP4-RP2	150 to 200	200	0.5	0.45	0.046	0	20	16	14	0	0	20	40	20	20	0	0	80	15	5	Flow type is drop / run or run, with a small (~15m) underground section.
		200	0.5	0.45	0.046	0.001	20	16	14												
		225	1.4	0	0.184	0.124	18	24	20												
RP4-RP2	200 to 250	250	0.8	0.113	0.24	0.252	26	34	16	0	0	40	30	20	0	10	0	95	5	0	Flow type is Cascade or drop / run. Channel overgrown with shrubs.
		250	0.8	0.113	0.24	0.252	26	34	16												
		275	1.1	0.049	0.019	0.057	24	24	20												
RP4-RP2	250 to 300	300	2	0.036	0.092	0.016	20	24	22	0	0	30	35	20	15	0	0	80	15	5	Flow type is Cascade or drop / run. Channel overgrown with shrubs.
		300	2	0.036	0.092	0.016	20	24	22												
		325	1.1	0.054	0	0	12	18	14												
RP4-RP2	300 to 350	350	1.3	0.532	0.464	0.042	10	10	8	0	0	25	55	10	10	0	0	85	15	0	Flow type is riffle / run or cascade / run. Channel overgrown with shrubs.
		350	1.3	0.532	0.464	0.042	10	10	8												
		375	0.4	0.077	0.15	0.407	12	15	14												
RP4-RP2	350 to 400	400	1.4	0.094	0.04	0.046	14	22	24	0	0	40	60	0	0	0	0	85	15	0	Stream resurfaces and comes together at ~150 m. Series of run / drop habitat overgrown with shrubs.
		400	1.4	0.094	0.04	0.046	14	22	24												
		425	0.9	0.01	0.09	0.014	20	18	20												
RP4-RP2	400 to 450	450	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	0	95	5	0	Channel underground for majority of section.
		450	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		475	4.9	0	0	0	38	48	40												
RP4-RP2	450 to 500	500	1.95	0	0.149	N/A	20	4	N/A	0	0	0	0	0	0	100	0	90	10	0	Pond / marsh habitat. Beaver dam near bottom end of section, channel braided through shrubs below dam.
		500	1.95	0	0.149	N/A	20	4	N/A												
		525	4.2	0.013	0	0	40	40	36												
RP4-RP2	500 to 550	550	2.5	0	0.021	0	38	46	42	0	0	0	0	0	0	100	0	65	35	0	A series of marsh / pond habitats separated by old, small beaver dams.
		0	1.8	0	0	0	80	82	82												
		25	1.5	0.036	0.095	0.069	28	44	42												
RSD	0 to 50	50	1	0.096	0.119	0.077	35	37	37	0	0	0	0	0	10	90	0	55	40	5	Flow type is steady under lake effect.
		50	1	0.096	0.119	0.077	35	37	37												
		75	1.4	0.108	0.066	0	21	27	24												
RSD	50 to 100	100	1.2	0.012	0.208	0	20	25	24	0	0	0	0	0	0	100	0	85	5	10	Flow type is slow deep runs with pools.
		100	1.2	0.012	0.208	0	20	25	24												
		125	1.1	0.023	0.21	0	10	20	30												
RSD	100 to 150	150	1.3	0.068	0.174	0	24	15	10	0	0	0	0	0	0	100	0	75	25	0	Flow type is narrow slow run with some pools, flowing through burn area, with some underground flow.
		150	1.3	0.068	0.174	0	24	15	10												
		175	1.4	0.039	0.108	0.015	40	36	20												
RSD	150 to 200	200	1.2	0.193	0.134	0.105	14	16	18	0	20	20	0	30	30	0	0	85	0	15	Flow type is narrow slow run with some pools, flowing through burn area, with some underground flow.
		200	1.2	0.193	0.134	0.105	14	16	18												
		225	1	0.106	0.053	0	34	32	27												
RSD	200 to 250	250	0.7	0.132	0.135	0.127	20	24	24	0	30	0	0	0	40	30	0	75	15	10	Flow type is narrow slow run with some pools, flowing through burn area, with some underground flow.
		250	0.7	0.132	0.135	0.127	20	24	24												
		275	1	0.215	0.126	0	28	24	20												
RSD	250 to 300	300	0.3	0	0.084	0.097	30	26	22	0	30	0	0	0	50	20	0	90	10	0	Flow type is narrow slow run with some pools, flowing through burn area, with more underground flow.
		300	0.3	0	0.084	0.097	30	26	22												
		325	1.1	0.013	0.037	0.041	20	30	30												
RSD	300 to 350	350	0.8	0.322	0.685	0.673	10	4	5	0	40	30	0	0	30	0	0	90	10	0	Flow type is narrow slow run with some pools, flowing through burn area.
		350	0.8	0.322	0.685	0.673	10	4	5												
		375	0.9	0.022	0.151	0.132	30	28	46												
RSD	350 to 400	400	1.1	0	0.162	0.042	10	8	10	0	30	40	10	0	20	0	0	85	10	5	Flow type is runs and riffles separated by cascades and chutes. Channel narrowing in places.
		400	1.1	0	0.162	0.042	10	8	10												
		425	1	0.035	0.163	0.056	24	20	30												
RSD	400 to 450	450	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	40	30	0	30	0	0	75	10	15	Flow type is runs and riffles separated by cascades and chutes.
		450	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		475	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RSD	450 to 500	500	0.8	0.266	0.128	0.178	12	20	22	0	0	30	0	0	30	40	0	80	15	5	Flow type is slow, shallow runs flowing underground in most places.
		500	0.8	0.266	0.128	0.178	12	20	22												
		525	0.6	0.084	0.054	0.011	45	44	39												
RSD	500 to 550	550	1.2	0.03	0.045	0.012	22	34	36	0	0	20	20	0	60	0	0	90	10	0	Flow type is slow moving runs and riffles.
		550	1.2	0.03	0.045	0.012	22	34	36												
		575	1.3	0.142	0.059	0.069	24	16	12												
RSD	550 to 600	600	1.5	0.047	0.053	0.161	26	22	20	0	20	30	30	0	20	0	0	85	5	10	Flow type is slow moving run with cascade / riffle or chute / run.
		600	1.5	0.047	0.053	0.161	26	22	20												
		625	2.1	0	0.309	0.239	16	10	12												
RSD	600 to 650	650	0.6	0.036	0.02	0	66	72	64	0	0	10	30	0	60	0	0	85	10	5	Flow type is slow runs and pools with intermittent riffles with some chute / runs.
		650	0.6	0.036	0.02	0	66	72	64												
		675	1.5	0.108	0.134	0	15	14	10												
RSD	650 to 700	700	1.9	0.163	0	0.078	10	10	12	0	0	20	20	20	40	0	0	85	10	5	Flow type is slow runs and pools with intermittent riffles.
		700	1.9	0.163	0	0.078	10	10	12												
		725	0.8	0.192	0.165	0.061	8	20	12												
RSD	700 to 750	750	1.7	0.153	0	0.051	20	18	22	0	0	15	40	30	15	0	0	85	10	5	Flow type is shallow riffle flowing through recent burned area with some underground flow.
		750	1.7	0.153	0	0.051	20	18	22												
		775	0.7	0.208	0.01	0	12	14	10												
RSD	750 to 800	800	0.7	0.097	0.045	0.01	24	28	28	0	5	15	30	30	20	0	0	85	10	5	Flow type is shallow riffle flowing through recent burned area with some underground flow.
		800	0.7	0.097	0.045	0.01	24	28	28												
		825	0.6	0.223	0.174	0.212	8	10	8												
RSD	800 to 850	850	1.2	0	0	0	14	16	18	0	0	20	40	40	0	0	0	95	0	5	Flow type is shallow riffle flowing through recent burned area with some underground flow.
		850	1.2	0	0	0	14	16	18												
		875	1.5	0.044	0.038	0.007	13	17	16												
RSD	850 to 900	900	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0	60	20	0	10	10	0	100	0	0	Flow type is shallow riffles with some underground flow. Stream flows through dense alders, and sometimes flowing underground.
		900	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
		925	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
RSD	900 to 950	950	1	0.178	0.019	0.019	8	10	10	0	0	20	30	0	20	30	0	80	10	10	Flow type is shallow riffles with some underground flow. Stream flows through dense alders, and sometimes flowing underground.
		950	1	0.178	0.019	0.019	8	10	10												
		975	0.5	0	0.136	0	10	12	10												
RSD	950 to 1000	1000	NA	NA	NA	NA	NA	NA	NA	0	0	40	50	0	10	0	0	40	15	45	Flow type is shallow riffles with some underground flow. Stream flows through dense alders, and sometimes flowing underground.
PLS-S1	0	0	7.4	0	0.012	0.337	20	12	8												
PLS-S1	0 to 50	50	3.1	0.39	0.186	0.391	20	20	18	0	10	40	40	0	10	0	15	55	10	35	Flow type is riffle. Channel becomes pond with boulder field below section.
PLS-S1	50 to 100	100	11.8	0.025	0.025	0.025	58	65	67	0	20	30	0	0	0	50	5	50	35	15	habitat along borders of channel.
PLS-S2	0 m	0 m	4.1	0.086	0.428	0.054	20	22	19	0	40	30	30	0	0	0	0				
PLS-S2	0 to 50 m	50 m	3.5	0.517	0.26	0	26	40	26	0	40	30	30	0	0	0	0	50	30	20	Downstream end of section 2 is 1.27km DS of PLS outflow. Flow type is rapids. High number of Lake Chub in stream section.
PLS-S2	50 to 100 m	100 m	4.6	0.605	0.355	0	22	20	26	0	60	40	0	0	0	0	0	40	40	20	Flow type is rapids. Fewer Lake Chub in this section.
PLS-S2	100 to 150 m	150 m	5	0.22	0.223	0.08	22	36	26	0	45	45	0	5	5	0	0	60	35	5	Flow type is run at top of section and riffle / rapids at bottom.

Site	Sampling Sub-section	Distance (m)	Stream Width	Velocity (m/s) 25%	Velocity (m/s) 50%	Velocity (m/s) 75%	Depth (cm) 25%	Depth (cm) 50%	Depth (cm) 75%	Substrate Composition (%) BR	B	R	C	G	S	F	Aquatic Vegetation (%)	Riparian S	G	T	Comment
PLS-S2	150 to 200 m	200 m	6.7	0.033	0.219	0.137	36	32	30	0	50	25	25	0	0	0	0	60	35	5	Flow type is flat / riffle.
PLS-S2	200 to 290 m	290 m	3.2	0	0	0	24	20	38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	NA	NA	NA	Pond habitat from 200 to 290 m upstream. Un-wadeable. Substrate Boulder / fines.
PLS-S2	290 to 340 m	340 m	4	0.041	0.015	0.023	68	60	26	0	80	20	0	0	0	0	15	60	35	5	Flow type is mostly flats with some short rapids between.
PLS-S2	340 to 390 m	390 m	2.7	0.092	0	0.05	18	26	10	0	80	20	0	0	0	0	20	60	35	5	Flow type is flat / run. Some water flowing through marsh-like borders of channel.
PLS-S2	390 to 420 m	420 m	4.8	0.004	0	0	52	48	36	0	50	20	0	0	0	30	20	45	45	10	Flow type is predominantly flats with a few short runs. Some flow through marsh-like borders of channel. High amount of aquatic vegetation in channel.
RND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No discernable channel. Drains wet area and flows underground majority of time.
TRIB1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	No stream evident
PLN-S1	0	0	4.9	0.169	0.529	0.757	24	28	22	0	60	30	0	5	5	0	0	60	40	0	Section 1 begins at outflow of Pike Lake North. Flow type is riffle / run with a few log jams.
PLN-S1	0 to 50	50	3.1	1.15	0.887	0	14	22	18	0	40	30	0	20	10	0	0	60	40	0	
PLN-S1	50 to 100	100	0.4	0.116	0.422	0.396	48	64	28	0	40	30	10	10	10	0	0	60	40	0	Flow type is shallow runs with riffles between. Extensive blue-green algae on rocks.
PLN-S1	100 to 150	150	11.8	0.144	0.025	0.03	20	20	30	0	30	20	0	10	15	25	0	60	40	0	Flow type is shallow runs with riffles between. Extensive blue-green algae on rocks. A few log jams in section.
PLN-S1	150 to 200	200	7	0	0.987	0.226	26	30	20	0	50	30	15	5	0	0	0	55	35	10	Flow type is rapids with one large pool (10m by10m) in middle of section.
PLN-S1	200 to 250	250	6.1	0	0.851	0.342	30	20	32	0	70	30	0	0	0	0	0	60	40	0	Flow type is rapids or cascade / rapids. Blue-green algae and moss on rocks.
PLN-S1	250 to 300	300	3.5	0	0.163	0.904	18	32	18	0	65	20	0	10	5	0	0	60	35	5	Flow type is rapids / riffle with one large (25m by 20m) pool in middle with aquatic vegetation.
PLN-S1	300 to 350	350	6.9	0.226	0.539	0.152	18	22	16	0	60	30	0	5	5	0	0	60	35	5	Flow type is deep run with a few riffle sections. Fallen logs in channel.
PLN-S1	350 to 400	400	4.1	0.107	0.105	0.33	26	26	30	0	60	25	0	5	10	0	0	80	10	10	Flow type is shallow runs with riffles between. Extensive blue-green algae on rocks. A few log jams in section.
PLN-S1	400 to 425	425	4.5	0.315	0.426	0	12	26	30	0	60	25	0	5	10	0	0	80	10	10	Flow type is rapids with small pools.
PLN-S2	0	0	6.4	0.01	0.095	0.701	12	24	36	0	50	40	0	5	5	0	0				Small section of stream (Section 2) between two small ponds downstream of Pike Lake North. Flow type is rapids.
PLN-S2	0 to 50	50	14	0	0.048	0.203	20	12	12	0	50	40	0	5	5	0	0	45	30	25	
PLN-S3	0	0	4.1	0.44	0.895	0.59	26	26	44	0	10	5	40	30	15	0	0				type is predominately run with some riffles and a short rapid at inflow to Walsh R. Some fallen logs in channel and one log jam.
PLN-S3	0 to 50	50	5.4	0	0.805	0.792	24	34	34	0	10	5	40	30	15	0	0	80	5	15	
PLN-S3	50 to 100	100	5.5	0	0.826	0.634	10	30	22	0	20	25	30	20	5	0	0	90	0	10	Flow type is mostly rapids with a short run at bottom of section.
PLN-S3	100 to 125	125	6.9	0.365	0.518	0.582	26	24	20	0	15	25	25	25	10	0	0	90	0	10	Several culverts at top of section. Flow type is mostly riffle with a small pool below culvert.
PLN-S3	125 to 225	225	4.3	0.56	0.362	0.718	44	46	16	NA	NA	NA	NA	NA	NA	NA	NA	0	0	0	Un-wadeable pool from 125 to 225m upstream of culverts.
PLN-S3	225 to 275	275	7.1	0.095	0.37	0	20	24	30	0	60	20	0	15	5	0	0	80	0	20	Flow type is predominately rapids with a small riffle at top of section at outflow of small pond.
PLN-S3	275 to 350	350	6.2	0.451	0	0	44	40	20	NA	NA	NA	NA	NA	NA	NA	NA	40	40	20	Un-wadeable pool.
PLN-S3	350 to 385	385	14.2	0.061	0	0	28	34	40	0	25	30	20	15	10	0	0	40	40	20	Small section between two ponds. Flow type is rapid in bottom half and flat in top half of section.
TDA01	0	0	3.4	0.34	0	0.029	40	44	40	0	50	30	20	0	0	0	0	75	0	25	Flow type is rapids / fast riffle with some small chutes.
TDA02	0 to 150	150	3.5	0.275	0.333	0.619	19	19	30	0	60	35	5	0	0	0	0	70	15	15	Flow type is rapid / run.
TDA02	150 to 250	250	4.7	0.255	0.238	0.387	22	44	30	0	30	20	20	10	20	0	0	60	0	40	Flow type is flats with some short riffles.
TDA02	250 to 350	350	3.1	0.32	0.15	0.52	33	45	36	0	25	25	20	12	18	0	0	50	0	50	Deep slow flat with intermittent riffles
TDA02	350 to 450	450	3.3	0.35	0.25	0.4	33	37	29	0	18	25	22	15	20	0	0	43	15	42	Flow type is run and riffles.
TDA02	450 to 550	550	4.1	0.16	0.25	0.32	42	48	45	0	10	30	20	20	20	0	0	40	60	0	Flow type is run and riffles.
TDA02	550 to 650	650	3.1	0.22	0.28	0.27	48	49	48	5	15	25	25	15	15	0	0	35	58	7	Flow type is rapids.
TDA02	650 to 800	800	3.7	0.437	0.823	0.267	32	18	22	0	25	25	20	20	10	0	0	60	35	5	Flow type is predominately run with a short rapid section at bottom.
TDA02	800 to 950	950	3.9	0.222	0.165	0.491	44	48	28	10	50	35	0	0	5	0	0	50	30	20	Flow type is mostly wide deep run with some short rapid / riffle sections.
TDA02	950 to 1100	1100	4.7	0.281	0.492	0.373	22	16	14	0	30	30	20	10	10	0	0	35	35	30	Flow type is riffle/run.
TDA02	1100 to 1250	1250	3.2	0.517	0.5	0.095	22	40	18	0	40	30	0	15	15	0	5	35	35	30	Beaver dam in middle of section. Flow type above dam is pond / slow run with flooded banks and inundated vegetation and riffle / run marshy area below.
TDA02	1250 to 1400	1400	4.2	0.164	0.17	0.126	64	66	72	0	30	30	20	15	5	0	10	40	45	15	Flow type is steady
TDA02	1400 to 1550	1550	1.6	0.272	0.238	0.26	58	61	76	0	60	20	0	0	15	5	0	35	35	30	Flow type is mostly flat with a 50 m section of run at top.
TDA02	1550 to 1700	1700	3.5	0.203	0.19	0.132	35	38	36	0	60	20	0	10	10	0	0	20	25	55	Flow type is mostly run with a small riffle at top of section.
TDA02	1700 to 1850	1850	3.2	0.4	0.412	0.231	18	20	33	0	30	20	25	20	5	0	0	35	35	25	Flow type is riffle / run becoming run / flat at bottom end.
TDA02	1850 to 2000	2000	5.5	0.42	0.561	0.484	16	10	15	0	40	30	10	20	0	0	0	50	40	10	Flow type is stepwise riffle / run or rapid / run.
TDA02	2000 to 2150	2150	3.8	0.046	0.155	0.161	40	39	34	0	20	20	35	15	10	0	0	50	40	10	Flow type is riffle / run or rapid / run. Two small islands in middle of section.
TDA02	2150 to 2300	2300	4.7	0.127	0.11	0.037	37	44	58	0	0	0	5	60	35	0	0	45	50	5	Flow type is deep flat becoming riffle / run.
TDA02	2300 to 2450	2450	3.4	0.06	0.112	0.11	42	44	42	0	10	0	0	50	40	0	5	55	40	5	Flow type is run or riffle / run.
TDA02	2450 to 2600	2600	3.2	0.097	0.068	0.112	44	47	42	0	20	30	0	10	10	30	0	45	50	5	Flow type is flat, becoming run or riffle / run. Flows through marsh area.
TDA02	2600 to 2750	2750	3.4	0.34	0	0.029	40	44	40	0	0	0	0	50	50	0	5	50	45	5	Flow type is slow flat / deep pool.
TDA02	2750 to2850	2850	2.9	0.03	0.04	0.04	28	24	22	0	30	23	22	25	0	0	0	77	15	13	Flow type is run with small pools and riffles.
TDA02	2850 to 2950	2950	2.7	0.1	0.12	0.01	19	17	13	0	30	30	22	18	0	0	5	67	20	13	Flow type is riffle/run
TDA02	2950 to 3050	3050	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	15	15	25	40	5	0	0	60	25	15	Flow type is riffle / run or riffle / flat.
TDA02	3050 to 3200	3200	2	0.015	0.039	0.316	6	6	8	0	0	0	30	60	10	0	0	60	25	15	Flow type is riffle / run.
TDA02	3200 to 3350	3350	2.1	0.061	0	0	30	30	26	0	20	20	20	20	20	0	10	60	20	20	Flow type is riffle / run with a few slower flats.
TDA02	3350 to 3500	3500	1.5	0.038	0	0.137	10	6	12	0	10	30	20	20	20	0	0	40	55	5	Flow type is flat becoming run, then riffle.
TDA02	3500 to 3650	3650	1.7	0.024	0.035	0.042	18	21	23	0	0	0	20	30	40	10	0	45	50	5	Flow type is slow flat with a few riffle sections.
TDA02	3650 to 3800	3800	1.4	0.022	0.055	0.062	30	30	24	0	0	0	0	0	40	60	20	35	60	5	Flow type is slow flat with a few riffle sections.
TDA02	3800 to 3950	3950	1.2	0.11	0	0	22	20	16	0	5	0	0	0	50	45	0	25	70	5	Flow type is deep, slow flat with some riffle habitat at bottom of section.
TDA02	3950 to 4100	4100	0.7	0.045	0.042	0.01	44	43	38	0	0	20	20	20	30	10	0	25	70	5	Flow type is riffle / run with a small pool at beginning of section.
TDA02	4100 to 4250	4250	1.6	0	0.09	0	16	20	20	0	20	15	15	20	30	0	0	25	70	5	Flow type is predominately flat becoming riffle / run at lower end.
TDA02	4250 to 4400	4400	2.4	0	0	0	1	1	1	0	5	0	0	15	40	40	0	75	20	5	Flow type is deep steady with a few riffle sections, and 2 moderate sized pools. Some undercut banks.
TDA02	4400 to 4550	4550	0.9	0.077	0.051	0.083	22	20	18	0	0	0	0	30	40	30	0	70	20	10	Flow type is slow flat / pool.
TDA02	4550 to 4700	4700	2.2	0.003	0.019	0.019	46	56	63	0	0	0	0	30	40	30	15	75	20	5	Flow type is slow flat / pool.
TDA02	4700 to 4850	4850	1.9	0	0.04	0.13	16	12	16	0	0	0	0	30	40	30	5	75	20	5	Flow type is slow flat / pool.
TDA02	4850 to 5000	5000	1.2	0.145	0.108	0.115	4	6	10	0	30	0	0	30	40	0	0	75	20	5	Flow type is predominantly slow run / flat with a few riffle sections. Channel flows back into marshy area.
TDA02	5000 to 5150	5150	1.6	0.021	0.015	0	18	10	22	0	30	20	30	20	0	0	0	75	15	10	Flow type is predominantly slow run / flat with a few riffle sections.
TDA02	5150 to 5300	5300	2.1	0.019	0.042	0.021	16	15	18	0	30	30	30	10	0	0	5	60	25	15	Flow type is flat with a few short riffle sections.
TDA02	5300 to 5450	5450	1.5	0.023	0	0.121	8	10	10	0	20	20	10	10	20	20	10	55	35	10	Flow type is flat with a few short riffle sections.
TDA02	5450 to 5600	5600	1.7	0.029	0.022	0	20	18	14	0	20	30	30	20	0	0	5	55	35	10	Flow type is riffle / run or riffle / flat.
TDA02	5600 to 5750	5750	1.5	0.021	0.033	0.099	14	16	14	0	5	30	0	15	50	0	5	50	40	10	Flow type is flat with a couple pools.
TDA02	5750 to 5900	5900	1.1	0.032	0.061	0.054	12	16	19	0	20	20	0	40	0	20	15	55	40	5	Flow type is riffle / run. Channel meanders heavily.
TDA02	5900 to 6050	6050	1.8	0.127	0	0.013	8	8	8	0	0	20	20	40	20	0	5	60	40	0	Upper part of section is flat becoming riffle / flat at downstream end.
TDA02	6050 to 6200	6200	1.7	0.099	0.053	0	18	15	18	0	0	50	30	20	0	0	5	65	30	5	Flow type is riffle / drop / run.
TDA02	6200 to 6350	6350	1.5	0.089	0.112	0	20	14	20	0	0	30	30	40	0	0	5	55	40	5	Flow type is riffle / drop / run.
TDA02	6350 to 6500	6500	1.3	0.066	0.096	0	18	22	20	0	50	30	10	5	5	0	10	55	40	5	Flow type is flat / run.
TDA02	6500 to 6650	6650	1.5	0.115	0.093	0.036	18	16	20	0	0	0	0	0	0	100	10	50	50	0	Flow type is slow flat. Channel meanders.
TDA02	6650 to 6800	6800	1.5	0.048	0.043	0.052	16	16	17	0	0	0	0	0	0	100	10	50	50	0	Flow type is slow flat. Channel meanders.
TDA01	0	0	0	0	0	0	0	0	0	0	20	30	0	10	10	30	0				Flow type is mostly riffle with a few small shallow runs. Steep banks with some undercuts.
TDA01	0 to 150	150	0.6	0.782	0.532	0.093	66	66	66	0	20	30	0	10	10	30	0	50	45	5	
TDA01	150 to 200	200	1.8	0.077	0.121	0	24	24	22	10	30	30	0	5	10	15	0	40	60	0	Flow type is mostly riffle with a few small shallow runs. Steep banks with some undercuts.
TDA01	200 to 300	300	1.4	0.02	0.1	0.05	18	17	17	10	35	10	0	20	25	0	0	30	55	15	Flow type is riffle with small runs and pools.
TDA01	300 to 400	400	0.9	0.33	0.19	0.02	15	21	19	0	25	30	0	30	15	0	0	48	45	7	Flow type is riffle with heavy overhanging veg.
TDA01	400 to 550	550	0.5	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0	0	100	0	70	20	10	Too overgrown for wading rod. Flow type is steady flowing through bog habitat.
TDA01	550 to 700	700	0.8	0.105	0.33	0.073	8	4	36	0	0	10	15	40	30	5	0	70	10	20	Flow type predominately riffle through heavy vegetation with a short flat halfway through section.
TDA01	700 to 850	850	0.6	0.075	0.079	0.024	40	44	44	0	15	15	0	30	30	10	0	70	5	25	Too overgrown for wading rod.
TDA01	850 to 1000	1000	1.4	0.079	0.073	0.052	46	46	50	0	10	0	0	40	30	20	0	65	20	15	Flow type is mostly a deep flat with one short riffle section in middle.
TDA01	1000 to 1150	1150	0.5	0.046	0.046	0.023	50	54	50	0	15	0	0	20	20	45	0	75	10	15	Flow type is predominately flat with some short riffles.

Site	Sampling Sub-section	Distance (m)	Stream Width	Velocity (m/s) 25%	Velocity (m/s) 50%	Velocity (m/s) 75%	Depth (cm) 25%	Depth (cm) 50%	Depth (cm) 75%	Substrate Composition (%) BR	B	R	C	G	S	F	Aquatic Vegetation (%)	Riparian S	G	T	Comment
TDA01	1150 to 1300	1300	1.2	0.096	0.071	0.026	38	41	40	0	10	0	0	20	20	50	0	75	15	10	Flow type is predominately flat with some short riffles. A few log jams in section.
TDA01	1300 to 1450	1450	0.7	0.054	0.053	0.051	94	96	94	0	5	0	0	15	15	65	0	70	15	15	Flow type is predominately flat with some short riffles. Channel goes underground at times.
TDA01	1450 to 1600	1600	0.7	0.109	0.115	0	38	28	18	0	10	0	0	10	10	70	0	60	0	40	Flow type is flat with some riffle sections. Channel underground ~ 10%.
TDA01	1600 to 1750	1750	1.3	0.051	0.021	0.019	60	64	60	0	0	0	0	10	10	80	0	60	5	35	Flow type is flat with some riffle sections. Some woody debris on bottom.
TDA01	1750 to 1900	1900	1	0.201	0.106	0	18	18	16	0	5	0	0	10	10	75	0	65	5	30	Flow type is flat with some riffle sections. Channel underground ~ 20%.
TDA01	1900 to 2050	2050	2.2	0	0.021	0.019	76	76	74	0	5	0	0	5	5	85	20	75	10	15	Flow type is a series of pools separated by underground flows or narrow channels.
TDA01	2050 to 2200	2200	1.5	0.062	0.067	0.04	38	30	34	0	0	0	0	10	10	80	5	80	15	5	Flow type is pools with a few short riffles.
TDA01	2200 to 2350	2350	1.3	0.056	0.091	0	20	22	24	0	0	10	0	20	20	50	0	70	30	0	Flow type is slow flat. Appears to have groundwater seeps (lighter gravel areas devoid of silt / biofilm).
TDA01	2350 to 2500	2500	0.6	0.067	0.057	0.064	32	32	32	0	20	0	0	20	15	45	0	60	35	5	Flow type is slow flat. Channel narrows in top 100 m.
TDA01	2500 to 2650	2650	0.7	0.047	0.068	0.061	18	16	14	0	10	0	0	10	20	60	0	75	20	5	Flow type is slow flat. Channel flows underground ~ 5%.
TDA01	2650 to 2800	2800	1.1	0.168	0.103	0	14	10	10	10	10	0	0	30	10	40	0	65	30	5	Flow type is slow flat. Channel braided and undefined above this section.
TDA02E	0 to 150	150	0.6	0	0.043	0	16	20	28	0	0	0	0	0	0	100	0	50	45	5	Flow type is steady flowing through bog habitat exiting small lake at headwaters of sub-catchment
TDA02E	150 to 300	300	0.8	0.011	0.022	0	20	20	11	0	0	0	0	0	0	100	0	60	35	5	Flow type is steady flowing through bog habitat.
TDA02E	300 to 450	450	0.4	0.058	0	0.293	8	10	10	0	20	0	0	0	0	80	0	25	50	25	Flow type is steady flowing through bog habitat and dense vegetation along banks.
TDA02E	450 to 600	600	NA	NA	NA	NA	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0	0	50	50	No defined channel - Stream flows under forest floor
TDA02E	600 to 750	750	0.5	0.032	0.126	0.042	11	10	10	0	0	0	0	0	100	0	0	30	50	20	Flow type is steady flowing through bog habitat and dense vegetation along banks.
TDA02E	750 to 900	900	0.7	0.082	0.194	0.174	23	26	28	0	0	0	0	0	90	10	0	30	60	10	Flow type is steady with grass vegetation on banks.
TDA02E	900 to 1050	1050	0.7	0.185	0.233	0.176	28	28	28	0	0	0	0	50	50	0	0	40	55	5	Flow type is steady with grass vegetation on banks.
TDA02E	1050 to 1200	1200	1.3	0.503	0.153	0	22	20	8	0	0	0	0	50	50	0	0	35	65	0	Flow type is steady with grass vegetation on banks.
TDA02E	1200 to 1350	1350	1	0.074	0.089	0.185	41	48	55	0	0	0	0	50	50	0	0	35	60	5	Flow type is steady with grass vegetation on banks.
TDA02E	1350 to 1500	1500	1	0.217	0.308	0.255	19	22	22	0	0	0	0	30	70	0	0	35	60	5	Flow type is steady with grass vegetation on banks.
TDA02E	1500 to 1650	1650	1.3	0.251	0.242	0.07	20	21	20	0	30	0	20	0	50	0	0	35	55	10	Flow type is steady with a developing riffle/pool regime.

Reach #	Transect #	Section	GPS Coordinates			Weather				Reach Length	Wetted Width	Channel Width	Water Temp
			Northing	Easting	Zone	Air Temp	Cloud (˚C)	Wind (Dir	Precipitat				
1	1	Mainstem	5856155	636430	19	12	70	W, 10	Y	38	13	13.09	15
2	1	Mainstem	5856164	636416	19	12	75	W, 10	N	28	15	16.17	15
3	1	Mainstem	5856126	636334	19	13	90	Calm	N	65	6.1	10.5	14
4	1	Mainstem	5856163	636253	19	14	70	Calm	N	60	8.8	9.78	14
5	1	Mainstem	5856160	636196	19	14	65	Calm	N	70	13	13.6	14
6	1	Mainstem	5855929	636080	19	14	80	W, 5	N	30	12.5	12.5	12
7	1	Mainstem	5855869	636055	19	14	50	Calm	N	68	7.4	13.04	14
8	1	Mainstem	5855721	636002	19	14	45	W, 5	N	57	10.1	10.54	16
9	1	Tributary	5855557	636015	19	15	50	Calm	N	100	0.8	0.8	7
10	1	Tributary	5855475	635991	19	15	15	W, 15	N	100	0.65	0.65	7
11	1	Tributary	5855379	636011	19	16	10	Calm	N	100	1.2	1.2	7
12	1	Tributary	5855285	636043	19	16	5	W, 10	N	100	0.27	0.27	7
13	1	Tributary	5855166	636041	19	16	5	W, 10	N	100	0.54	0.54	7

Reach #	Transect #	Discharge Distance (m)											
		1	2	3	4	5	6	7	8	9	10	1	2
1	1	0	2	4	6	8	10	12	13			0.16	0.15
2	1	0	2	4	6	8	10	12	14	15		0.08	0.09
3	1	0	1	2	3	4	5	6.1				0.01	0
4	1	0	1	2	3	4	5	6	7	8	8.8	0.06	0.28
5	1	0	2	4	6	8	10	12	13			0.02	0.15
6	1	0	2	4	6	8	10	12	12.5			0.05	0.12
7	1	0	1	2	3	4	5	6	7	7.4		0.12	0.17
8	1	0	1.5	3	4.5	6	7.5	9	10.1			0.05	0.14
9	1	0	0.2	0.4	0.6	0.8						0.02	0.18
10	1	0	0.15	0.3	0.45	0.6	0.65					0.34	0.4
11	1	0	0.25	0.5	0.75	1	1.2					0.41	0.22
12	1	0	0.13	0.27								0.33	0.35
13	1	0	0.26	0.54								0.17	0.27

Reach #	Transect #	Discharge Depth (m)								Disc			
		3	4	5	6	7	8	9	10	1	2	3	4
1	1	0.16	0.1	0.09	0.09	0.12	0.02			0.09	0.74	0.35	0
2	1	0.04	0.05	0.22	0.21	0.24	0.18	0.22		0	0.78	-	0.9
3	1	0.23	0.33	0.39	0.23	?				-	-	0.91	0.95
4	1	0.12	0.39	0.47	0.43	0	0.01	0.08	0.03	0.21	0.89	0.84	-
5	1	0	0	0.28	0.62	0.57	0			-	0.9	-	-
6	1	0.46	0.36	0.13	0.18	0.03	0.05			-	0.45	0.77	0.99
7	1	0	0.31	0.51	0.62	0	0	0.02		0	0.71	-	0.92
8	1	0.33	0.28	0.29	0.3	0.2	0.15			-	1.08	0.91	0.88
9	1	0.23	0.23	0.37						-	0.26	0.39	0.39
10	1	0.4	0.36	0.39	0.41					0	0.16	0.29	0.16
11	1	0.17	0.26	0.26	0.19					0.35	0	0	0.19
12	1	0.32								0	0	0	
13	1	0.19								0	0	0	

Reach #	Transect #	harge Velocity					Substrate Type						
		5	6	7	8	9	Be	Bo	R	C	G	S	Fines
1	1	0.33	0.88	0.56	-			65	20	10	5		
2	1	0.29	1.21	0.96	1.32	0.92		65	20	10	5		
3	1	2.06	1.52	?				70	20	10			
4	1	0	-					80	10	5	5		
5	1	1.01	0.36	1.5	-			55	30	15			
6	1	0.57	0.35	-	-			20	40	35	5		
7	1	0.83	1.03	-	-	-		20	40	35	5		
8	1	0.82	0.8	0.36	0.06			15	40	30	10	5	
9	1	0.27										10	90
10	1	0.04	0								5	15	80
11	1	0	0									5	95
12	1											20	80
13	1								60	30	10		

Reach #	Transect #	ut Bank (% of reach		Bank Stability	Slope		Bank Composition						
		L	R		Rise (m)	Run (m)	Be	Bo	R	C	G	S	Fines
1	1	30	5	Fair	0.71	15		35	30				20
2	1	0	65	Fair	0.97	12		35	30				20
3	1	0	10	Fair	0.39	8.3		60	10				15
4	1	5	10	Good	0.38	10		60	20				10
5	1	25	30	Good	0.56	14		65	10				10
6	1	60	60	Good	0.15	14			20				20
7	1	30	30	Good	0.15	20.8		40	5				5
8	1	40	40	Good	0.03	13			5				5
9	1	90	90	Good	0.01	13							20
10	1	90	90	Good	0.08	10							20
11	1	75	75	Good	0.06	11							20
12	1	90	90	Good	0.12	7.5							20
13	1	100	100	Good	0.04	4.7							5

Reach #	Transect #		Cover			Vegetation 5m Riparian Left Side (%)						Vegetatio	
		Veg	Instream	Overhang	Canopy	Deciduou	Coniferou	Shrubs	Grasses	Bog	No Veg	Deciduou	Coniferou
1	1	15	5	5	5		5	60	40				5
2	1	15	5	5	5		5	35	65				45
3	1	15	25	5	2		15	70	50			5	45
4	1	15	20	5	5	5	60	40	25			15	50
5	1	20	15	5	5	5	50	50	20			5	50
6	1	60	5	5	2		80	30	20				80
7	1	50	5	2	5		90	30	20				90
8	1	90	5	2	2		30	20	70				30
9	1	80	60	70	5		20	10	90	80			20
10	1	80	20	60	30		40	10	70	70			40
11	1	80	15	35	30		40	5	70	60			40
12	1	80	20	70	45		40	10	60	70			40
13	1	95	90	90	30		50	5	70				50

Reach #	Transect #	GPS	GPS Coordinates		Reach	Wetted Width	Habitat	Channel	Water	Discharge Distance (m)						Discharge Depth (m)			
		Coordina	Northing	Easting	Length	(m)	Units	Width (m)	Temp (˚C)	1	2	3	4	5	6	1	2	3	4
1	1	WGS 84	5854276	637338	100	0.31	0.31	0.31	8	0	0.15	0.31				0	0.05	0.06	
2	1	WGS 84	5854285	637250	100	0.4	0.40	0.4	8	0	0.2	0.4				0.01	0.06	0.04	
3	1	WGS 84	5854243	637166	100	0.44	0.44	0.44	8	0	0.22	0.44				0	0.06	0.05	
4	1	WGS 84	5854194	637107	100	0.18	0.18	0.18	7	0	0.09	0.18				0	0.06	0.11	
5	1	WGS 84	5854131	637041	100	0.36	0.36	0.36	7	0	0.18	0.36				0.04	0.04	0.02	
6	1	WGS 84	5854067	636960	100	0.64	0.64	0.64	7	0	0.2	0.2	0.64			0.12	0.07	0.05	0.07
7	1	WGS 84	5853990	636912	100	0.82	0.82	0.82	7	0	0.2	0.4	0.6	0.82		0	0.08	0.06	0.02
8	1	WGS 84	5853925	636848	100	0.87	0.87	0.87	7	0	0.2	0.4	0.6	0.8	0.87	0.03	0.06	0.07	0.04
9	1	WGS 84	5853862	636798	44	0.43	0.19	0.43	6	0	0.2	0.43				0.08	0.12	0.11	

Reach #	Transect #			Average Depth	Discharge Velocity						Average Velocity	Substrate Type								cut Bank (% of reach		Bank Stability	Slo
		5	6		1	2	3	4	5	6		Be	Bo	R	C	G	S	Fines	AqV	L	R		Rise (m)
1	1			0.04	NA	0.05	0.48				0.27				10	40	30	20		95	95	Good	0
2	1			0.04	NA	0.03	NA				0.03				10	30	50	10		95	95	Good	0.07
3	1			0.04	NA	0	0				0.00				5	20	35	40		95	95	Good	0.26
4	1			0.06	NA	0	0				0.00						60	40		100	100	Good	0.23
5	1			0.03	NA	NA	NA				-				5	10	60	25		100	100	Good	0.36
6	1			0.08	0	0	0	0			0.00					5	25	70		80	80	Good	0.07
7	1	0.01		0.03	NA	0	0.08	NA	NA		0.04				10	10	40	40		85	85	Good	0.14
8	1	0.04	0	0.04	NA	0	0	NA	NA	NA	0.00				10	25	30	35		75	75	Good	0.04
9	1			0.10	0	0	0				0.00					5	30	65		85	85	Good	0.19

Reach #	Transect #	ope		Bank Composition								Cover			Vegetation 5m Riparian Left Side (%)						Vegetation 5	
		Run (m)	Slope	Be	Bo	R	C	G	S	Fines	Veg	Instream	Overhang	Canopy	Deciduous	Coniferou	Shrubs	Grasses	Bog	No Veg	Deciduous	Coniferou
1	1	11	0.00								90	2	98	5		5	80	50	10			5
2	1	5.8	0.01								80	10	90	20		20	80	50				20
3	1	4.1	0.06								80	40	95	5		5	80	50	20			5
4	1	4.8	0.05								95	25	95	0		10	60	80	10			10
5	1	4.7	0.08								90	40	95	5		20	50	70				20
6	1	6	0.01								85	20	80	50		45	20	60	15			45
7	1	6.3	0.02						20		60	40	90	20		40	60	70				40
8	1	3	0.01								75	20	85	2		5	80	70				5
9	1	6	0.03								80	30	90	0		2	65	70	20			2

Reach #	Transect #	m Riparian Right Side (%)			
		Shrubs	Grasses	Bog	No Veg
1	1	80	50	10	
2	1	80	50		
3	1	80	50	20	
4	1	60	80	10	
5	1	50	70		
6	1	20	60	15	
7	1	60	70		
8	1	80	70		
9	1	65	70	20	

Reach #	Transect #	GPS Coordinates			Weather				Reach Length	Wetted Width (m)	Channel Width (m)
		Northing	Easting	Zone	Air Temp (	Cloud (˚C)	Wind (Dire	Precipitati			
1	1	5853651	637689	19	16	99	NW 5km/h	N	100	0.52	0.52
2	1	5853558	637716	19	16	95	Calm	N	100	0.41	0.63
3	1	5853469	637741	19	16	95	Calm	N	120	0.58	0.58

Reach #	Transect #	Water Temp	Discharge Distance (m)				Discharge Depth (m)				Discharg	
			1	2	3	Average	1	2	3	Average	1	2
1	1	5	0.00	0.25	0.52	0.26	0.02	0.14	0.17	0.11	NA	0.24
2	1	5	0.00	0.22	0.41	0.21	0.17	0.14	0.12	0.14	0.09	0.03
3	1	5	0.00	0.25	0.58	0.28	0.12	0.08	0.06	0.09	0.08	0.08

Reach #	Transect #	ge Velocity		Substrate Type							
		3	Average	Be	Bo	R	C	G	S	Fines	AqV
1	1	0.13	0.19					5	20	75	
2	1	0.00	0.04						40	60	
3	1	0.00	0.05						50	50	

Reach #	Transect #	Undercut Bank (% of reach length)		Bank Stability	Slope		Bank Composition				
		L	R		Rise (m)	Run (m)	Be	Bo	R	C	G
1	1	95	95	Good	0	6					
2	1	90	90	Good	0	9.2					
3	1	90	90	Good	0	5.8					

Reach #	Transect #				Cover			Vegetation 5m Riparian Left Side (%)				
		S	Fines	Veg	Instream	Overhang	Canopy	Deciduous	Coniferou	Shrubs	Grasses	Bog
1	1		10	90	2	95	0			5	95	
2	1		5	95	5	85				5	95	
3	1		5	95	5	95				5	90	40

Reach #	Transect #		Vegetation 5m Riparian Right Side (%)					
		No Veg	Deciduous	Coniferou	Shrubs	Grasses	Bog	No Veg
1	1				5	95		
2	1				5	95		
3	1				5	90	40	

Reach #	Transect #	GPS Coordinates			Weather				Distance to	Reach Length	Wetted Width (m)
		Northing	Easting	Zone	Air Temp (	Cloud (˚C)	Wind (Dire	Precipitati			
1	1	5853386	637714	19	17	90	Calm	N	60	100	0.18
2	1	5853344	637635	19	18	90	Calm	Y	60	100	0.88
3	1	5853335	637564	19	20	60	Calm	N	40	43	0.88
4	1	5853319	637511	19	20	60	Calm	N	60	100	0.65
5	1	5853310	637415	19	20	50	Calm	N	60	100	0.7
6	1	5853281	637332	19	20	45	Calm	N	60	100	0.56
7	1	5853235	637223	19	20	75	Calm	N	93	100	0.39
8	1	5853235	637158	19	20	65	Calm	N	60	120	0.22

Reach #	Transect #	Channel Width (m)	Water Temp (˚C)	Discharge Distance (m)								
				1	2	3	4	5	6	7	Average	1
1	1	0.18	8	0	0.09	0.18					0.09	0.10
2	1	0.88	8	0	0.2	0.4	0.6	0.8	0.88		0.48	0.02
3	1	0.88	8	0	0.2	0.4	0.6	0.8	0.88		0.48	0.11
4	1	1.43	9	0	0.15	0.3	0.45	0.6	0.65		0.36	0.01
5	1	0.7	9	0	0.15	0.3	0.45	0.6	0.7		0.37	0.02
6	1	0.56	9	0	0.1	0.2	0.3	0.4	0.5	0.56	0.29	0.04
7	1	0.39	10	0	0.1	0.2	0.3	0.39			0.20	0.04
8	1	0.22	10	0	0.11	0.22					0.11	0.06

Reach #	Transect #	Discharge Depth (m)							Discharg			
		2	3	4	5	6	7	Average	1	2	3	4
1	1	0.08	0.11					0.10	NA	0.01	NA	
2	1	0.02	0.01	0.00	0.05	0.04		0.02	NA	NA	NA	NA
3	1	0.13	0.08	0.07	0.09	0.06		0.09	0	0	0	0
4	1	0.05	0.04	0.06	0.06	0.06		0.05	NA	0.3	NA	0
5	1	0.05	0.06	0.04	0.04	0.06		0.05	NA	NA	0	NA
6	1	0.04	0.03	0.05	0.03	0.03	0.00	0.03	NA	NA	NA	0.43
7	1	0.05	0.06	0.03	0.05			0.05	NA	0	NA	NA
8	1	0.03	0.03					0.04	0	NA	NA	

Reach #	Transect #	e Velocity				Substrate Type					
		5	6	7	Average	Be	Bo	R	C	G	S
1	1				0.01						30
2	1	0.15	NA		0.15			2	8	30	60
3	1	0.18	0.32		0.08			2	8	30	60
4	1	0	0		0.08						60
5	1	NA	0		0.00			10			60
6	1	NA	NA	NA	0.43				25	10	40
7	1	0			0.00			15	20	10	40
8	1				0.00						40

Reach #	Transect #			cut Bank (% of reach		Bank	Slope					Bank Cor
		Fines	AqV	L	R	Stability	Rise (m)	Run (m)	Be	Bo	R	C
1	1	70		95	95	Good	0.02	6.7				
2	1	0		90	90	Good	0.08	3.3				
3	1	0		60	60	Good	0.57	3.4		25	70	5
4	1	40		65	75	Good	0	4.5				
5	1	30		50	50	Good	0.02	7.6				
6	1	25		60	60	Good	0.08	5.8				5
7	1	15		80	80	Good	0.38	6.2			20	
8	1	60		90	90	Good	0.07	5				

Reach #	Transect #	nposition					Cover				Vegetation 5m Riparian Left S	
		G	S	Fines	Veg	Instream	Overhang	Canopy	Deciduou	Coniferou	Shrubs	Grasses
1	1			5	95	10	95				80	80
2	1			20	80	10	85				50	80
3	1				20	20	75				75	65
4	1			20	80	10	70	20		20	40	80
5	1			20	80	25	75	35		35	60	70
6	1			20	75	15	65	5		5	70	75
7	1			20	60	25	90	15		20	60	80
8	1			10	90	20	80			40	90	30

Reach #	Transect #	Side (%)		Vegetation 5m Riparian Right Side (%)					
		Bog	No Veg	Deciduous	Coniferou	Shrubs	Grasses	Bog	No Veg
1	1					80	80		
2	1					50	80		
3	1					75	65		
4	1				20	40	80		
5	1				35	60	70		
6	1				5	70	75		
7	1				20	60	80		
8	1				40	90	30		

Reach #	Transect #	on 5m Riparian Right Side (%)			
		Shrubs	Grasses	Bog	No Veg
1	1	60	50		
2	1	60	5		
3	1	40	25		
4	1	40	25		
5	1	50	20		
6	1	30	20		
7	1	30	25		
8	1	20	70		
9	1	10	90	80	
10	1	10	70	70	
11	1	5	70	60	
12	1	10	60	70	
13	1	5	70		

APPENDIX B

Riverine Fish Capture Data

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	RP2-RP1	19-Jul-11	Index	Sculpin		1	62	
Stantec	RP2-RP1	19-Jul-11	Index	Sculpin		1	66	
Stantec	RP2-RP1	19-Jul-11	Index	Sculpin		1	54	
Stantec	RP2-RP1	19-Jul-11	Index	Lake Chub		1	70	
Stantec	RP2-RP1	19-Jul-11	Index	Lake Chub		1	65	
Stantec	RP2-RP1	19-Jul-11	Index	Lake Chub		1	70	
Stantec	RP2-RP1	19-Jul-11	Index	Lake Chub		1	63	
Stantec	RP2-RP1	19-Jul-11	Index	Lake Chub		1	63	
Stantec	RP2-RP1	19-Jul-11	Index	Lake Chub		1	72	
Stantec	RP2-RP1	19-Jul-11	Index	Lake Chub		1	62	
Stantec	RP2-RP1	19-Jul-11	Index	No Fish		0		0.0
Stantec	RP2-RP1	19-Jul-11	Index	Brook Trout		1	218	
Stantec	RP2-RP1	19-Jul-11	Index	Sculpin		1	110	
Stantec	RP2-RP1	19-Jul-11	Index	Brook Trout		1	55	
Stantec	RP2-RP1	19-Jul-11	Index	Brook Trout		1	52	
Stantec	RP3-RP2	20-Jul-11	Index	Brook Trout		1	145	46.0
Stantec	RP3-RP2	20-Jul-11	Index	Brook Trout		1	100	
Stantec	RP3-RP2	20-Jul-11	Index	Brook Trout		1	156	47.6
Stantec	RP3-RP2	20-Jul-11	Index	Brook Trout		1	105	13.9
Stantec	RP3-RP2	20-Jul-11	Index	Burbot		1	109	13.3
Stantec	RP3-RP2	20-Jul-11	Index	Lake Chub		1	81	6.0
Stantec	RP3-RP2	20-Jul-11	Index	Lake Chub		1	80	5.9
Stantec	RP3-RP2	20-Jul-11	Index	Lake Chub		1	85	5.9
Stantec	RP3-RP2	20-Jul-11	Index	Pearl Dace		1	98	8.8
Stantec	RP3-RP2	20-Jul-11	Index	Lake Chub		1	81	5.2
Stantec	RP3-RP2	20-Jul-11	Index	Brook Trout		1	118	18.6
Stantec	RP3-RP2	20-Jul-11	Index	Lake Chub		1	77	5.3
Stantec	RP3-RP2	20-Jul-11	Index	Brook Trout		1	98	12.4
Stantec	RP3-RP2	20-Jul-11	Index	Brook Trout		1	162	50.2
Stantec	RP3-RP2	20-Jul-11	Index	Sculpin		1	52	1.5
Stantec	RP3-RP2	20-Jul-11	Index	Burbot		1	125	10.1
Stantec	RP5-RP4	21-Jul-11	Index	Brook Trout		1	90	9.1
Stantec	RP5-RP4	21-Jul-11	Index	Lake Chub		1	108	14.3
Stantec	RP5-RP4	21-Jul-11	Index	Brook Trout		1	48	1.6
Stantec	RP5-RP4	21-Jul-11	Index	Pearl Dace		1	88	8.0
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	125	
Stantec	RP4-RP2	22-Jul-11	Index	White Sucker		1	56	
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	172	
Stantec	RP4-RP2	22-Jul-11	Index	No Fish		0		0.0
Stantec	RP4-RP2	22-Jul-11	Index	No Fish		0		0.0
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	44	
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	40	
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	78	
Stantec	RP4-RP2	22-Jul-11	Index	No Fish		0		0.0
Stantec	RP4-RP2	22-Jul-11	Index	No Fish		0		0.0
Stantec	RP4-RP2	22-Jul-11	Index	No Fish		0		0.0
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	79	
Stantec	RP4-RP2	22-Jul-11	Index	No Fish		0		0.0
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	39	
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	42	
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	43	
Stantec	RP4-RP2	22-Jul-11	Index	Brook Trout		1	47	
Stantec	M01-M02	23-Jul-11	Index	No Fish		0		0.0
Stantec	M01-M02	23-Jul-11	Index	Brook Trout		1	94	8.6
Stantec	M01-M02	23-Jul-11	Index	No Fish		0		0.0
Stantec	M01-M02	23-Jul-11	Index	Brook Trout		1	125	24.8
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	45	1.3
Stantec	M02-ML	23-Jul-11	Index	No Fish		0		0.0
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	86	8.6
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	114	8.2
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	65	3.0
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	104	6.6
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	58	1.7
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	87	8.2
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	89	6.9
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	106	12.1
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	260	216.1
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	76	6.5
Stantec	M02-ML	23-Jul-11	Index	No Fish		0		0.0
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	165	65.7
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	49	2.3
Stantec	M02-ML	23-Jul-11	Index	Longnose Dace		1	95	9.6
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	89	9.0
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	90	9.2
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1		
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	170	55.5
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	192	89.7
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	82	7.3
Stantec	M02-ML	23-Jul-11	Index	Longnose Dace		1	95	9.0
Stantec	M02-ML	23-Jul-11	Index	Longnose Dace		1	83	7.8
Stantec	M02-ML	23-Jul-11	Index	Longnose Dace		1	83	6.8
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	115	22.1

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	71	15.1
Stantec	M02-ML	23-Jul-11	Index	Brook Trout		1	150	36.5
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	76	4.9
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	72	4.3
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	85	8.3
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	82	6.7
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	54	1.7
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	74	4.6
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	74	5.4
Stantec	RSD	25-Jul-11	Index	Brook Trout		1		
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	69	5.0
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	73	4.3
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	72	4.3
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	Brook Trout		1		
Stantec	RSD	25-Jul-11	Index	Brook Trout		1		
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	63	2.6
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	56	1.9
Stantec	RSD	25-Jul-11	Index	Brook Trout		1	42	1.0
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RSD	25-Jul-11	Index	No Fish		0		0.0
Stantec	RP1-PLS	26-Jul-11	Index	White Sucker		1	119	
Stantec	RP1-PLS	26-Jul-11	Index	White Sucker		1	107	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	67	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	89	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	65	
Stantec	RP1-PLS	26-Jul-11	Index	Sculpin		1	75	
Stantec	RP1-PLS	26-Jul-11	Index	No Fish		0		0.0
Stantec	RP1-PLS	26-Jul-11	Index	No Fish		0		0.0
Stantec	RP1-PLS	26-Jul-11	Index	No Fish		0		0.0
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	59	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	71	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	63	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	63	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	72	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	65	
Stantec	RP1-PLS	26-Jul-11	Index	Burbot		1	190	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	68	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	74	
Stantec	RP1-PLS	26-Jul-11	Index	Lake Chub		1	66	
Stantec	RP1-PLS	26-Jul-11	Index	No Fish		0		0.0
Stantec	SC01	27-Jul-11	Index	Longnose Dace		1	85	
Stantec	SC01	27-Jul-11	Index	Brook Trout		1	50	
Stantec	SC01	27-Jul-11	Index	Brook Trout		1	54	
Stantec	SC01	27-Jul-11	Index	Sculpin		1	50	
Stantec	SC01	27-Jul-11	Index	Longnose Dace		1	110	
Stantec	SC01	27-Jul-11	Index	Lake Chub		1	57	
Stantec	SC01	27-Jul-11	Index	No Fish		0		0.0
Stantec	SC03	27-Jul-11	Index	Burbot		1	133	14.2
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	127	23.7
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	93	8.9
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	78	5.4
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	61	1.8
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	58	1.6
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	58	1.7
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	56	1.5
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	59	1.9
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	172	49.3
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	104	14.3
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	83	6.4
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	94	9.9
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	87	8.4
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	85	5.9
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	77	5.0
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	77	5.8
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	69	4.1
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	58	2.2
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	63	2.9
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	138	28.5
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	90	8.6
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	110	15.0
Stantec	SC03	27-Jul-11	Index	Brook Trout		1	113	16.0
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	290	311.4
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	212	129.7
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	254	208.7

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	89	9.3
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	107	13.9
Stantec	SC06	28-Jul-11	Index	Longnose Dace		1	61	2.5
Stantec	SC06	28-Jul-11	Index	Pearl Dace		1	67	3.9
Stantec	SC06	28-Jul-11	Index	Pearl Dace		1	82	6.5
Stantec	SC06	28-Jul-11	Index	Pearl Dace		1	83	5.9
Stantec	SC06	28-Jul-11	Index	Longnose Dace		1	71	3.9
Stantec	SC06	28-Jul-11	Index	Pearl Dace		1	78	4.9
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	131	26.1
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	163	47.3
Stantec	SC06	28-Jul-11	Index	Longnose Dace		1	78	6.2
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	112	18.9
Stantec	SC06	28-Jul-11	Index	Lake Chub		1	77	5.1
Stantec	SC06	28-Jul-11	Index	Longnose Dace		1	56	2.0
Stantec	SC06	28-Jul-11	Index	Sculpin		1	49	2.2
Stantec	SC06	28-Jul-11	Index	Brook Trout		1	47	1.7
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	81	7.3
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	64	2.4
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	88	8.4
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	74	5.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	62	2.8
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	123	22.6
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	72	4.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	57	2.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	111	16.8
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	96	8.2
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	65	3.6
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	66	3.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	67	3.8
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	78	5.0
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	113	17.6
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	82	9.2
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	73	4.6
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	54	1.6
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	67	3.4
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	31	0.4
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	210	103.7
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	178	69.4
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	174	66.4
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	73	3.8
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	92	9.2
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	85	7.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	83	6.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	107	12.8
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	230	130.4
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	64	2.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	110	15.7
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	150	39.9
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	61	2.5
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	109	13.1
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	122	22.7
Stantec	SC07	28-Jul-11	Index	Brook Trout		1	112	17.8
Stantec	SC09	28-Jul-11	Index	Brook Trout		1	127	25.3
Stantec	SC09	28-Jul-11	Index	White Sucker		1	152	34.0
Stantec	SC09	28-Jul-11	Index	Burbot		1	113	9.8
Stantec	SC09	28-Jul-11	Index	Burbot		1	109	9.3
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	64	2.7
Stantec	SC09	28-Jul-11	Index	Longnose Dace		1	73	5.1
Stantec	SC09	28-Jul-11	Index	Longnose Dace		1	75	4.4
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	77	4.1
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	63	2.9
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	68	3.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	64	3.0
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	62	2.5
Stantec	SC09	28-Jul-11	Index	Burbot		1	185	34.5
Stantec	SC09	28-Jul-11	Index	Burbot		1	115	17.4
Stantec	SC09	28-Jul-11	Index	Burbot		1	160	60.1
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	64	3.2
Stantec	SC09	28-Jul-11	Index	Sculpin		1	45	1.1
Stantec	SC09	28-Jul-11	Index	Longnose Dace		1	59	2.2
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	70	3.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	69	3.4
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	64	3.0
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	62	2.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	72	3.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	66	2.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	65	2.7
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	66	3.0
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	69	3.9
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	67	3.2
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	58	2.2
Stantec	SC09	28-Jul-11	Index	Brook Trout		1	193	111.8

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	SC09	28-Jul-11	Index	Brook Trout		1	187	101.0
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	65	2.5
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	68	3.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	70	3.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	63	3.1
Stantec	SC09	28-Jul-11	Index	Longnose Dace		1	100	12.1
Stantec	SC09	28-Jul-11	Index	Sculpin		1	46	1.2
Stantec	SC09	28-Jul-11	Index	Burbot		1	150	24.5
Stantec	SC09	28-Jul-11	Index	Burbot		1	120	9.1
Stantec	SC09	28-Jul-11	Index	Sculpin		1	62	2.7
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	62	2.9
Stantec	SC09	28-Jul-11	Index	Longnose Sucker		1	185	62.7
Stantec	SC09	28-Jul-11	Index	Longnose Sucker		1	165	51.4
Stantec	SC09	28-Jul-11	Index	Sculpin		1	63	
Stantec	SC09	28-Jul-11	Index	Pearl Dace		1	63	2.9
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	83	6.6
Stantec	SC09	28-Jul-11	Index	Lake Chub		1	61	2.4
Stantec	SC09	28-Jul-11	Index	Sculpin		1	42	0.9
Stantec	SC10	28-Jul-11	Index	No Fish		0		0.0
Stantec	SC10	28-Jul-11	Index	Brook Trout		1	220	118.5
Stantec	SC10	28-Jul-11	Index	No Fish		0		0.0
Stantec	SC10	28-Jul-11	Index	Pearl Dace		1	66	3.3
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	165	39.7
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	104	13.6
Stantec	SC05	29-Jul-11	Index	Brook Trout		1		31.3
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	96	10.3
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	48	1.1
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	232	132.4
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	157	43.2
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	116	18.0
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	144	35.8
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	137	29.0
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	142	34.4
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	103	10.5
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	72	5.8
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	162	50.4
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	74	5.2
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	118	20.0
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	71	4.5
Stantec	SC05	29-Jul-11	Index	Sculpin		1	74	4.8
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	144	32.1
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	90	8.6
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	88	8.6
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	82	6.1
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	138	32.4
Stantec	SC05	29-Jul-11	Index	Sculpin		1	58	2.5
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	69	4.6
Stantec	SC05	29-Jul-11	Index	Brook Trout		1	85	8.9
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	54	1.7
Stantec	TDA02	29-Jul-11	Index	Pearl Dace		1	88	7.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	93	8.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	43	0.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	48	1.0
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	48	1.2
Stantec	TDA02	29-Jul-11	Index	Pearl Dace		1	98	10.6
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	89	9.3
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	72	6.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	88	8.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	110	14.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	88	7.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	64	3.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	44	1.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	51	1.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	40	0.9
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	75	4.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	67	3.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	75	5.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	126	25.4
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	140	22.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	81	6.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	39	0.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	42	0.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	98	11.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	78	5.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	45	1.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	43	0.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	46	1.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	41	0.9
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	60	2.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	142	31.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	77	5.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	140	30.9

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	47	1.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	96	12.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	46	1.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	44	1.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	45	1.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	42	0.9
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	50	
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	44	0.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	155	42.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	76	5.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	68	3.3
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	38	0.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	43	0.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	43	0.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	49	1.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	100	10.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	44	0.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	44	1.0
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	49	1.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	135	26.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	107	12.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	64	2.3
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	45	1.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	38	0.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	42	0.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	112	12.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	105	14.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	94	8.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	104	9.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	100	9.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	40	0.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	67	3.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	70	3.9
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	48	1.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	105	14.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	94	8.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	104	9.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	100	9.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	40	0.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	67	3.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	70	3.9
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	48	1.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	72	4.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	58	1.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	102	9.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	71	3.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	63	2.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	180	68.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	150	33.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	133	25.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	89	7.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	86	7.3
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	165	35.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	67	3.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	73	4.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	71	3.4
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	67	3.3
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	80	5.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	38	0.9
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	42	0.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	68	3.3
Stantec	TDA02	29-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	170	58.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	105	15.3
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	134	27.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	129	22.1
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	102	10.6
Stantec	TDA02	29-Jul-11	Index	Sculpin		1	72	4.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	155	36.3
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	160	39.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	102	10.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	105	15.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	124	19.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	82	6.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	254	190.4
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	185	68.9
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	164	49.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	145	36.4
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	168	66.2
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	102	10.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	140	29.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	133	23.9

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	112	15.8
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	143	35.6
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	94	9.7
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	64	2.5
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	117	17.0
Stantec	TDA02	29-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	29-Jul-11	Index	Brook Trout		1	168	57.9
Stantec	SC04	30-Jul-11	Index	Brook Trout		1	169	53.0
Stantec	SC04	30-Jul-11	Index	Sculpin		1	66	4.2
Stantec	SC04	30-Jul-11	Index	Brook Trout		1	125	22.4
Stantec	SC04	30-Jul-11	Index	Brook Trout		1	65	3.8
Stantec	SC04	30-Jul-11	Index	No Fish		0		0.0
Stantec	SC04	30-Jul-11	Index	Brook Trout		1	149	45.3
Stantec	SC04	30-Jul-11	Index	Brook Trout		1	240	164.1
Stantec	SC04	30-Jul-11	Index	Brook Trout		1	160	43.9
Stantec	SC04	30-Jul-11	Index	Brook Trout		1	220	88.6
Stantec	SC04	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	48	1.1
Stantec	TDA01	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	123	19.9
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	57	2.9
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	105	11.8
Stantec	TDA01	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA01	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	103	12.7
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	163	42.7
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	104	13.5
Stantec	TDA01	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA01	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	115	17.1
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	84	7.0
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	124	21.4
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	67	4.0
Stantec	TDA01	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	108	14.6
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	131	21.8
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	119	16.3
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	126	20.3
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	103	13.1
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	98	8.7
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	50	1.8
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	86	8.0
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	125	17.9
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	114	15.1
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	127	21.9
Stantec	TDA01	30-Jul-11	Index	Brook Trout		1	118	16.4
Stantec	TDA01	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	145	30.1
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	181	70.0
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	188	86.7
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	182	68.1
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	195	82.6
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	152	29.4
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	140	28.4
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	130	22.7
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	42	1.3
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	145	29.6
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	115	20.1
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	103	12.3
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	180	65.4
Stantec	TDA02	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	45	0.7
Stantec	TDA02	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	111	16.2
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	73	5.2
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	68	3.2
Stantec	TDA02	30-Jul-11	Index	No Fish		0		0.0
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	172	50.5
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	162	52.9
Stantec	TDA02	30-Jul-11	Index	Brook Trout		1	129	22.9
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	65	2.8
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	68	4.9
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	61	2.8
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	80	6.3
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	90	8.1
Stantec	PLN S1	1-Aug-11	Index	Longnose Dace		1	98	11.5
Stantec	PLN S1	1-Aug-11	Index	Longnose Dace		1	108	15.5
Stantec	PLN S1	1-Aug-11	Index	Sculpin		1	51	3.7
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	103	11.1
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	80	6.3

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	85	7.2
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	86	7.8
Stantec	PLN S1	1-Aug-11	Index	Longnose Dace		1	98	11.1
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	89	8.6
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	79	6.1
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	92	8.0
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	86	7.3
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	106	14.0
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	67	3.6
Stantec	PLN S1	1-Aug-11	Index	Brook Trout		1	56	2.5
Stantec	PLN S1	1-Aug-11	Index	White Sucker		1	108	15.7
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	100	11.8
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	84	9.5
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	83	6.4
Stantec	PLN S1	1-Aug-11	Index	Burbot		1	52	1.1
Stantec	PLN S1	1-Aug-11	Index	No Fish		0		0.0
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	71	4.3
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	69	3.2
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	65	3.1
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	101	13.4
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	87	7.0
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	65	3.7
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	66	2.8
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	81	5.4
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	66	2.7
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	65	2.6
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	66	2.6
Stantec	PLN S1	1-Aug-11	Index	Sculpin		1	56	2.1
Stantec	PLN S1	1-Aug-11	Index	White Sucker		1	145	34.4
Stantec	PLN S1	1-Aug-11	Index	Longnose Dace		1	131	13.9
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	85	7.8
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	95	9.6
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	71	4.6
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	69	3.9
Stantec	PLN S1	1-Aug-11	Index	Sculpin		1	54	1.7
Stantec	PLN S1	1-Aug-11	Index	White Sucker		1	210	101.8
Stantec	PLN S1	1-Aug-11	Index	Burbot		1	163	24.3
Stantec	PLN S1	1-Aug-11	Index	Burbot		1	125	10.2
Stantec	PLN S1	1-Aug-11	Index	White Sucker		1	89	9.6
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	83	6.6
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	69	2.7
Stantec	PLN S1	1-Aug-11	Index	Lake Chub		1	64	2.8
Stantec	PLN S1	1-Aug-11	Index	Burbot		1	45	0.6
Stantec	PLS S1	1-Aug-11	Index	Burbot		1		
Stantec	PLS S1	1-Aug-11	Index	Longnose Dace		1	113	17.4
Stantec	PLS S1	1-Aug-11	Index	Burbot		1	138	14.4
Stantec	PLS S1	1-Aug-11	Index	Longnose Dace		1	103	12.2
Stantec	PLS S1	1-Aug-11	Index	Burbot		1	136	14.7
Stantec	PLS S1	1-Aug-11	Index	Lake Chub		1	86	6.2
Stantec	PLS S1	1-Aug-11	Index	Lake Chub		1	86	7.1
Stantec	PLS S1	1-Aug-11	Index	Lake Chub		1	57	2.1
Stantec	PLS S1	1-Aug-11	Index	Lake Chub		1	66	3.6
Stantec	PLS S1	1-Aug-11	Index	Lake Chub		1	84	5.8
Stantec	PLS S1	1-Aug-11	Index	Brook Trout		1	270	217.9
Stantec	PLS S1	1-Aug-11	Index	Brook Trout		1	228	111.1
Stantec	PLS S1	1-Aug-11	Index	Longnose Dace		1	82	8.2
Stantec	PLS S1	1-Aug-11	Index	Lake Chub		1	88	7.6
Stantec	PLS S1	1-Aug-11	Index	Lake Chub		1	52	1.6
Stantec	PLS S1	1-Aug-11	Index	Burbot		1	51	1.0
Stantec	PLS S1	1-Aug-11	Index	Brook Trout		1	225	148.7
Stantec	PLS S1	1-Aug-11	Index	Burbot		1	178	38.9
Stantec	PLS S1	1-Aug-11	Index	Brook Trout		1	155	22.7
Stantec	PLS S1	1-Aug-11	Index	White Sucker		1	128	33.1
Stantec	PLS S1	1-Aug-11	Index	Burbot		1	170	39.9
Stantec	PLS S1	1-Aug-11	Index	Brook Trout		1	176	51.7
Stantec	PLS S1	1-Aug-11	Index	Longnose Dace		1		
Stantec	PLS S1	1-Aug-11	Index	Longnose Dace		1	96	5.5
Stantec	PLS S1	1-Aug-11	Index	Longnose Dace		1	84	5.8
Stantec	PLS S1	1-Aug-11	Index	Longnose Dace		1	72	5.0
Stantec	PLS S1	1-Aug-11	Index	Pearl Dace		1	85	7.1
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	54	2.3
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	57	2.6
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	63	3.7
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	59	
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	62	
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	54	
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	67	
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	57	
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	59	
Stantec	PLS S2	1-Aug-11	Index	Burbot		1	155	
Stantec	PLS S2	1-Aug-11	Index	Burbot		1	109	
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	93	

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	59	
Stantec	PLS S2	1-Aug-11	Index	White Sucker		1	133	29.7
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	127	28.9
Stantec	PLS S2	1-Aug-11	Index	White Sucker		1	112	17.7
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	133	26.0
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	98	11.5
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	94	8.9
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	89	9.3
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	56	2.3
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	96	10.7
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	63	3.0
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	183	78.8
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	69	3.9
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	86	8.0
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	91	8.8
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	84	8.3
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	82	9.2
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	89	8.9
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	91	11.4
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	59	2.1
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	69	4.5
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	76	5.5
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	83	7.0
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	80	5.0
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	57	2.0
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	84	6.4
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	98	11.2
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	81	5.1
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	73	4.4
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	56	1.9
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	72	4.4
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	90	7.6
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	78	4.9
Stantec	PLS S2	1-Aug-11	Index	White Sucker		1	73	4.2
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	56	1.9
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	56	2.0
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	63	2.5
Stantec	PLS S2	1-Aug-11	Index	White Sucker		1	118	20.2
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	92	9.6
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	94	9.6
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	71	5.1
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	66	3.9
Stantec	PLS S2	1-Aug-11	Index	White Sucker		1	76	5.7
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	82	6.1
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	83	6.4
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	55	1.9
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	72	4.1
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	76	4.2
Stantec	PLS S2	1-Aug-11	Index	Pearl Dace		1	75	4.9
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	80	7.4
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	65	2.9
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	101	12.3
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	190	
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	182	
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	126	26.4
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	62	2.3
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	91	10.5
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	72	6.0
Stantec	PLS S2	1-Aug-11	Index	Brook Trout		1	109	12.3
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	50	1.8
Stantec	PLS S2	1-Aug-11	Index	Lake Chub		1	75	2.8
Stantec	PLS S2	1-Aug-11	Index	Longnose Dace		1	80	5.8
Stantec	PLS S2	1-Aug-11	Index	Sculpin		1	55	2.7
Stantec	PLN S2	2-Aug-11	Index	Brook Trout		1	218	126.0
Stantec	PLN S2	2-Aug-11	Index	Brook Trout		1	162	39.0
Stantec	PLN S2	2-Aug-11	Index	Brook Trout		1	100	10.7
Stantec	PLN S2	2-Aug-11	Index	Burbot		1	177	34.4
Stantec	PLN S2	2-Aug-11	Index	Longnose Dace		1	106	14.8
Stantec	PLN S2	2-Aug-11	Index	Longnose Dace		1	77	5.5
Stantec	PLN S2	2-Aug-11	Index	Longnose Dace		1	83	6.6
Stantec	PLN S2	2-Aug-11	Index	Lake Chub		1	78	5.7
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	213	112.3
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	216	120.6
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	85	7.3
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	41	0.7
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	48	1.1
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	59	2.0
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1		
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1		
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	111	16.8
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	105	12.2
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	58	2.2

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
Stantec	PLN S3	2-Aug-11	Index	Sculpin		1	59	3.0
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	55	1.5
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	73	5.0
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	65	3.9
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	52	1.6
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	42	0.9
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	101	11.7
Stantec	PLN S3	2-Aug-11	Index	Sculpin		1	84	6.4
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	88	8.9
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	61	2.4
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	99	12.7
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	62	2.7
Stantec	PLN S3	2-Aug-11	Index	No Fish		0		0.0
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	122	24.9
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	94	12.5
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	101	10.7
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	65	2.8
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	95	10.9
Stantec	PLN S3	2-Aug-11	Index	Sculpin		1	54	1.8
Stantec	PLN S3	2-Aug-11	Index	No Fish		0		0.0
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	79	6.7
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	84	6.8
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	101	14.4
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	85	6.6
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	94	8.7
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	100	11.5
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	93	9.9
Stantec	PLN S3	2-Aug-11	Index	Longnose Dace		1	74	4.5
Stantec	PLN S3	2-Aug-11	Index	Brook Trout		1	98	12.8
AMEC	Pike Lake North	11-Aug-12	Index	Burbot		1	81	3.7
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	105	11.6
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	86	6.1
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	60	2.2
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	76	4.9
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	36	0.6
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	77	5.0
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	93	9.5
AMEC	Pike Lake North	11-Aug-12	Index	Brook Trout		1	114	16.0
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	82	5.0
AMEC	Pike Lake North	11-Aug-12	Index	White Sucker		1	171	60.5
AMEC	Pike Lake North	11-Aug-12	Index	White Sucker		1	120	20.7
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	90	7.5
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	66	2.2
AMEC	Pike Lake North	11-Aug-12	Index	Burbot		1	72	2.7
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	87	6.8
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	88	6.6
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	87	5.5
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	75	4.1
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	180	65.1
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	95	9.6
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	106	13.1
AMEC	Pike Lake North	11-Aug-12	Index	Burbot		1	62	2.1
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	98	10.9
AMEC	Pike Lake North	11-Aug-12	Index	White Sucker		1	190	21.1
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	77	5.0
AMEC	Pike Lake North	11-Aug-12	Index	Burbot		1	62	1.2
AMEC	Pike Lake North	11-Aug-12	Index	White Sucker		1	112	1.7
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	97	7.3
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	86	6.0
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	93	6.3
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	82	5.8
AMEC	Pike Lake North	11-Aug-12	Index	Burbot		1	52	1.1
AMEC	Pike Lake North	11-Aug-12	Index	Burbot		1	136	14.9
AMEC	Pike Lake North	11-Aug-12	Index	White Sucker		1	119	17.3
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	69	2.3
AMEC	Pike Lake North	11-Aug-12	Index	Lake Chub		1	87	6.0
AMEC	Pike Lake North	12-Aug-12	Index	Longnose Sucker		1	79	7.2
AMEC	Pike Lake North	13-Aug-12	Index	Lake Chub		1	80	5.1
AMEC	Pike Lake North	14-Aug-12	Index	Longnose Sucker		1	105	12.7
AMEC	Pike Lake North	15-Aug-12	Index	Longnose Sucker		1	76	5.3
AMEC	RP01	17-Aug-12	Quantatitive	Brook Trout	1	1	188	70.8
AMEC	RP01	17-Aug-12	Quantatitive	Brook Trout	1	1	150	38.0
AMEC	RP01	17-Aug-12	Quantatitive	Lake Chub	1	1	53	2.3
AMEC	RP01	17-Aug-12	Quantatitive	Northern Pike	1	1	282	169.1
AMEC	RP01	17-Aug-12	Quantatitive	Brook Trout	2	1	121	17.4
AMEC	RP01	17-Aug-12	Quantatitive	Lake Chub	2	1	51	0.9
AMEC	RP01	17-Aug-12	Quantatitive	Lake Chub	2	1	56	1.7
AMEC	RP01	17-Aug-12	Quantatitive	Lake Chub	3	1	56	1.8
AMEC	RP01	17-Aug-12	Quantatitive	Lake Chub	3	1	57	2.1
AMEC	RP01	17-Aug-12	Quantatitive	Lake Chub	3	1	60	2.2
AMEC	RP01	17-Aug-12	Quantatitive	Lake Chub	3	1	74	4.2
AMEC	RP01	17-Aug-12	Quantatitive	No Fish	4	0		0.0

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
AMEC	RP02	17-Aug-12	Quantatitive	White Sucker	1	1	171	52.7
AMEC	RP02	17-Aug-12	Quantatitive	Lake Chub	1	1	97	9.4
AMEC	RP02	17-Aug-12	Quantatitive	White Sucker	2	1	107	13.0
AMEC	RP02	17-Aug-12	Quantatitive	No Fish	3	0		0.0
AMEC	RP02	17-Aug-12	Quantatitive	No Fish	4	0		0.0
AMEC	WR01	18-Aug-12	Quantatitive	Brook Trout	1	1	51	1.1
AMEC	WR01	18-Aug-12	Quantatitive	Brook Trout	1	1	100	10.9
AMEC	WR01	18-Aug-12	Quantatitive	Brook Trout	2	1	47	1.1
AMEC	WR01	18-Aug-12	Quantatitive	Brook Trout	3	1	47	0.8
AMEC	WR01	18-Aug-12	Quantatitive	No Fish	4	0		0.0
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	58	1.8
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	67	3.1
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	77	4.9
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	68	2.8
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	59	2.2
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	65	3.0
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	61	2.2
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	60	2.3
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	71	3.8
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	85	6.6
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	60	2.2
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	84	7.2
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	47	1.2
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	55	2.0
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	57	2.1
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	162	42.6
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	1	1	161	43.7
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	75	3.9
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	72	3.3
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	69	2.4
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	74	3.4
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	54	1.3
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	64	2.9
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	56	2.0
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	2	1	41	0.9
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	72	3.9
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	71	3.7
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	76	4.1
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	46	1.1
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	58	2.6
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	53	2.4
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	62	2.4
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	3	1	101	9.0
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	4	1	39	0.5
AMEC	WR03	19-Aug-12	Quantatitive	Brook Trout	4	1	112	11.8
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	204	89.1
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	190	67.2
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	154	35.9
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	123	18.9
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	130	20.2
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	133	22.6
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	121	18.2
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	80	5.2
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	44	0.8
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	1	1	50	1.3
AMEC	TI01	20-Aug-12	Quantatitive	Sculpin	1	1	88	8.4
AMEC	TI01	20-Aug-12	Quantatitive	Sculpin	1	1	70	4.2
AMEC	TI01	20-Aug-12	Quantatitive	Sculpin	1	1	60	2.3
AMEC	TI01	20-Aug-12	Quantatitive	Sculpin	1	1	22	0.1
AMEC	TI01	20-Aug-12	Quantatitive	Sculpin	1	1	20	0.1
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	2	1	135	24.1
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	2	1	141	28.6
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	2	1	94	7.8
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	2	1	94	7.9
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	2	1	99	9.3
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	2	1	85	6.5
AMEC	TI01	20-Aug-12	Quantatitive	Brook Trout	2	1	91	7.4
AMEC	TI01	20-Aug-12	Quantatitive	Sculpin	2	1	64	3.1
AMEC	TI01	20-Aug-12	Quantatitive	Sculpin	3	1	41	0.8
AMEC	TI01	20-Aug-12	Quantatitive	No Fish	4	0		0.0
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	122	20.1
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	144	28.1
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	154	35.1
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	228	112.6
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	104	10.5
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	70	3.6
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	101	10.0
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	80	5.1
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	82	5.6
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	75	3.7
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	70	3.5
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	58	1.8

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	1	1	45	0.9
AMEC	TI02	20-Aug-12	Quantatitive	Brook Trout	2	1	179	60.2
AMEC	TI02	20-Aug-12	Quantatitive	No Fish	3	0		0.0
AMEC	TI02	20-Aug-12	Quantatitive	No Fish	4	0		0.0
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	1	1	102	9.5
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	1	1	156	45.8
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	1	1	178	52.4
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	2	1	129	22.0
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	2	1	87	7.3
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	2	1	149	35.5
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	2	1	166	53.7
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	2	1	164	46.2
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	2	1	152	34.8
AMEC	TI03	21-Aug-12	Quantatitive	Brook Trout	3	1	185	63.4
AMEC	TI03	21-Aug-12	Quantatitive	No Fish	4	0		0.0
AMEC	TI04	21-Aug-12	Quantatitive	Brook Trout	1	1	43	1.2
AMEC	TI04	21-Aug-12	Quantatitive	Brook Trout	1	1	72	3.9
AMEC	TI04	21-Aug-12	Quantatitive	Brook Trout	1	1	75	3.1
AMEC	TI04	21-Aug-12	Quantatitive	Brook Trout	1	1	75	7.2
AMEC	TI04	21-Aug-12	Quantatitive	Brook Trout	1	1	136	27.1
AMEC	TI04	21-Aug-12	Quantatitive	Brook Trout	2	1	40	0.7
AMEC	TI04	21-Aug-12	Quantatitive	Brook Trout	3	1	65	2.4
AMEC	TI04	21-Aug-12	Quantatitive	No Fish	4	0		0.0
WSP	Mills Lake Outflow	4-Aug-23	Index	Brook Trout	1	1	183	69.7
WSP	Mills Lake Outflow	4-Aug-23	Index	Brook Trout	1	1	146	36.0
WSP	Mills Lake Outflow	4-Aug-23	Index	Brook Trout	1	1	147	30.4
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	129	24.3
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	126	28.1
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	101	13.3
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	110	15.2
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	93	8.2
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	96	10.5
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	87	7.9
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	71	3.9
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	81	6.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	68	2.3
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	82	6.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	63	2.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	58	1.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	45	2.2
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	54	2.5
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	56	1.9
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	50	1.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	53	2.7
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	68	1.5
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	54	2.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Brook Trout	1	1	154	37.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Brook Trout	1	1	156	55.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Brook Trout	1	1	123	17.9
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	77	4.1
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	104	11.0
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Sucker	1	1	106	12.0
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	55	1.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	76	4.1
WSP	Mills Lake Outflow	4-Aug-23	Index	Burbot	1	1	222	59.6
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Sucker	1	1	97	8.5
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	98	9.6
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Sucker	1	1	89	6.2
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Sucker	1	1	87	6.5
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	52	2.5
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	58	1.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	69	4.0
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	90	8.4
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	117	14.1
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	56	2.1
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	83	6.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	72	4.0
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	73	3.6
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	84	5.3
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	83	4.9
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	92	7.6
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	106	4.6
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Sucker	1	1	55	1.2
WSP	Mills Lake Outflow	4-Aug-23	Index	Lake Chub	1	1	50	1.6
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	54	1.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	53	1.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	70	3.2
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	72	4.2
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	91	8.3
WSP	Mills Lake Outflow	4-Aug-23	Index	Burbot	1	1	117	10.3
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	48	0.8
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	106	11.5

Consultant	Location	Date	Station Type	Species	Sweep Number	Total Catch	Length (mm)	Weight (g)
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	84	5.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	74	4.4
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	50	1.0
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Dace	1	1	55	2.4
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	59	1.9
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	70	3.9
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Sucker	1	1	80	4.9
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	85	5.9
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	74	4.8
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	63	2.9
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	60	2.1
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	52	2.3
WSP	Mills Lake Outflow	4-Aug-23	Index	Longnose Sucker	1	1	54	1.1
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	62	2.1
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	81	5.3
WSP	Mills Lake Outflow	4-Aug-23	Index	Burbot	1	1	59	0.9
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	52	1.1
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	53	1.1
WSP	Mills Lake Outflow	4-Aug-23	Index	Sculpin	1	1	61	2.2
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	55	1.0
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	61	0.7
WSP	Mills Lake Outflow	4-Aug-23	Index	White Sucker	1	1	43	0.6

APPENDIX C

Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	17-Jul-11	RP01	Gillnet	GN01				No Fish	0		0.0		
Stantec	2011	17-Jul-11	RP01	Gillnet	GN02				No Fish	0		0.0		
Stantec	2011	17-Jul-11	RP01	Gillnet	GN03				No Fish	0		0.0		
Stantec	2011	17-Jul-11	RP01	Gillnet	GN04				No Fish	0		0.0		
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Northern Pike	1	680		2402.3	
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Sculpin	1	46	0.6		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Sculpin	1	51	0.9		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Sculpin	1	53	1.7		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Sculpin	1	56	1.6		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Lake Chub	1	65	2.8		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Lake Chub	1	60	2.1		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Lake Chub	1	69	3.2		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Lake Chub	1	68	2.1		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Lake Chub	1	73	3.7		0.95
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Lake Chub	1	65	2.2		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Lake Chub	1	66	2.5		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Sculpin	1	53	1.3		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN01				Sculpin	1	46	0.9		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Burbot	1	37	0.6		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Sculpin	1	55	0.9		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Burbot	1	37	0.6		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Sculpin	1	46	0.7		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Northern Pike	1	46	0.6		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Northern Pike	1	71	2.6		0.73
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Sculpin	1	43	0.7		-
Stantec	2011	17-Jul-11	PLS	Fyke Net	FN02				Sculpin	1	59	2.3		-
Stantec	2011	17-Jul-11	PLS	Gillnet	GN01				No Fish	0		0.0		
Stantec	2011	17-Jul-11	PLS	Gillnet	GN02				Northern Pike	1	730		2980.7	
Stantec	2011	17-Jul-11	PLS	Gillnet	GN02				White Sucker	1	117	17.6		1.10
Stantec	2011	17-Jul-11	PLS	Gillnet	GN03				No Fish	0		0.0		
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN01				Northern Pike	1	248	126.5		0.83
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN01				Lake Chub	125			375.0	
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	3.9		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	65	2.2		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	3.3		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	64	2.9		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	66	2.9		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	67	2.9		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	68	3.2		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	67	2.8		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	62	1.2		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	75	3.9		0.92
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	67	3.1		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	60	2.5		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	60	2.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	69	3.5		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	66	3.1		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	65	2.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	61	2.1		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	65	2.0		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	64	2.5		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	3.7		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	2.7		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	75	4.5		1.07
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	67	2.2		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	3.9		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	3.5		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	63	3.2		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	69	3.0		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	62	2.5		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	4.2		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	63	2.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	88	8.5		1.25
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	3.1		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	58	1.9		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	68	2.5		-

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	67	2.7		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	64	3.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	62	2.9		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	62	3.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	68	3.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	59	2.1		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	66	2.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	64	2.8		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	2.5		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	78	4.3		0.91
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	70	3.1		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	59	2.8		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	74	4.6		1.14
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	65	2.6		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	57	2.4		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	1	65	2.7		-
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Lake Chub	464			1392.0	
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	262	230.5		1.28
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	245	167.8		1.14
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	188	85.2		1.28
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	182	81.2		1.35
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	165	55.0		1.22
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	137	29.8		1.16
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				Burbot	1	188	38.0		0.57
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	188	83.1		1.25
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	128	23.8		1.13
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	119	18.4		1.09
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	112	16.7		1.19
Stantec	2011	17-Jul-11	RP01	Fyke Net	FN02				White Sucker	1	112	16.6		1.18
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Northern Pike	1	534		1152.0	
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	50		1.5	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	51		1.6	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	55		2.0	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	47		1.3	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	46		1.2	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	55		2.0	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	49		1.5	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Sculpin	1	53		1.8	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Lake Chub	1	63		2.7	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Lake Chub	1	75		4.5	
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Lake Chub	1	67		3.2	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Lake Chub	1	64		2.8	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN01				Lake Chub	1	69		3.5	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN02				Northern Pike	1	181		42.9	
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN02				Sculpin	1	57		2.2	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN02				Sculpin	1	55		2.0	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN02				Sculpin	1	58		2.2	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN02				Sculpin	1	52		1.7	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN02				Sculpin	1	56		2.1	-
Stantec	2011	19-Jul-11	RP02	Fyke Net	FN02				Lake Chub	1	90		7.8	
Stantec	2011	19-Jul-11	RP02	Gillnet	GN01				Northern Pike	1	561		1338.4	
Stantec	2011	19-Jul-11	RP02	Gillnet	GN02				No Fish	0		0.0		
Stantec	2011	19-Jul-11	RP02	Gillnet	GN03				No Fish	0		0.0		
Stantec	2011	19-Jul-11	RP02	Gillnet	GN04				No Fish	0		0.0		
Stantec	2011	19-Jul-11	RP03	Fyke Net	FN01				Northern Pike	1	430		596.2	
Stantec	2011	19-Jul-11	RP03	Fyke Net	FN02				Northern Pike	1	640		1997.9	
Stantec	2011	19-Jul-11	RP03	Gillnet	GN01				No Fish	0		0.0		
Stantec	2011	19-Jul-11	RP03	Gillnet	GN02				No Fish	0		0.0		
Stantec	2011	19-Jul-11	RP03	Gillnet	GN03				Northern Pike	1	580		1481.1	
Stantec	2011	19-Jul-11	RP03	Gillnet	GN03				Northern Pike	1	600		1641.9	
Stantec	2011	19-Jul-11	RP03	Gillnet	GN04				No Fish	0		0.0		
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				White Sucker	1	55	1.9		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				Lake Chub	1	62	2.7		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				White Sucker	1	50	1.4		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				Lake Chub	1	35	0.9		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				Lake Chub	1	92	9.1		1.17

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				Lake Chub	1	59	2.0		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				White Sucker	1	53	1.8		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				White Sucker	1	44	0.8		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				Lake Chub	1	39	0.5		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				White Sucker	1	49	1.1		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN01				Sculpin	1	36	0.5		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	240	80.7		0.58
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	176	56.5		1.04
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Brook Trout	1	182	64.0		1.06
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	245	81.1		0.55
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	183	60.5		0.99
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	249	87.0		0.56
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	220	55.9		0.52
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	220	111.7		1.05
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	192	73.4		1.04
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Brook Trout	1	220	134.7		1.27
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	164	45.1		1.02
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	199	40.3		0.51
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	252	159.7		1.00
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	182	64.9		1.08
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	182	52.4		0.87
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	180	55.6		0.95
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	199	45.7		0.58
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	186	64.4		1.00
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	195	73.8		1.00
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	158	40.4		1.02
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	175	50.4		0.94
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	154	18.6		0.51
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	162	49.9		1.17
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Burbot	1	191	37.0		0.53
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	81	4.3		0.81
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	82	5.3		0.96
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	43	1.0		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	114	13.0		0.88
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1		11.8		
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	115	14.2		0.93
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	108	12.5		0.99
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	117	14.8		0.92
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	115	17.7		1.16
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	97	11.6		1.27
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	115	21.4		1.41
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	105	13.0		1.12
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	104	14.3		1.27
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	100	11.7		1.17
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	45	0.8		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	105	12.4		1.07
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	111	14.5		1.06
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	82	5.7		1.03
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	106	12.5		1.05
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	107	13.5		1.10
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	102	11.8		1.11
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	105	12.7		1.10
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	49	1.8		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	113	15.7		1.09
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	106	13.5		1.13
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	104	12.8		1.14
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	66	3.1		-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	88	9.3		1.36
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	109	13.3		1.03
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	77	7.2		1.58
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	117	13.8		0.86
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	100	10.2		1.02
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	97	9.1		1.00
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	108	11.8		0.94
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	102	10.4		0.98
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	94	8.8		1.06

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	127	20.9		1.02
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	110	13.7		1.03
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	108	10.3		0.82
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	120	17.8		1.03
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	98	9.5		1.01
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	110	13.2		0.99
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	114	13.7		0.92
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	81	5.9		1.11
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	111		16.3	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	96		9.4	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	116		16.7	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	112		16.7	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	106		14.2	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	103		11.7	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	109		13.8	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	120		18.5	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	70		3.5	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	97		9.7	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	101		12.2	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	70		3.5	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	110		14.2	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	100		11.9	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	87		7.8	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	107		13.1	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	92		8.3	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	100		10.7	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	92		8.3	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	98		10.0	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	105		13.8	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	106		14.2	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	102		11.3	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	104		12.0	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	66		2.9	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	69		3.4	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	69		3.4	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	62		2.8	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	48		1.1	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	45		0.9	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	73		4.0	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	99		10.4	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	99		10.4	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	82		5.6	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	96		9.0	
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				White Sucker	1	61		2.7	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	66		2.9	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Lake Chub	1	65		2.9	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	68		3.2	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	68		3.2	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	66		2.9	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	54		1.6	-
Stantec	2011	20-Jul-11	RP04	Fyke Net	FN02				Pearl Dace	1	49		1.2	-
Stantec	2011	21-Jul-11	RP04	Gillnet	GN01				White Sucker	1	382	680.2		1.22
Stantec	2011	21-Jul-11	RP04	Gillnet	GN02				No Fish	0		0.0		
Stantec	2011	21-Jul-11	RP04	Gillnet	GN03				White Sucker	1	395		762.6	
Stantec	2011	21-Jul-11	RP04	Gillnet	GN03				White Sucker	1	425		952.0	
Stantec	2011	21-Jul-11	RP04	Gillnet	GN04				No Fish	0		0.0		
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	96	8.3		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	86	6.9		1.08
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	110	12.5		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	105	11.3		0.98
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				White Sucker	1	98	9.5		1.01
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	123	16.1		0.87
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	104	11.4		1.01
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	97	9.1		1.00
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				White Sucker	1	118	17.4		1.06
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	88	6.9		1.01

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	87	6.1		0.93
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	105	11.2		0.97
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	84	6.4		1.08
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	109	13.3		1.03
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	132	22.7		0.99
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	94	9.7		1.17
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	98	10.5		1.12
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Sculpin	1	61	1.5		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	112	14.3		1.02
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	88	6.4		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	96	8.2		0.93
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	83	5.2		0.91
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	103	8.8		0.81
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	102	9.6		0.90
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	97	8.7		0.95
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	81	5.1		0.96
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	86	7.4		1.16
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	105	11.3		0.98
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	112	14.5		1.03
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	97	8.8		0.96
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	122	19.5		1.07
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	98	11.4		1.21
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	112	14.4		1.02
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	105	11.3		0.98
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	104	11.5		1.02
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	108	13.6		1.08
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	92	8.5		1.09
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	99	9.5		0.98
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	75	4.0		0.95
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Burbot	1	165	26.1		0.58
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	69	5.4		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	120	17.1		0.99
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	93	8.8		1.09
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	106	11.2		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	98	9.0		0.96
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	120	17.0		0.98
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	116	15.6		1.00
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				White Sucker	1	94	7.8		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	102	9.7		0.91
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	107	12.1		0.99
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	87	6.6		1.00
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	107	11.6		0.95
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	98	9.5		1.01
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Pearl Dace	1	95	8.9		1.04
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	90	6.8		0.93
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	100	9.7		0.97
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	126	18.4		0.92
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	112	14.8		1.05
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	102	9.9		0.93
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	104	10.4		0.92
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	103	10.6		0.97
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	97	9.8		1.07
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	64	2.2		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	113	14.0		0.97
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	98	10.9		1.16
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	93	8.9		1.11
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	89	8.6		1.22
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	110	14.9		1.12
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	102	11.5		1.08
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	108	12.5		0.99
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	99	8.8		0.91
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	82	6.5		1.18
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN01				Lake Chub	1	91	8.8		1.17
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	63	3.4		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	94	8.1		0.98
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	59	1.9		-

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	98	10.3		1.09
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	83	6.2		1.08
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	102	10.1		0.95
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Burbot	1	156	24.2		0.64
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	120	17.1		0.99
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				White Sucker	1	113	14.4		1.00
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				White Sucker	1	94	7.6		0.92
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				White Sucker	1	126	19.5		0.97
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	100	9.1		0.91
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	107	10.6		0.87
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	93	8.7		1.08
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	71	4.3		1.20
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	102	10.2		0.96
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	83	5.0		0.87
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	60	1.5		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				White Sucker	1	120	17.7		1.02
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	67	3.2		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	60	2.0		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				White Sucker	1	94	8.7		1.05
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	102	11.2		1.06
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	85	6.3		1.03
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	83	5.7		1.00
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	103	12.1		1.11
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	79	3.9		0.79
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	95	9.5		1.11
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	82	7.1		1.29
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	60	1.7		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	125	17.8		0.91
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	63	1.7		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				White Sucker	1	90	7.8		1.07
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	93	9.2		1.14
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	87	6.2		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	65	2.5		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	64	2.1		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	78	3.6		0.76
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	69	2.4		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	84	4.9		0.83
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	74	3.8		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	71	2.8		0.78
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	58	3.2		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	61	2.4		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	87	5.7		0.87
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	88	6.4		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	72	2.6		0.70
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	83	6.5		1.14
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	60	2.4		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	92	7.5		0.96
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	77	4.7		1.03
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	87	6.5		0.99
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	67	2.8		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	60	2.2		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	79	5.3		1.07
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	68	3.6		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	72	3.5		0.94
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	54	1.5		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	54	1.3		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	68	3.1		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	63	2.5		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	63	2.8		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	63	2.5		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Lake Chub	1	44	1.0		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	64	2.2		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	50	1.1		-
Stantec	2011	21-Jul-11	RP05	Fyke Net	FN02				Pearl Dace	1	45	0.9		-
Stantec	2011	21-Jul-11	RP05	Gillnet	GN01				Brook Trout	1	120	20.5		1.19
Stantec	2011	21-Jul-11	RP05	Gillnet	GN01				Brook Trout	1	119	21.4		1.27

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				Brook Trout	1	227		119.9	
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				Brook Trout	1	260	191.8		1.09
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	207	109.8		1.24
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	189	90.2		1.34
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	119	20.0		1.19
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				Brook Trout	1	341	415.6		1.05
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				Brook Trout	1	401	648.5		1.01
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				Brook Trout	1	320	372.5		1.14
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	382	644.9		1.16
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	350	454.0		1.06
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	295	306.7		1.19
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	340	430.0		1.09
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	412	735.6		1.05
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	405	676.9		1.02
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	322	444.2		1.33
Stantec	2011	21-Jul-11	RP05	Gillnet	GN02				White Sucker	1	185	76.5		1.21
Stantec	2011	23-Jul-11	M01	Fyke Net	FN01				Brook Trout	1	185	78.7		1.24
Stantec	2011	23-Jul-11	M01	Fyke Net	FN01				Brook Trout	1	171	51.4		1.03
Stantec	2011	23-Jul-11	M01	Fyke Net	FN01				Brook Trout	1	205	103.0		1.20
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	230	126.2		1.04
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	206	95.2		1.09
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	220	115.1		1.08
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	206	87.8		1.00
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	192	77.9		1.10
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	203	85.8		1.03
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	195	83.0		1.12
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	119	21.1		1.25
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	141	30.2		1.08
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	198	81.1		1.04
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	169	50.4		1.04
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	159	41.3		1.03
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	186	73.5		1.14
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	146	37.6		1.21
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	116	15.6		1.00
Stantec	2011	23-Jul-11	M01	Fyke Net	FN02				Brook Trout	1	108	16.1		1.28
Stantec	2011	23-Jul-11	M01	Gillnet	GN01				Brook Trout	1	151	36.2		1.05
Stantec	2011	23-Jul-11	M01	Gillnet	GN01				Brook Trout	1	182	67.9		1.13
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	205	39.2		0.46
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	184	31.9		0.51
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	191	28.2		0.40
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	167	31.5		0.68
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	195	39.8		0.54
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	145	16.5		0.54
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	126	18.5		0.92
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	165	46.5		1.04
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	132	24.4		1.06
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	53	2.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	145	32.1		1.05
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	135	25.8		1.05
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	153	17.1		0.48
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	141	29.2		1.04
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	121	19.6		1.11
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	131	21.6		0.96
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Burbot	1	127	9.6		0.47
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	75	3.6		0.85
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	78	5.0		1.05
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	74	3.1		0.77
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	80	4.7		0.92
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	84	6.6		1.11
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	81	6.0		1.13
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	95	8.1		0.94
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	92	8.5		1.09
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Pearl Dace	1	85	5.6		0.91
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Pearl Dace	1	69	3.3		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	64	3.2		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	72	3.8		1.02

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	90	7.6		1.04
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	88	8.1		1.19
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	71	4.9		1.37
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	85	6.9		1.12
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	73	4.9		1.26
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	62	3.7		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	75	4.9		1.16
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	59	2.8		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	53	1.1		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	70	4.1		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	82	6.6		1.20
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	67	3.6		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	70	3.9		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	63	1.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	115	13.2		0.87
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Pearl Dace	1	81	5.2		0.98
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	66	3.2		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	60	0.9		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	73	4.3		1.11
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Pearl Dace	1	77	3.4		0.74
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	70	3.2		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	56	1.5		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	75	5.5		1.30
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	78	5.9		1.24
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	71	3.6		1.01
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	83	5.7		1.00
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	69	4.3		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	85	6.7		1.09
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	75	4.1		0.97
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	70	4.0		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	80	4.4		0.86
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	83	6.1		1.07
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	98	8.9		0.95
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Brook Trout	1	105	14.2		1.23
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	85	7.7		1.25
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	77	7.0		1.53
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	66	5.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	55	2.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	52	1.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	52	0.7		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	41	0.8		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	82	6.1		1.11
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	75	5.5		1.30
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	71	5.0		1.40
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	70	3.5		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	81	6.0		1.13
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	82	5.6		1.02
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	80	6.5		1.27
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	70	5.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	73	5.5		1.41
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	83	8.5		1.49
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	72	4.9		1.31
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	70	4.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	67	3.3		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	75	3.7		0.88
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	76	4.2		0.96
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	51	2.2		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	66	3.6		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	68	4.0		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	69	5.0		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	75	3.7		0.88
Stantec	2011	23-Jul-11	M02	Fyke Net	FN01				Lake Chub	1	65	3.0		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Trout	1	660		2801.5	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	54	1.9		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	95	7.1		0.83
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	48	1.5		-

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	74	4.3		1.06
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	53	1.5		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	55	1.7		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	53	1.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	52	1.4		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	82	5.7		1.03
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	39	0.3		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	28	0.2		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	53	1.9		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	82	4.7		0.85
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	37	0.3		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	64	2.6		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	154	37.2		1.02
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	155	38.9		1.04
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	83	4.5		0.79
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	73	4.6		1.18
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	81	6.3		1.19
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	83	5.4		0.94
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	84	8.1		1.37
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	54	1.8		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	78	5.1		1.07
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	41		0.7	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	98	7.3		0.78
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	83	7.5		1.31
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	88		7.0	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	89		7.2	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	40		0.7	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	77		4.7	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	46		1.0	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	53		1.5	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	57		1.9	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	85		6.3	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	72		3.8	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	158	44.1		1.12
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	101		10.5	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	86		6.5	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	66		2.9	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	65		2.8	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	85	4.9		0.80
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	92		8.0	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	53		1.5	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	108	13.2		1.05
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	57		1.9	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	52		1.4	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	88	6.2		0.91
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	101	9.5		0.92
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	80	5.7		1.11
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	144	28.0		0.94
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Burbot	1	156	19.5		0.51
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	82	5.9		1.07
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	81		5.4	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	153		37.6	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	84	5.1		0.86
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	60		2.2	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	183	65.5		1.07
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	80		5.2	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	83		5.8	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	185	60.6		0.96
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	190	70.8		1.03
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	185	69.2		1.09
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	105		11.8	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	95		8.8	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	70		3.5	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	62		2.4	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	67		3.1	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	82		5.6	

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	76		4.5	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	84		6.1	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	68		3.2	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	79		5.0	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	80		5.2	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	90		7.4	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	87		6.7	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	171	51.9		1.04
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Brook Trout	1	155	31.8		0.85
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	106		12.1	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	83		5.8	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	74		4.1	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	57		1.9	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	92		8.0	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	104		11.5	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	55		1.7	-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Burbot	1	168	23.5		0.50
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	104	12.7		1.13
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	83		5.8	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	93		8.2	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	113		14.7	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	105		11.8	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	85		6.3	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	92		8.0	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	94		8.5	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	94		8.5	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	88		7.0	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Pearl Dace	1	87		6.7	
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	65	2.6		-
Stantec	2011	23-Jul-11	M02	Fyke Net	FN02				Lake Chub	1	86	5.4		0.85
Stantec	2011	23-Jul-11	M02	Gillnet	GN01				Brook Trout	1	110	14.6		1.10
Stantec	2011	23-Jul-11	M02	Gillnet	GN01				Brook Trout	1	246	139.5		0.94
Stantec	2011	23-Jul-11	M02	Gillnet	GN01				Brook Trout	1	195	79.2		1.07
Stantec	2011	23-Jul-11	M02	Gillnet	GN01				Brook Trout	1	198	82.7		1.07
Stantec	2011	23-Jul-11	M02	Gillnet	GN01				Brook Trout	1	135	24.4		0.99
Stantec	2011	23-Jul-11	M02	Gillnet	GN02				No Fish	0		0.0		
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Round Whitefish	1	172	47.1		0.93
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	214	120.3		1.23
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	250	92.4		0.59
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	173	63.1		1.22
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	157	45.6		1.18
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	179	70.2		1.22
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	146	41.9		1.35
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	146	21.2		0.68
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	120	13.4		0.78
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	122	13.8		0.76
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	136	32.5		1.29
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	143	33.7		1.15
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	42	1.1		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	45	0.5		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	40	0.4		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	39	0.3		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	37	0.3		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	92	6.7		0.86
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	135	17.1		0.70
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	127	16.9		0.83
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	155	43.3		1.16
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Round Whitefish	1	112	12.2		0.87
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	129	25.3		1.18
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	112	9.8		0.70
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Longnose Sucker	1	137	28.3		1.10
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	118	12.1		0.74
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Brook Trout	1	135	26.9		1.09
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Brook Trout	1	116	19.8		1.27
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	79	4.7		0.95
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	96	8.6		0.97

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	61	2.0		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	43	0.7		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	45	1.4		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Lake Chub	1	48	0.7		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	28	0.3		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	32	0.2		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	35	0.3		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Sculpin	1	40	0.7		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	28	0.3		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN01				Burbot	1	30	0.3		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN02				White Sucker	1	127	22.6		1.10
Stantec	2011	25-Jul-11	D01	Fyke Net	FN02				White Sucker	1	147	35.6		1.12
Stantec	2011	25-Jul-11	D01	Fyke Net	FN02				Pearl Dace	1	62	3.6		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN02				Pearl Dace	1	42	1.1		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN02				Sculpin	1	48	0.9		-
Stantec	2011	25-Jul-11	D01	Fyke Net	FN02				Sculpin	1	34	0.4		-
Stantec	2011	25-Jul-11	D01	Gillnet	GN01				Lake Trout	1	420	640.2		0.86
Stantec	2011	25-Jul-11	D01	Gillnet	GN02				Round Whitefish	1	332	343.2		0.94
Stantec	2011	25-Jul-11	D01	Gillnet	GN02				Round Whitefish	1	275	218.5		1.05
Stantec	2011	25-Jul-11	D01	Gillnet	GN02				Round Whitefish	1	325	311.5		0.91
Stantec	2011	25-Jul-11	D01	Gillnet	GN02				Round Whitefish	1	221	120.2		1.11
Stantec	2011	25-Jul-11	D01	Gillnet	GN02				Round Whitefish	1	292	265.6		1.07
Stantec	2011	25-Jul-11	D01	Gillnet	GN02				Lake Trout	1	435	823.6		1.00
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Sculpin	1	138	30.0		1.14
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Lake Chub	1	96	9.0		1.02
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Burbot	1	227	117.9		1.01
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Pearl Dace	1	49	1.0		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Lake Chub	1	62	2.0		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Pearl Dace	1	43	0.9		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Longnose Dace	1	36	0.6		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Pearl Dace	1	48	1.2		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Pearl Dace	1	47	1.1		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Pearl Dace	1	42	0.6		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN01				Pearl Dace	1	46	1.0		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	115	17.6		1.16
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	164	57.1		1.29
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	195	92.2		1.24
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Pearl Dace	1	66	3.1		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	185	76.9		1.21
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	154	44.4		1.22
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	117	20.1		1.25
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Brook Trout	1	198	88.1		1.13
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	188	87.3		1.31
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	186	83.5		1.30
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	149	40.4		1.22
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Burbot	1	172	32.9		0.65
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	139	38.1		1.42
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	169	60.3		1.25
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Longnose Sucker	1	74	4.8		1.18
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Pearl Dace	1	50	1.3		-
Stantec	2011	25-Jul-11	D02	Fyke Net	FN02				Pearl Dace	1	48	0.9		-
Stantec	2011	25-Jul-11	D02	Gillnet	GN01				Brook Trout	1	399	703.1		1.11
Stantec	2011	25-Jul-11	D02	Gillnet	GN02				No Fish	0		0.0		
AMEC	2012	4-Aug-12	Pike Lake South	Fyke Net	FN01				Burbot	1	57		2.0	
AMEC	2012	4-Aug-12	Pike Lake South	Fyke Net	FN01				Burbot	1	59		2.2	
AMEC	2012	4-Aug-12	Pike Lake South	Fyke Net	FN02				Northern Pike	1	256	119.6		
AMEC	2012	4-Aug-12	Pike Lake South	Fyke Net	FN02				Northern Pike	1	245	119.4		
AMEC	2012	4-Aug-12	Pike Lake South	Fyke Net	FN02				Northern Pike	1	234	108.6		
AMEC	2012	4-Aug-12	Pike Lake South	Fyke Net	FN02				Northern Pike	1	580	2000.0		
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Sculpin	1	54		1.9	
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Burbot	1	72	1.9		
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Burbot	1	65	1.8		
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Burbot	1	65	1.2		
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Burbot	1	62	1.1		
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Burbot	1	64	1.1		
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Burbot	1	63	1.7		

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
AMEC	2012	5-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	590	2400.0		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	94	5.6		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	366	259.0		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	61	2.5		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	62	2.2		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	64	1.7		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	61	1.7		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	68	2.6		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	64	3.4		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	56	1.8		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	64	1.4		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	62	1.9		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	65	2.9		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	69	1.5		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	58	2.1		
AMEC	2012	6-Aug-12	Pike Lake South	Fyke Net					Burbot	1	63	1.8		
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	127		14.6	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	128		15.0	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	115		10.8	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	119		12.0	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	54		1.7	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	61		2.4	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	69		3.5	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	61		2.4	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	68		3.4	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	68		3.4	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	68		3.4	
AMEC	2012	7-Aug-12	Pike Lake South	Fyke Net					Burbot	1	62		2.5	
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					Burbot	1	57	1.6		-
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					Northern Pike	1	287	136.6		0.58
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					Northern Pike	1	200	61.2		0.77
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	225	116.6		1.02
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	277	265.6		1.25
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	242	175.5		1.24
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	238	169.7		1.26
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	322	394.0		1.18
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	297	321.3		1.23
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	287	273.5		1.16
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	308	382.1		1.31
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	352	595.0		1.36
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	330	444.6		1.24
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	265	240.9		1.29
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	190	78.3		1.14
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	269	228.2		1.17
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	204	92.7		1.09
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	265	220.7		1.19
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	304	331.2		1.18
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	152	41.9		1.19
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	209	114.2		1.25
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	212	106.2		1.11
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	206	95.6		1.09
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	197	90.1		1.18
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	215	120.4		1.21
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	185	57.6		0.91
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	208	102.4		1.14
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	210	115.6		1.25
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	199	89.7		1.14
AMEC	2012	8-Aug-12	Pike Gully	Fyke Net					White Sucker	1	197	82.3		1.08
AMEC	2012	8-Aug-12	Pike Lake South	Fyke Net					Sculpin	1	68	3.3		
AMEC	2012	8-Aug-12	Pike Lake South	Fyke Net					Burbot	1	57	1.9		
AMEC	2012	8-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	136	17.2		
AMEC	2012	8-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	114	8.6		
AMEC	2012	8-Aug-12	Pike Lake South	Fyke Net					Northern Pike	1	500	2000.0		
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					Burbot	1	150	14.9		0.44
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					Northern Pike	1	89	4.2		0.60
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	290	287.2		1.18

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	405	1000.0		1.51
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	152	43.0		1.22
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	351	572.0		1.32
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	152	43.0		1.22
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	395	510.0		0.83
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	365	573.8		1.18
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	277	245.7		1.16
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	323	419.8		1.25
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	291	303.4		1.23
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	275	255.3		1.23
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	184	72.9		1.17
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	273	251.5		1.24
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	159	39.8		0.99
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	169	54.5		1.13
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	271	244.9		1.23
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	172	57.9		1.14
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	292	228.9		0.92
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	178	66.4		1.18
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	270	233.1		1.18
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	269	216.4		1.11
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	248	162.2		1.06
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	159	44.5		1.11
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	256	187.9		1.12
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	246	180.1		1.21
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	260	209.8		1.19
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	243	166.1		1.16
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	200	103.5		1.29
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	218	128.2		1.24
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	302	323.1		1.17
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	281	265.2		1.20
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	208	109.4		1.22
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	218	119.3		1.15
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	191	90.7		1.30
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	211	113.2		1.21
AMEC	2012	9-Aug-12	Pike Gully	Fyke Net					White Sucker	1	281	260.9		1.18
AMEC	2012	9-Aug-12	Pike Lake South	Fyke Net					Lake Chub	1	86	4.6		
AMEC	2012	9-Aug-12	Pike Lake South	Fyke Net					Burbot	1	40	0.6		
AMEC	2012	9-Aug-12	Pike Lake South	Fyke Net					Sculpin	1	75	7.3		
AMEC	2012	9-Aug-12	Pike Lake South	Fyke Net					Burbot	1	78	2.6		
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Brook Trout	1	273	228		1.12
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Brook Trout	1	259	222.2		1.28
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	275	152.6		0.73
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	280	173.4		0.79
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	312	201.1		0.66
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	280	157.4		0.72
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	273	169.1		0.83
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	300	198.2		0.73
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	299		197.5	
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	284		168.9	
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	307	181.7		0.63
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	273	158.4		0.78
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	257	121.3		0.71
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	319	204.1		0.63
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	184	45.1		0.72
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					Sculpin	1	75		4.3	
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					White Sucker	1	214	118.5		1.21
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					White Sucker	1	295	356.5		1.39
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					White Sucker	1	298	363.2		1.37
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					White Sucker	1	258	239		1.39
AMEC	2012	23-Aug-12	Rose Pond	Fyke Net					White Sucker	1	244	193.7		1.33
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Brook Trout	1	300	326		1.21
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Brook Trout	1	325	382.5		1.11
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	303	209.4		0.75
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	299	197.4		0.74
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	294	178.8		0.70
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	282	149		0.66

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	274	153.1		0.74
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	304	177.9		0.63
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	302	219.3		0.80
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	300	192.4		0.71
AMEC	2012	24-Aug-12	Rose Pond	Fyke Net					White Sucker	1	165	56.5		1.26
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Brook Trout	1	266	210.5		1.12
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Brook Trout	1	346	425.2		1.03
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Burbot	1	116	7.4		0.47
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Lake Chub	1	82	5.3		0.96
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Lake Chub	1	88	5.9		0.87
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	286	154.7		0.66
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	296	199.1		0.77
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	328	305.3		0.87
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	279	167.6		0.77
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	304	211.7		0.75
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	295	183.5		0.71
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	300	204.8		0.76
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	250	125		0.80
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	279	153.3		0.71
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	305	200		0.70
AMEC	2012	25-Aug-12	Rose Pond	Fyke Net					White Sucker	1	243	181.7		1.27
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Burbot	1	92	6		0.77
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	291	185.4		0.75
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Sculpin	1	27		0.3	-
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	321	258.4		0.78
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	306	217.3		0.76
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	312	209.1		0.69
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	303	214.7		0.77
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	274	156.4		0.76
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	290	175.6		0.72
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	292	187.2		0.75
AMEC	2012	26-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	301	187.6		0.69
AMEC	2012	27-Aug-12	Rose Pond	Fyke Net					Burbot	1	162	19.5		0.46
AMEC	2012	27-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	279	155.6		0.72
AMEC	2012	27-Aug-12	Rose Pond	Fyke Net					Sculpin	1	72	3.3		0.88
AMEC	2012	27-Aug-12	Rose Pond	Fyke Net					Northern Pike	1	308	219.2		0.75
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Brook Trout	1	163	36.1		0.83
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Brook Trout	1	223	116.2		1.05
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Brook Trout	1	105	10.3		0.89
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	111	14.7		1.07
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	101	11.6		1.13
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	102	12.7		1.20
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	100	13.5		1.35
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	95	11.7		1.36
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	105	14.3		1.24
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	105	12.8		1.11
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	101	12.3		1.19
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	84	5.7		0.96
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	86	5.6		0.88
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	73	4.4		1.13
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	64	3.4		-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	53	1.7		-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	73	3.3		0.85
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	95	9.8		1.14
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	93	9.7		1.21
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	90	10.6		1.45
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	89	7.6		1.08
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	94	7.7		0.93
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	103	11.4		1.04
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	54		1.7	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	51		1.4	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	51		1.4	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	50		1.3	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	50		1.3	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	52		1.5	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	51		1.4	-

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	53		1.6	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	49		1.2	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	53		1.6	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	54		1.7	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	50		1.3	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	48		1.2	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	50		1.3	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	45		1.0	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	51		1.4	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	52		1.5	-
AMEC	2012	28-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	43		0.8	-
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Brook Trout	1	128	16.7		0.80
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Brook Trout	1	113	13.4		0.93
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	117	14.9		0.93
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	106	13.1		1.10
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	104	11.3		1.00
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	105	12.6		1.09
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	109	13.3		1.03
AMEC	2012	29-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	73	4.2		1.08
AMEC	2012	30-Aug-12	Tailings Pond	Fyke Net					Brook Trout	1	160	39.3		0.96
AMEC	2012	30-Aug-12	Tailings Pond	Fyke Net					Brook Trout	1	137	21.2		0.82
AMEC	2012	30-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	76	4.2		0.96
AMEC	2012	30-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	101	13.3		1.29
AMEC	2012	30-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	54	0.9		-
AMEC	2012	30-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	103	10.9		1.00
AMEC	2012	30-Aug-12	Tailings Pond	Fyke Net					Lake Chub	1	85	6.6		1.07
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN01	5859947	632238		White Sucker	1	406	668.3		1.00
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN01	5859947	632238		White Sucker	1	432	871.3		1.08
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN01	5859947	632238		White Sucker	1	404	790.3		1.20
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN01	5859947	632238		White Sucker	1	445	794.3		0.90
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN01	5859947	632238		Burbot	1	172	29.2		0.57
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN02	5859910	631943		White Sucker	1	454	1185.4		1.27
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN02	5859910	631943		White Sucker	1	341	599.6		1.51
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN03	5860730	632032		White Sucker	1	414	665.1		0.94
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN03	5860730	632032		White Sucker	1	352	538.6		1.23
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN03	5860730	632032		Lake Chub	1	91	8.3		1.10
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	399	667.8		1.05
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	275	214.6		1.03
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		Northern Pike	1	78	3.2		0.67
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Northern Pike	1	78	3.8		0.80
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Northern Pike	1	106	8.8		0.74
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Northern Pike	1	91	4.9		0.65
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Northern Pike	1	84	3.8		0.64
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	93	9.2		1.14
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	109	16.0		1.24
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	118	19.9		1.21
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	193	78.6		1.09
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Burbot	1	47	0.8		-
WSP	2023	27-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	403	698.8		1.07
WSP	2023	27-Jul-23	Pike Lake North	Gillnet	GN01	5860054	631492		White Sucker	1	378	703.2		1.30
WSP	2023	27-Jul-23	Pike Lake North	Gillnet	GN01	5860054	631492		Lake Whitefish	1	340		486.5	
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN01	5859947	632238		Sculpin	1	48	1.2		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN01	5859947	632238		Sculpin	1	49	1.5		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN02	5859910	631943		White Sucker	1	57	2.3		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN02	5859910	631943		Sculpin	1	47	1.4		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN02	5859910	631943		Sculpin	1	45	1.3		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN02	5859910	631943		Sculpin	1	46	1.1		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN02	5859910	631943		Burbot	1	43	0.8		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN03	5860730	632032		Northern Pike	1	84	4.7		0.79
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN03	5860730	632032		Northern Pike	1	101	7.0		0.68
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN03	5860730	632032		Sculpin	1	48	1.5		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		Northern Pike	1	86	4.7		0.74
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	240	169.2		1.22
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	414	913.2		1.29
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	325	455.6		1.33
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	95	8.8		1.03

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Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	101	10.6		1.03
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	89	8.9		1.26
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	88	9.0		1.32
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		White Sucker	1	98	10.5		1.12
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN04	5861098	632160		Sculpin	1	50	1.6		-
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Northern Pike	1	115	11.3		0.74
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Northern Pike	1	99	6.0		0.62
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Northern Pike	1	113	9.7		0.67
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	246	188.2		1.26
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	200	97.6		1.22
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	234	173.1		1.35
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	217	133.5		1.31
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	272	148.7		0.74
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	162	60.5		1.42
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		White Sucker	1	141	33.2		1.18
WSP	2023	28-Jul-23	Pike Lake North	Fyke Net	FN05	5860523	632040		Sculpin	1	46	1.2		-
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		Lake Whitefish	1	336		469.8	
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		Lake Whitefish	1	310	362.9		1.22
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		Lake Whitefish	1	354	556.6		1.25
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		Lake Whitefish	1	303	337.2		1.21
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		Lake Whitefish	1	335	457.3		1.22
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		Lake Whitefish	1	302	361.2		1.31
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		White Sucker	1	385	322.9		0.57
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		White Sucker	1	420	989.1		1.34
WSP	2023	28-Jul-23	Pike Lake North	Gillnet	GN02	5860136	632501		White Sucker	1	318	437.6		1.36
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	69	4.0		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	67	3.9		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Sculpin	1	60	2.2		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	71	4.3		1.20
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	69	4.0		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	79	5.6		1.14
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	150	41.4		1.23
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	138	34.4		1.31
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	69	4.0		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Sculpin	1	55	2.2		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	77	5.1		1.12
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Dace	1	47	1.6		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	67	4.1		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Sculpin	1	43	1.3		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Sculpin	1	38	0.9		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Burbot	1	143	19.4		0.66
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Burbot	1	139	17.8		0.66
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Burbot	1	437	657.9		0.79
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Brook Trout	1	211	117.4		1.25
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	76	4.8		1.09
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	68	3.8		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	86	7.1		1.12
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	55	1.5		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	87	8.3		1.26
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	58	1.9		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	86	7.6		1.19
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	53	1.7		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	67	4.0		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	70	3.9		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	232	152.6		1.22
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	70	3.9		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	71	4.0		1.12
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	70	4.6		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	75	5.2		1.23
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	66	3.3		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	60	2.7		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	69	4.1		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Sculpin	1	73	4.9		1.26
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Sculpin	1	58	2.0		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Sculpin	1	52	2.0		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Lake Chub	1	31	0.3		-

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	32	0.3		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Burbot	1	147	19.7		0.62
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Burbot	1	142	17.6		0.61
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Burbot	1	124	11.2		0.59
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	72	4.7		1.26
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	70	4.4		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	115	20.7		1.36
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	47	1.4		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	65	3.2		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	64	3.4		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	176	70.1		1.29
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	52	2.1		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	51	1.9		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Burbot	1	285	148.7		0.64
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Burbot	1	132	13.6		0.59
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Longnose Dace	1	57	2.7		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Longnose Sucker	1	142	37.8		1.32
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Sculpin	1	52	1.8		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Longnose Sucker	1	63	3.7		-
WSP	2023	29-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Sculpin	1	47	1.7		-
WSP	2023	29-Jul-23	Mills Lake	Gillnet	GN03	5854818	635501		Round Whitefish	1	330		363.0	
WSP	2023	29-Jul-23	Mills Lake	Gillnet	GN03	5854818	635501		Round Whitefish	1	375		539.1	
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	94	6.1		0.73
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	51	1.6		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	55	1.8		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	86	7.1		1.12
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	76	4.6		1.05
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Dace	1	83	7.0		1.22
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	55	2.0		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	55	2.2		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	66	3.4		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	71	4.6		1.29
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	60	2.5		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Sculpin	1	52	1.6		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	77	5.2		1.14
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	68	3.4		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	67	3.3		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	69	2.9		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	67	3.8		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	71	4.5		1.26
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	57	2.2		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Sculpin	1	47	1.2		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Lake Chub	1	88	9.0		1.32
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	69	3.9		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	202	102.8		1.25
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	130	26.7		1.22
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	209	117.1		1.28
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	171	68.3		1.37
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	189	85.9		1.27
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	152	43.4		1.24
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Brook Trout	1	155	45.1		1.21
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	123	22.2		1.19
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	77	5.5		1.20
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	203	107.7		1.29
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	128	26.4		1.26
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	170	61.2		1.25
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	155	47.1		1.26
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	69	3.8		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Longnose Sucker	1	74	4.7		1.16
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Burbot	1	143	15.1		0.52
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN06	5855173	634826		Sculpin	1	50	1.3		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	54	1.7		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Sculpin	1	51	1.5		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Longnose Sucker	1	36	0.4		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Burbot	1	52	0.9		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Lake Chub	1	52	1.6		-

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN07	5854658	634842		Sculpin	1	49	1.1		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Brook Trout	1	352	553.2		1.27
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Lake Chub	1	65	3.0		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	103	14.4		1.32
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Lake Chub	1	84	6.8		1.15
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Lake Chub	1	70	3.9		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	169	55.2		1.14
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Lake Chub	1	79	5.8		1.18
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	187	82.1		1.26
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	260	202.3		1.15
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	109	14.2		1.10
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Lake Chub	1	85	6.7		1.09
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	65	3.0		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Sculpin	1	47	1.1		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	109	14.7		1.14
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	107	14.3		1.17
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Longnose Sucker	1	74	4.6		1.14
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN08	5854281	634850		Burbot	1	139	16.5		0.61
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	98	9.7		1.03
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	69	3.3		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	71	3.8		1.06
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	72	3.6		0.96
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	119	20.0		1.19
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	60	2.5		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	73	4.4		1.13
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	70		4.4	-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	78	5.7		1.20
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	49	1.3		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	161	54.0		1.29
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	66	2.8		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	70	4.5		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	101	11.9		1.16
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	125	22.8		1.17
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	68	4.5		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	71	4.3		1.20
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	72	4.6		1.23
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	75	5.8		1.37
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	118	16.6		1.01
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	119	19.1		1.13
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	48	1.4		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	45	1.1		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	61	3.2		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	65	3.2		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	85	5.8		0.94
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	67	3.9		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	126	20.5		1.02
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	124	21.3		1.12
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	67	4.0		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Lake Chub	1	82	6.2		1.12
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Longnose Sucker	1	108	13.9		1.10
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	46	1.2		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	90	7.8		1.07
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	53	1.5		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	85	6.9		1.12
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Sculpin	1	49	1.4		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN09	5853975	634752		Burbot	1	289	157.2		0.65
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Longnose Sucker	1	181	70.9		1.20
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Sculpin	1	47	1.5		-
WSP	2023	30-Jul-23	Mills Lake	Fyke Net	FN10	5853142	634748		Sculpin	1	60	3.0		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Lake Chub	1	91	10.3		1.37
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Lake Chub	1	60	2.9		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Lake Chub	1	101	13.1		1.27
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Lake Chub	1	75	4.8		1.14
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Lake Chub	1	58	2.2		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Longnose Dace	1	60	2.5		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Burbot	1	133	14.3		0.61

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN11	5857713	640871		Burbot	1	124	11.2		0.59
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Brook Trout	1	241		185.0	0.00
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	77	11.7		2.56
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Longnose Dace	1	72	12.3		3.30
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	71	2.6		0.73
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	98	11.7		1.24
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	107	12.3		1.00
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	99	9.6		0.99
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	91	8.2		1.09
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	108	12.4		0.98
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	74	4.8		1.18
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	88	6.0		0.88
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	84	5.6		0.94
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	87	5.6		0.85
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	83	6.3		1.10
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	95	7.1		0.83
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	95	7.4		0.86
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	67	3.9		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	95	8.3		0.97
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Longnose Dace	1	84	7.8		1.32
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	21		176.1		
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		White Sucker	1	240	168.4		1.22
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		White Sucker	1	235	179.4		1.38
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Longnose Sucker	1	222	149.2		1.36
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		White Sucker	1	176	69.3		1.27
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Longnose Sucker	1	217	136.3		1.33
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		White Sucker	1	161	61.9		1.48
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Burbot	1	215	59.3		0.60
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Burbot	1	116	10.5		0.67
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Longnose Dace	1	72	5.4		1.45
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	95	10.1		1.18
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	109	13.1		1.01
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	62	2.1		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	75	4.3		1.02
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Lake Chub	1	56	1.2		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Burbot	1	228	71.8		0.61
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN12	5857827	641151		Burbot	1	207	57.8		0.65
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN13	5857264	641664		No Fish	0		0.0		
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Lake Chub	1	81	6.2		1.17
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Lake Chub	1	87	7.5		1.15
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Lake Chub	1	77	5.4		1.18
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Lake Chub	1	71	3.9		1.09
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Lake Chub	1	60	2.3		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Lake Chub		63	55.7		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Longnose Dace	1	50	1.4		-
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Longnose Dace	1	72	5.3		1.42
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Burbot	1	293	159.5		0.63
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Burbot	1	238	82.1		0.61
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN14	5856973	641738		Burbot	1	152	28.9		0.82
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN15	5856261	641814		Lake Chub	1	78	6.2		1.31
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN15	5856261	641814		Lake Chub	1	102	17.1		1.61
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN15	5856261	641814		Lake Chub	1	102	12.9		1.22
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN15	5856261	641814		Lake Chub	1	77	4.3		0.94
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN15	5856261	641814		Sculpin	1	71	4.4		1.23
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN15	5856261	641814		Burbot	1	246	95.3		0.64
WSP	2023	2-Aug-23	Riorden Lake	Fyke Net	FN15	5856261	641814		Burbot	1	213	54.0		0.56
WSP	2023	2-Aug-23	Riorden Lake	Gillnet	GN04	5856739	641707		No Fish	0		0.0		
WSP	2023	3-Aug-23	Riorden Lake	Gillnet	GN05	5826545	641608		No Fish	0		0.0		
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN16	5861499	637045		White Sucker	1	478	1402.6		1.28
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN16	5861499	637045		Longnose Sucker	1	128	20.8		0.99
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN16	5861499	637045		White Sucker	1	115	21.6		1.42
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	152	42.4		1.21
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	50	1.9		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	51	2.1		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	51	2.2		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	43	1.3		-

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	46	1.4		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	46	1.5		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	85	7.4		1.20
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	98	10.8		1.15
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	103	7.6		0.70
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker		433		881.3	
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	47		1.2	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	40		0.7	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	38		0.6	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	46		1.1	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	44		1.0	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	44		1.0	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	43		0.9	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	42		0.9	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	38		0.6	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	45		1.1	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	40		0.7	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	47		1.2	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	49		1.4	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	42		0.9	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	42		0.9	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	40		0.7	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	44		1.0	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	43		0.9	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	46		1.1	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	47		1.2	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	43		0.9	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	41		0.8	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	78		6.0	
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	123		22.6	
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	36		0.5	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	38		0.6	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	80		5.5	
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	75		4.5	
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	66		3.7	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	68		3.3	-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	38	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	37	0.6		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	45	0.7		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	46	1.5		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	44	0.9		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	48	1.5		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	51	1.7		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	93	10.0		1.24
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	43	1.1		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	94	8.4		1.01
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Lake Chub	1	90	8.8		1.21
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	44	1.1		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	112	17.9		1.27
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	70	5.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		White Sucker	1	85	7.2		1.17
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	46	1.2		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN18	5860507	637897		Longnose Sucker	1	51	1.3		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		White Sucker	1	48	1.3		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	71	4.2		1.17
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	166	41.8		0.91
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	120	16.0		0.93
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	86	6.8		1.07
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	75	5.4		1.28
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	80	5.9		1.15
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		White Sucker	1	49	1.4		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		White Sucker	1	39	0.7		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		White Sucker	1	41	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	45	1.1		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	55	1.5		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	60	2.1		-

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	50	1.5		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	47	1.3		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Burbot	1	52	1.2		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	46	1.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Lake Chub	1	56	1.6		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	40	0.7		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	43	1.1		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44	1.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	42	1.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	45	1.2		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	43	1.1		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	40	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	83	6.6		1.15
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Lake Chub	1	102	12.8		1.21
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44	1.1		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	47	1.6		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	81	6.3		1.19
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	119	21.0		1.25
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	75	5.8		1.37
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	45	1.9		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	82	7.2		1.31
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	85	1.3		0.21
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	82	6.2		1.12
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	59	3.9		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	74	4.4		1.09
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41	0.7		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	45	1.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	45	1.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	50	1.4		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	40	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	39	0.5		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44	0.9		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	46	1.3		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42	0.9		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42	0.6		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42	0.6		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41	0.8		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	46	1.4		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42	0.9		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	73	4.5		1.16
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	45	1.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	77	5.8		1.27
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	68	4.0		-
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Lake Chub	1	80	5.0		0.98
WSP	2023	3-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Burbot	1	142	21.8		0.76
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	92		9.7	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	91		9.4	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		White Sucker	1	73		4.6	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	51		1.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Lake Chub	1	92		8.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		White Sucker	1	32		0.4	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		White Sucker	1	110		15.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		White Sucker	1	70		4.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	72		4.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	75		5.4	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Lake Chub	1	86		6.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	44		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	84		7.4	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Round Whitefish	1	66		2.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Lake Chub	1	84		6.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Lake Chub	1	99		10.4	

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	51		1.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	82		6.9	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		White Sucker	1	106		14.2	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Longnose Sucker	1	41		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN21	5859849	638001		Burbot	1	115		10.0	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	48		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	51		1.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	48		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	48		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	45		1.2	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	51		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	46		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	52		1.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	48		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	51		1.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	57		2.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	48		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	49		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	53		1.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	42		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	47		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	50		1.6	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	51		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	47		1.4	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	52		1.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	48		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	78		5.1	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	41		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	47		1.2	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	48		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	50		1.6	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	41		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	49		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	48		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	88		7.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Lake Chub	1	89		7.5	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		White Sucker	1	46		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	48		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN17	5860859	637030		Longnose Sucker	1	47		1.4	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN16	5861499	637045		Longnose Sucker	1	52		1.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN16	5861499	637045		Lake Chub	1	72		4.0	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	119		20.5	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	109		13.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	198		90.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	137		30.9	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	121		21.5	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	65		2.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	85		7.7	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	77		5.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	91		8.0	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	104		13.9	

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	106		14.7	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	44		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	111		16.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	52		1.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	62		2.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	142		34.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	115		18.6	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	52		1.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	86		6.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	92		8.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	45		1.2	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	96		11.0	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	85		7.7	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	111		16.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	53		1.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Sculpin	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Lake Chub	1	83		6.1	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Longnose Sucker	1	104		13.9	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		Burbot	1	106		7.9	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN19	5858933	637954		White Sucker	1	81		6.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Lake Chub	1	115		16.3	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	45		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	78		5.6	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	63		2.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	46		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	44		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	44		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	37		0.6	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Lake Chub	1	81		5.7	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	38		0.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	31		0.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	82		6.5	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	36		0.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	43		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	51		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	46		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	71		4.2	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	46		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	42		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	41		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	44		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	39		0.8	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	32		0.4	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	44		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Lake Chub	1	76		4.7	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	83		6.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	48		1.3	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	44		1.0	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	43		1.1	-

Appendix C
Lacustrine Fish Capture Data

Consultant	Sampling Year	Date	Location	Gear Type	Net ID	Northing	Easting	zone	Species	Total Catch	Length (mm)	Weight (g)	Estimated Weight	Condition Factor
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	41		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	43		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	43		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	40		0.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	87		7.8	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	43		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	82		6.5	
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	43		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	51		1.7	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	43		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	51		1.5	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		Longnose Sucker	1	43		1.1	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	42		0.9	-
WSP	2023	4-Aug-23	Long Lake	Fyke Net	FN20	5859663	636474		White Sucker	1	33		0.4	-
WSP	2023	5-Aug-23	Long Lake	Gillnet	GN06	5861176	635652		No Fish	0		0.0		
WSP	2023	5-Aug-23	Long Lake	Gillnet	GN07	5861671	636256		No Fish	0		0.0		
WSP	2023	5-Aug-23	Long Lake	Gillnet	GN06	5861176	635652		No Fish	0		0.0		
WSP	2023	5-Aug-23	Long Lake	Gillnet	GN07	5861671	636256		No Fish	0		0.0		

APPENDIX D

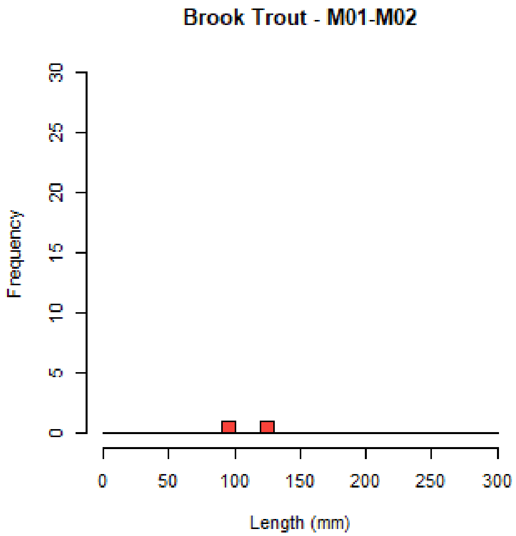
Fish Biometric Summaries

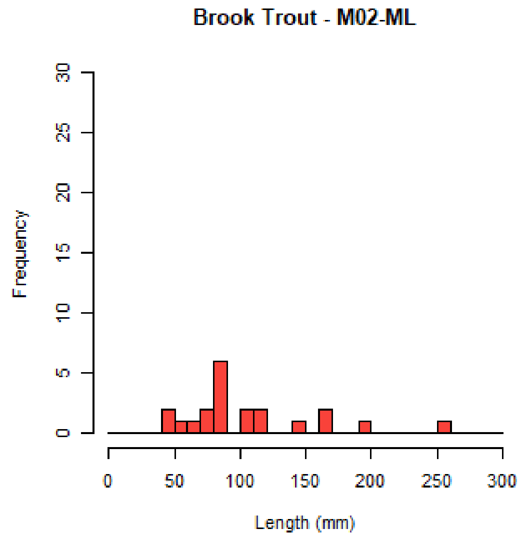
Species	Location	Total Catch	Length (mm)			Weight (g)		
			Minimum Measured	Mean Measured	Maximum Measured	Minimum Measured	Mean Measured	Maximum Measured
Brook Trout	M01-M02	2	94	109.5	125	8.6	16.7	24.8
	M02-ML	22	45	107.8	260	1.3	28.2	216.1
	Mills Lake Outflow	6	123	151.5	183	17.9	41.2	69.7
	Pike Lake North Outflow	1	114	114.0	114	16.0	16.0	16.0
	PLN S1	1	56	56.0	56	2.5	2.5	2.5
	PLN S2	3	100	160.0	218	10.7	58.6	126.0
	PLN S3	13	58	116.7	216	2.2	30.9	120.6
	PLS S1	5	155	210.8	270	22.7	110.4	217.9
	PLS S2	9	59	132.4	190	2.1	25.9	78.8
	RP01	3	121	153.0	188	17.4	42.1	70.8
	RP2-RP1	3	52	108.3	218	-	-	-
	RP3-RP2	7	98	126.3	162	12.4	31.5	50.2
	RP4-RP2	10	39	70.9	172	-	-	-
	RP5-RP4	2	48	69.0	90	1.6	5.4	9.1
	RSD	16	42	68.6	85	1.0	4.2	8.3
	SC01	2	50	52.0	54	-	-	-
	SC03	23	56	87.4	172	1.5	9.9	49.3
	SC04	7	65	161.1	240	3.8	60.2	164.1
	SC05	24	48	114.7	232	1.1	24.4	132.4
	SC06	9	47	156.1	290	1.7	85.2	311.4
	SC07	36	31	96.8	230	0.4	18.3	130.4
	SC09	3	127	169.0	193	25.3	79.4	111.8
	SC10	1	220	220.0	220	118.5	118.5	118.5
	TDA01	23	48	104.3	163	1.1	14.3	42.7
	TDA02	127	38	97.3	254	0.6	17.7	190.4
	TI01	17	44	115.8	204	0.8	21.8	89.1
	TI02	14	45	108.0	228	0.9	21.5	112.6
	TI03	10	87	146.8	185	7.3	37.1	63.4
	TI04	7	40	72.3	136	0.7	6.5	27.1
	WR01	4	47	61.3	100	0.8	3.5	10.9
	WR03	35	39	71.2	162	0.5	5.6	43.7
Burbot	Mills Lake Outflow	3	59	132.7	222	0.9	23.6	59.6
	Pike Lake North Outflow	6	52	77.5	136	1.1	4.3	14.9
	PLN S1	4	45	96.3	163	0.6	9.1	24.3
	PLN S2	1	177	177.0	177	34.4	34.4	34.4
	PLS S1	6	51	134.6	178	1.0	21.8	39.9
	PLS S2	2	109	132.0	155	-	-	-
	RP1-PLS	1	190	190.0	190	-	-	-
	RP3-RP2	2	109	117.0	125	10.1	11.7	13.3
	SC03	1	133	133.0	133	14.2	14.2	14.2
	SC09	7	109	136.0	185	9.1	23.5	60.1
Lake Chub	Mills Lake Outflow	10	50	81.0	96	1.6	6.3	10.5
	Pike Lake North Outflow	26	36	86.8	180	0.6	8.5	65.1
	PLN S1	36	61	78.9	106	2.6	6.2	14.0
	PLN S2	1	78	78.0	78	5.7	5.7	5.7
	PLS S1	7	52	74.1	88	1.6	4.9	7.6
	PLS S2	1	75	75.0	75	2.8	2.8	2.8
	RP01	7	51	58.1	74	0.9	2.2	4.2
	RP02	1	97	97.0	97	9.4	9.4	9.4
	RP1-PLS	12	59	68.5	89	-	-	-
	RP2-RP1	7	62	66.4	72	-	-	-
	RP3-RP2	5	77	80.8	85	5.2	5.7	6.0
	RP5-RP4	1	108	108.0	108	14.3	14.3	14.3
	SC01	1	57	57.0	57	-	-	-
	SC06	1	77	77.0	77	5.1	5.1	5.1
	SC09	25	58	66.5	83	2.2	3.2	6.6
Longnose Dace	M02-ML	4	83	89.0	95	6.8	8.3	9.6
	Mills Lake Outflow	12	53	68.3	98	1.4	3.7	9.6

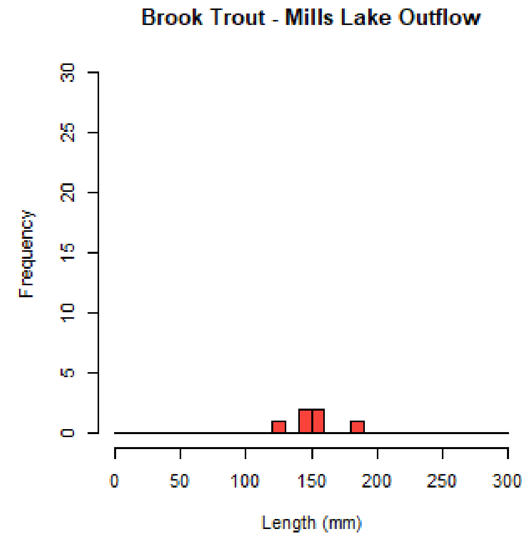
Appendix D
Fish Biometric Summaries - RIverine Summary Statistics

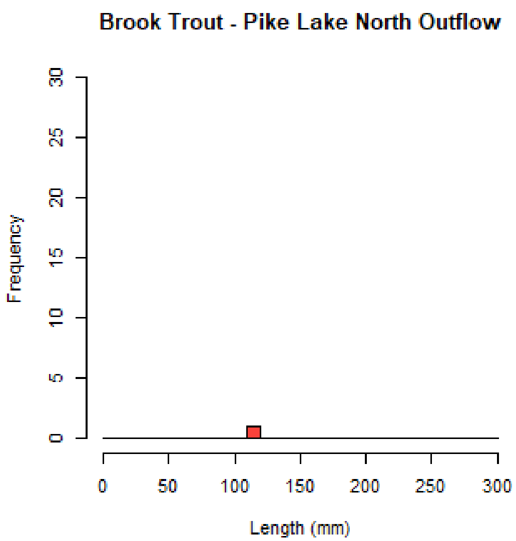
Species	Location	Total Catch	Length (mm)			Weight (g)		
			Minimum Measured	Mean Measured	Maximum Measured	Minimum Measured	Mean Measured	Maximum Measured
Longnose Dace	PLN S1	4	98	108.8	131	11.1	13.0	15.5
	PLN S2	3	77	88.7	106	5.5	9.0	14.8
	PLN S3	22	41	74.3	101	0.7	5.9	14.4
	PLS S1	7	72	91.7	113	5.0	9.0	17.4
	PLS S2	18	62	82.5	98	2.3	7.0	11.5
	SC01	2	85	97.5	110	-	-	-
	SC06	4	56	66.5	78	2.0	3.7	6.2
	SC09	4	59	76.8	100	2.2	6.0	12.1
Longnose Sucker	Mills Lake Outflow	7	54	81.1	106	1.1	5.8	12.0
	Pike Lake North Outflow	3	76	86.7	105	5.3	8.4	12.7
	SC09	2	165	175.0	185	51.4	57.1	62.7
Northern Pike	RP01	1	282	282.0	282	169.1	169.1	169.1
Pearl Dace	PLS S1	1	85	85.0	85	7.1	7.1	7.1
	PLS S2	26	55	74.6	96	1.9	5.6	11.4
	RP3-RP2	1	98	98.0	98	8.8	8.8	8.8
	RP5-RP4	1	88	88.0	88	8.0	8.0	8.0
	SC06	4	67	77.5	83	3.9	5.3	6.5
	SC09	1	63	63.0	63	2.9	2.9	2.9
	SC10	1	66	66.0	66	3.3	3.3	3.3
	TDA02	2	88	93.0	98	7.9	9.3	10.6
Sculpin	Mills Lake Outflow	20	45	60.1	82	1.4	2.6	6.4
	PLN S1	3	51	53.7	56	1.7	2.5	3.7
	PLN S3	3	54	65.7	84	1.8	3.7	6.4
	PLS S2	14	50	61.4	101	1.8	3.8	12.3
	RP1-PLS	1	75	75.0	75	-	-	-
	RP2-RP1	4	54	73.0	110	-	-	-
	RP3-RP2	1	52	52.0	52	1.5	1.5	1.5
	SC01	1	50	50.0	50	-	-	-
	SC04	1	66	66.0	66	4.2	4.2	4.2
	SC05	2	58	66.0	74	2.5	3.7	4.8
	SC06	1	49	49.0	49	2.2	2.2	2.2
	SC09	5	42	51.6	63	0.9	1.5	2.7
	TDA02	12	42	56.6	89	0.7	2.6	9.3
	TI01	7	20	52.1	88	0.1	2.7	8.4
White Sucker	Mills Lake Outflow	23	43	82.5	129	0.6	7.4	28.1
	Pike Lake North Outflow	5	112	142.4	190	1.7	24.3	60.5
	PLN S1	4	89	138.0	210	9.6	40.4	101.8
	PLS S1	1	128	128.0	128	33.1	33.1	33.1
	PLS S2	5	73	102.4	133	4.2	15.5	29.7
	RP02	2	107	139.0	171	13.0	32.9	52.7
	RP1-PLS	2	107	113.0	119	-	-	-
	RP4-RP2	1	56	56.0	56	-	-	-
	SC09	1	152	152.0	152	34.0	34.0	34.0

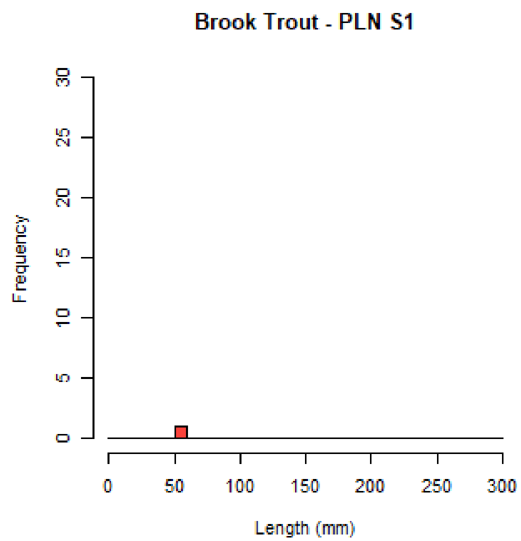
Appendix D
Fish Biometric Summaries – Riverine Fish Length Distributions

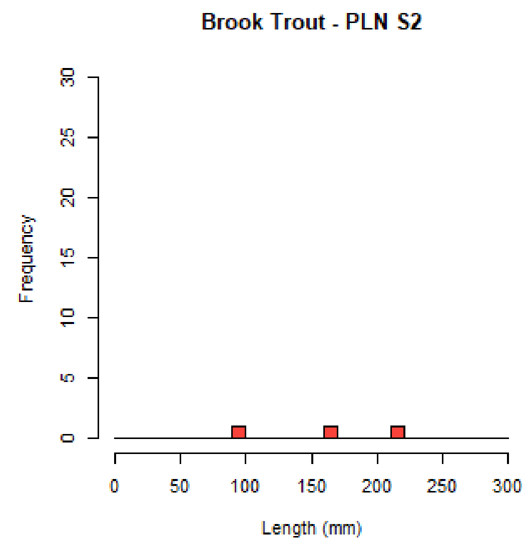




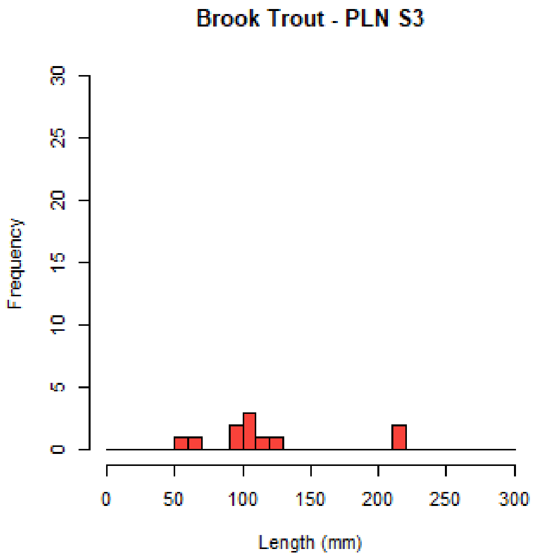


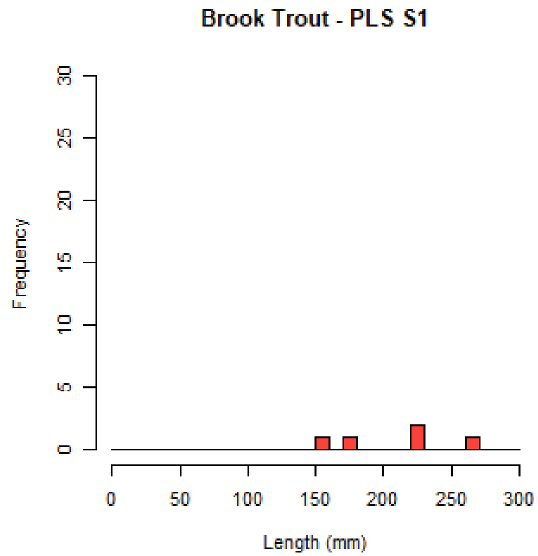


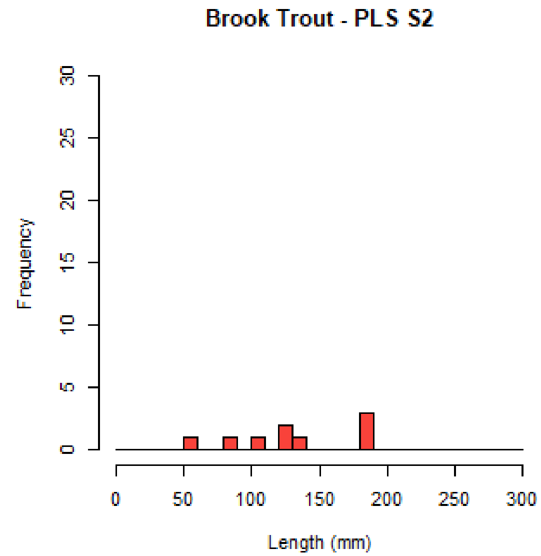


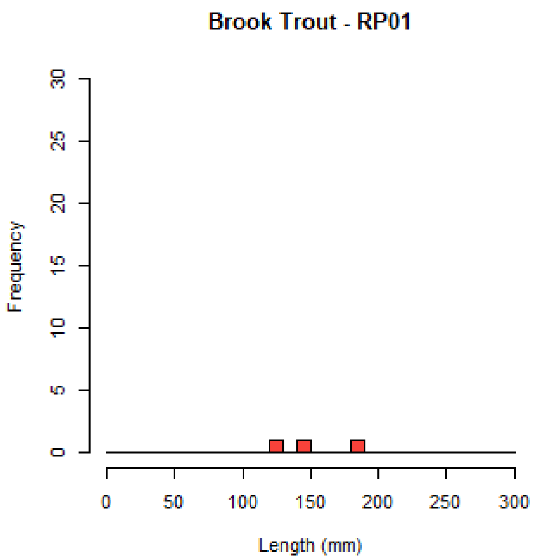


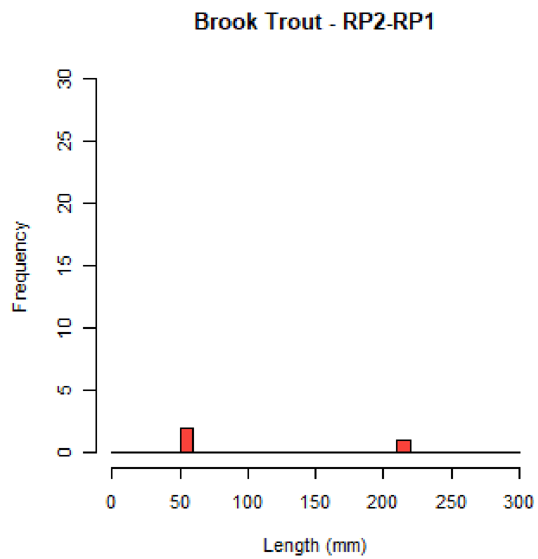
Appendix D
Fish Biometric Summaries – Riverine Fish Length Distributions

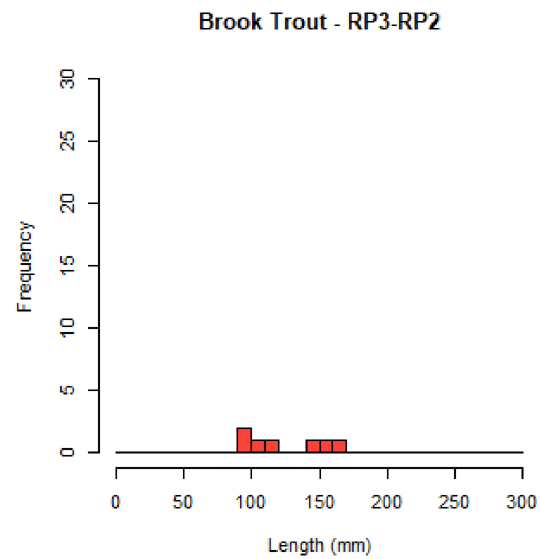




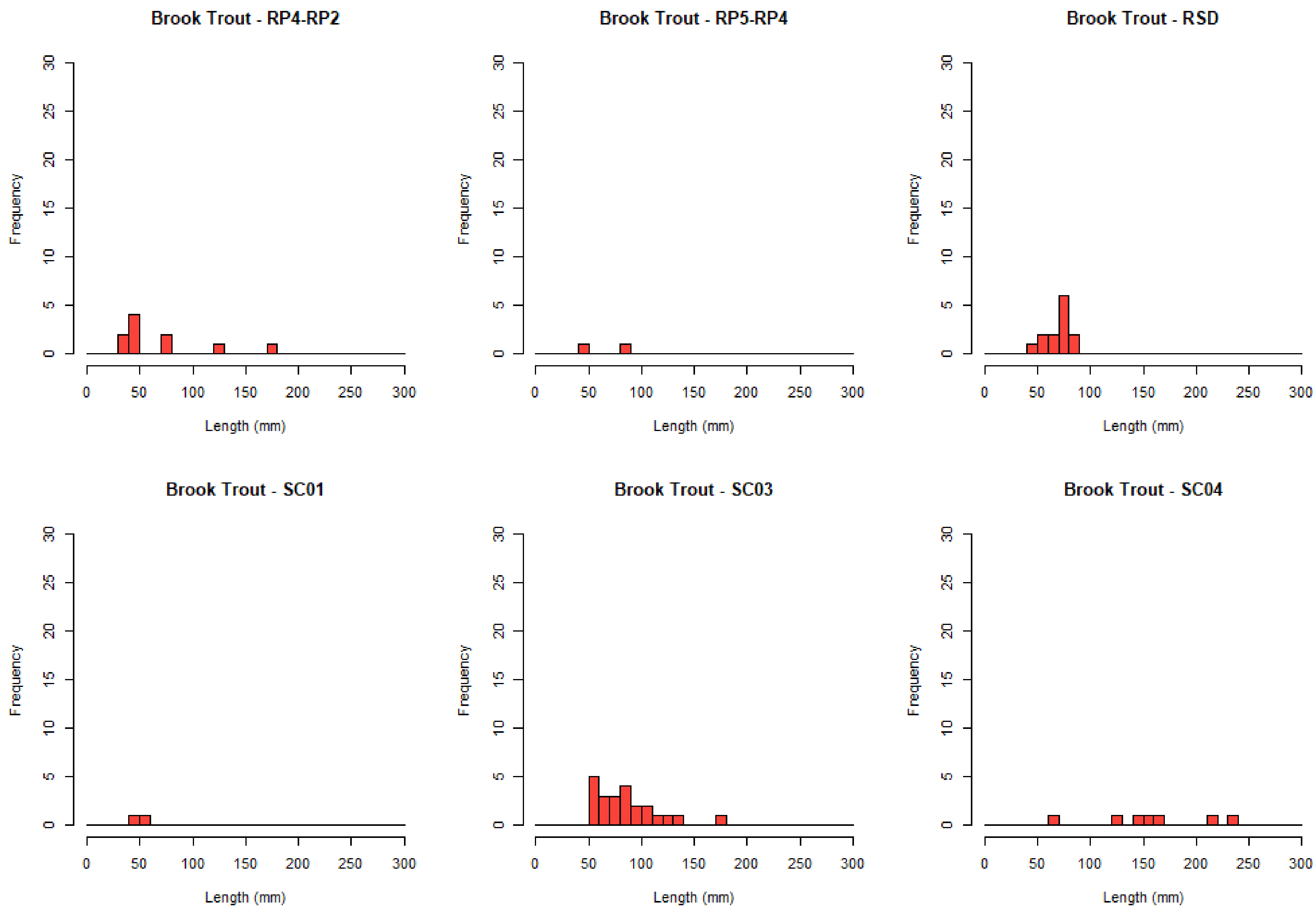




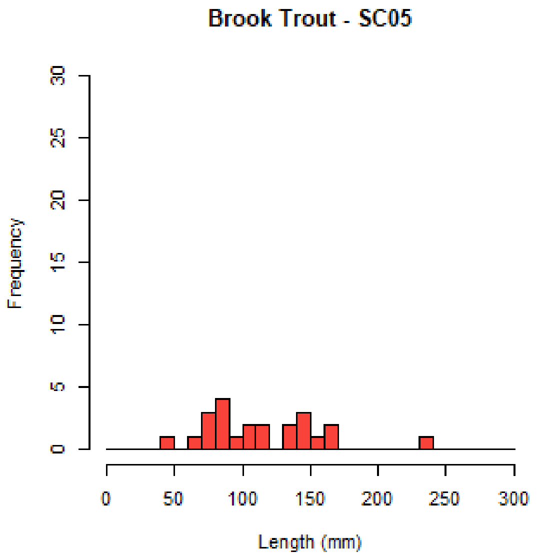


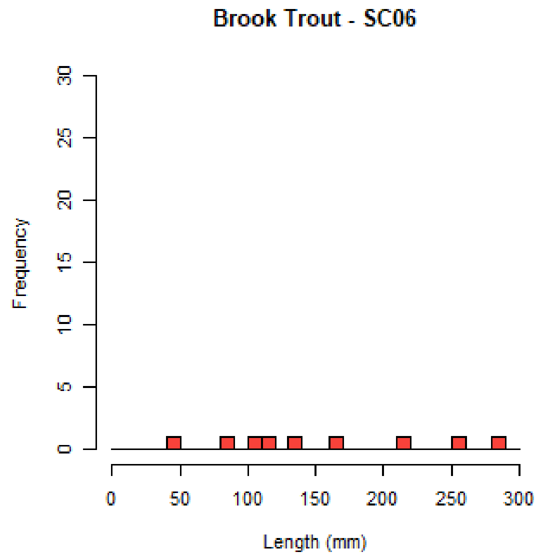


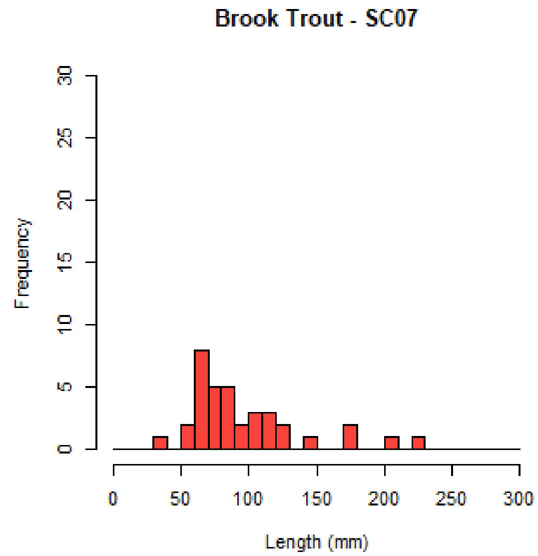
Appendix D
Fish Biometric Summaries – Riverine Fish Length Distributions

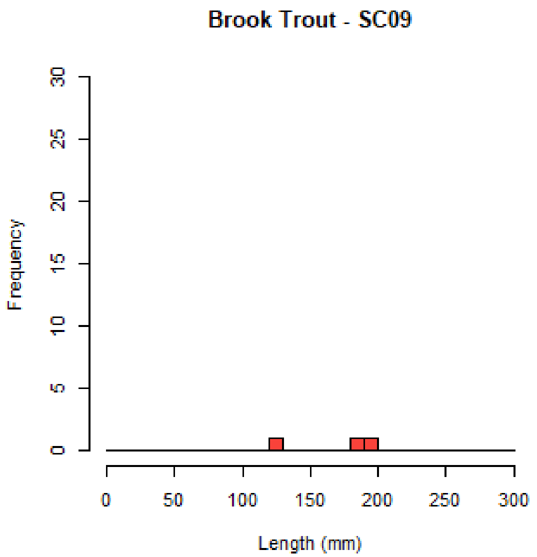


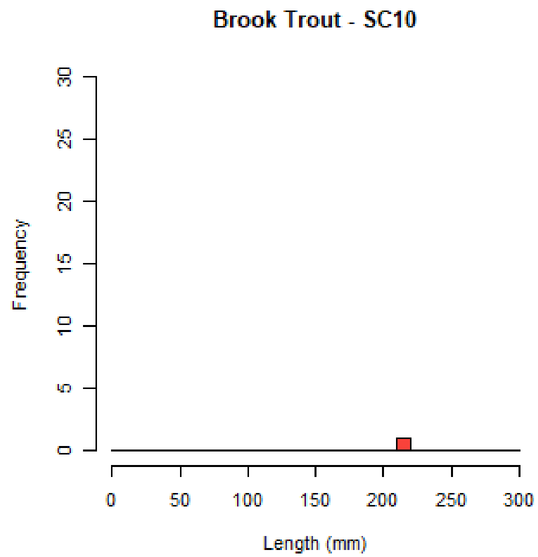
Appendix D
Fish Biometric Summaries – Riverine Fish Length Distributions

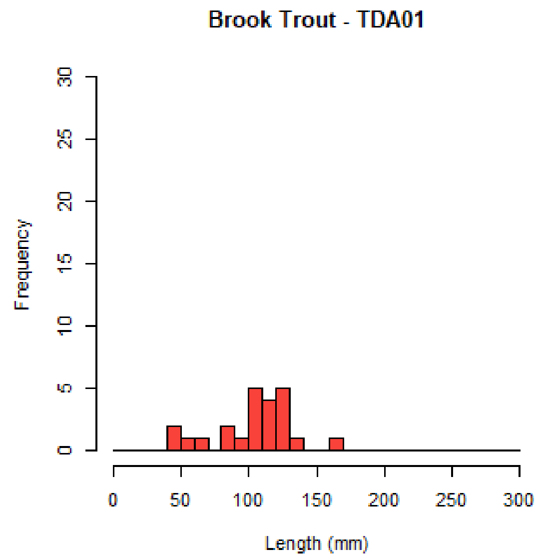




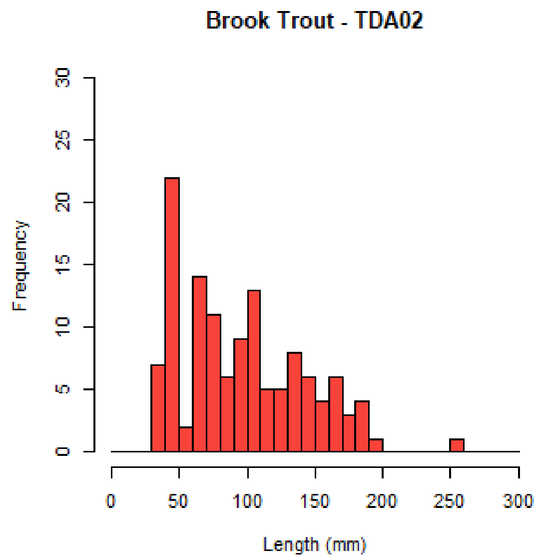


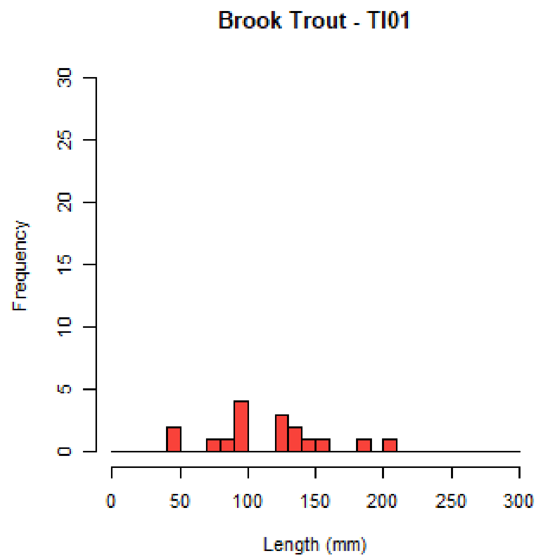


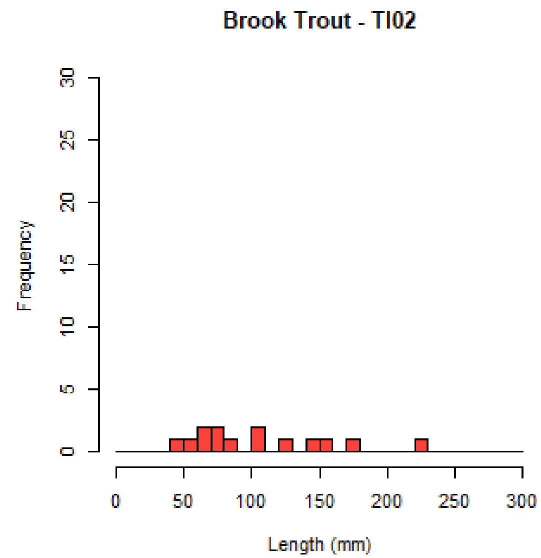


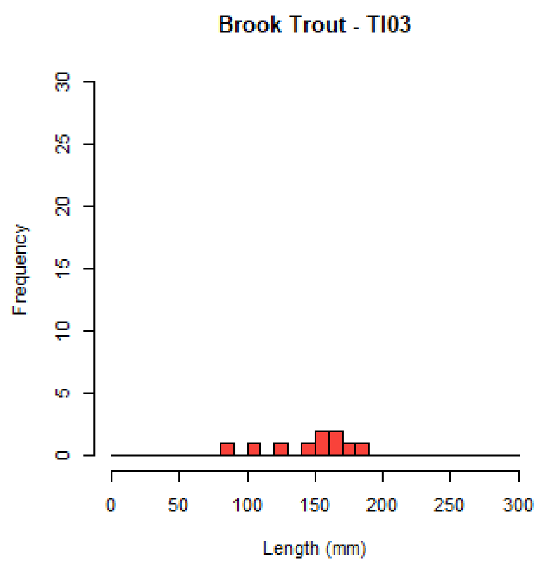


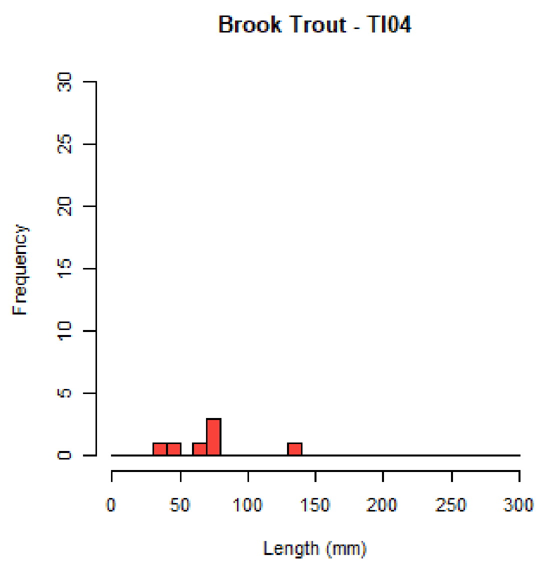
Appendix D
Fish Biometric Summaries – Riverine Fish Length Distributions

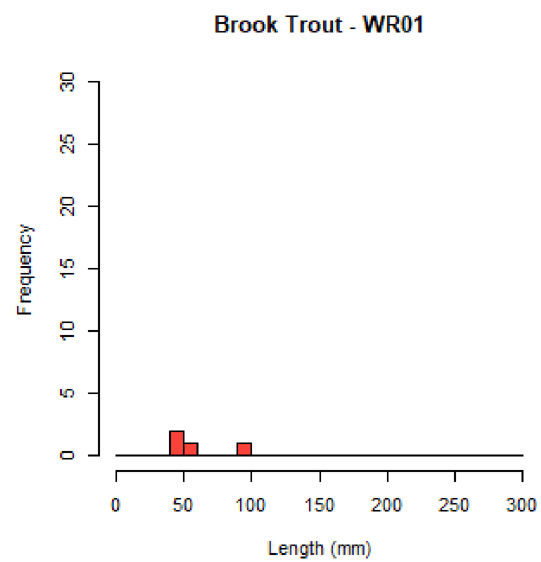












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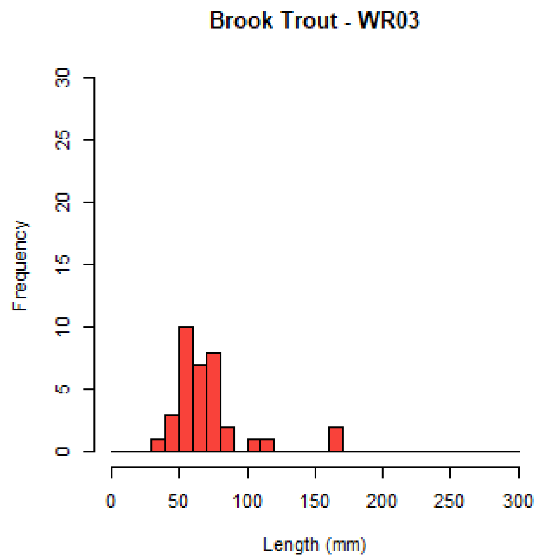
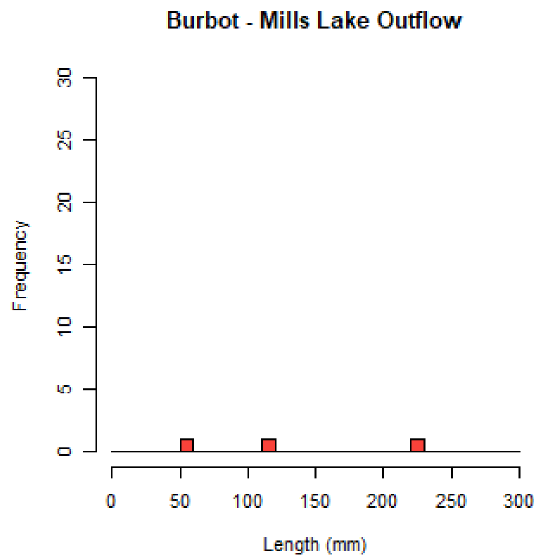
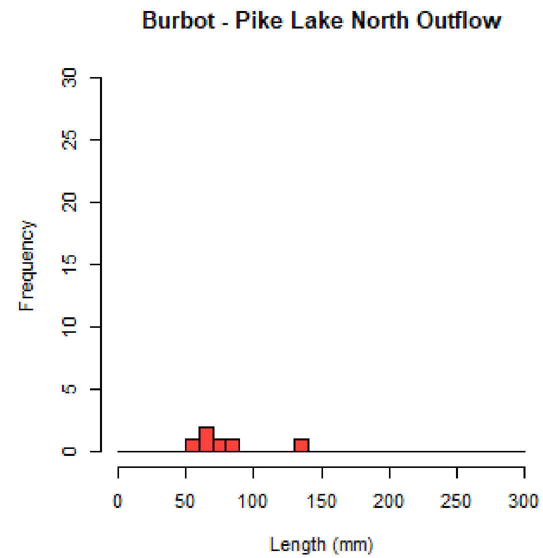
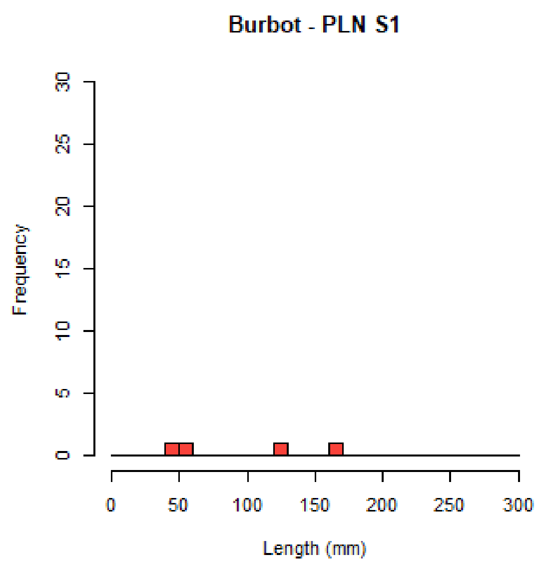
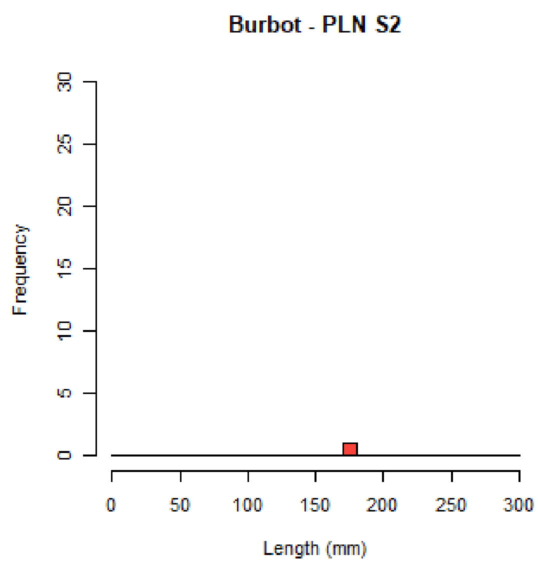
Fish Biometric Summaries – Riverine Fish Length Distributions

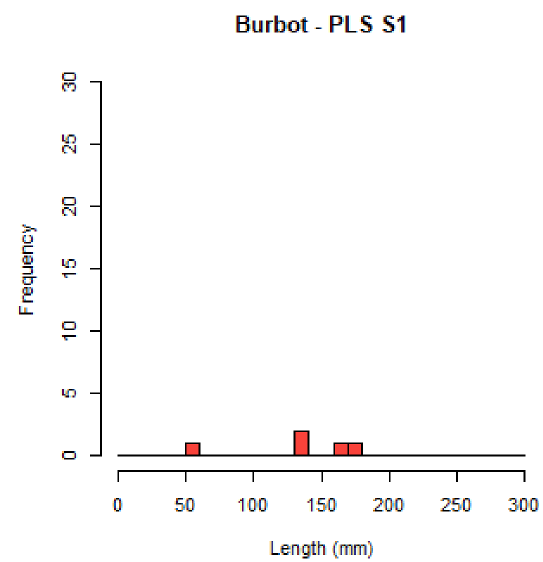












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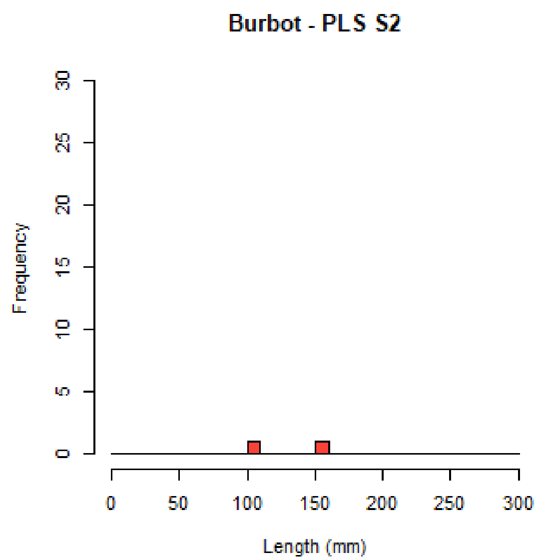
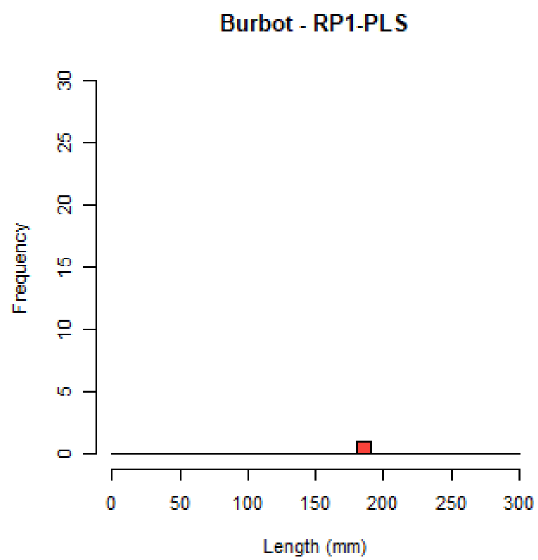
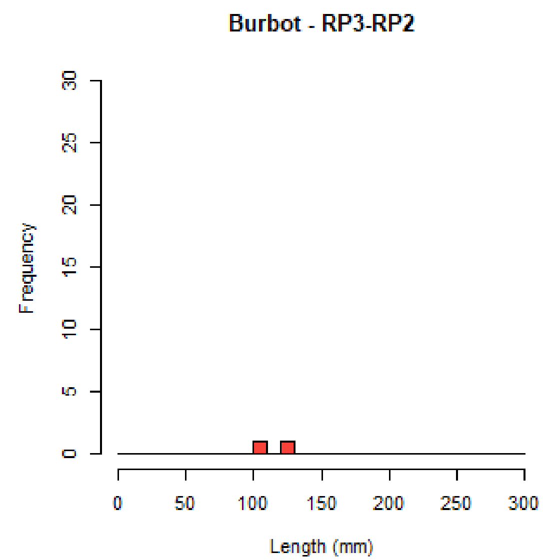
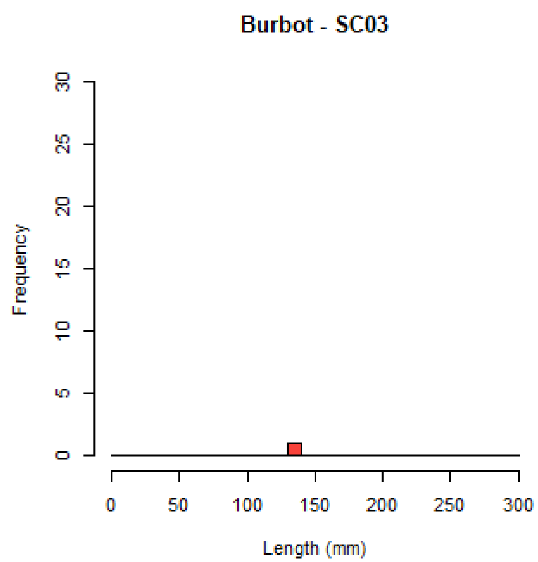
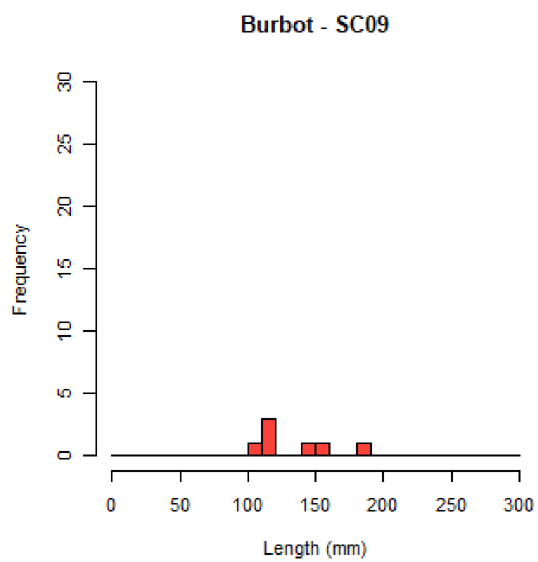
Fish Biometric Summaries – Riverine Fish Length Distributions

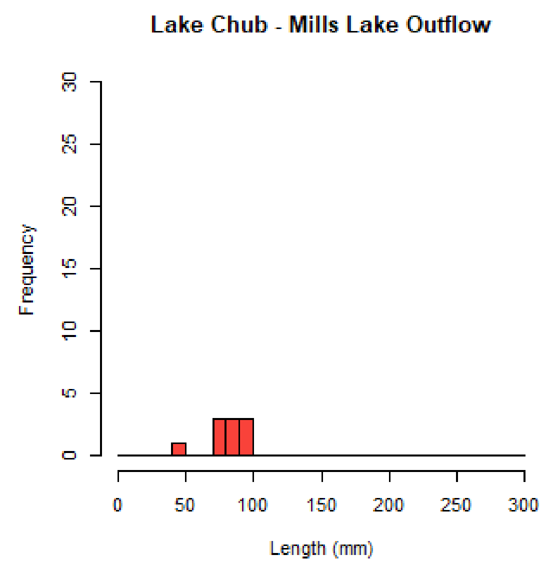












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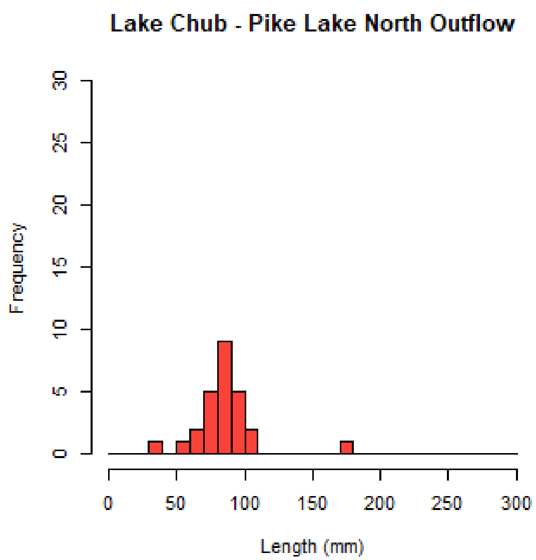
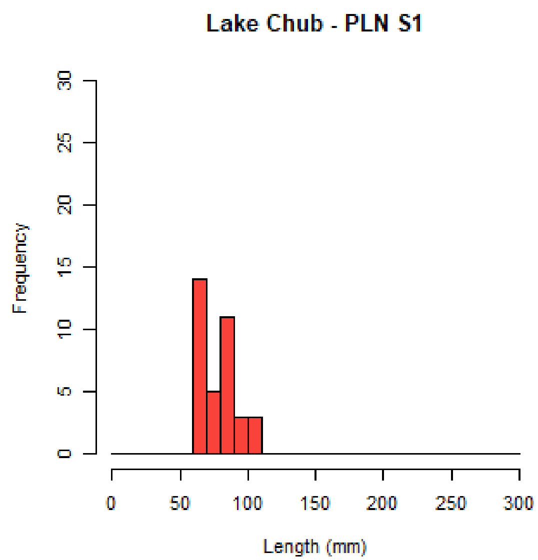
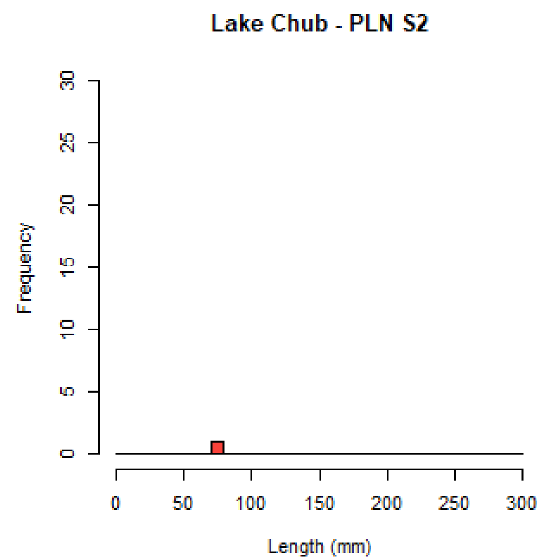
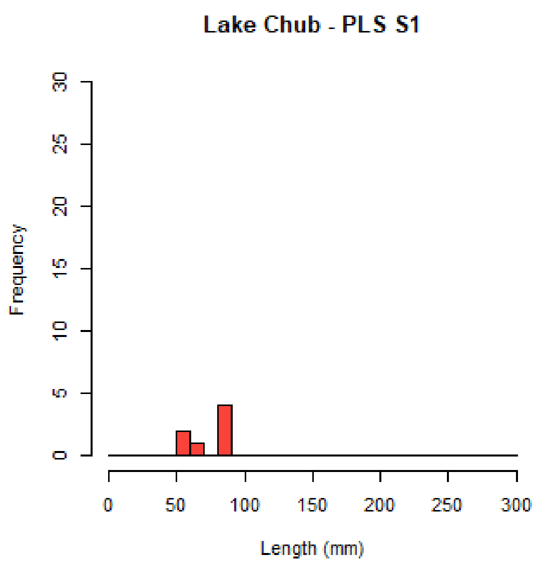
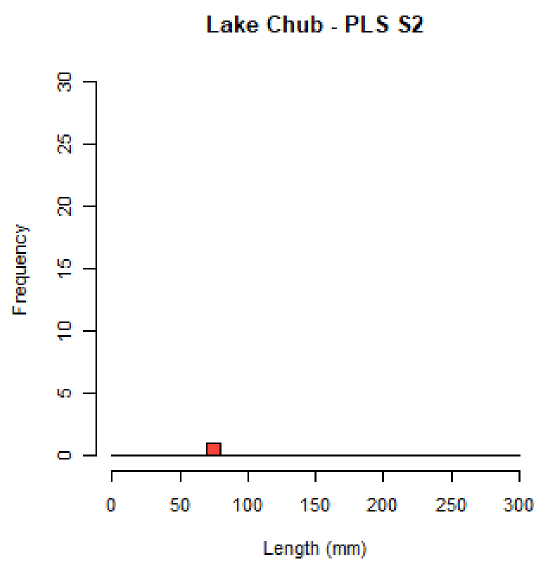
Fish Biometric Summaries – Riverine Fish Length Distributions

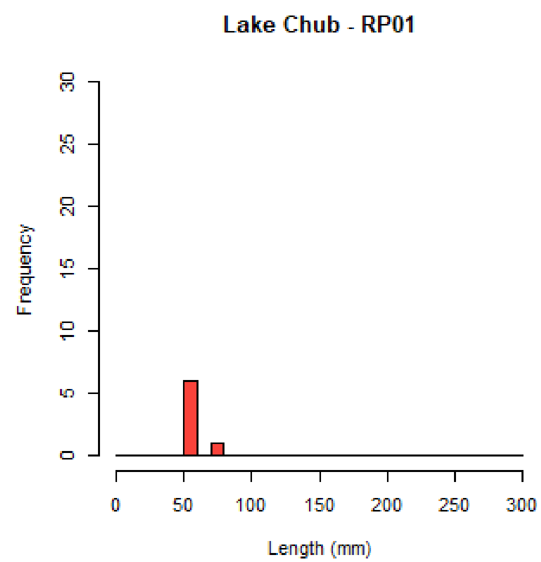












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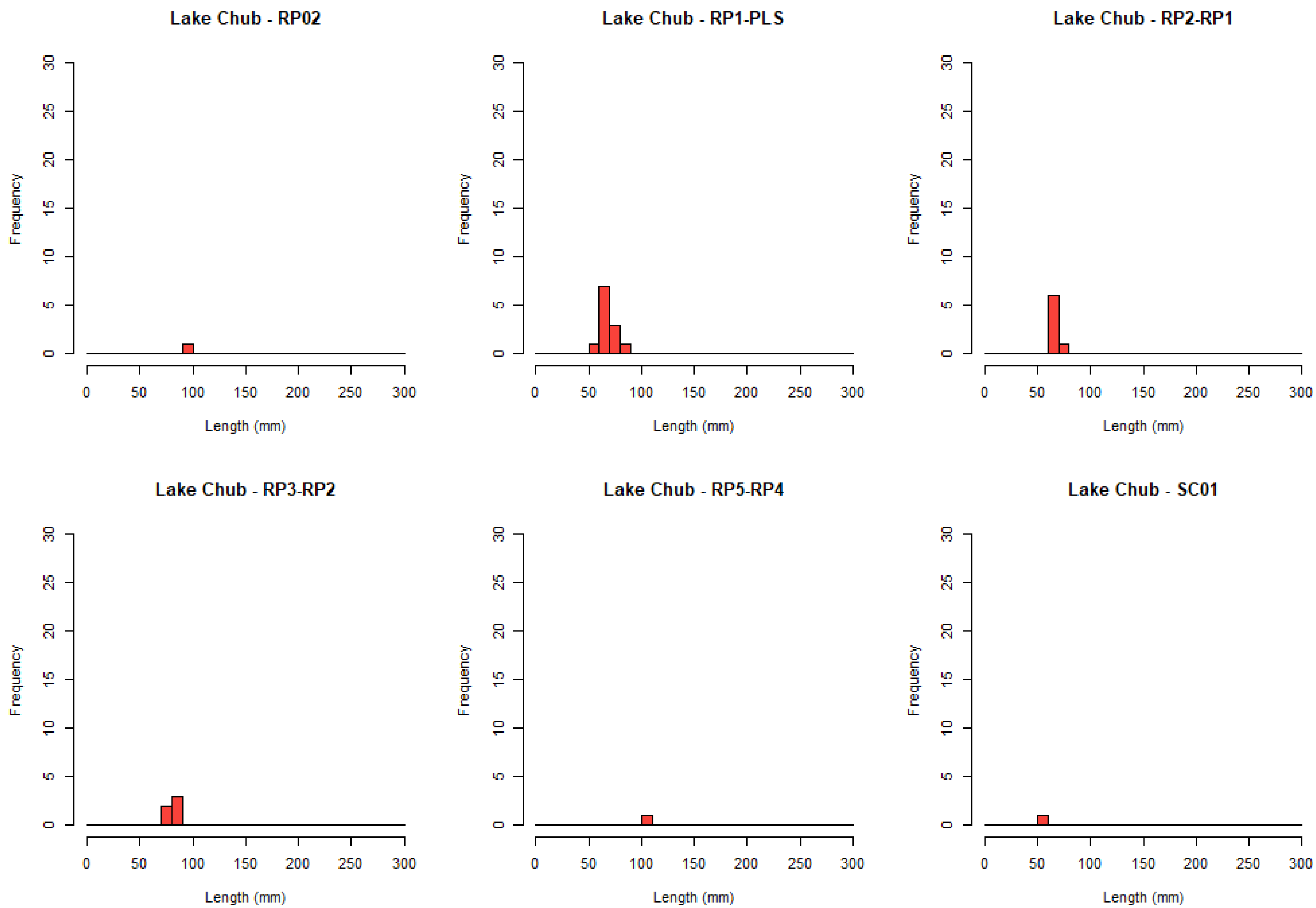

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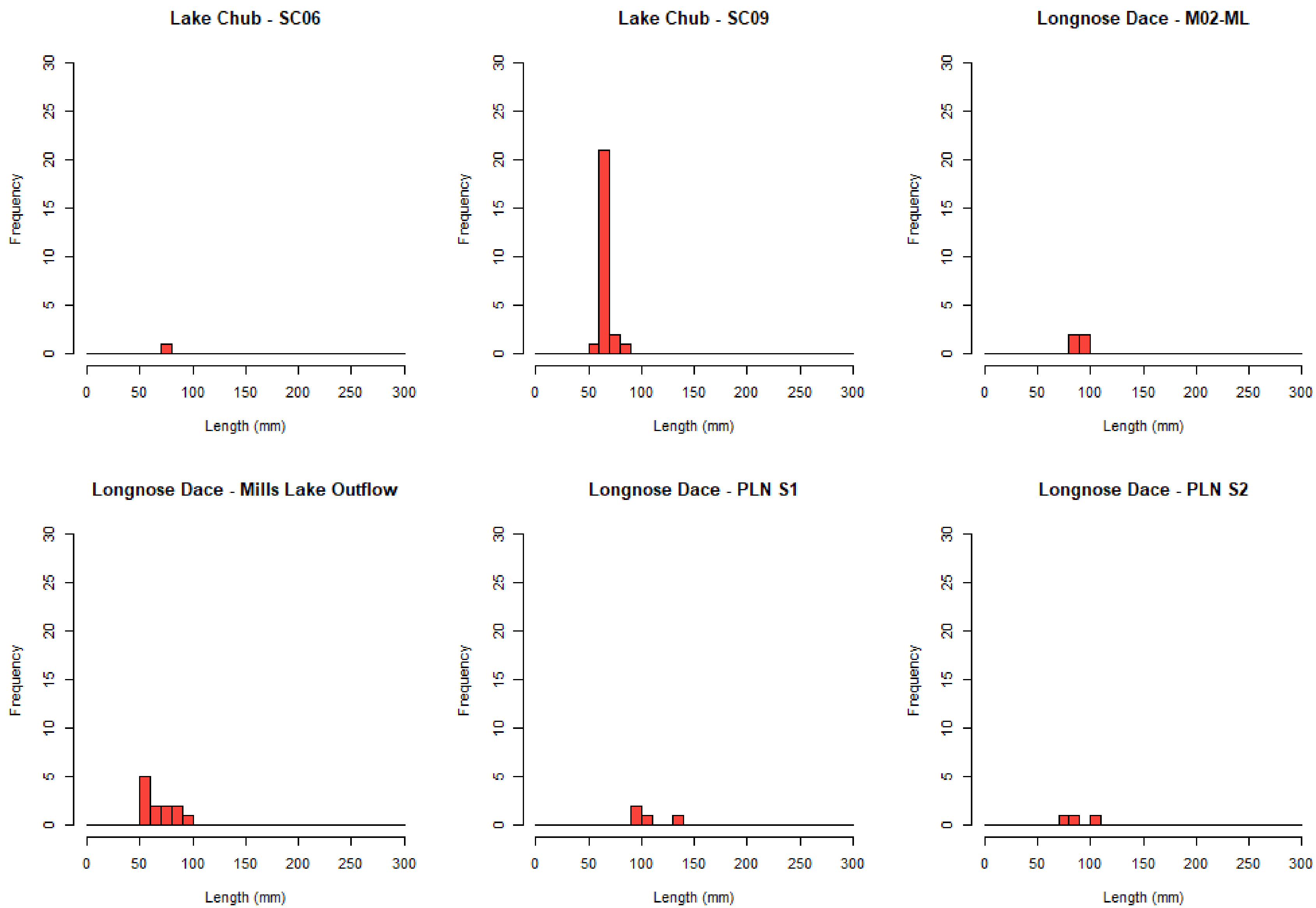

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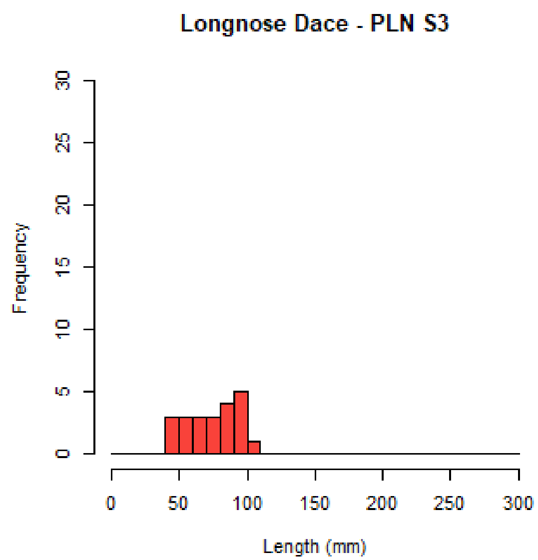
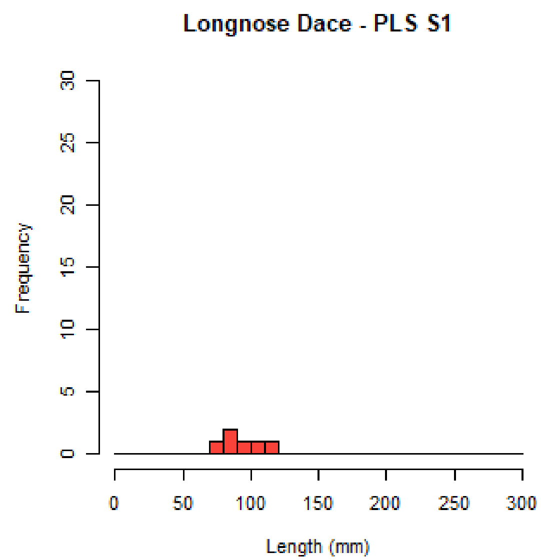
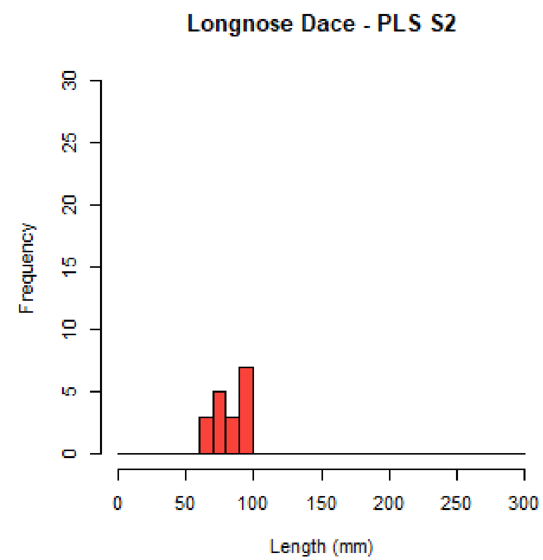
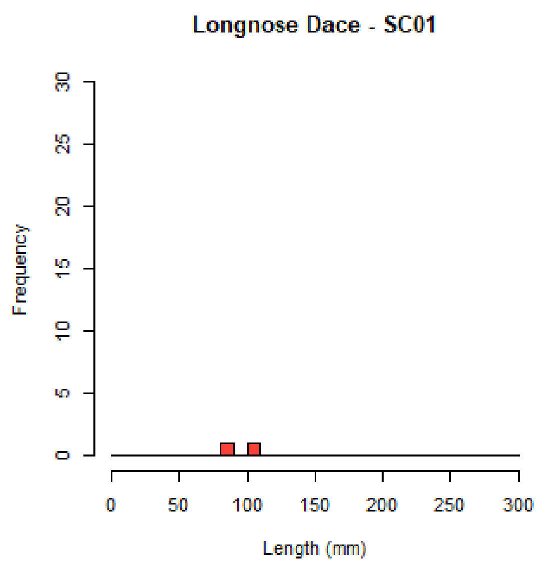
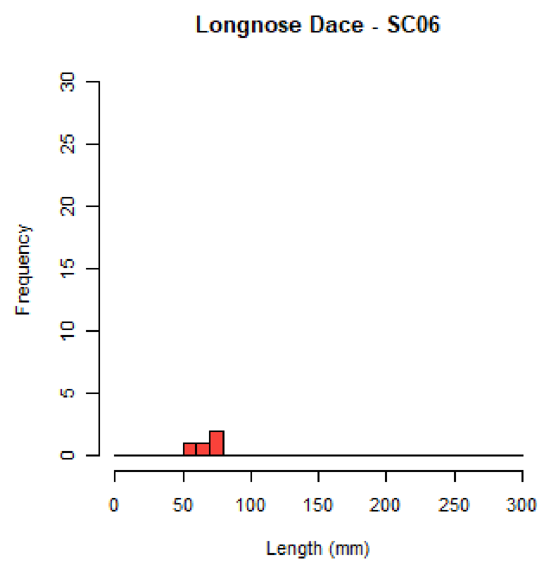
Fish Biometric Summaries – Riverine Fish Length Distributions

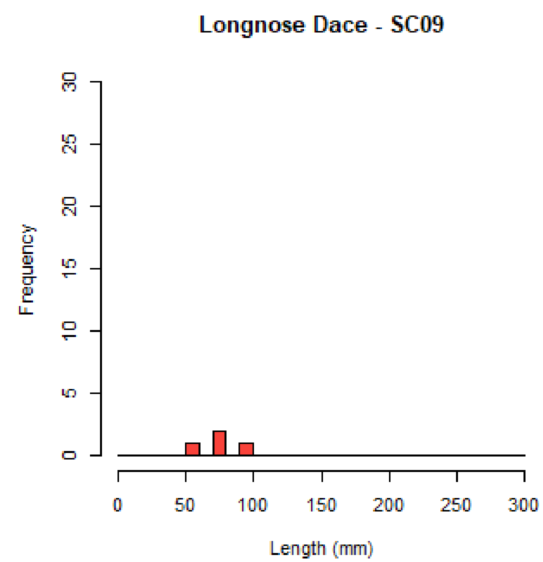












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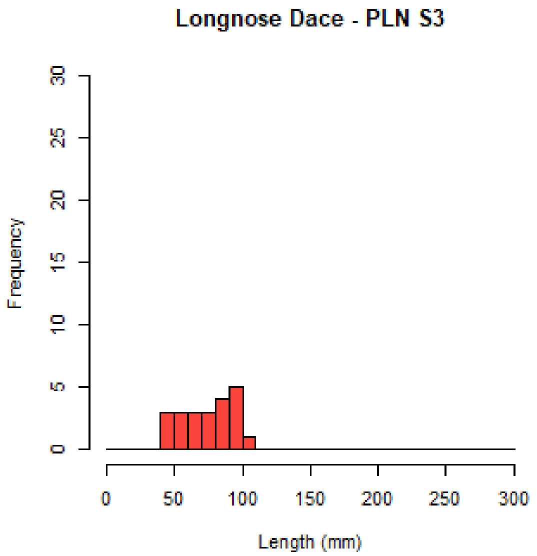
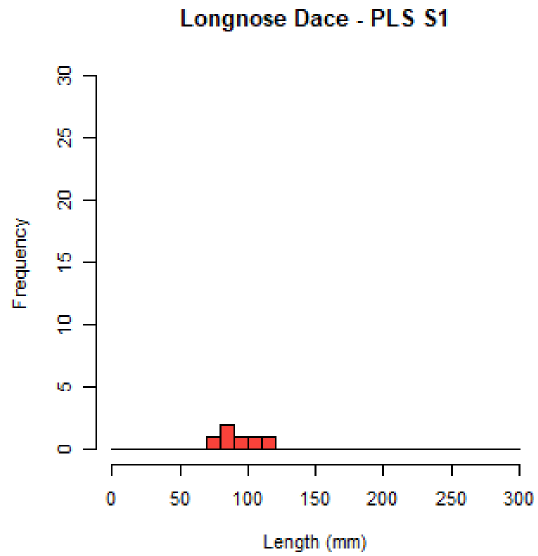
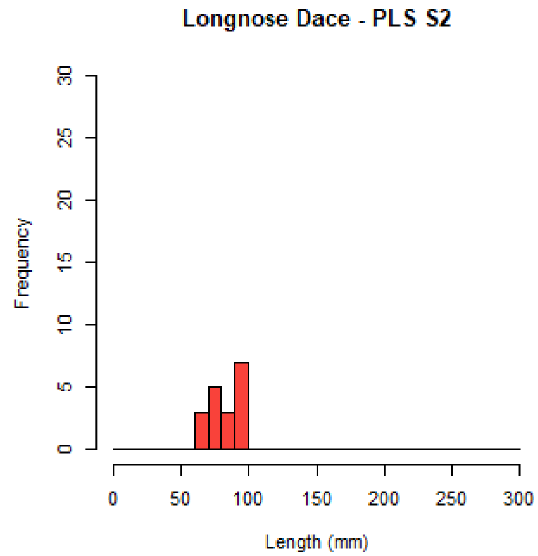
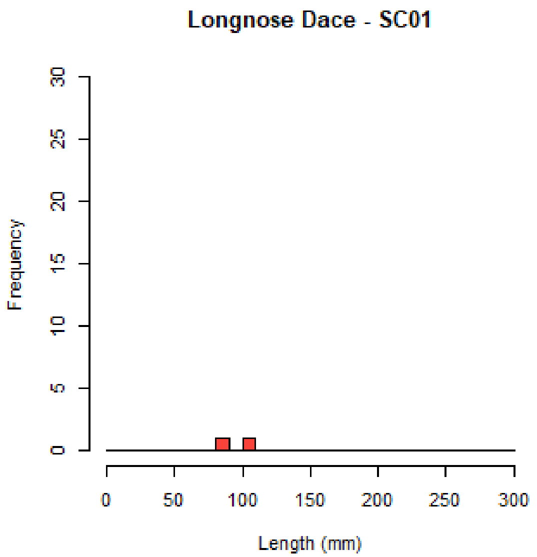
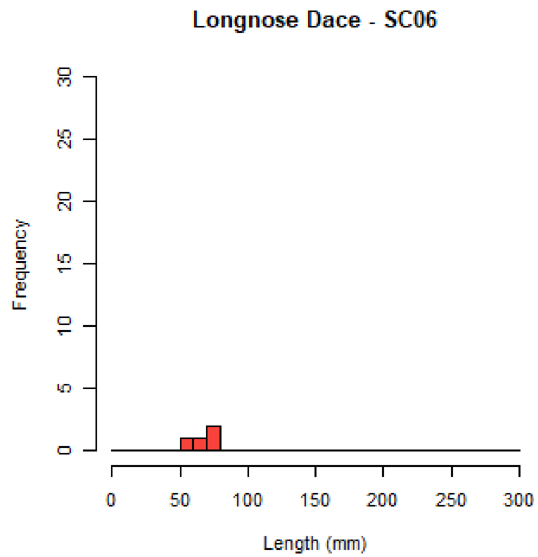
Fish Biometric Summaries – Riverine Fish Length Distributions

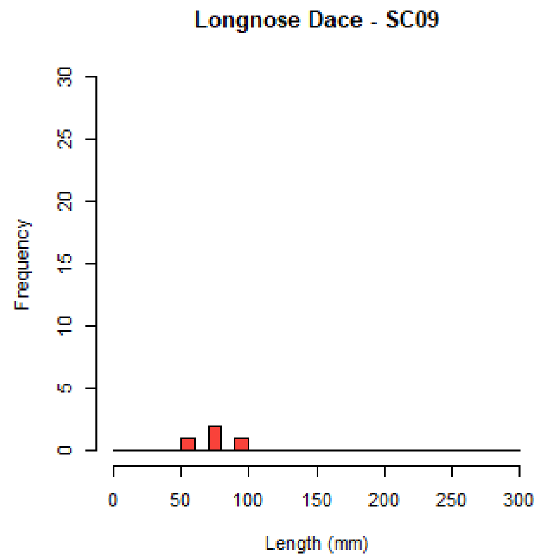












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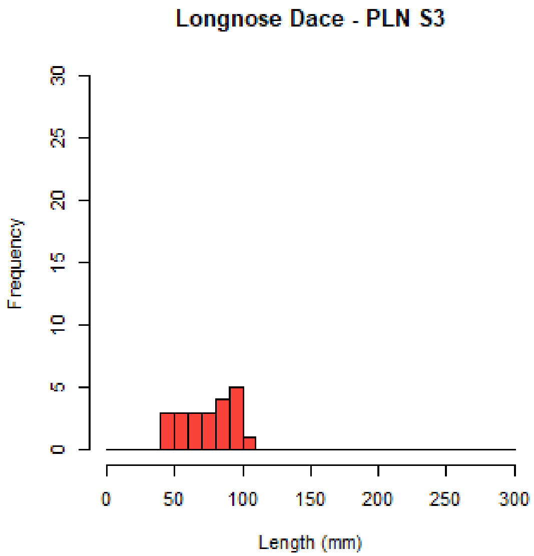

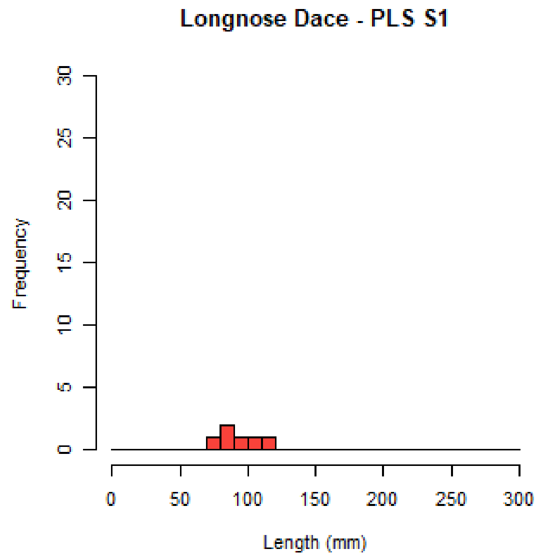

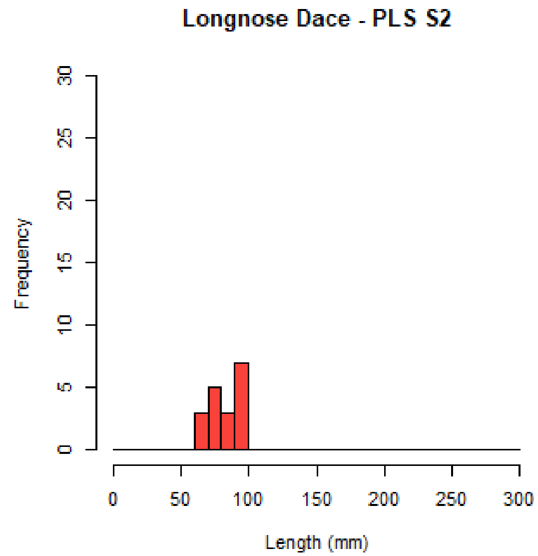

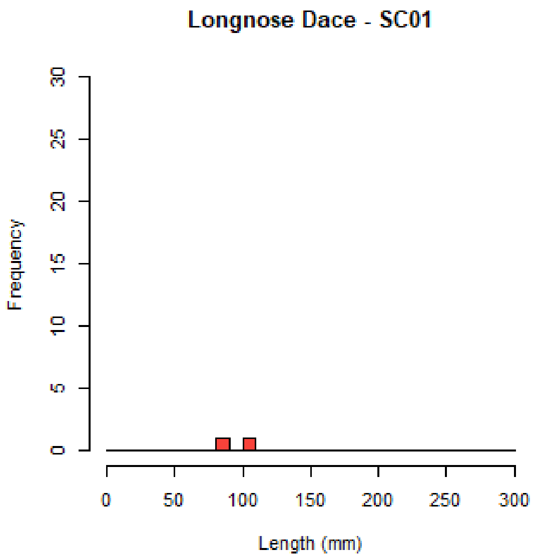

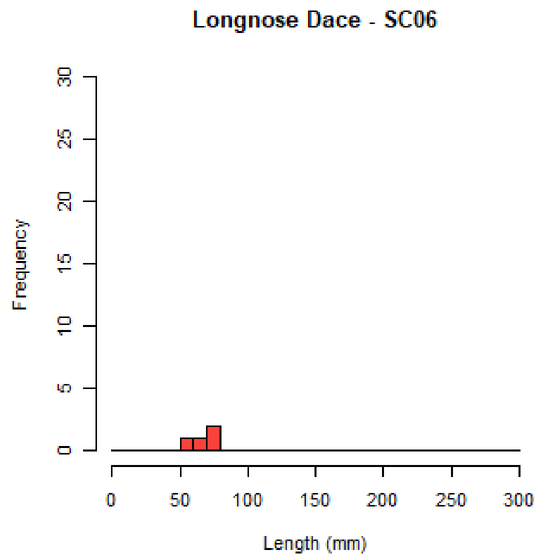

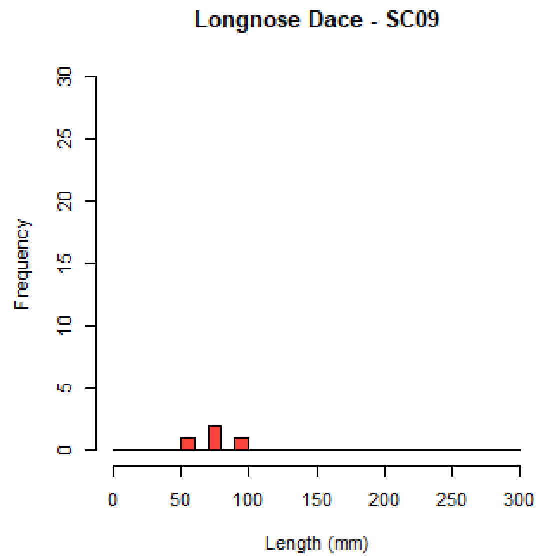

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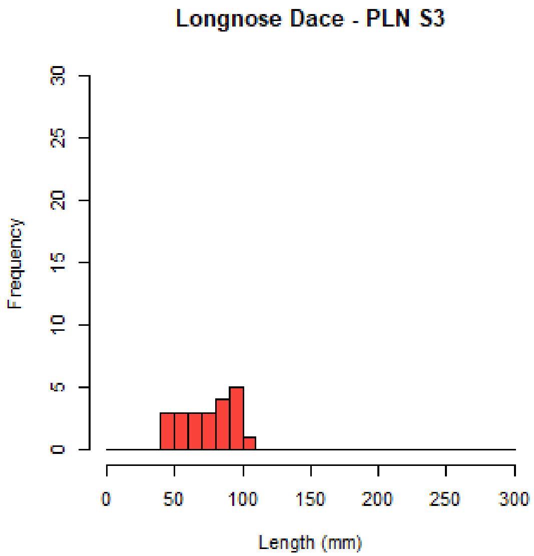
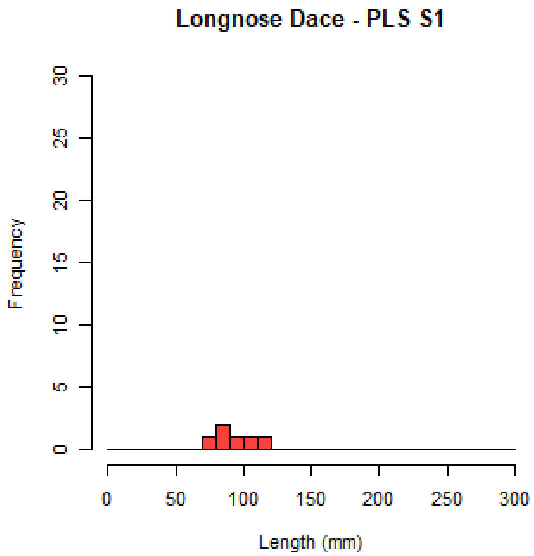
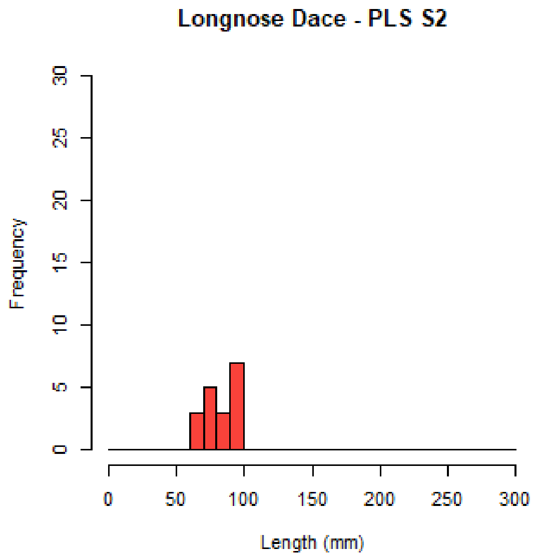
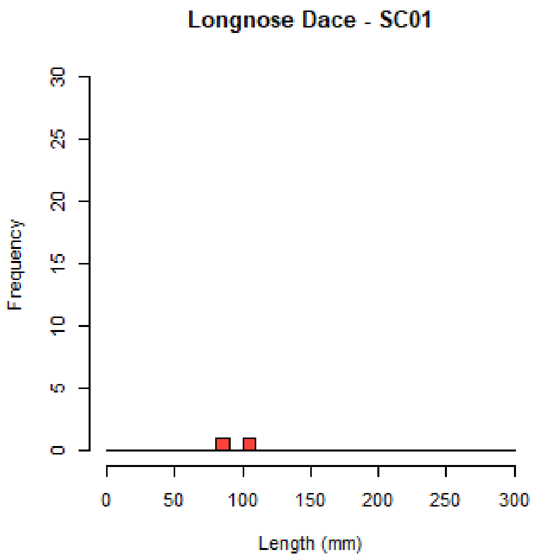
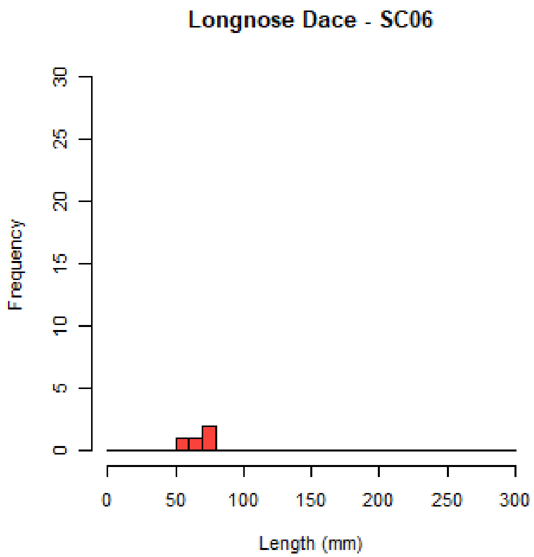
Fish Biometric Summaries – Riverine Fish Length Distributions

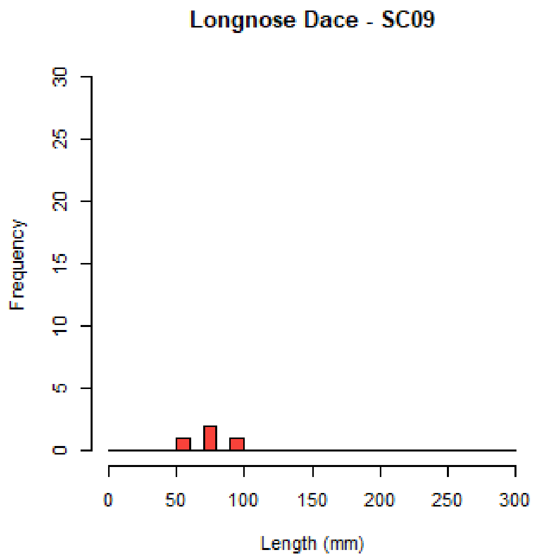












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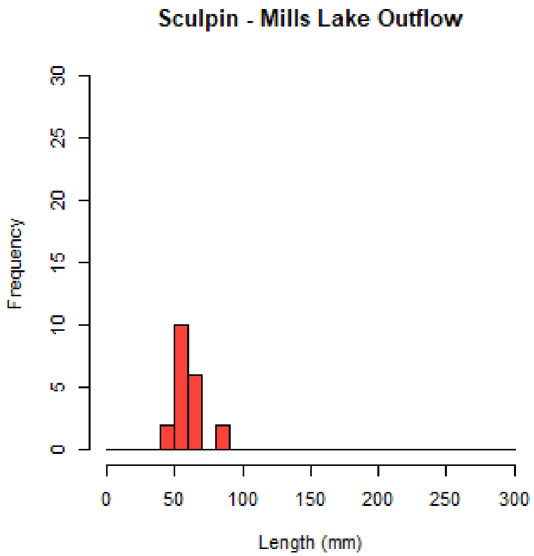
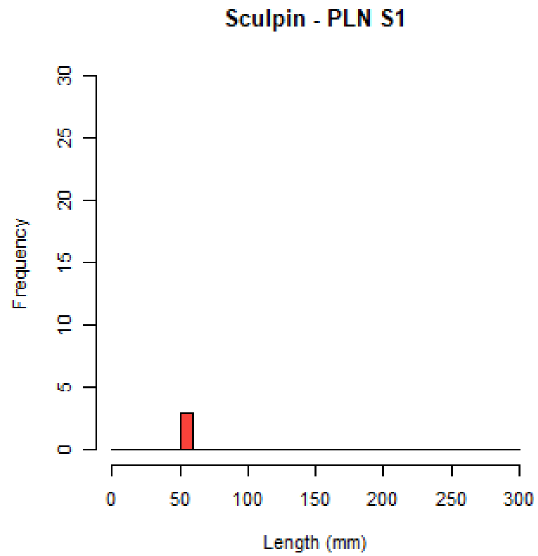
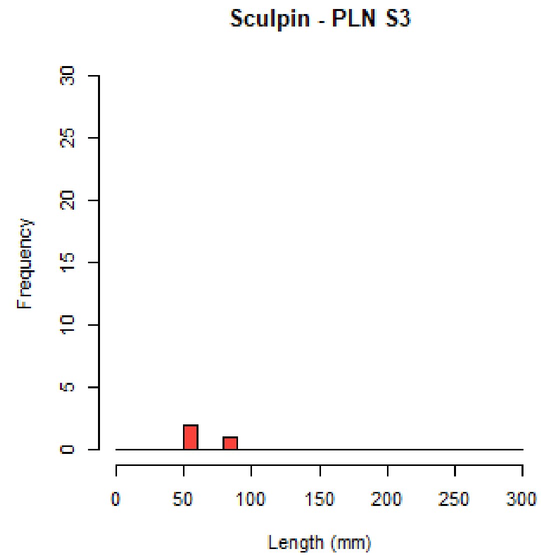
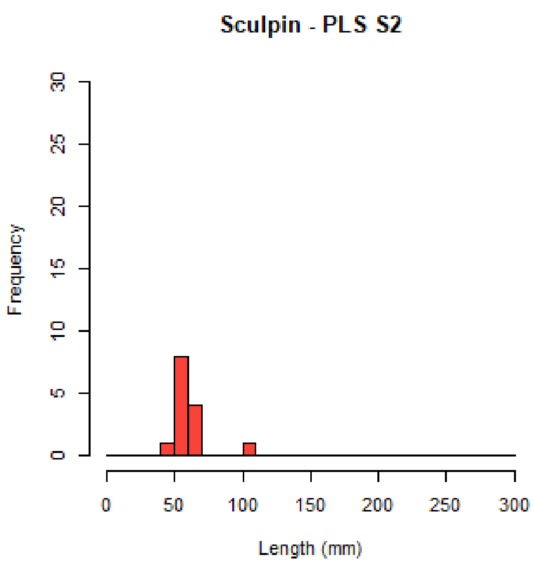
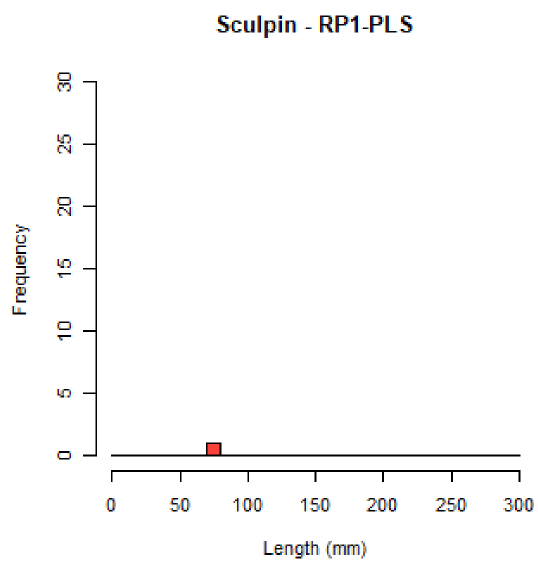
Fish Biometric Summaries – Riverine Fish Length Distributions

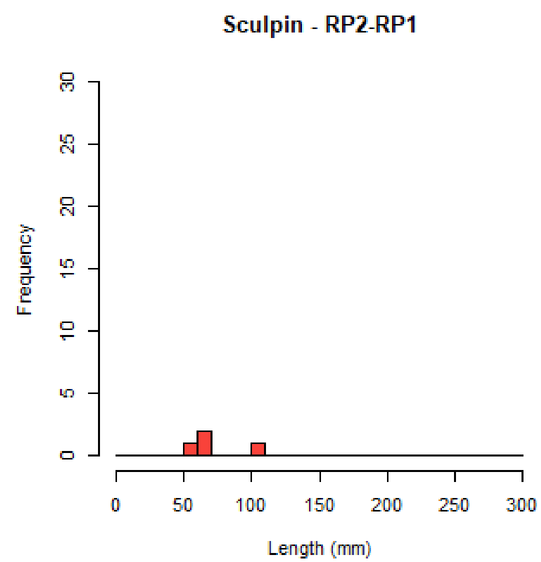












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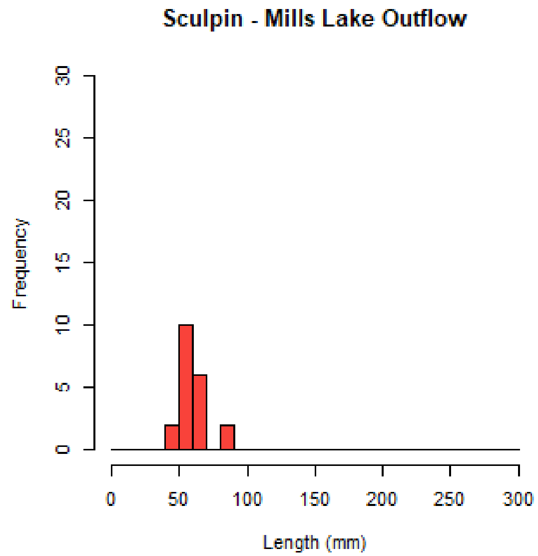

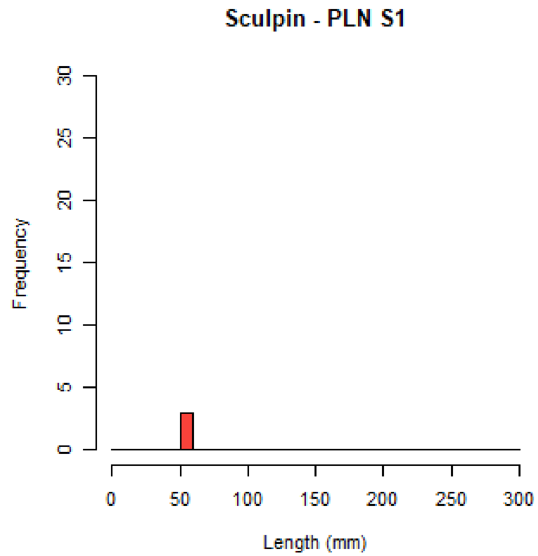

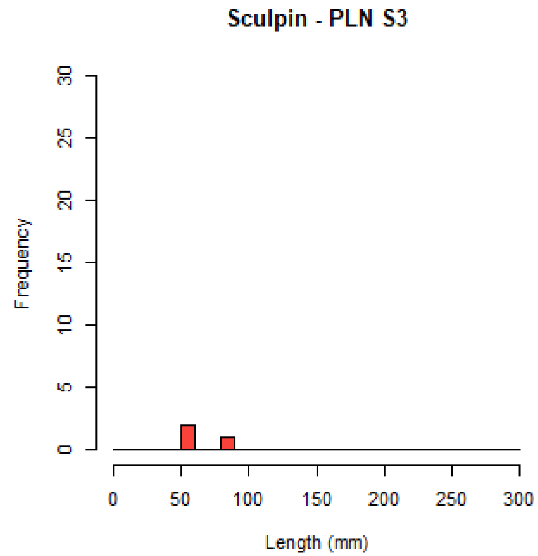

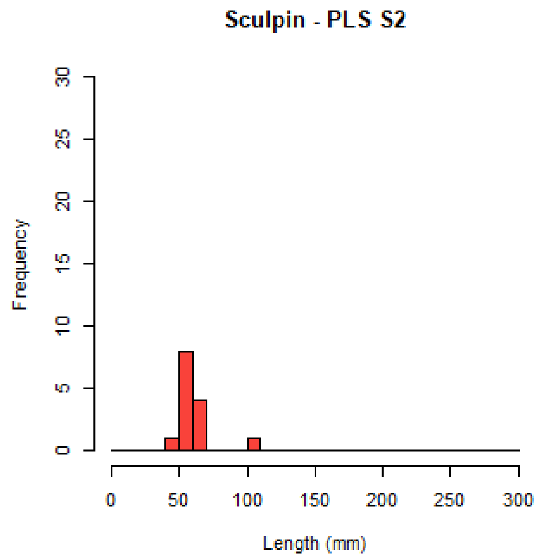

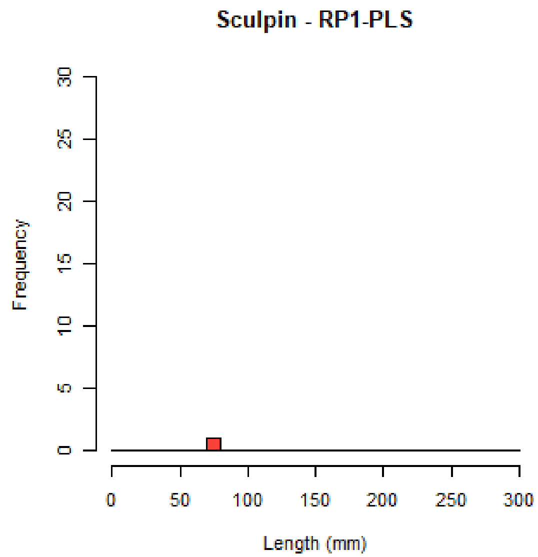

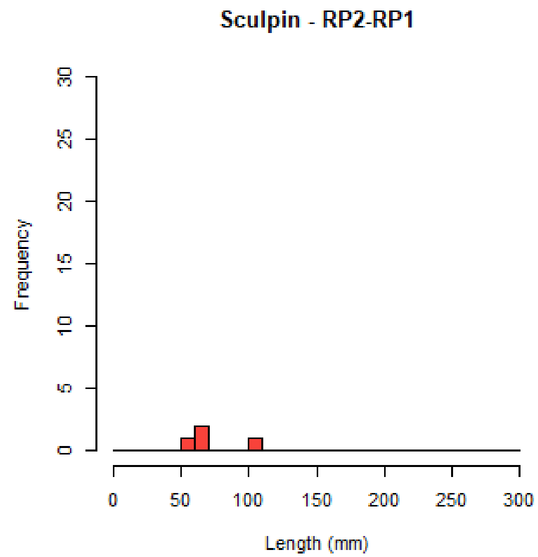

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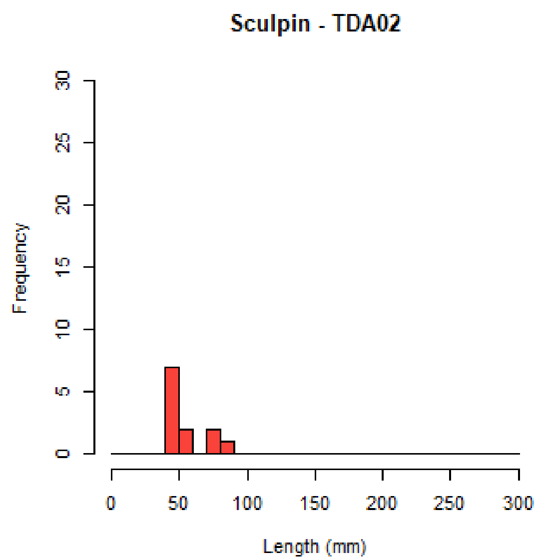

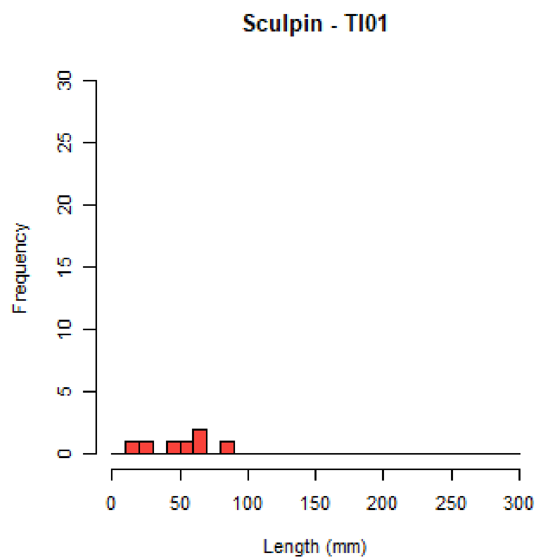

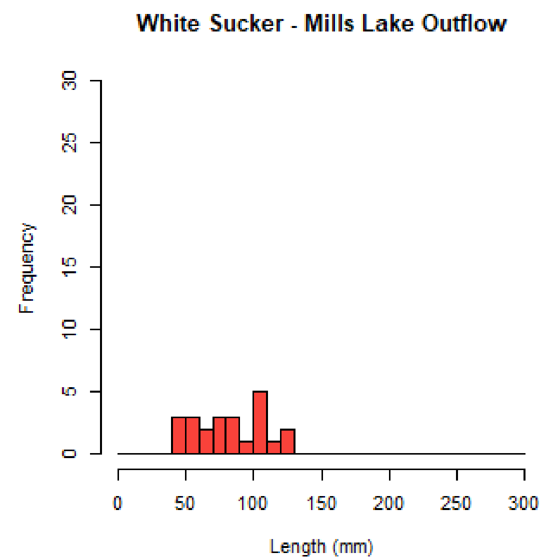

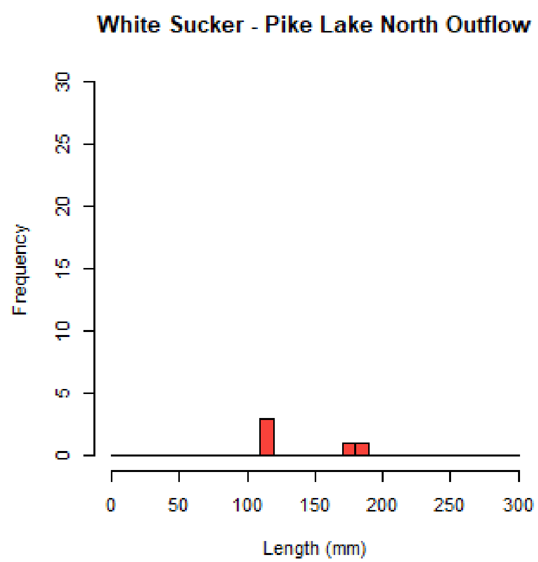

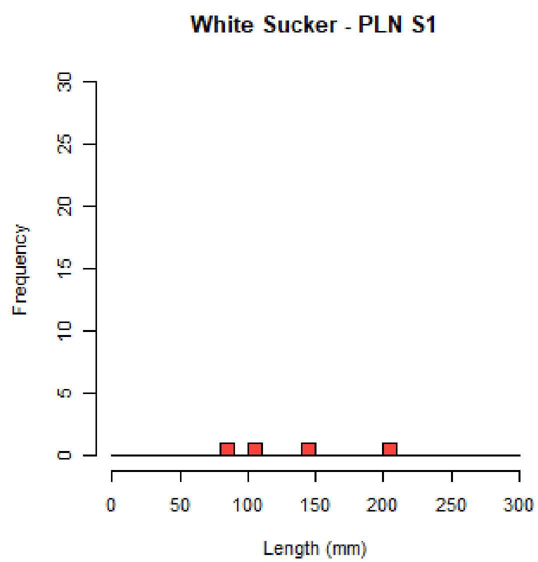

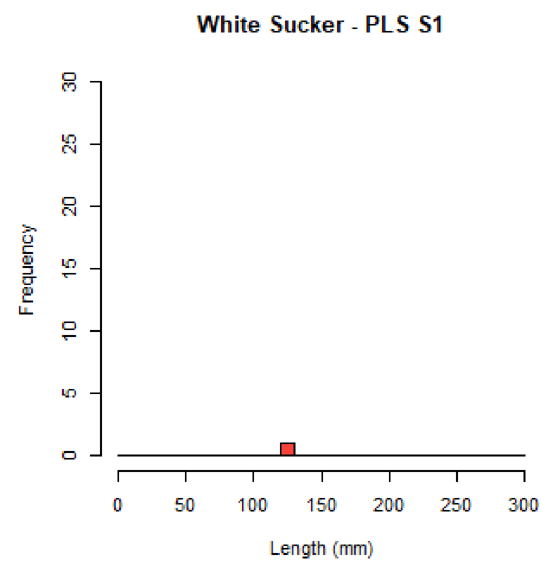

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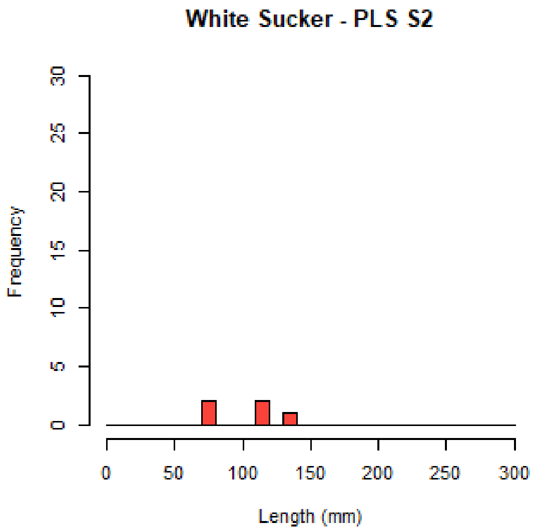
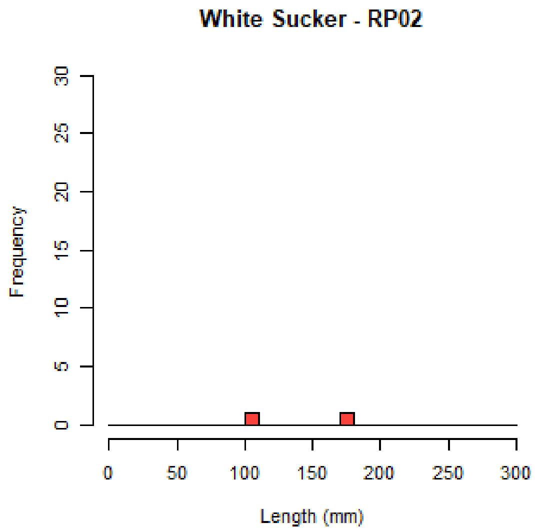
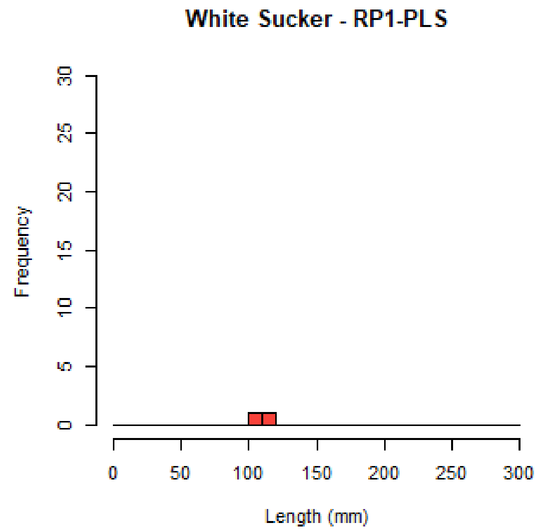
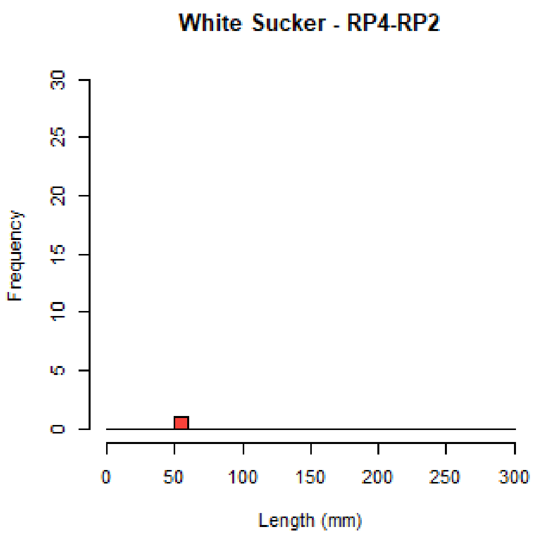
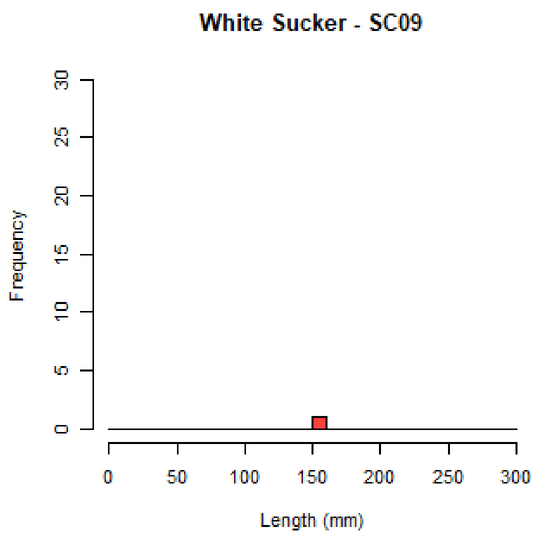




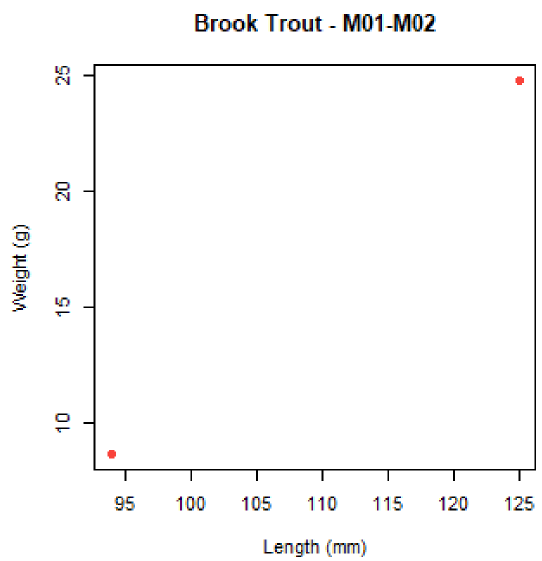


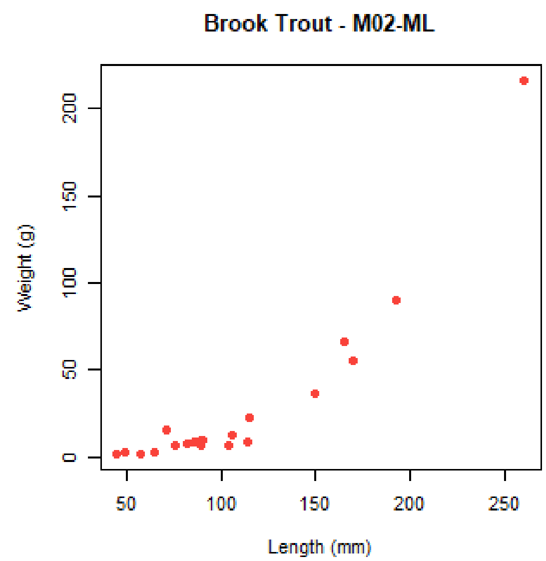


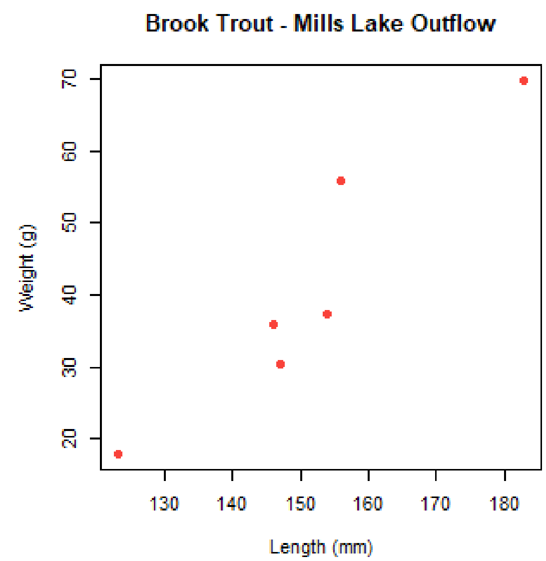


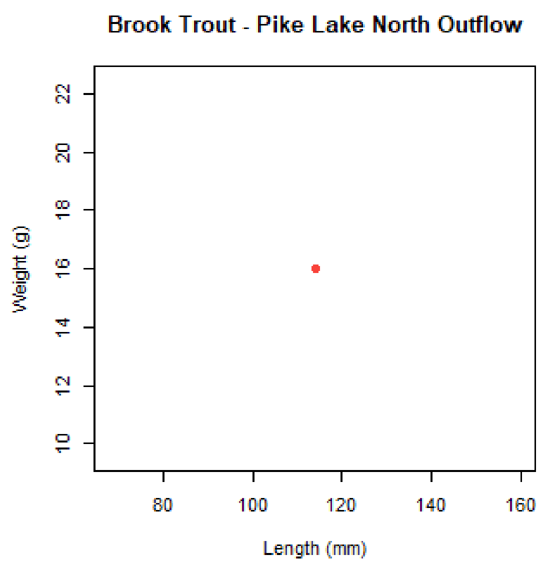
Appendix D

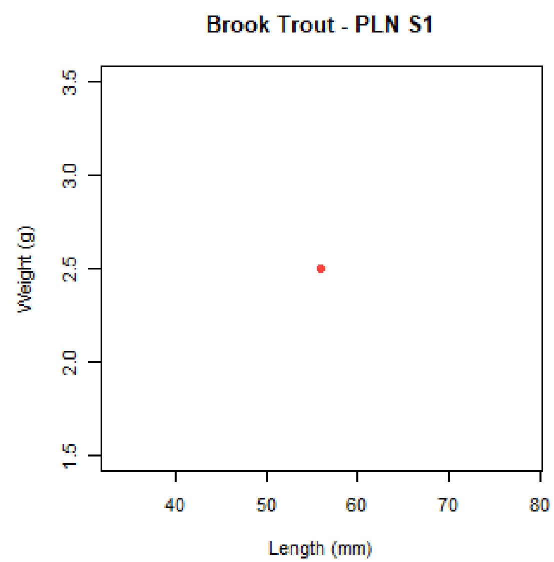
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

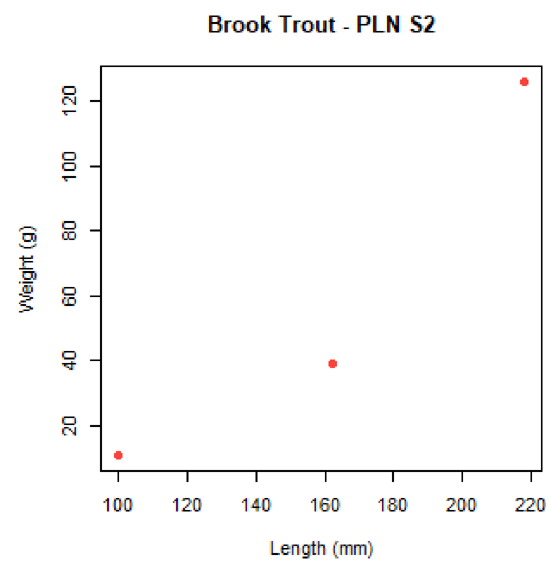




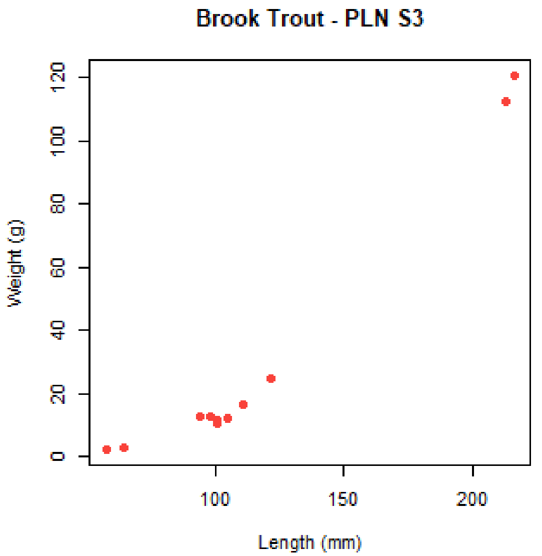


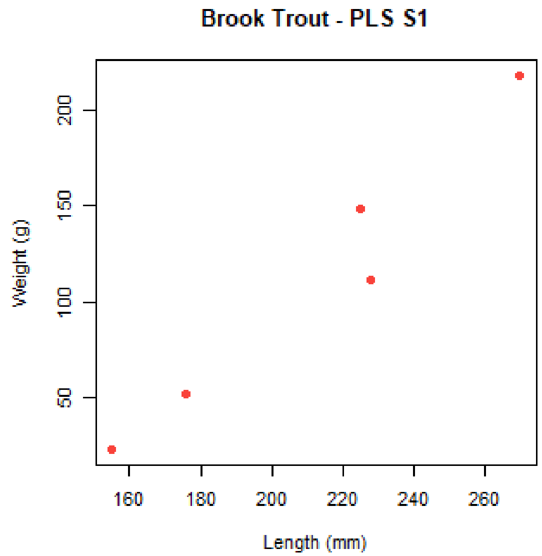


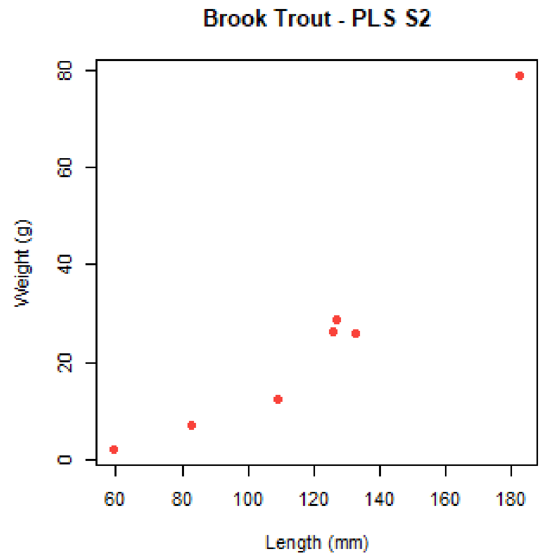


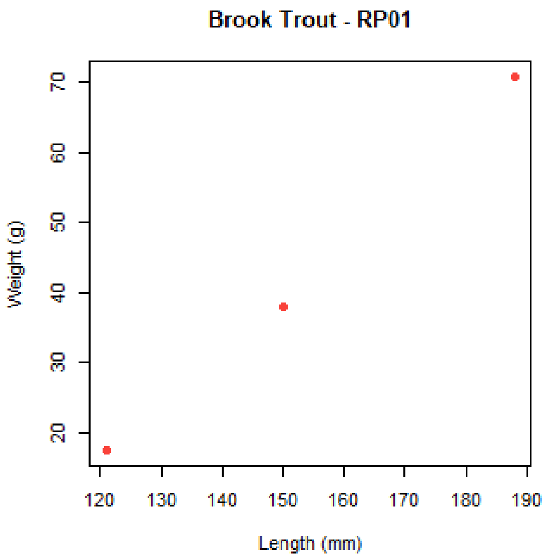


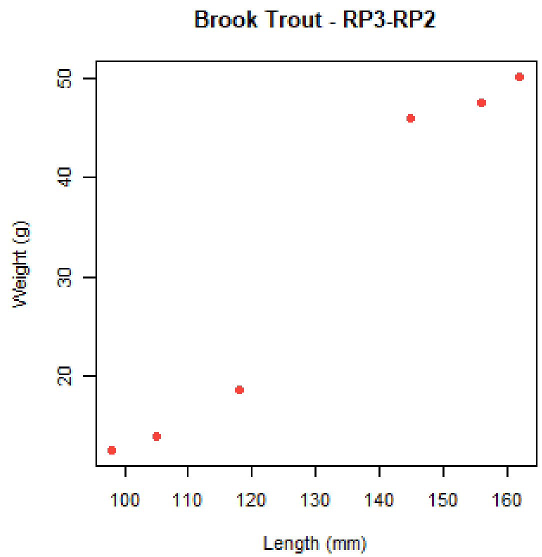
Appendix D
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

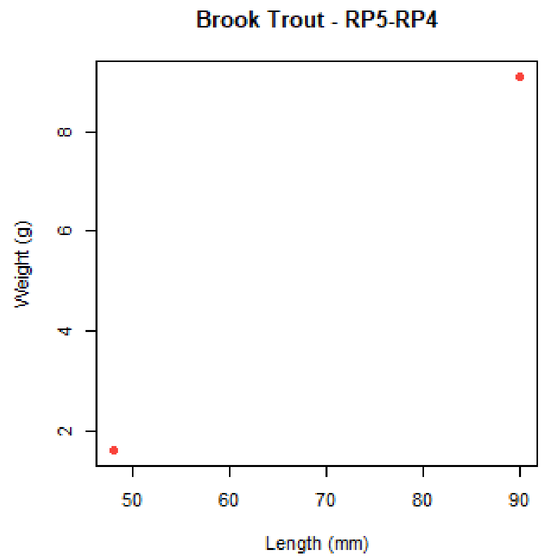




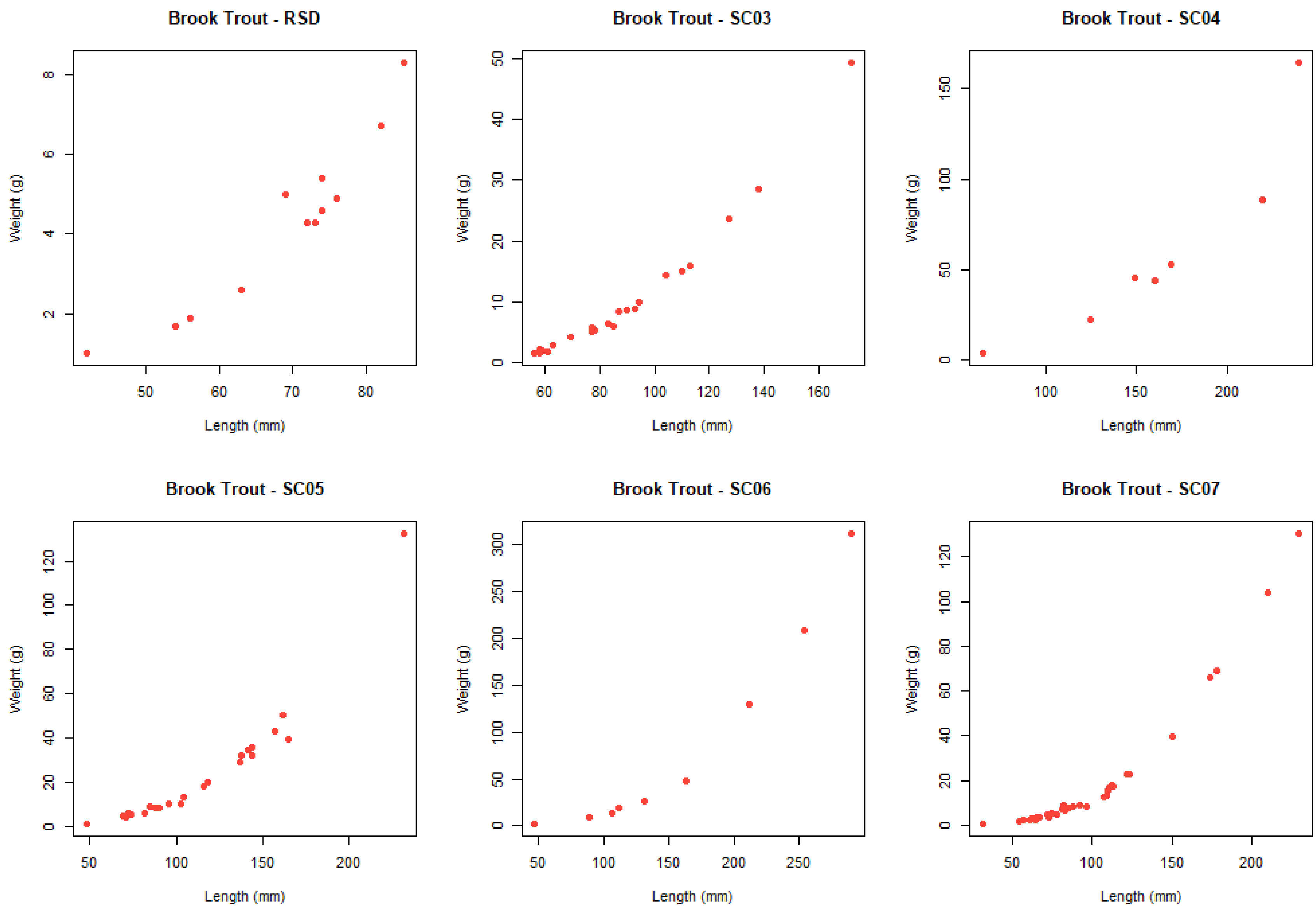






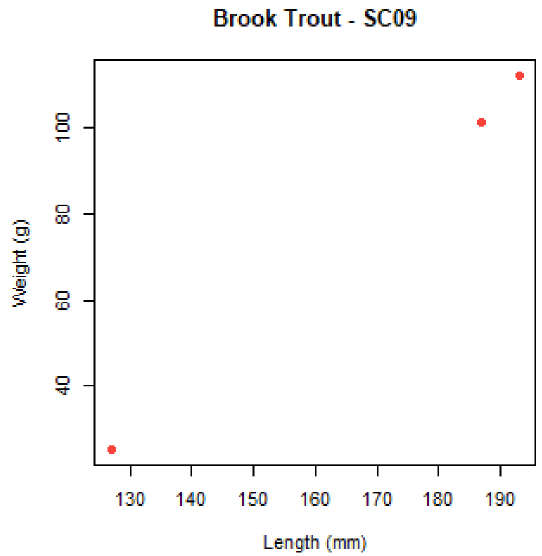


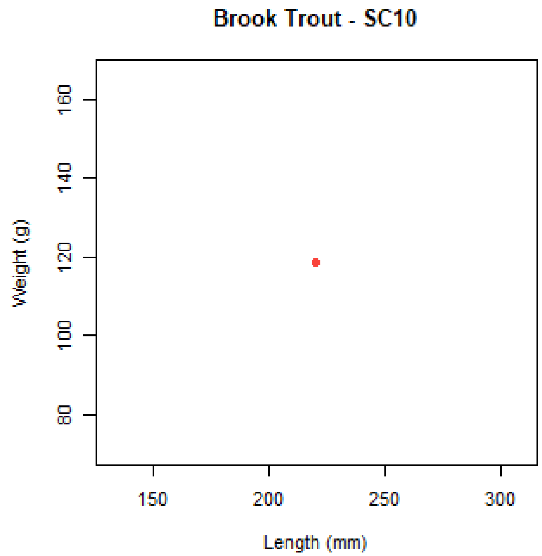
Appendix D
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

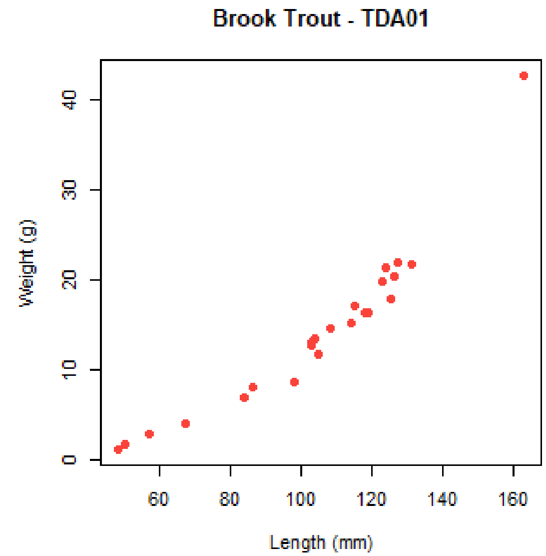


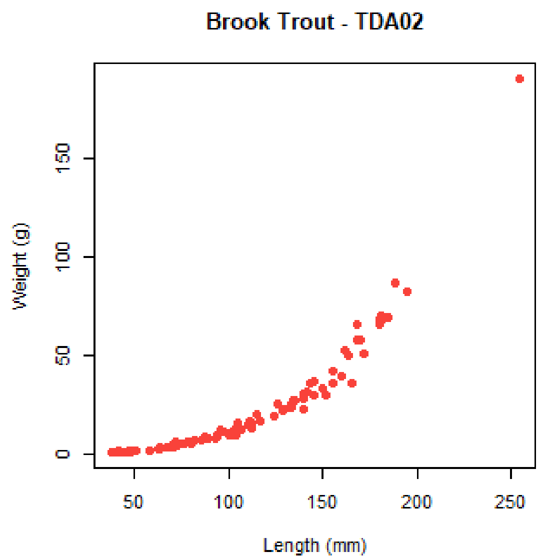
Appendix D

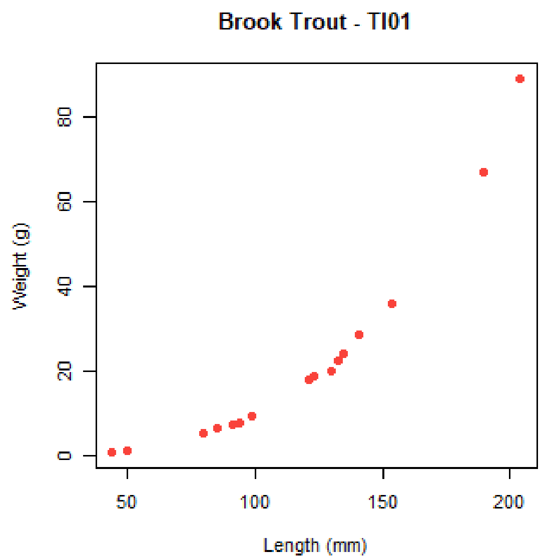
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

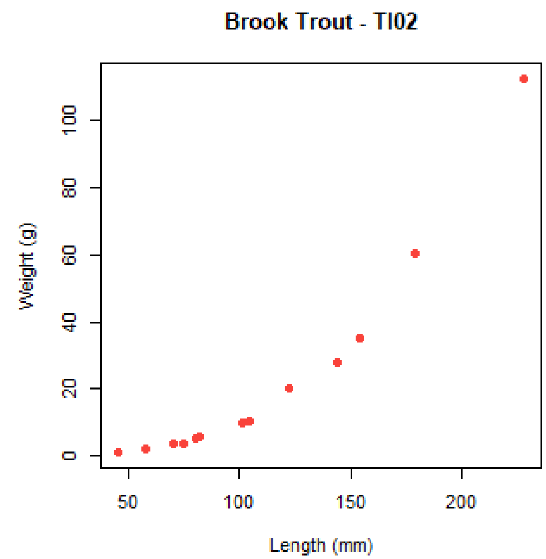






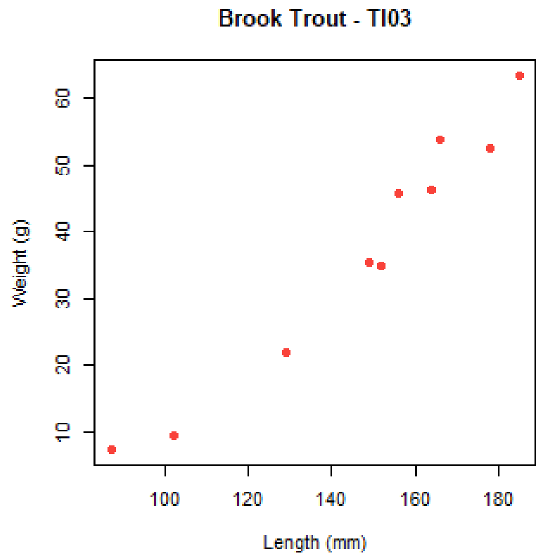


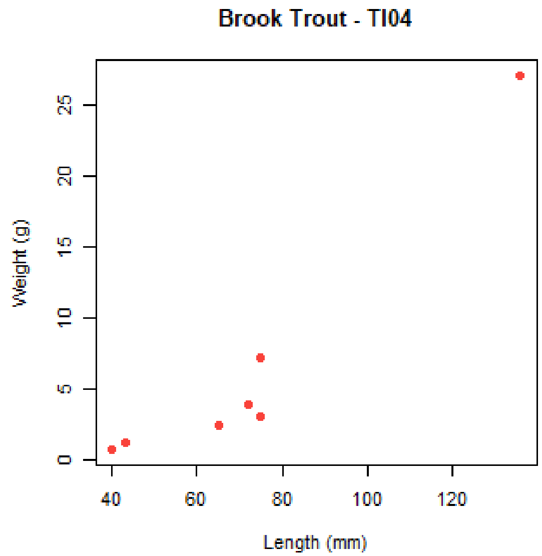


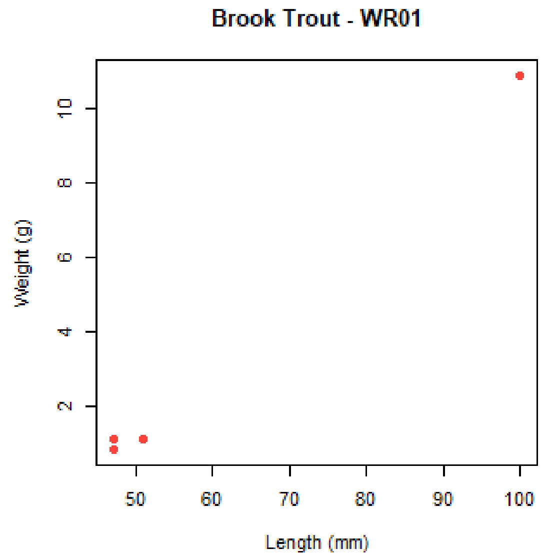


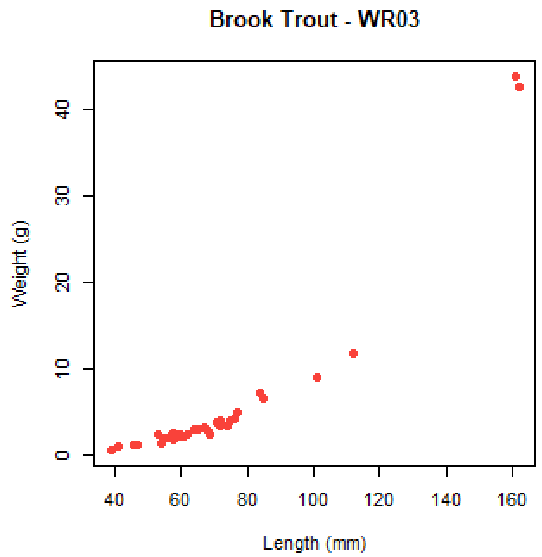
Appendix D

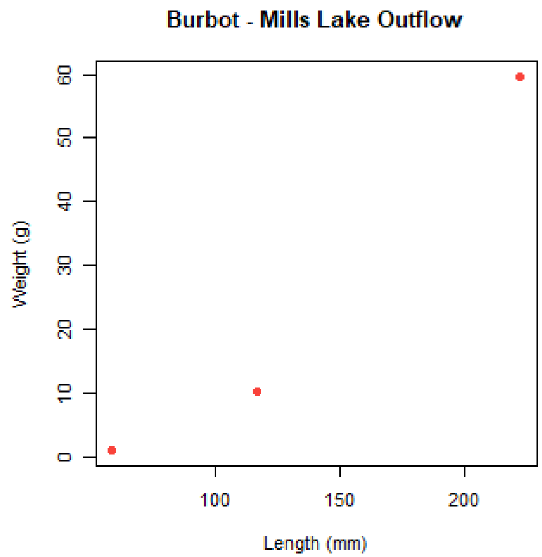
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

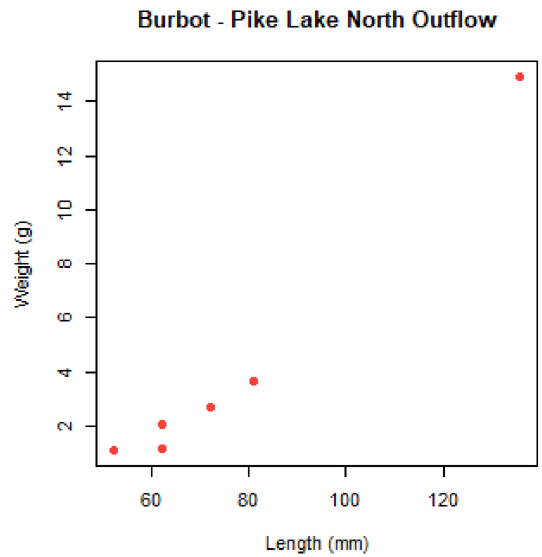






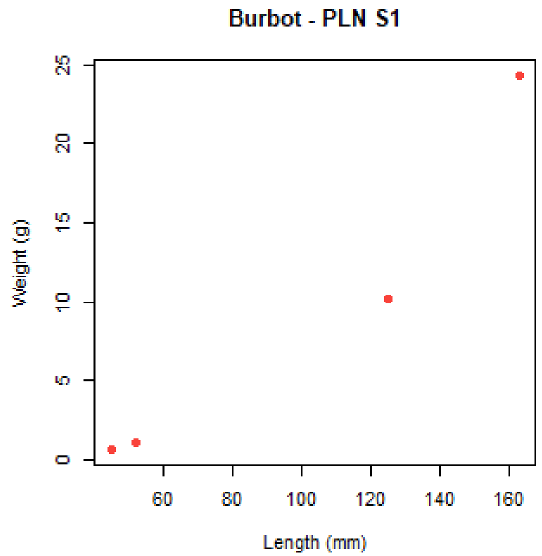


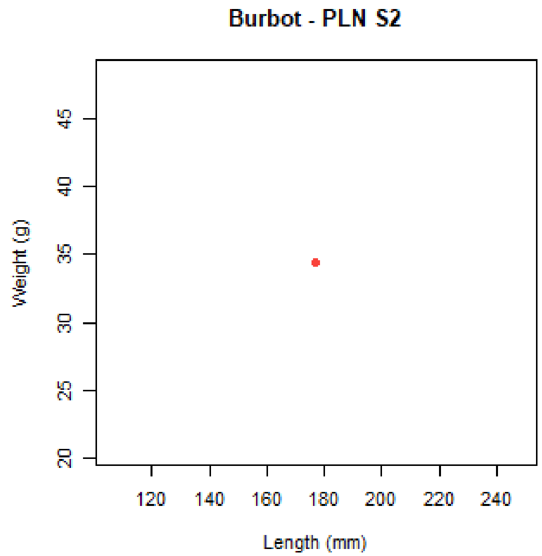


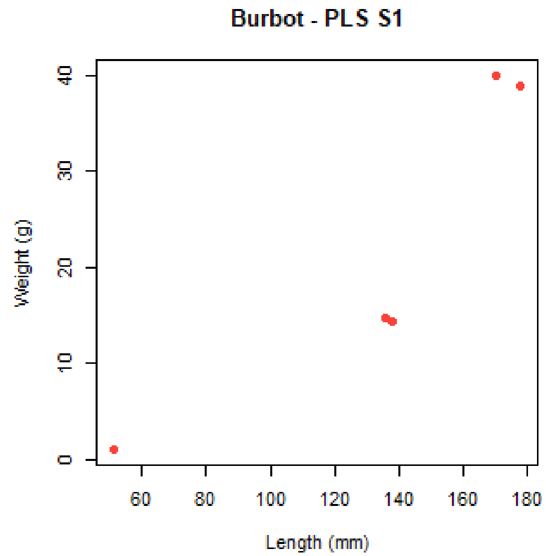


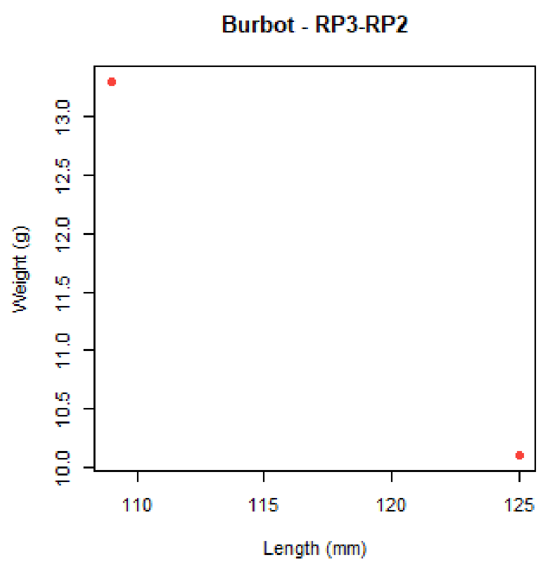
Appendix D

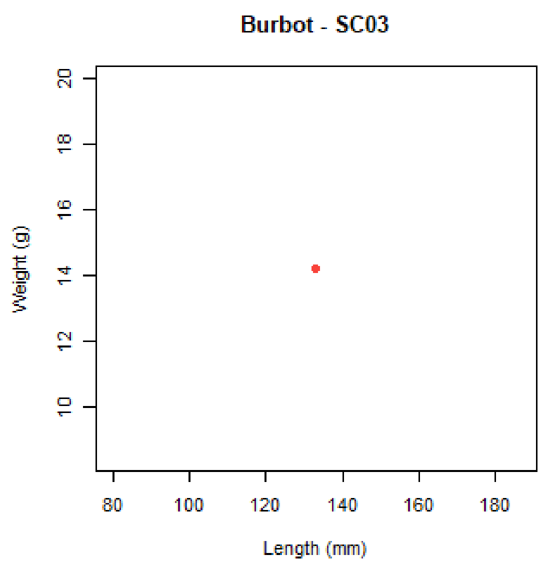
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

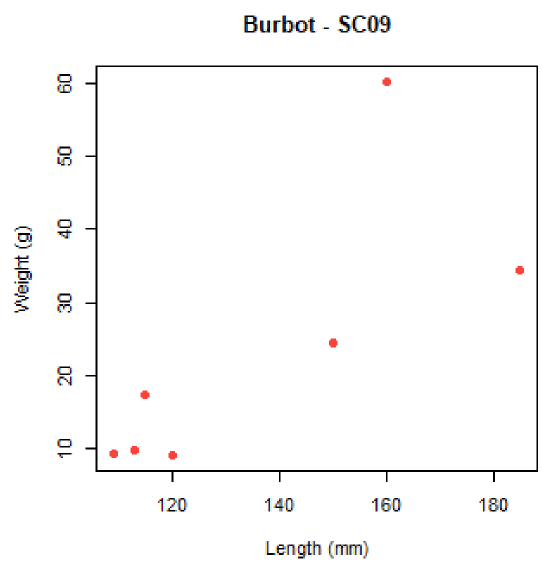






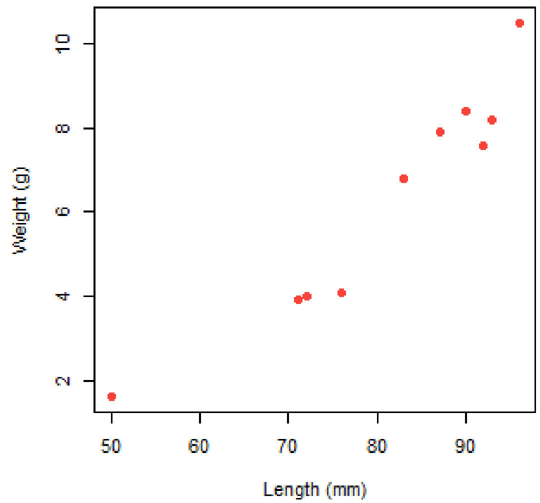




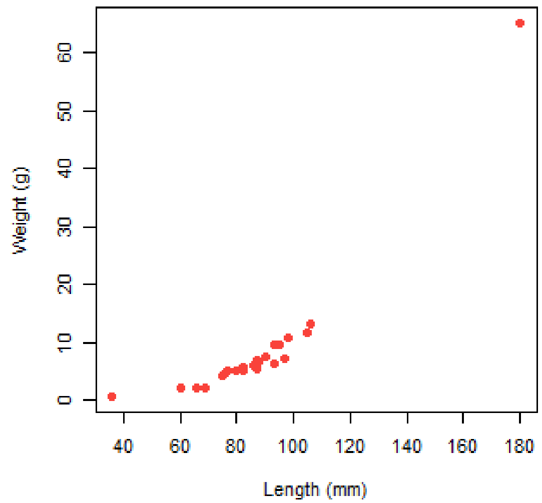


Appendix D
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

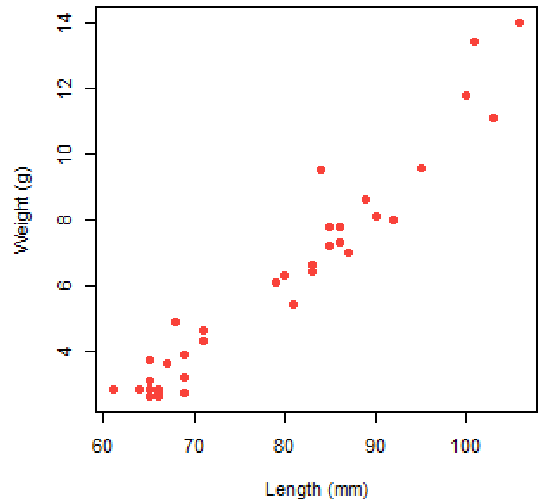
Lake Chub - Mills Lake Outflow



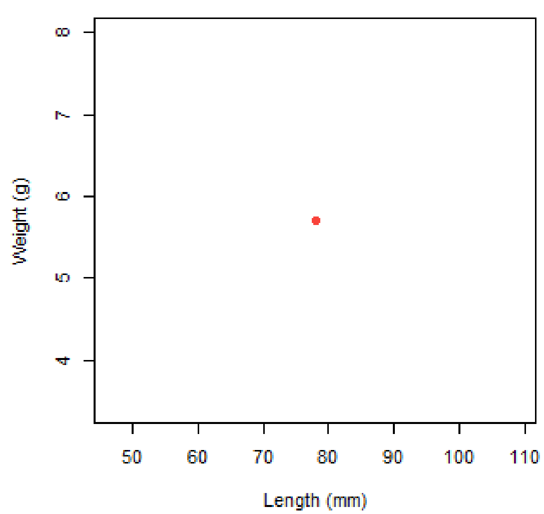
Lake Chub - Pike Lake North Outflow



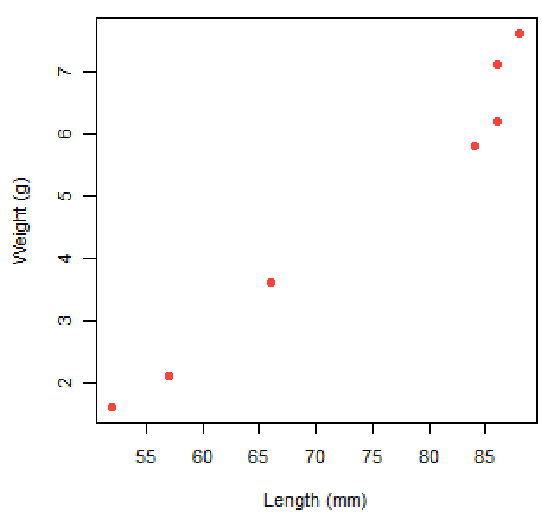
Lake Chub - PLN S1



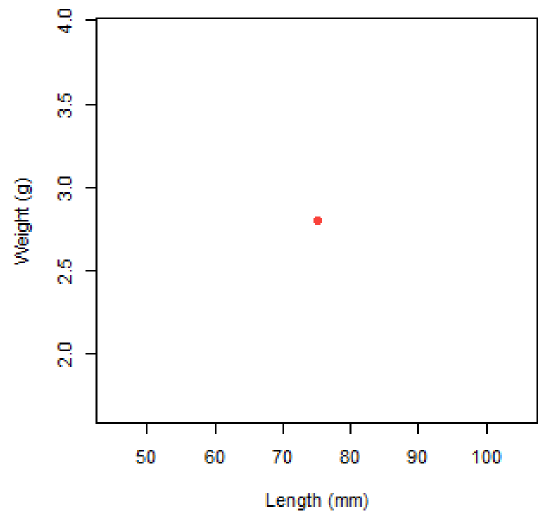
Lake Chub - PLN S2



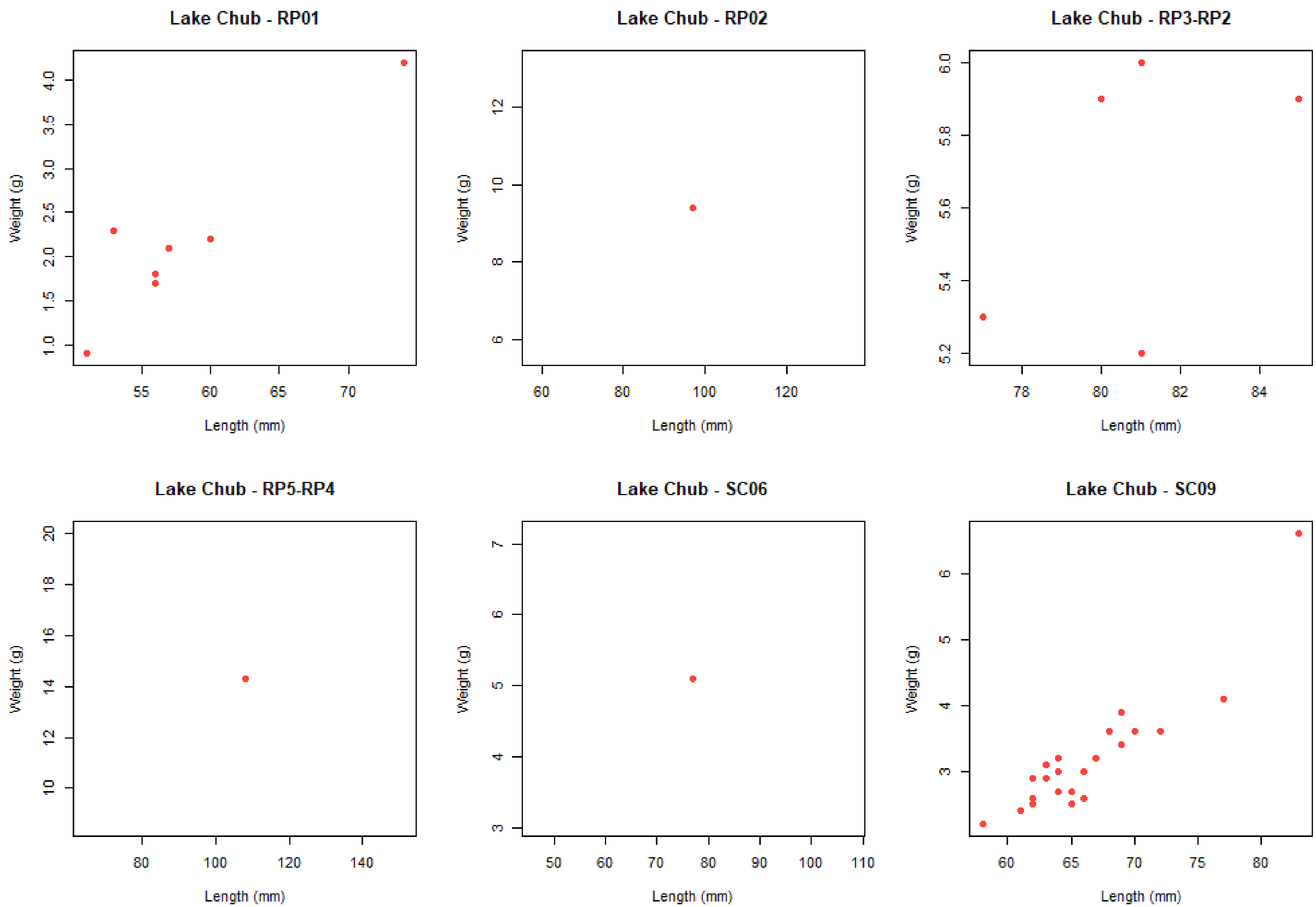
Lake Chub - PLS S1



Lake Chub - PLS S2

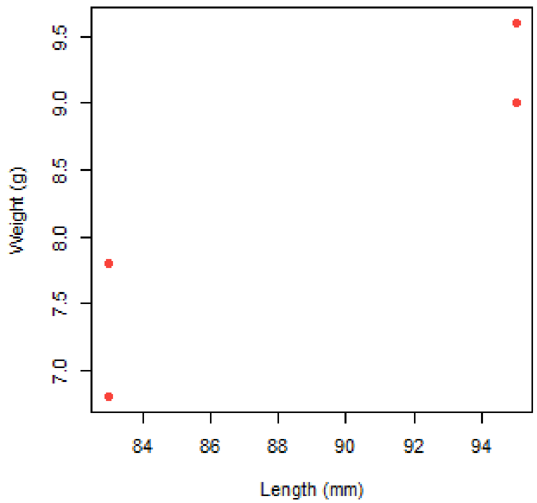


Appendix D
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

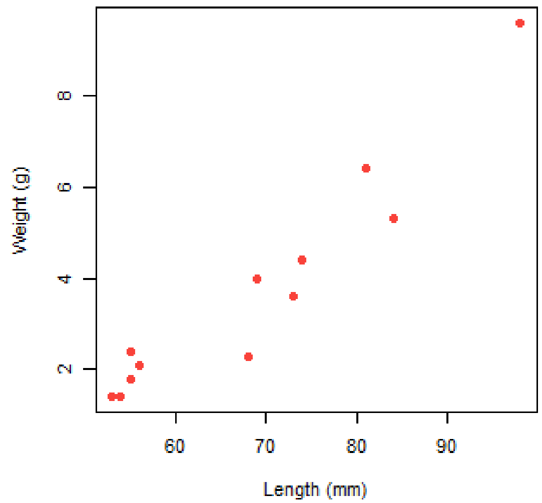


Appendix D
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

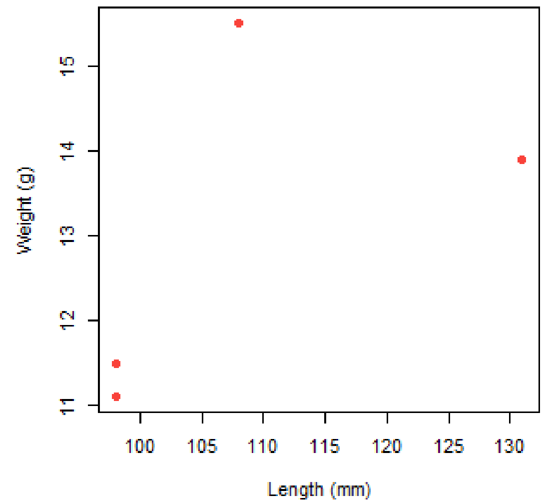
Longnose Dace - M02-ML



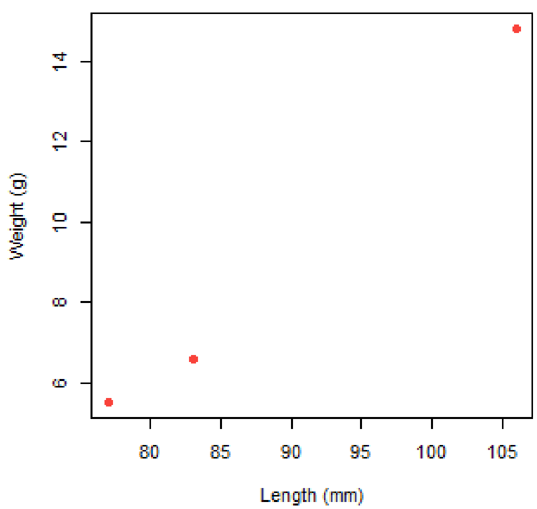
Longnose Dace - Mills Lake Outflow



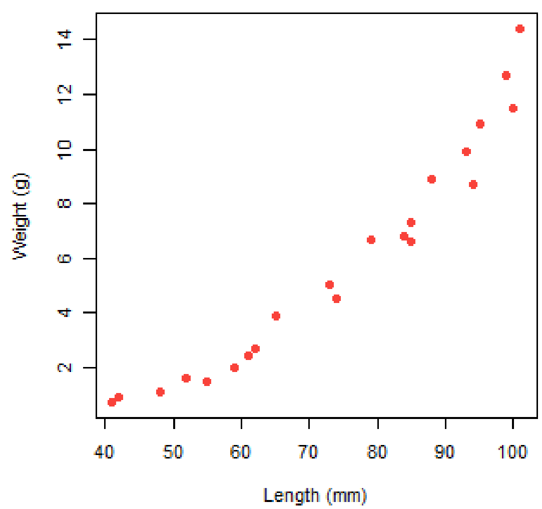
Longnose Dace - PLN S1



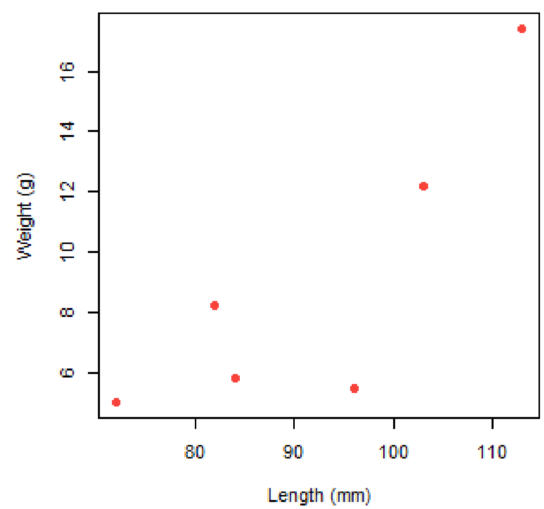
Longnose Dace - PLN S2



Longnose Dace - PLN S3



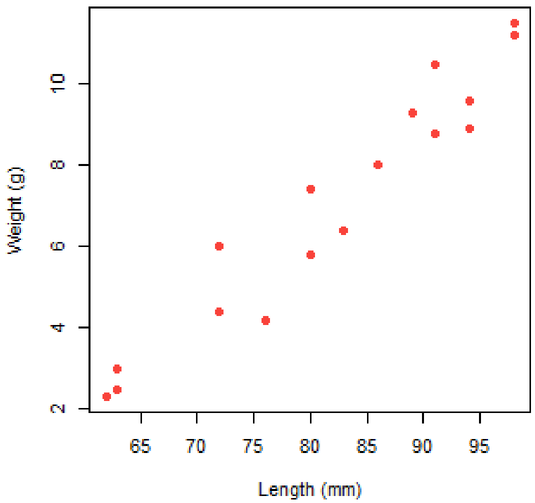
Longnose Dace - PLS S1



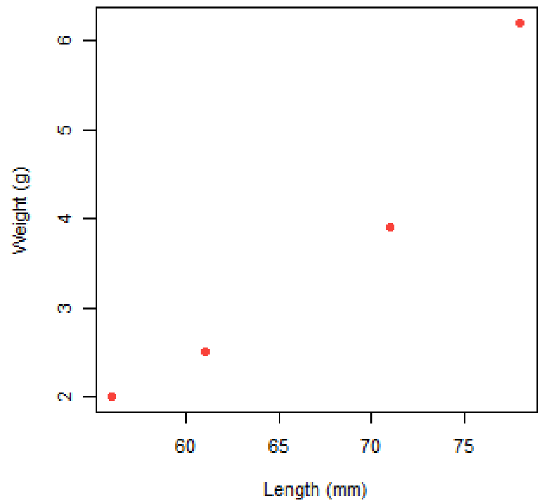
Appendix D

Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

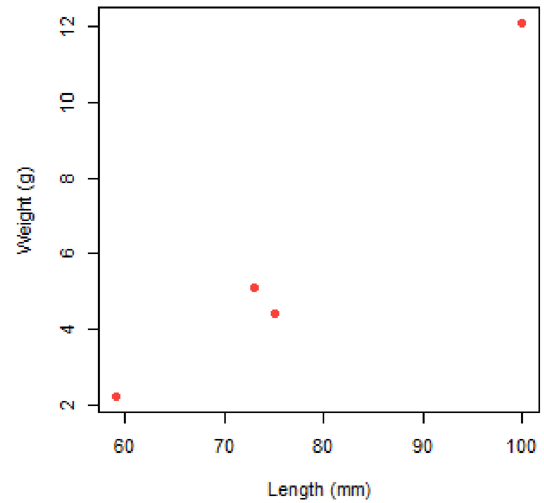
Longnose Dace - PLS S2



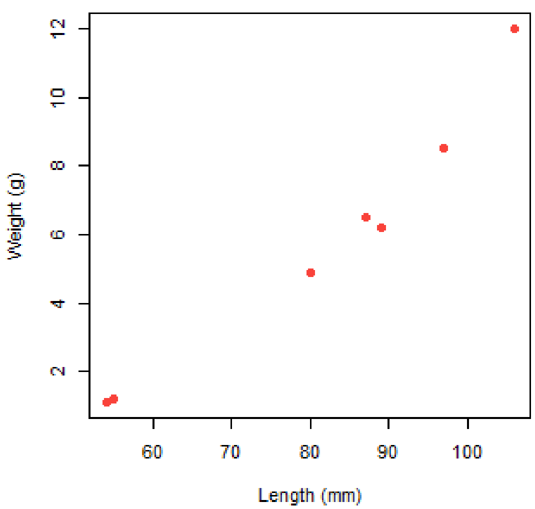
Longnose Dace - SC06



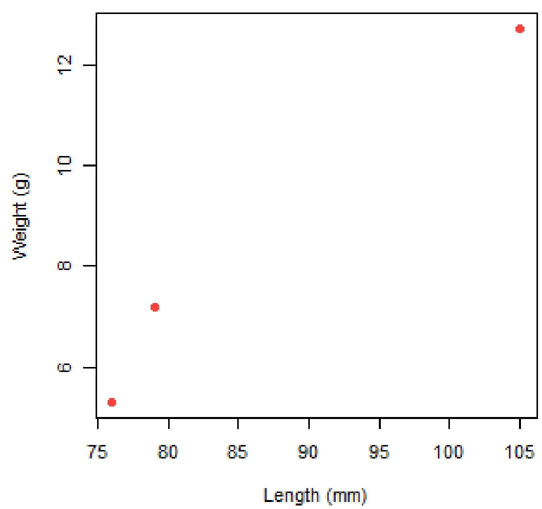
Longnose Dace - SC09



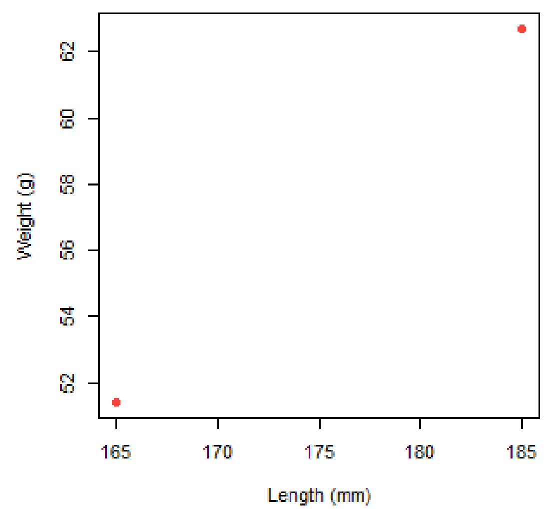
Longnose Sucker - Mills Lake Outflow



Longnose Sucker - Pike Lake North Outflow

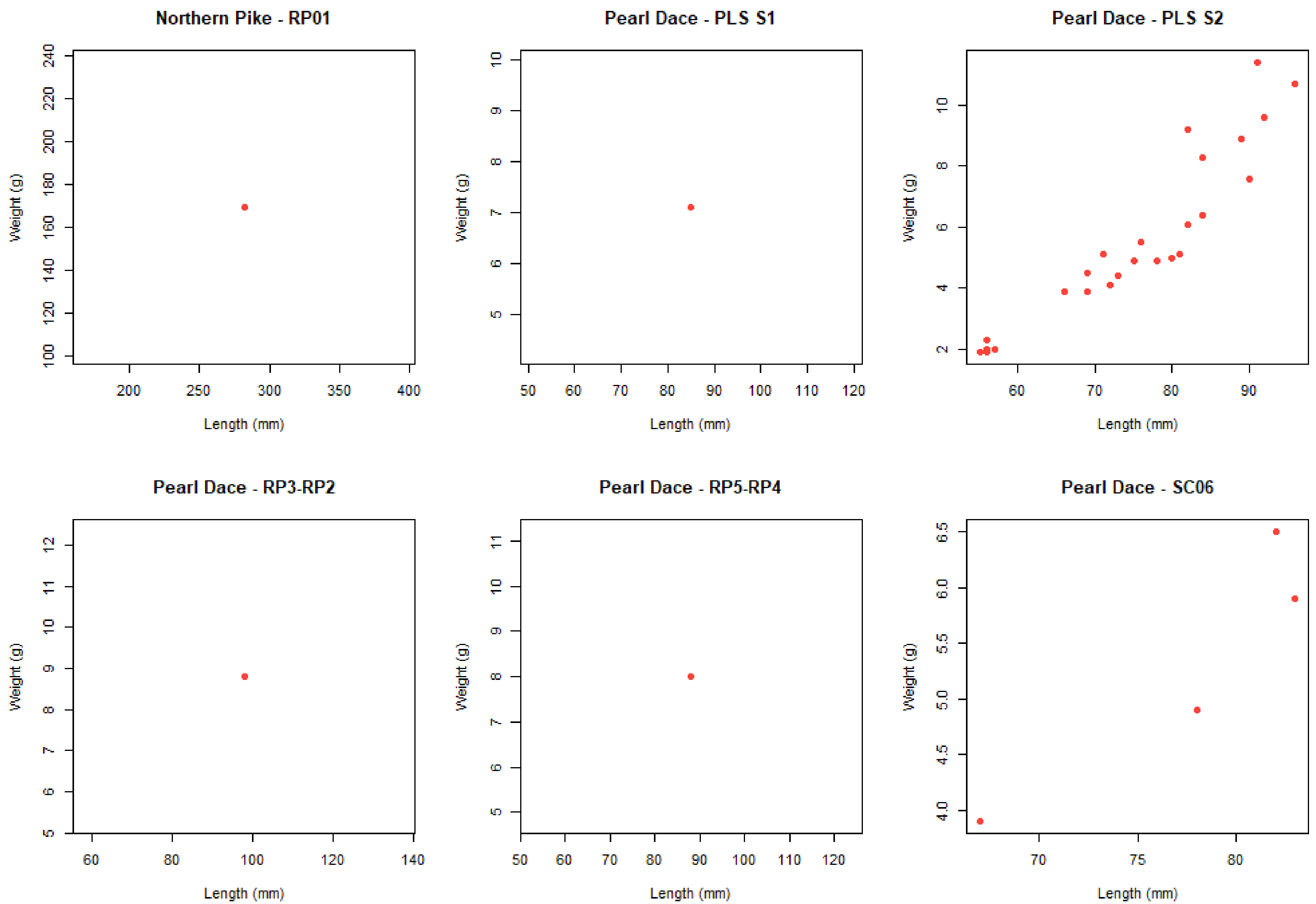


Longnose Sucker - SC09



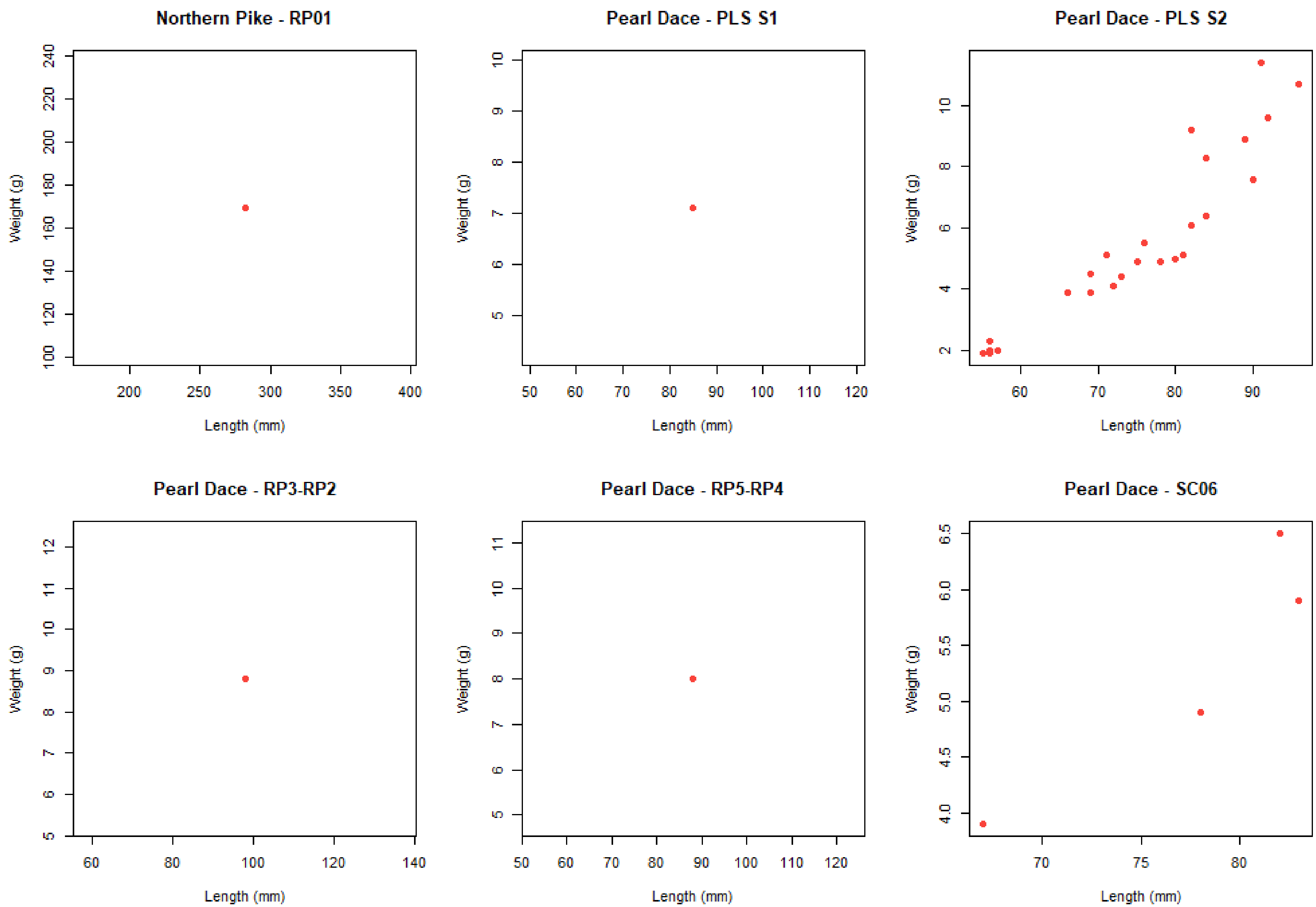
Appendix D

Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

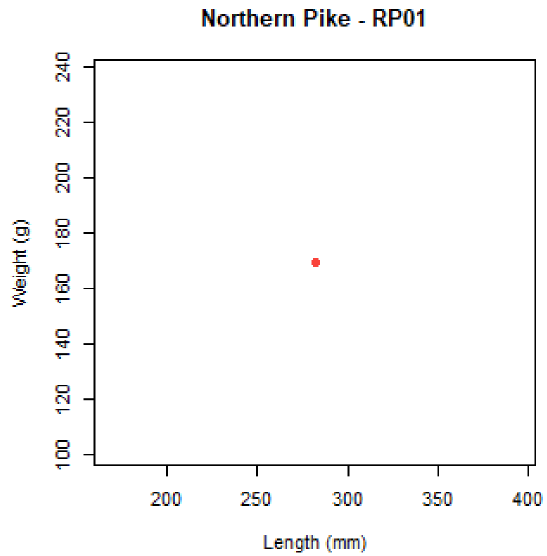


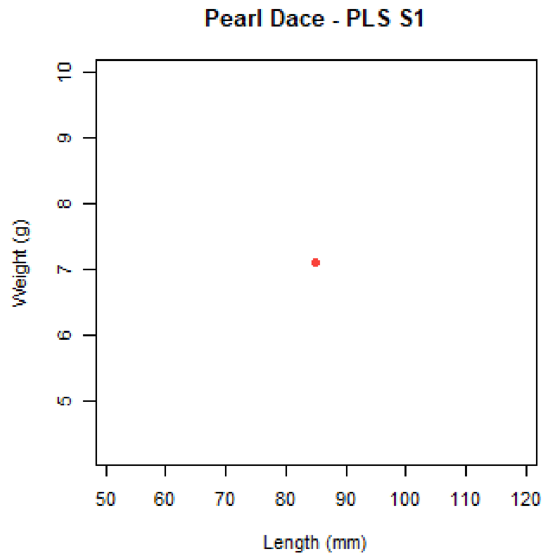
Appendix D

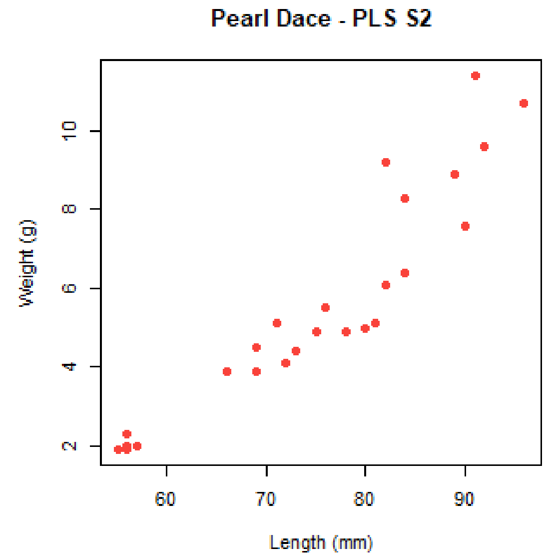
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

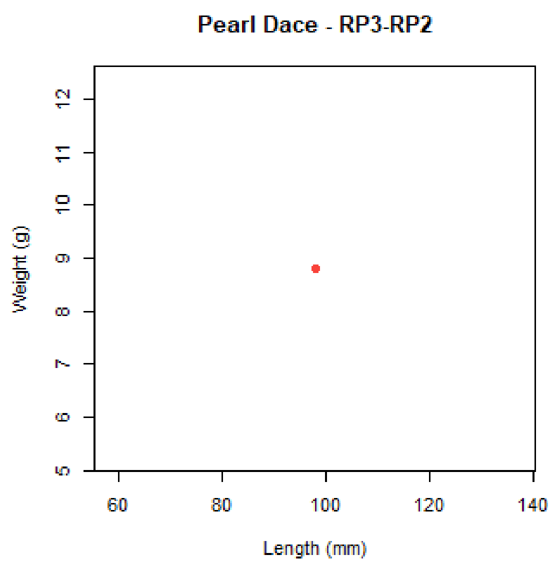


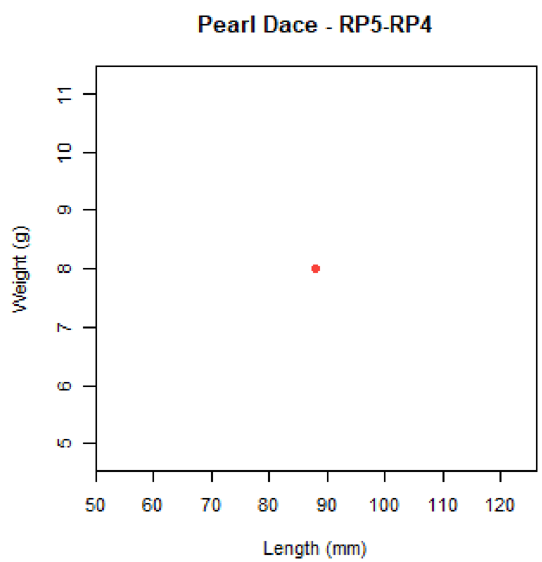
Appendix D
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

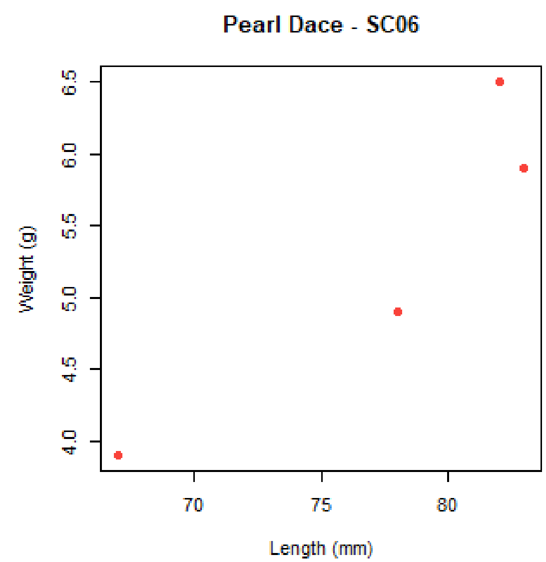




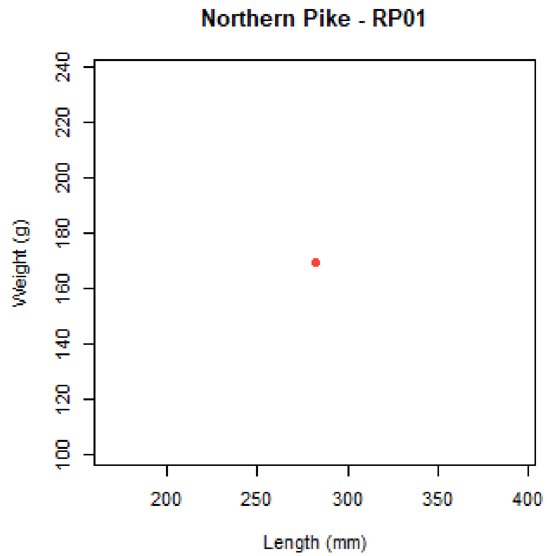


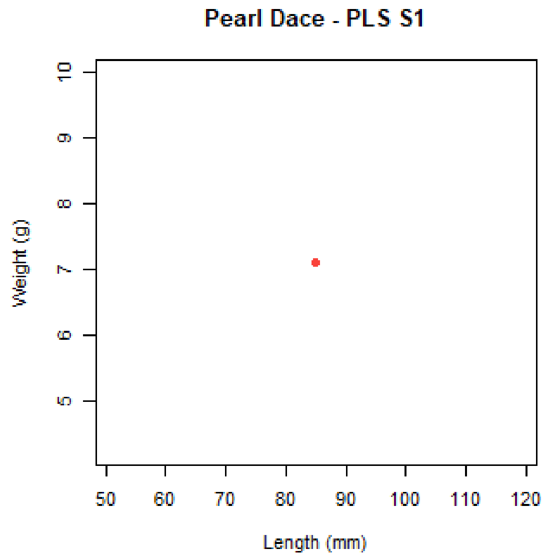


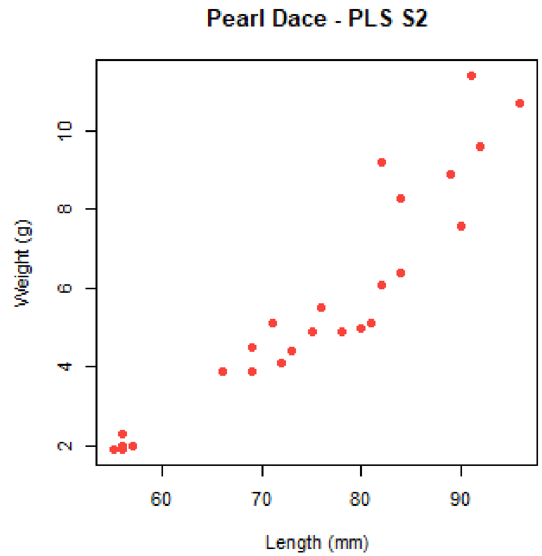


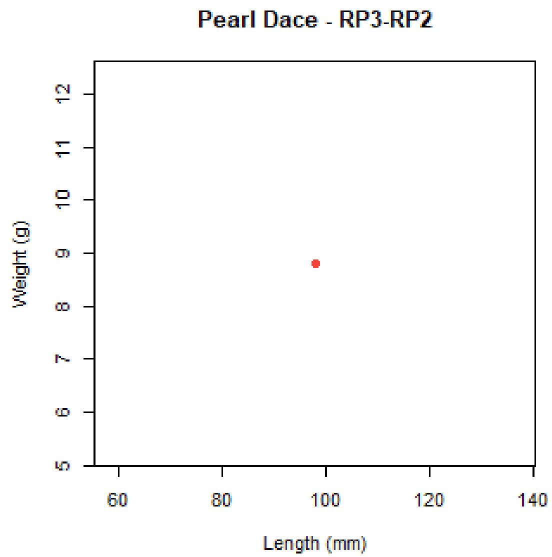


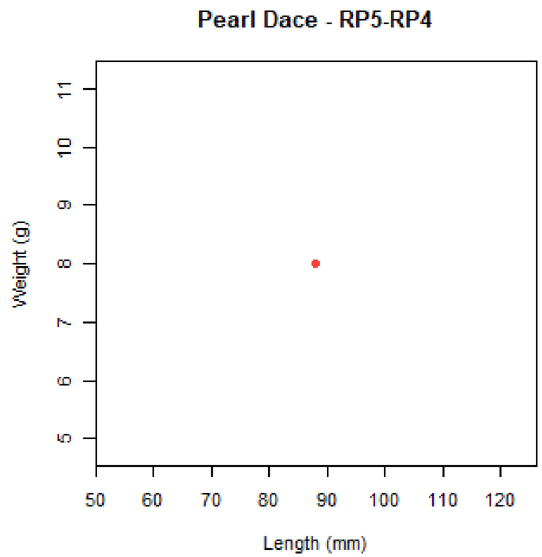
Appendix D
Fish Biometric Summaries – Riverine Fish Length -Weight Relationships

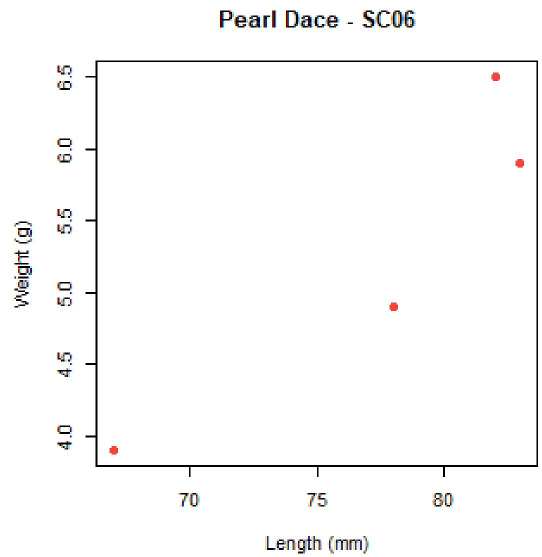






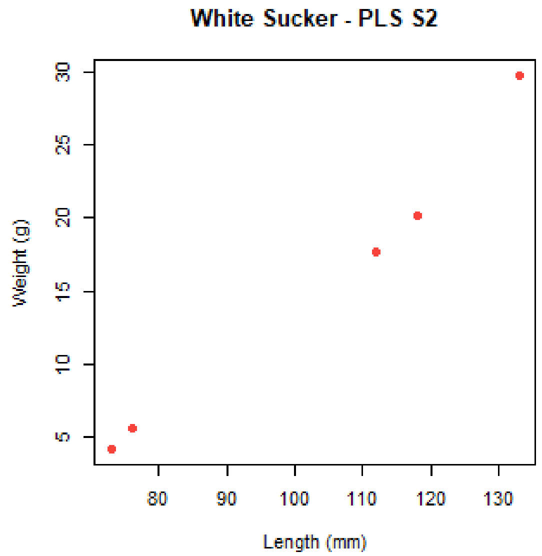


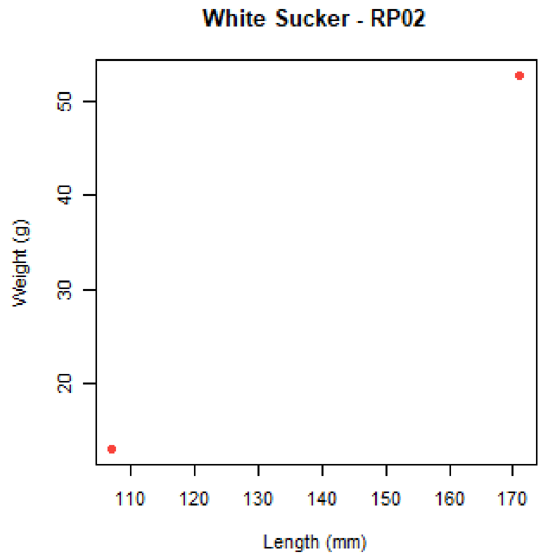


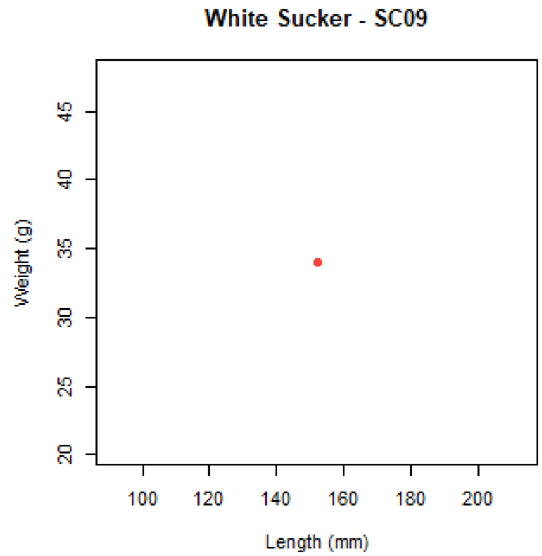


Appendix D

Fish Biometric Summaries – Riverine Fish Length -Weight Relationships







Appendix D
Fish Biometric Summaries - Lacustrine Summary Statistics

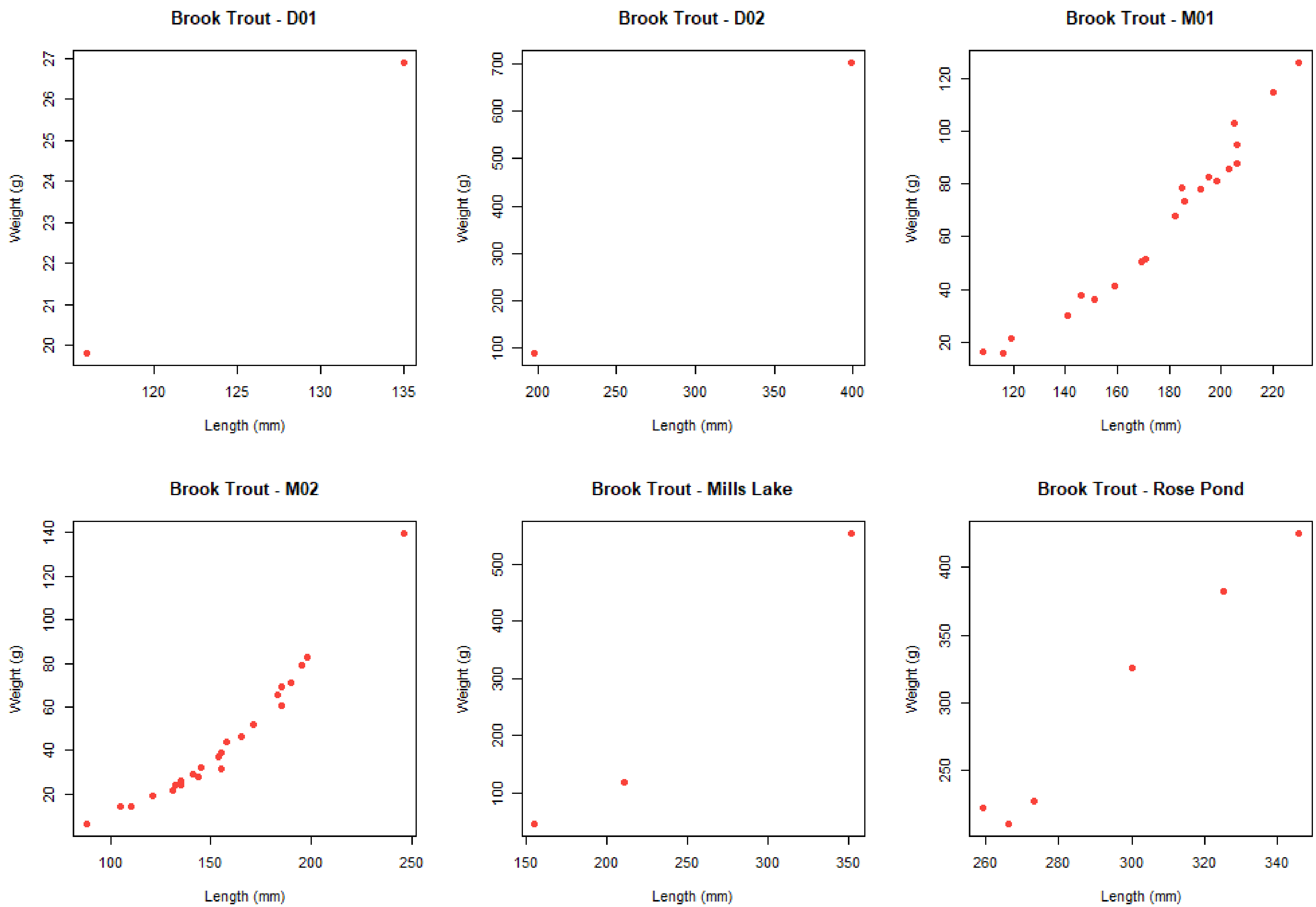
Species	Location	Sample Size	Length (mm)			Weight (g)		
			Minimum Measured	Mean Measured	Maximum Measured	Minimum Measured	Mean Measured	Maximum Measured
Brook Trout	D01	2	116	125.5	135	19.8	23.4	26.9
	D02	2	198	298.5	399	88.1	395.6	703.1
	M01	21	108	175.6	230	15.6	65.5	126.2
	M02	25	88	155.2	246	6.2	44.1	139.5
	Mills Lake	3	155	239.3	352	45.1	238.6	553.2
	Riorden Lake	1	241	241.0	241			
	Rose Pond (2012)	6	259	294.8	346	210.5	299.1	425.2
	RP04	2	182	201.0	220	64.0	99.4	134.7
	RP05	7	119	255.4	401	20.5	278.4	648.5
	Tailings Pond	7	105	147.0	223	10.3	36.2	116.2
Burbot	D01	13	28	98.7	250	0.2	15.2	92.4
	D02	2	172	199.5	227	32.9	75.4	117.9
	Long Lake	4	52	103.8	142	1.2	11.5	21.8
	M02	10	127	169.1	205	9.6	25.7	39.8
	Mills Lake	12	52	181.0	437	0.9	91.3	657.9
	Pike Gully	2	57	103.5	150	1.6	8.3	14.9
	Pike Lake North	3	43	87.3	172	0.8	10.3	29.2
	Pike Lake South (2012)	32	40	62.8	78	0.6	1.9	3.4
	Pike Lake South (2011)	2	37	37.0	37	0.6	0.6	0.6
	Riorden Lake	11	116	196.8	293	10.5	58.6	159.5
	Rose Pond (2012)	3	92	123.3	162	6.0	11.0	19.5
	Rose Pond (2011)	1	188	188.0	188	38.0	38.0	38.0
	RP04	9	154	216.6	252	18.6	67.3	159.7
	RP05	2	156	160.5	165	24.2	25.2	26.1
Lake Chub	D01	12	37	55.6	96	0.3	2.3	8.6
	D02	2	62	79.0	96	2.0	5.5	9.0
	Long Lake	36	36	82.5	120	1.6	8.4	16.0
	M02	83	41	75.9	126	0.7	5.2	18.5
	Mills Lake	35	31	71.1	98	0.3	4.4	9.7
	Pike Lake North	1	91	91.0	91	8.3	8.3	8.3
	Pike Lake South (2012)	1	86	86.0	86	4.6	4.6	4.6
	Pike Lake South (2011)	7	60	66.6	73	2.1	2.7	3.7
	Riorden Lake	36	56	83.3	109	1.2	8.6	55.7
	Rose Pond (2012)	2	82	85.0	88	5.3	5.6	5.9
	Rose Pond (2011)	50	57	66.7	88	1.2	3.1	8.5
	RP02	6	63	71.3	90			
	RP04	40	35	93.2	120	0.5	8.5	14.5
	RP05	95	44	93.4	132	1.0	9.0	22.7
	Tailings Pond	49	43	76.7	117	0.9	9.3	14.9
Lake Trout	D01	2	420	427.5	435	640.2	731.9	823.6
	M02	1	660	660.0	660			
Lake Whitefish	Pike Lake North	7	302	325.7	354	337.2	415.0	556.6
Longnose Dace	D02	1	36	36.0	36	0.6	0.6	0.6
	Mills Lake	3	47	62.3	83	1.6	3.8	7.0
	Riorden Lake	6	50	68.3	84	1.4	5.8	12.3
Longnose Sucker	D01	10	129	156.9	214	25.3	50.4	120.3
	D02	12	74	152.9	195	4.8	51.9	92.2
	Long Lake	112	38	65.4	433	0.5	5.6	42.4
	Mills Lake	81	32	101.8	260	0.3	23.8	202.3
	Riorden Lake	2	217	219.5	222	136.3	142.8	149.2
	Pike Gully	3	89	192.0	287	4.2	67.3	136.6

Appendix D

Fish Biometric Summaries - Lacustrine Summary Statistics

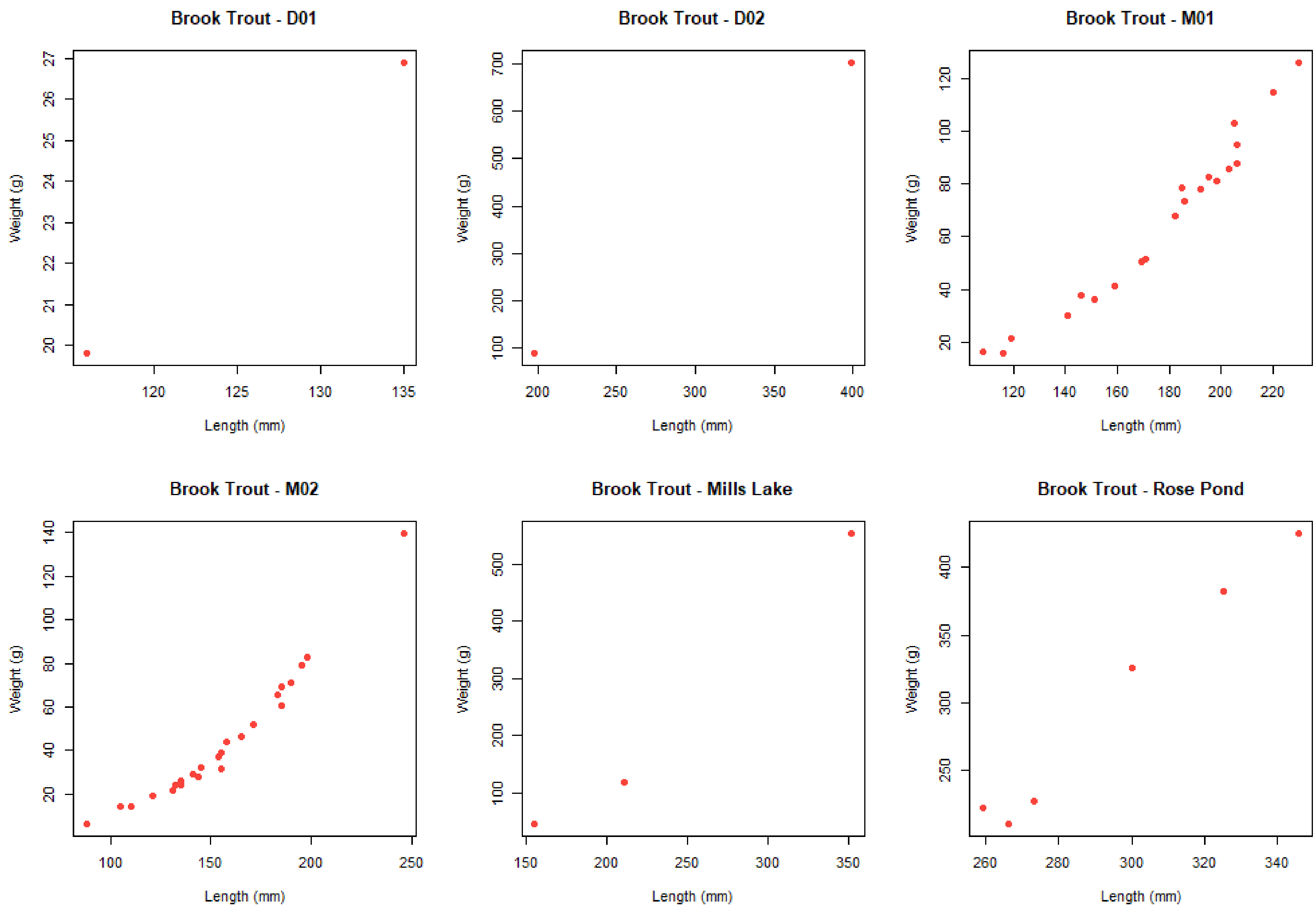
Species	Location	Sample Size	Length (mm)			Weight (g)		
			Minimum Measured	Mean Measured	Maximum Measured	Minimum Measured	Mean Measured	Maximum Measured
Northern Pike	Pike Lake North	11	78	94.1	115	3.2	6.2	11.3
	Pike Lake South (2012)	14	94	257.4	590	5.6	703.8	2400.0
	Pike Lake South (2011)	4	46	381.8	730	0.6	1.6	2.6
	Rose Pond (2012)	42	184	290.5	328	45.1	182.8	305.3
	Rose Pond (2011)	1	248	248.0	248	126.5	126.5	126.5
	RP02	3	181	425.3	561			
	RP03	4	430	562.5	640			
Pearl Dace	D01	2	42	52.0	62	1.1	2.4	3.6
	D02	9	42	48.8	66	0.6	1.2	3.1
	M02	77	28	74.1	113	0.2	3.4	8.1
	RP04	28	45	79.3	120	1.8	11.2	17.8
	RP05	33	45	76.5	125	0.9	5.1	17.8
Round Whitefish	D01	7	112	247.0	332	12.2	188.3	343.2
	Long Lake	1	66	66.0	66			
	Mills Lake	2	330	352.5	375			
Sculpin	D01	3	34	40.7	48	0.4	0.7	0.9
	D02	1	138	138.0	138	30.0	30.0	30.0
	Long Lake	9	42	51.7	62	1.1	1.5	2.1
	Mills Lake	30	38	54.9	90	0.9	2.3	7.8
	Pike Lake North	8	45	47.4	50	1.1	1.4	1.6
	Pike Lake South (2012)	3	54	65.7	75	3.3	5.3	7.3
	Pike Lake South (2011)	10	43	50.8	59	0.6	1.2	2.3
	Riorden Lake	1	71	71.0	71	4.4	4.4	4.4
	Rose Pond (2012)	3	27	58.0	75	3.3	3.3	3.3
	RP02	13	46	52.6	58			
	RP04	1	36	36.0	36	0.5	0.5	0.5
	RP05	1	61	61.0	61	1.5	1.5	1.5
White Sucker	D01	2	127	137.0	147	22.6	29.1	35.6
	Long Lake	124	31	55.0	478	0.6	35.0	1402.6
	Pike Gully	63	152	247.6	405	39.8	214.8	1000.0
	Pike Lake North	35	57	266.2	454	2.3	362.7	1185.4
	PLS	1	117	117.0	117	17.6	17.6	17.6
	Riorden Lake	4	161	203.0	240	61.9	119.8	179.4
	Rose Pond (2012)	7	165	245.3	298	56.5	215.6	363.2
	Rose Pond (2011)	11	112	167.1	262	16.6	73.5	230.5
	RP04	44	44	139.1	425	0.8	51.8	680.2
	RP05	20	90	207.7	412	7.6	205.0	735.6

Appendix D
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

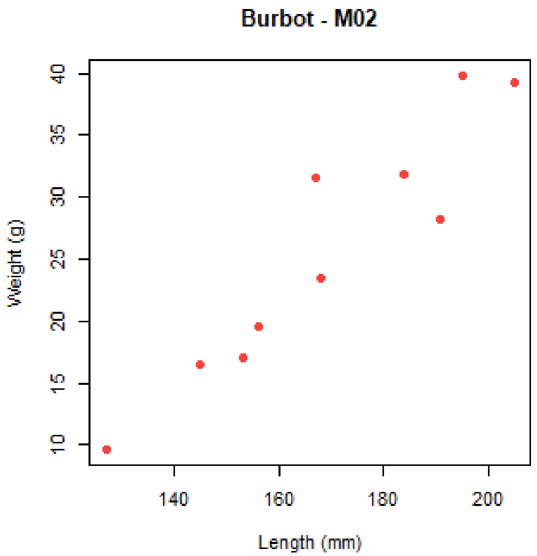


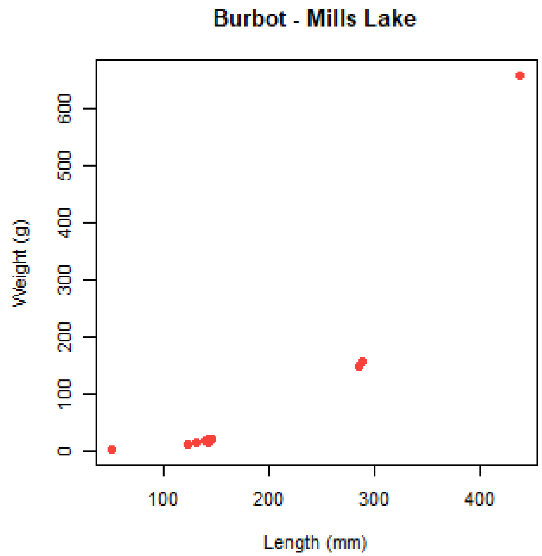
Appendix D

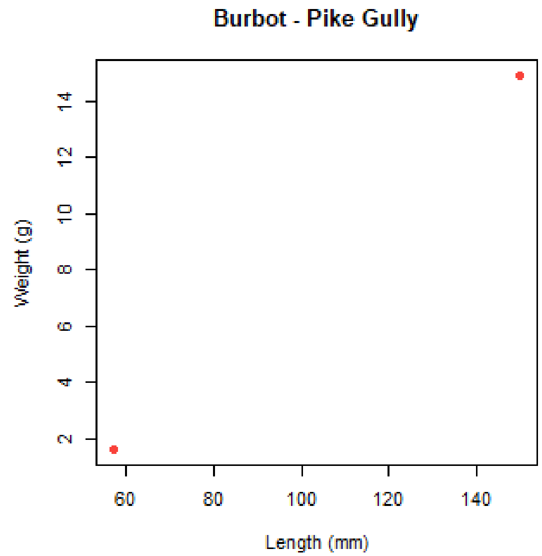
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

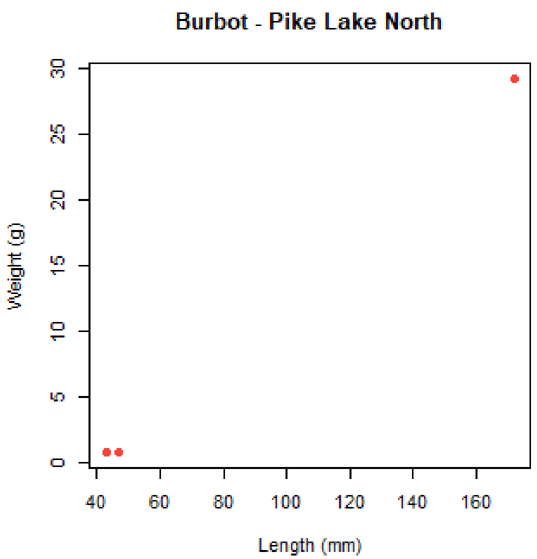


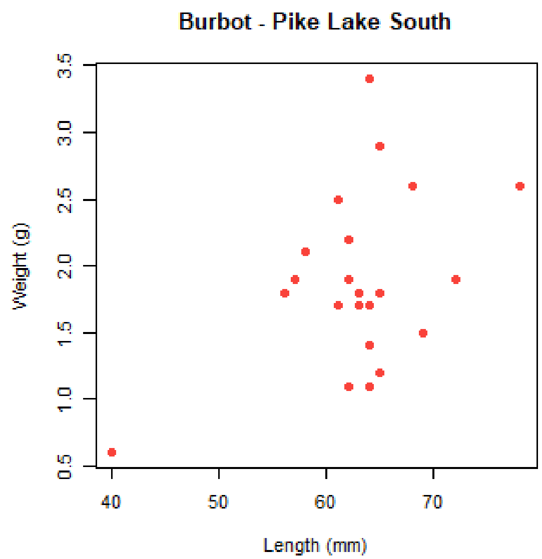
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

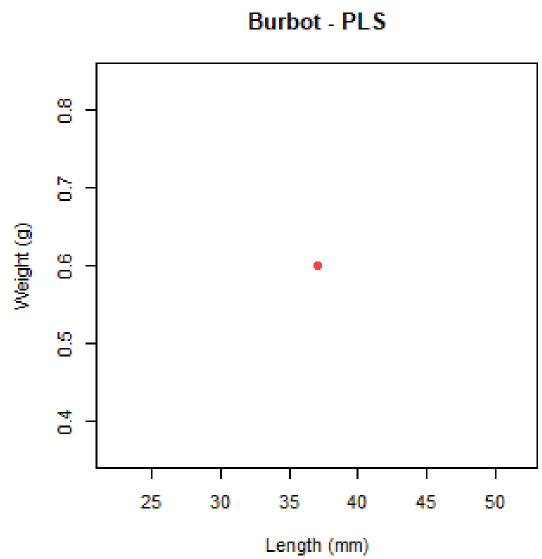






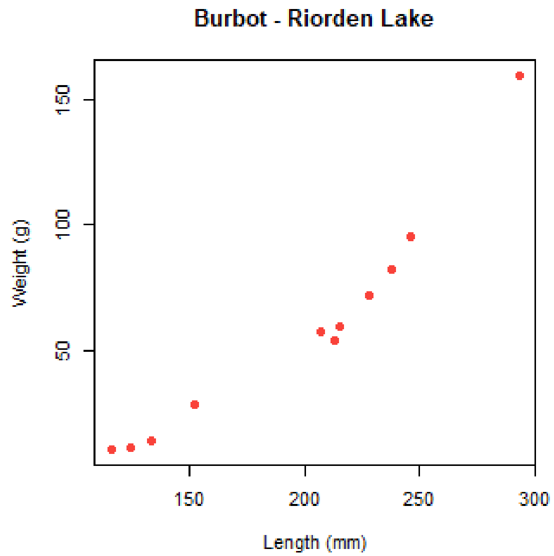


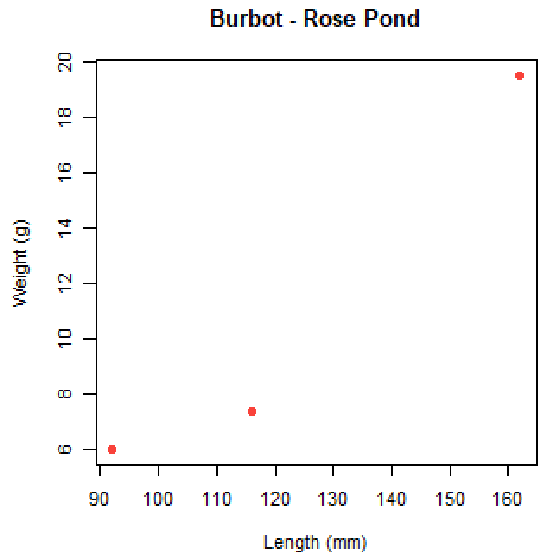


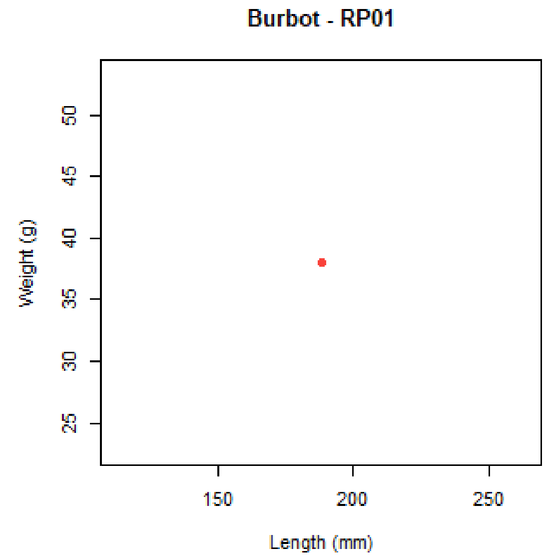


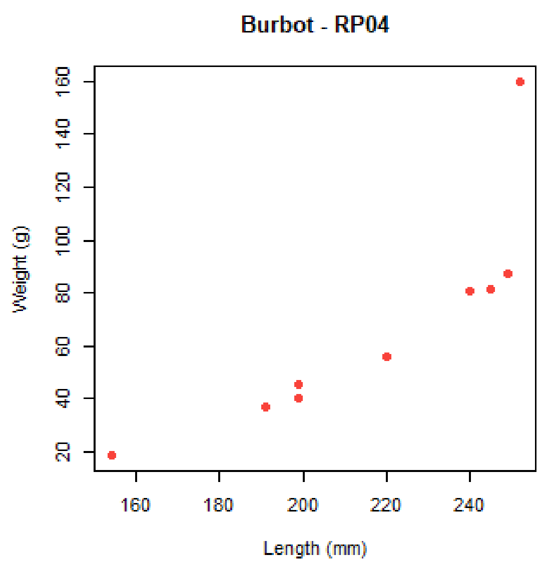
Appendix D

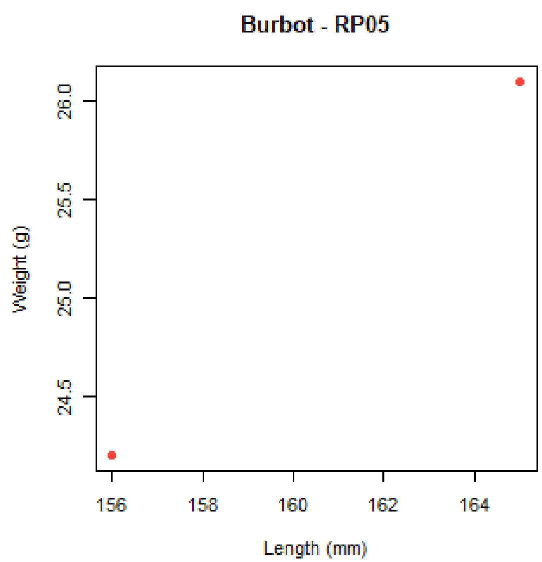
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

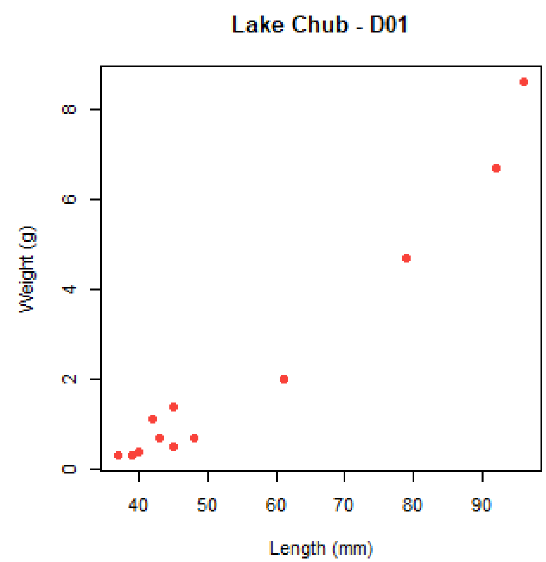






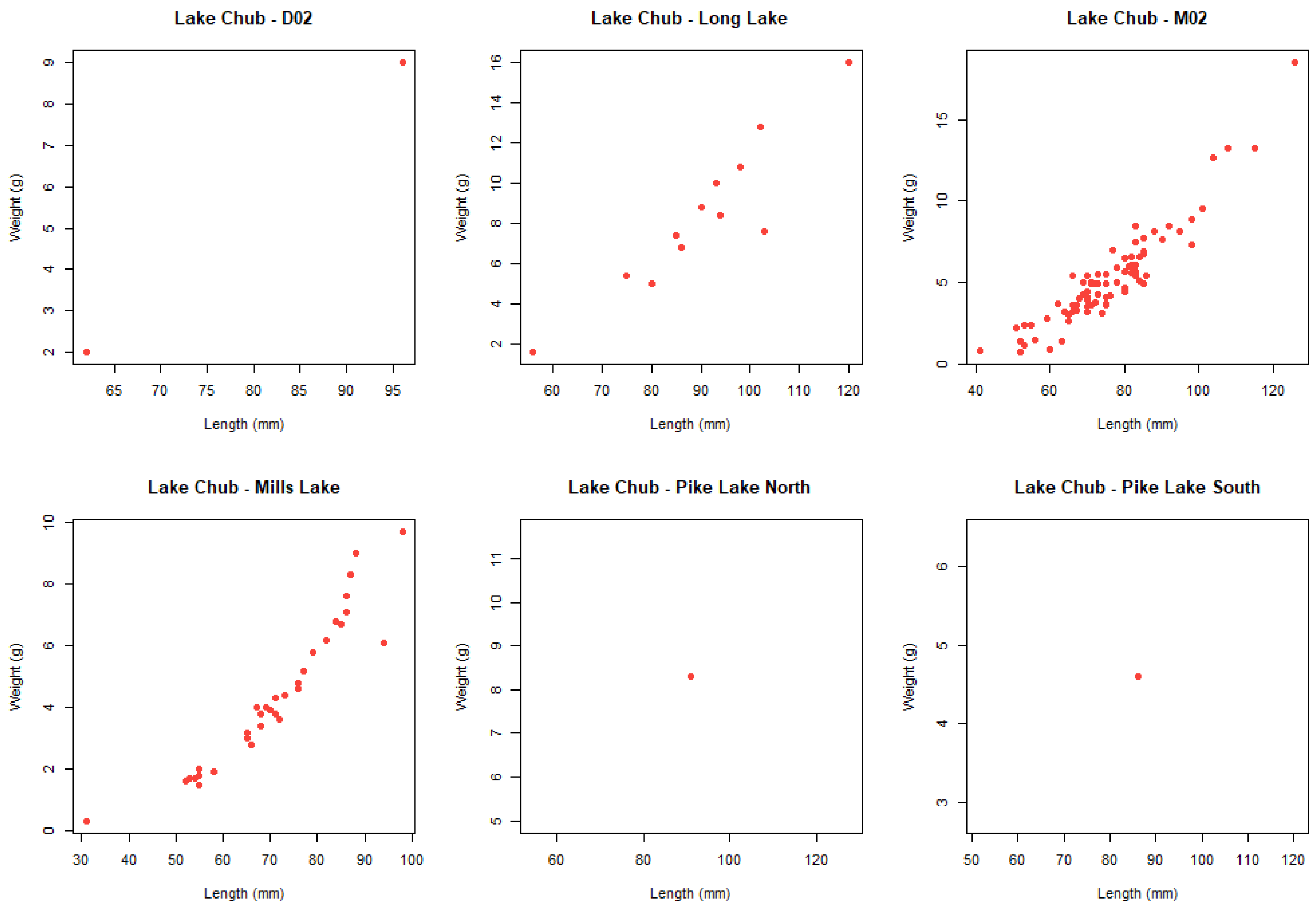






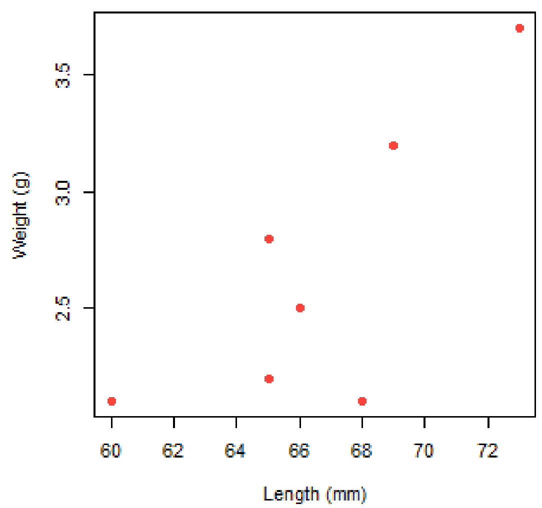
Appendix D

Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

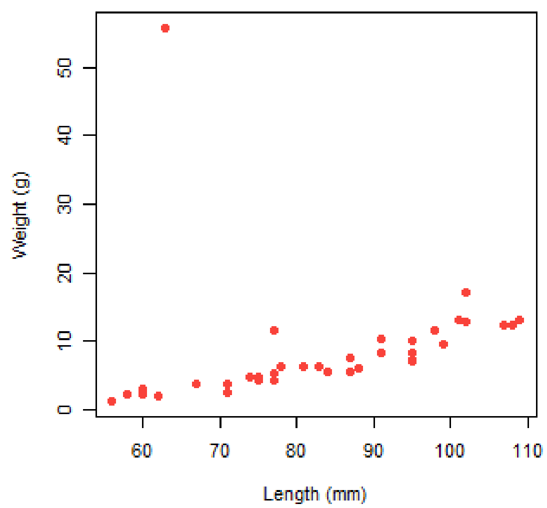


Appendix D
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

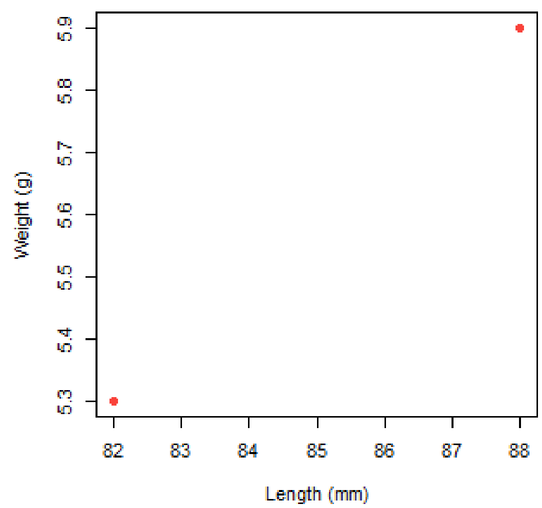
Lake Chub - PLS



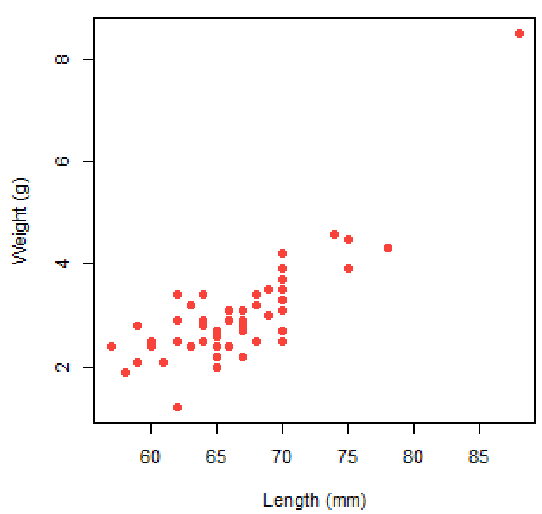
Lake Chub - Riorden Lake



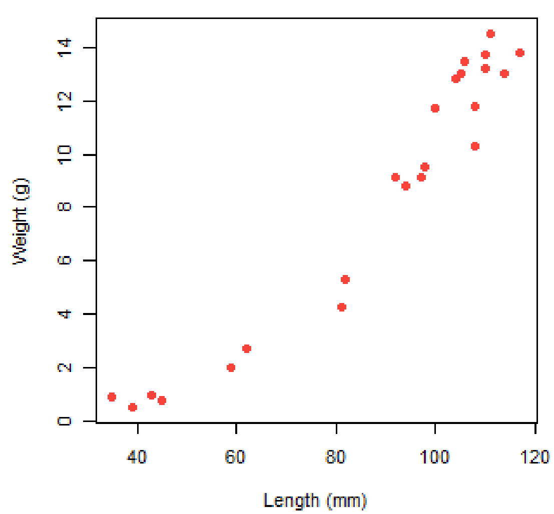
Lake Chub - Rose Pond



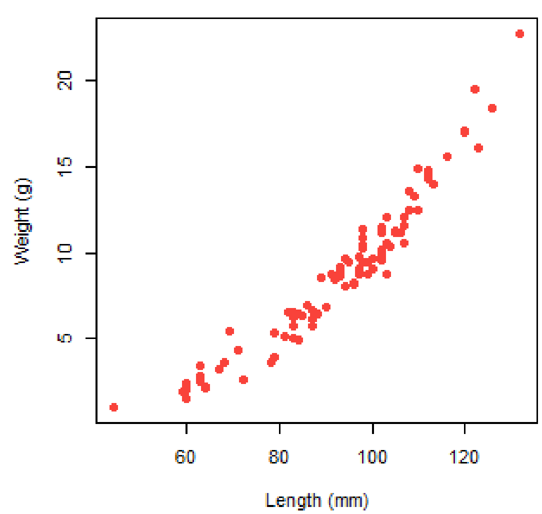
Lake Chub - RP01



Lake Chub - RP04

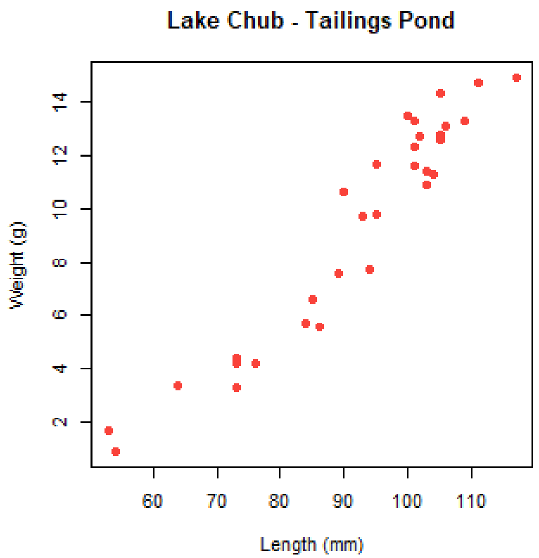


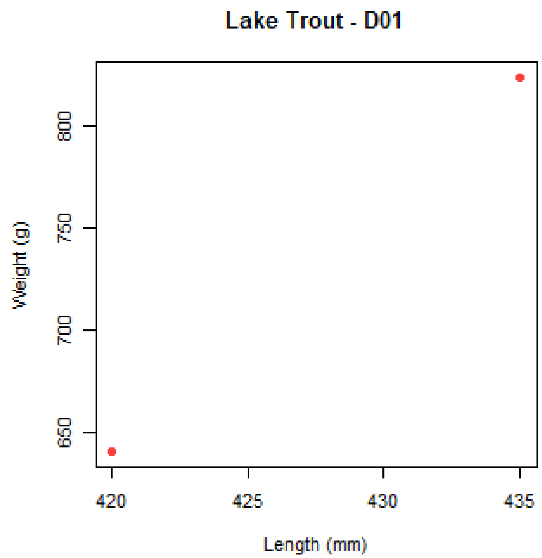
Lake Chub - RP05

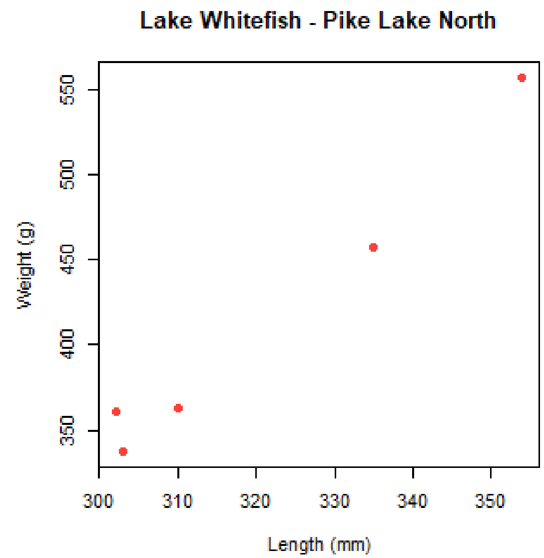


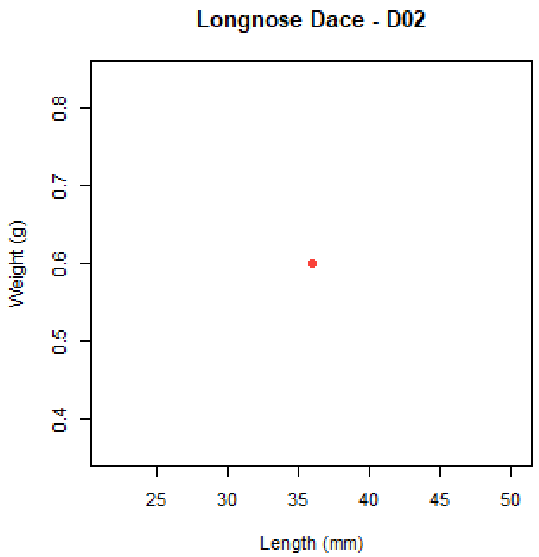
Appendix D

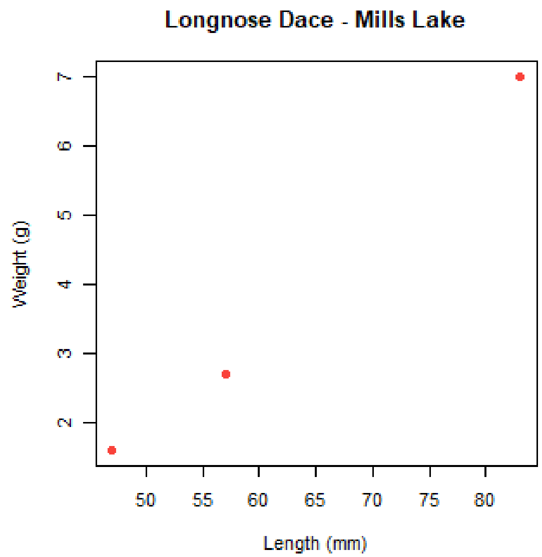
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

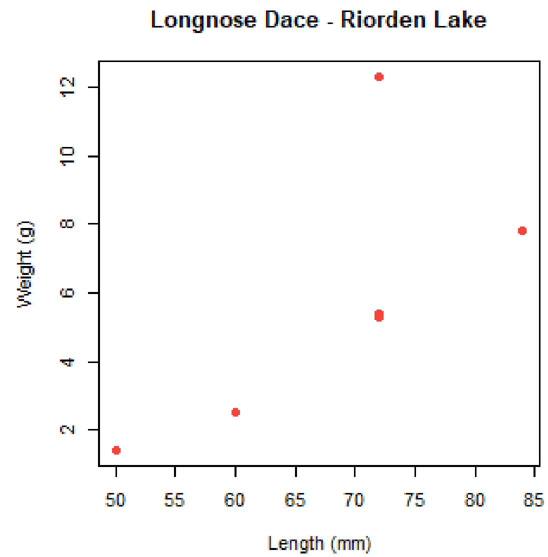






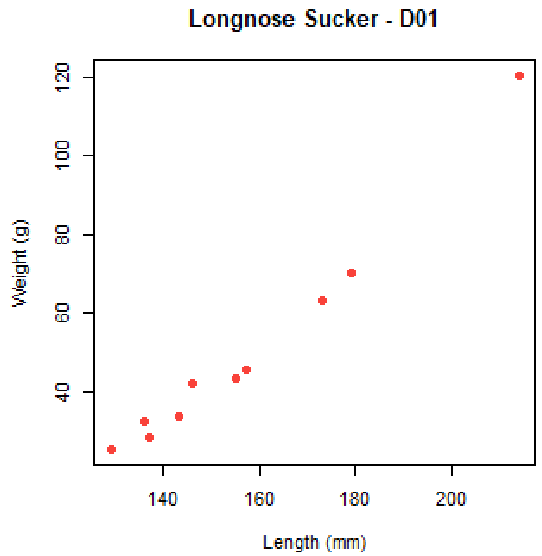


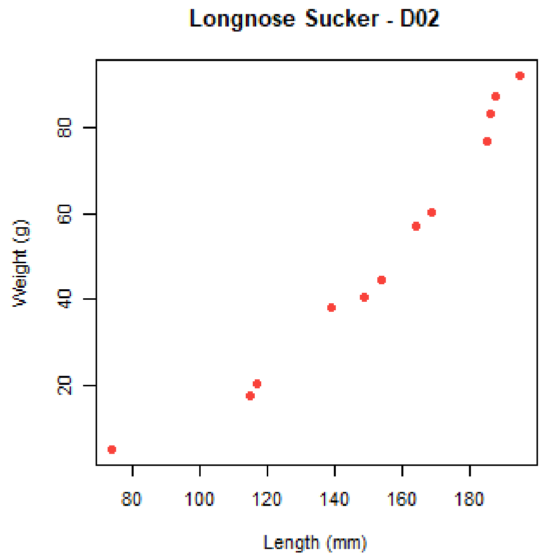


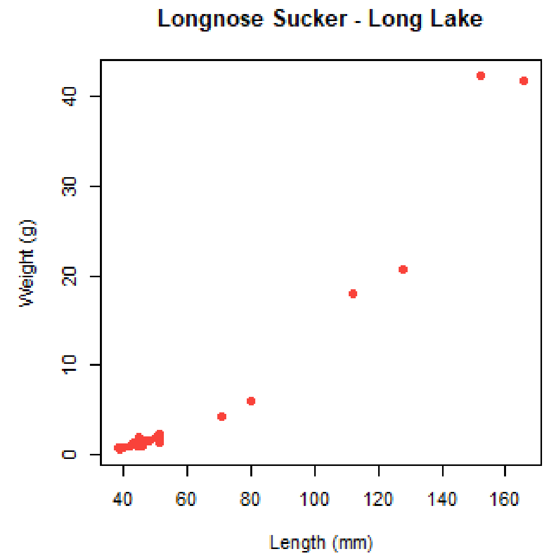


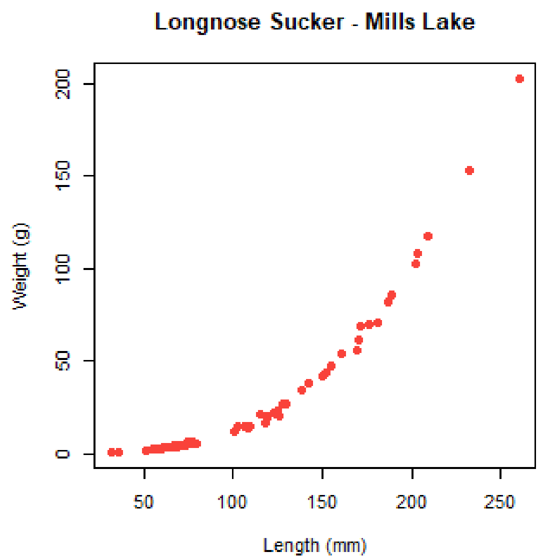
Appendix D

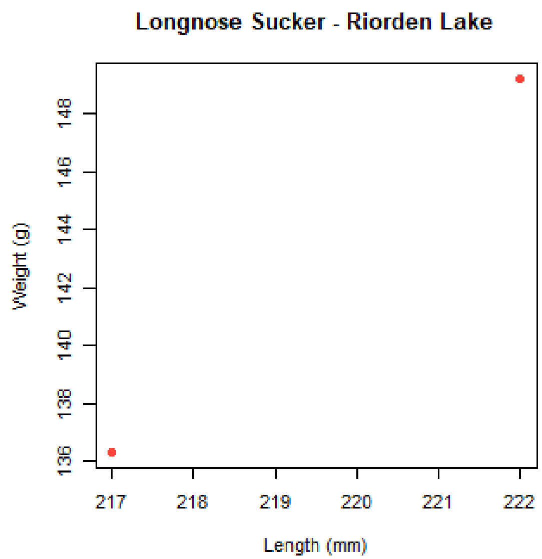
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

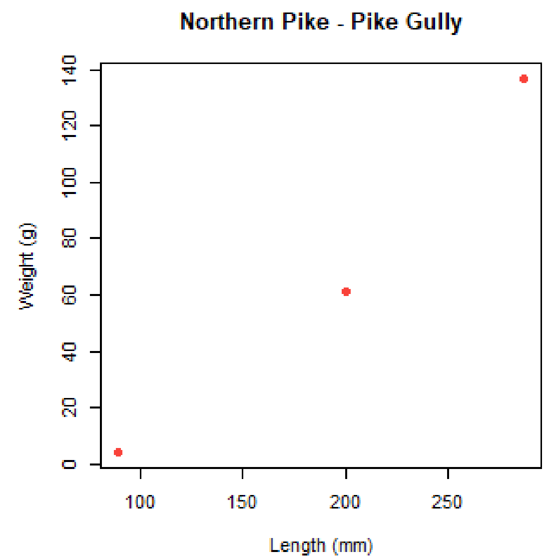






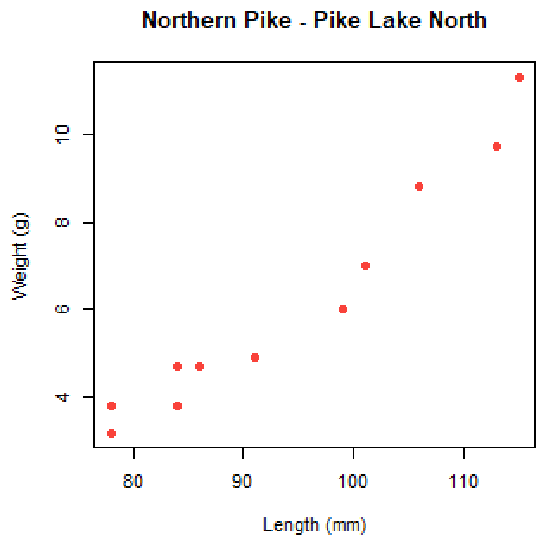


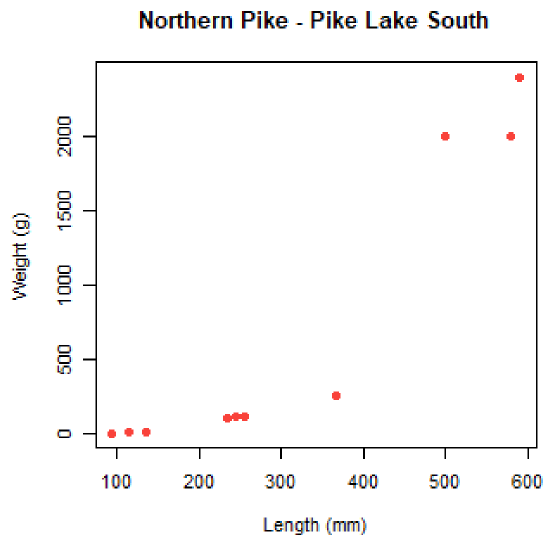


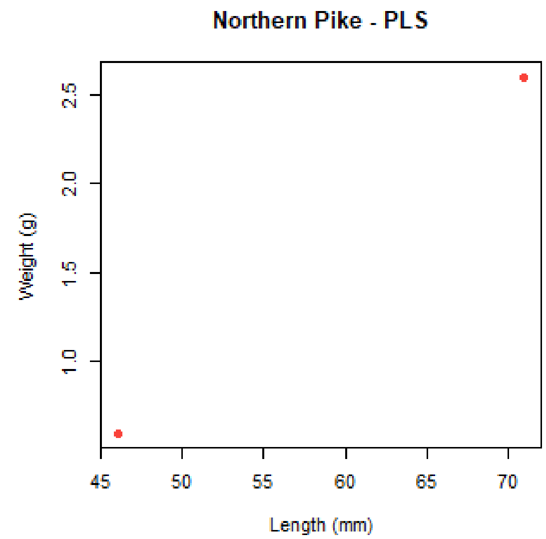


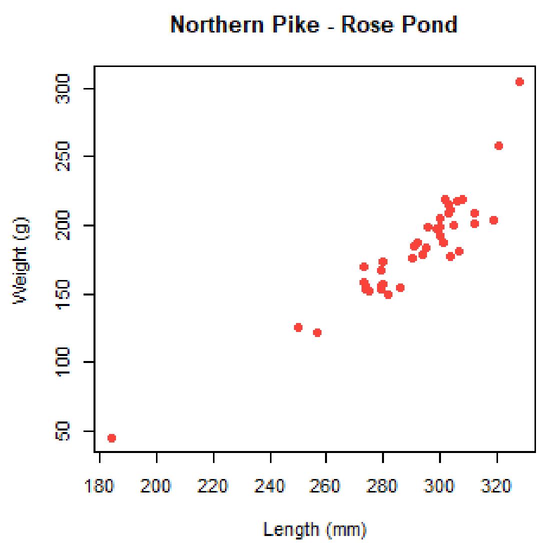
Appendix D

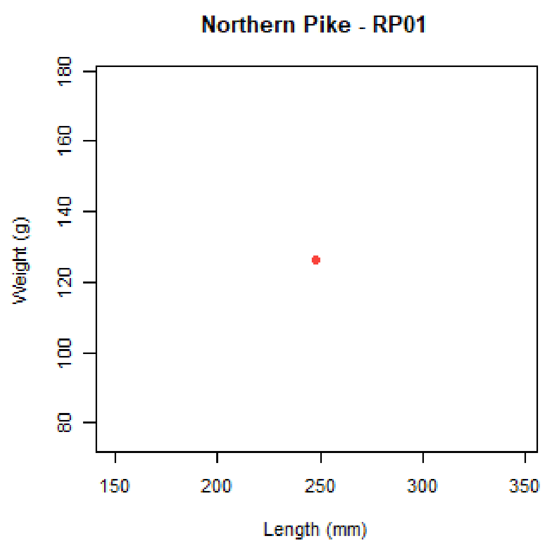
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

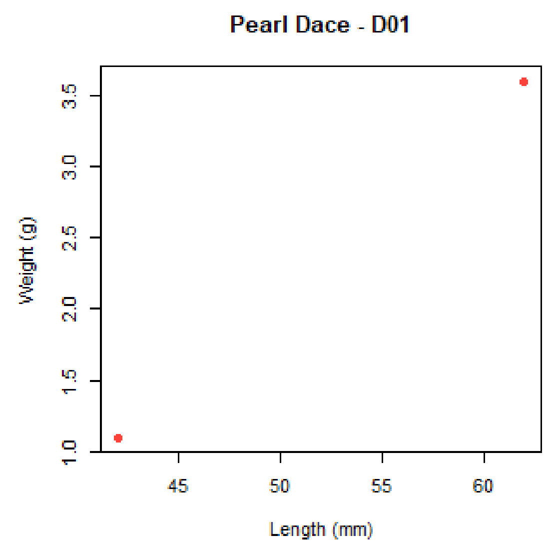






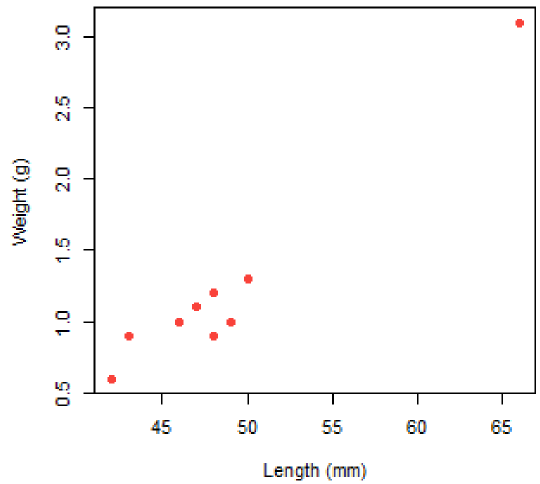




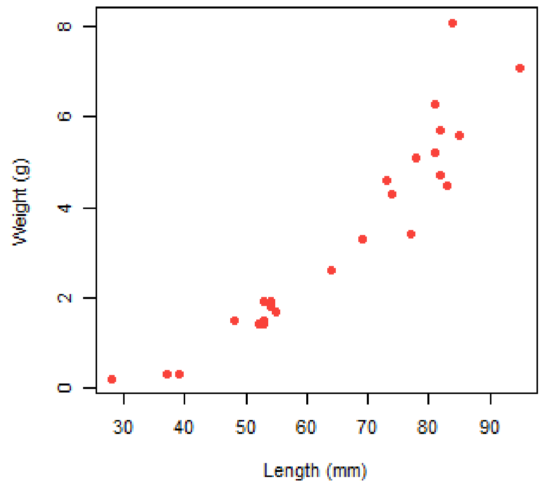


Appendix D
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

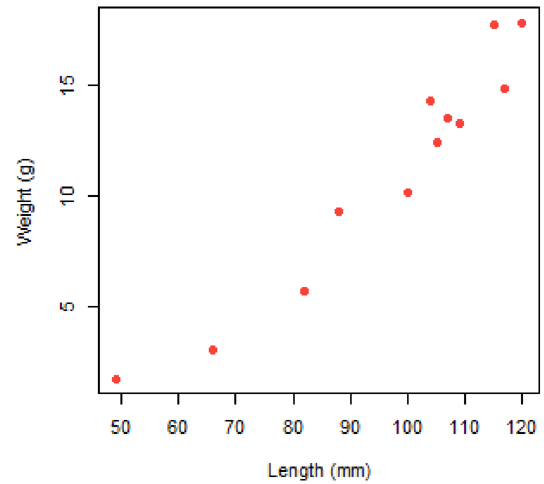
Pearl Dace - D02



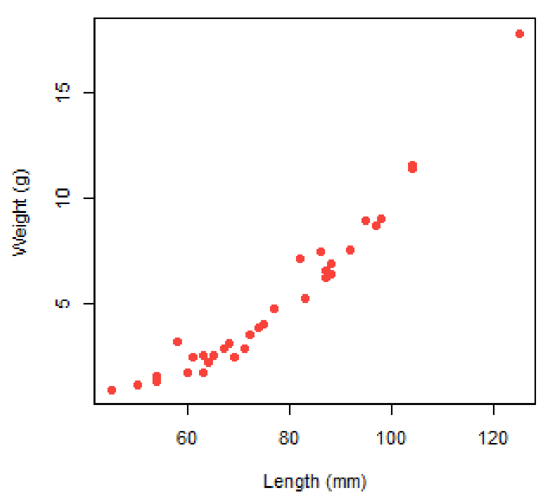
Pearl Dace - M02



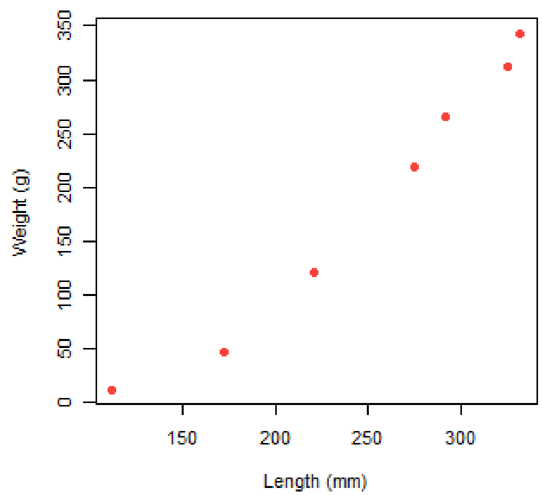
Pearl Dace - RP04



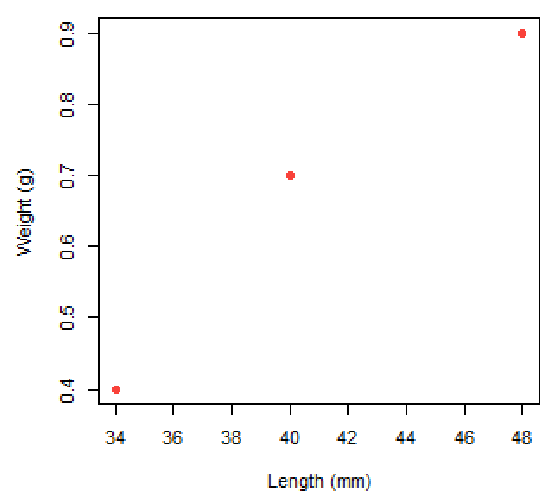
Pearl Dace - RP05



Round Whitefish - D01

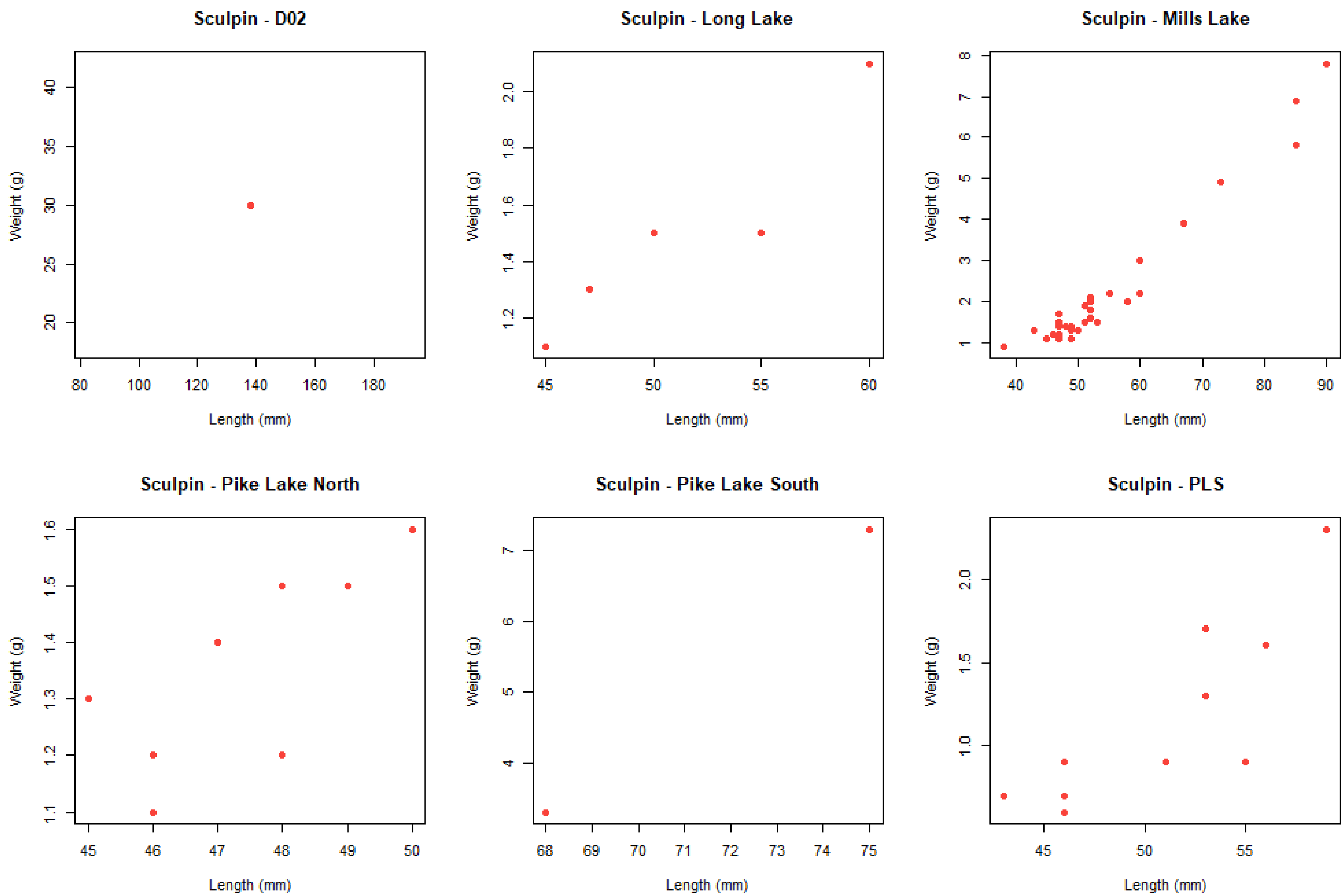


Sculpin - D01



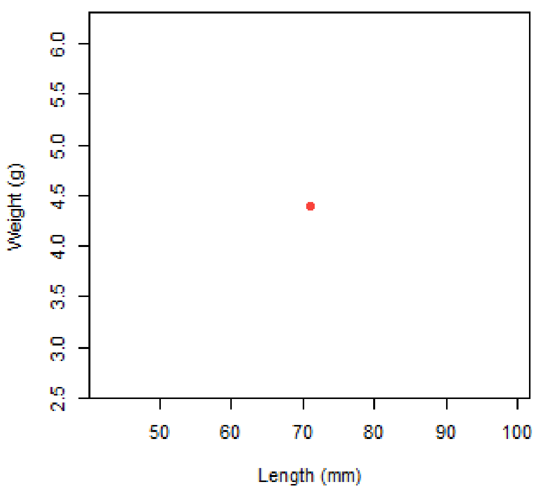
Appendix D

Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

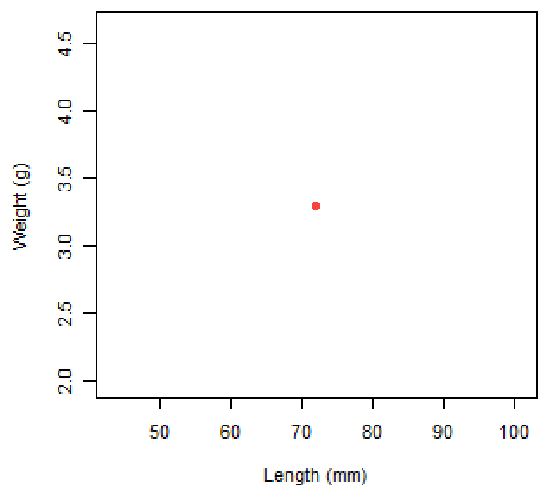


Appendix D
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

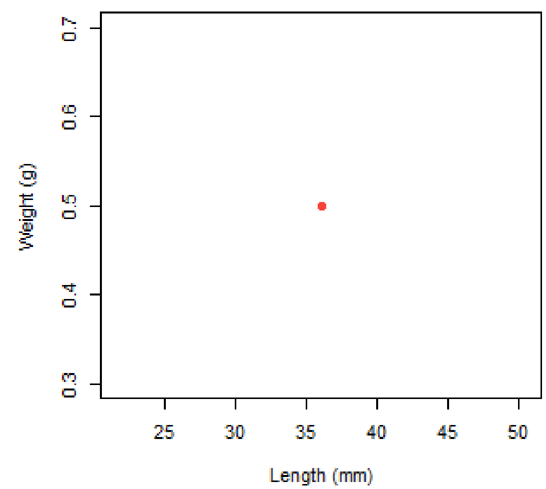
Sculpin - Riorden Lake



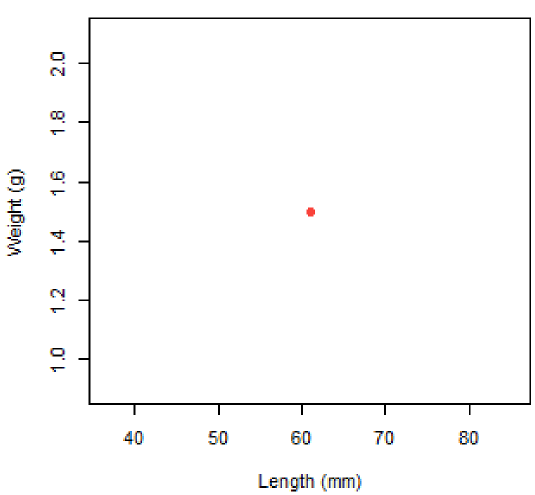
Sculpin - Rose Pond



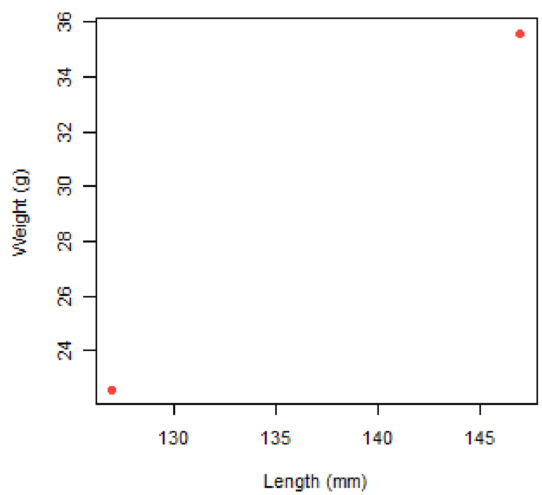
Sculpin - RP04



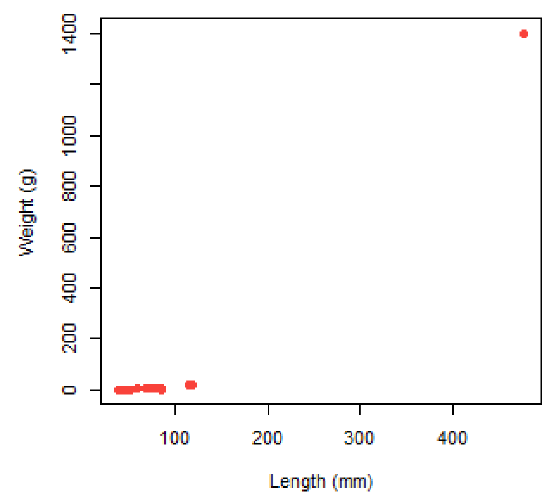
Sculpin - RP05



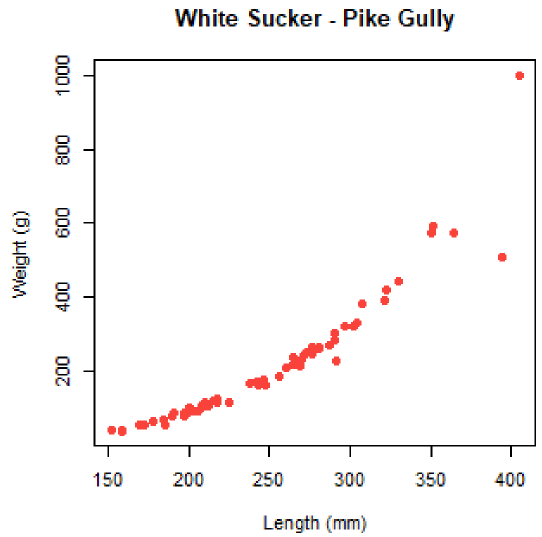
White Sucker - D01

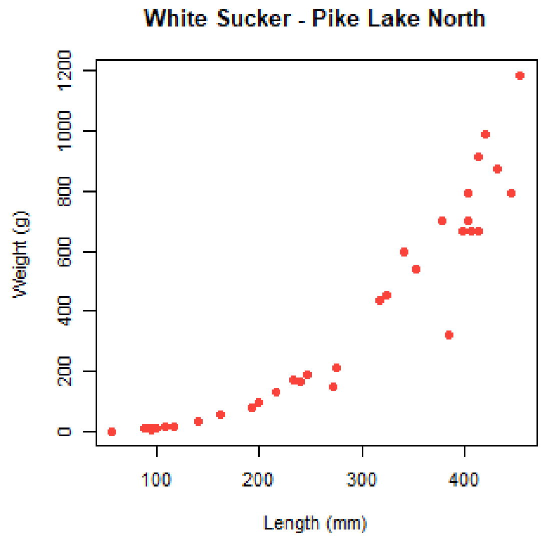


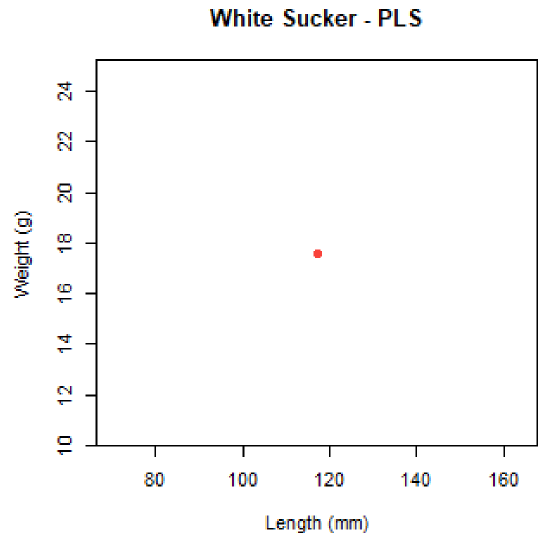
White Sucker - Long Lake

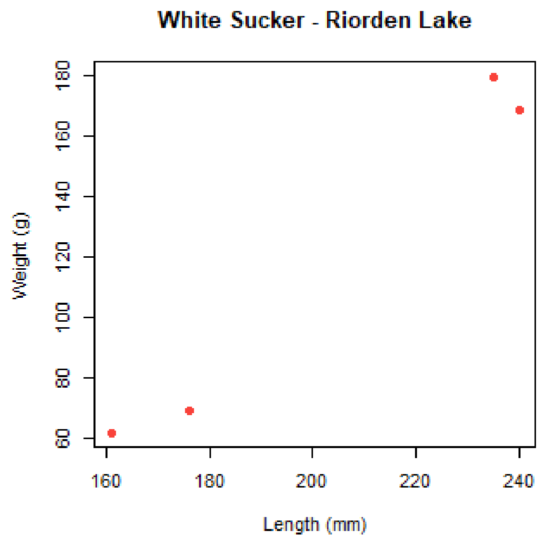


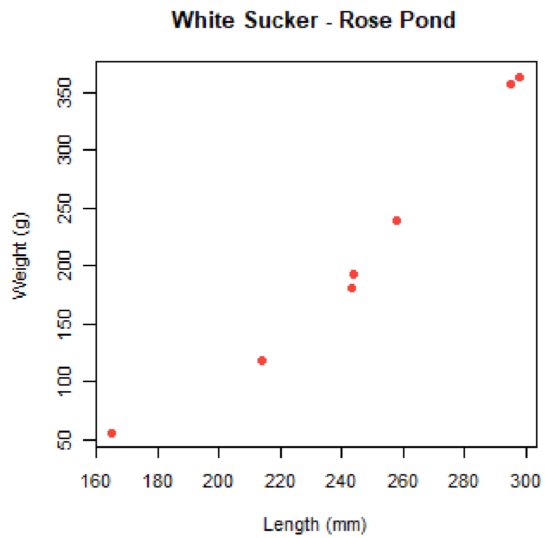
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

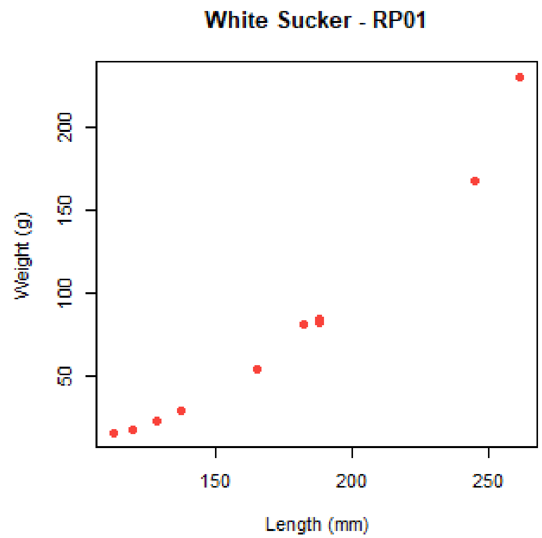




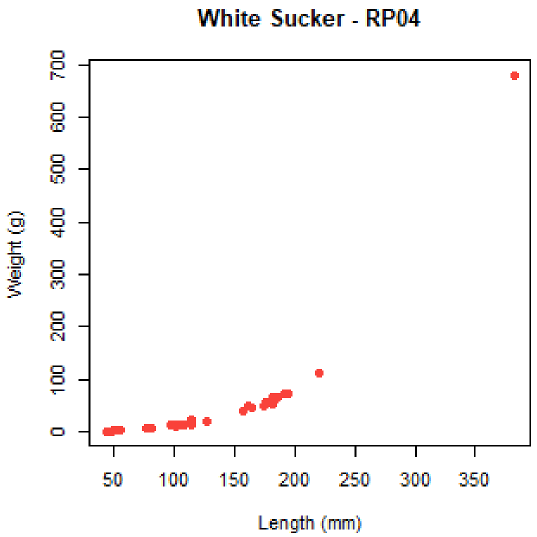


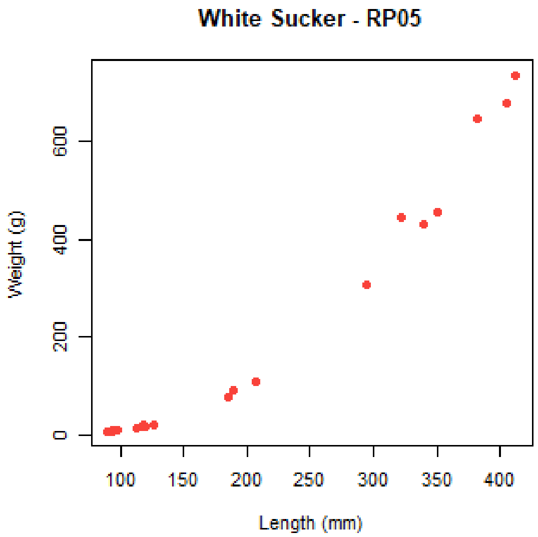






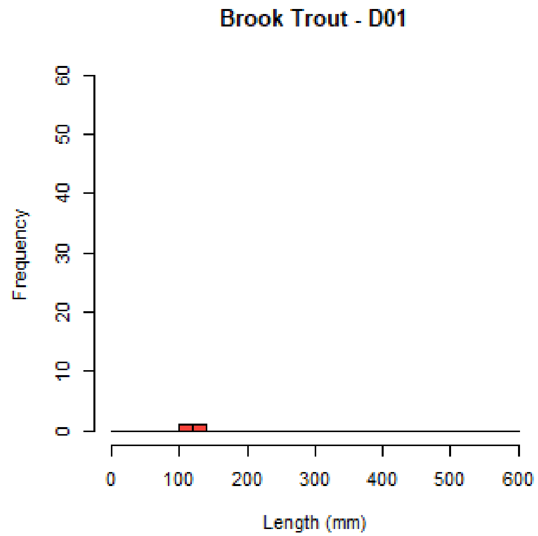
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length -Weight Relationships

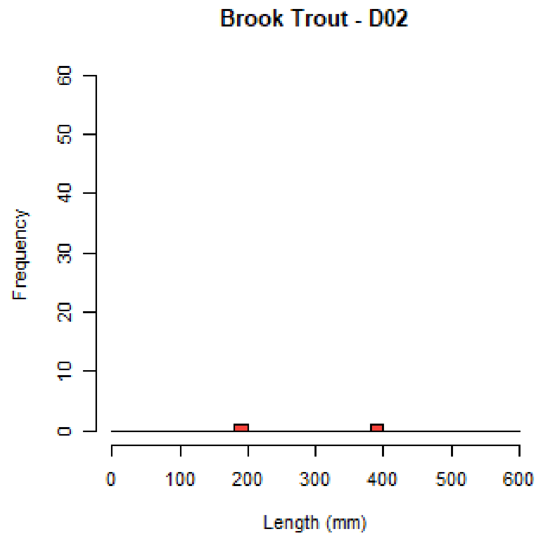


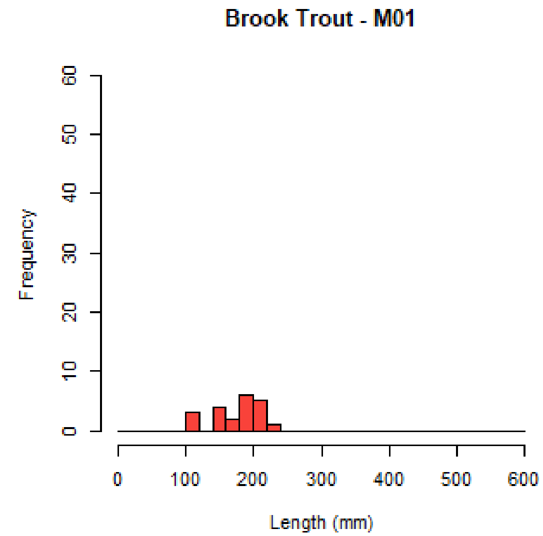


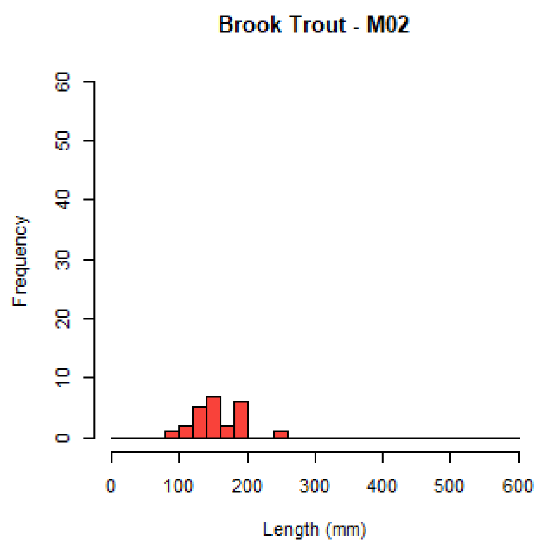
Appendix D

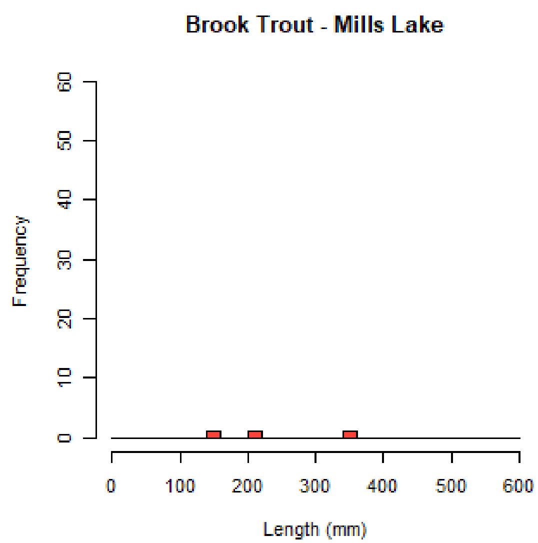
Fish Biometric Summaries – Lacustrine Fish Length Distributions

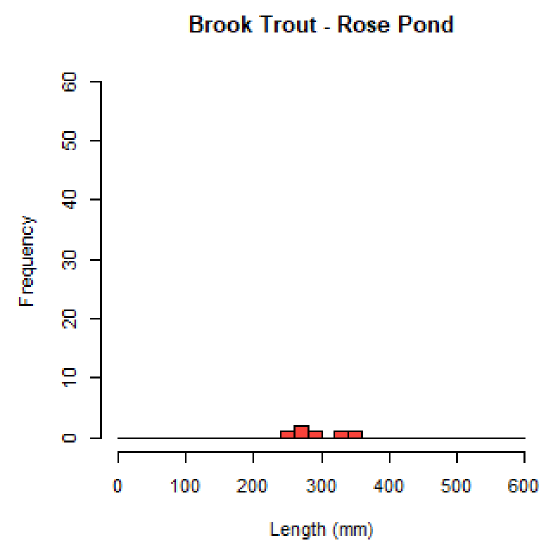






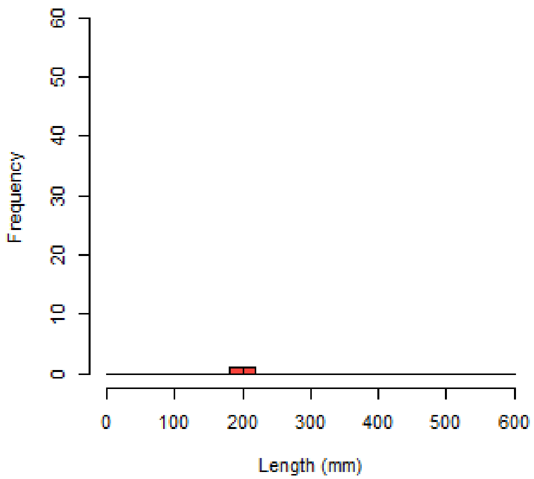




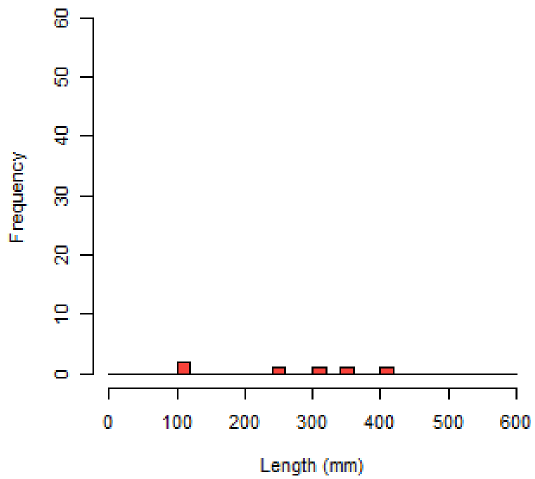


Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions

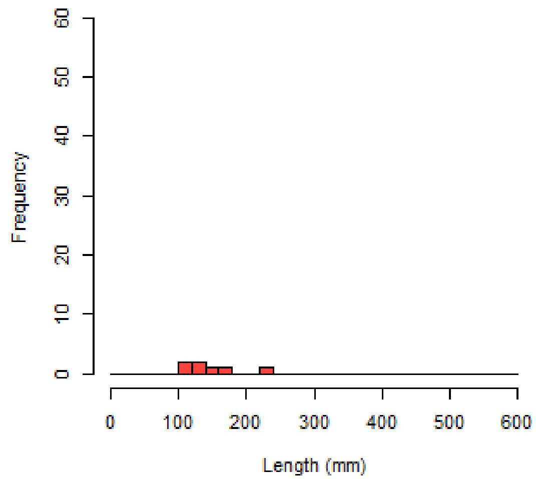
Brook Trout - RP04



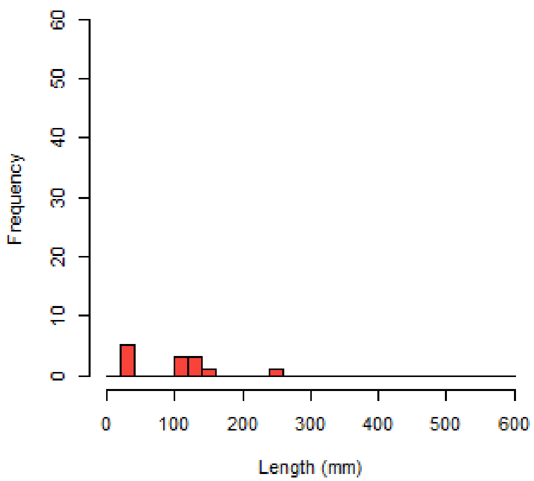
Brook Trout - RP05



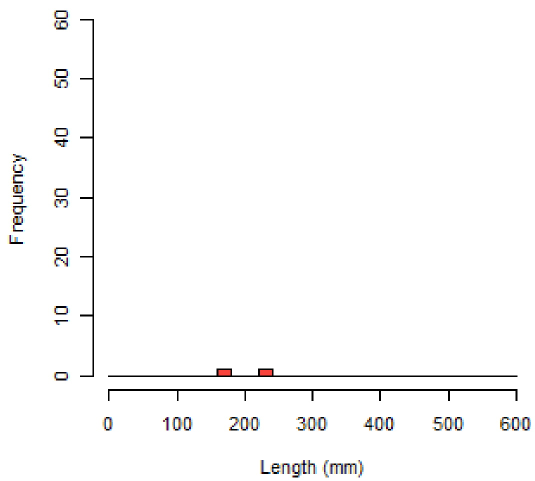
Brook Trout - Tailings Pond



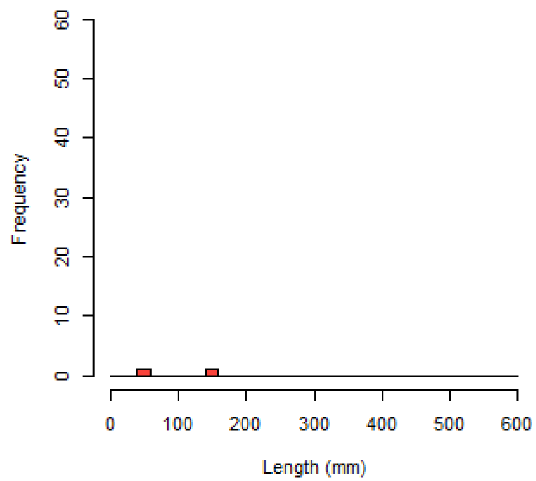
Burbot - D01



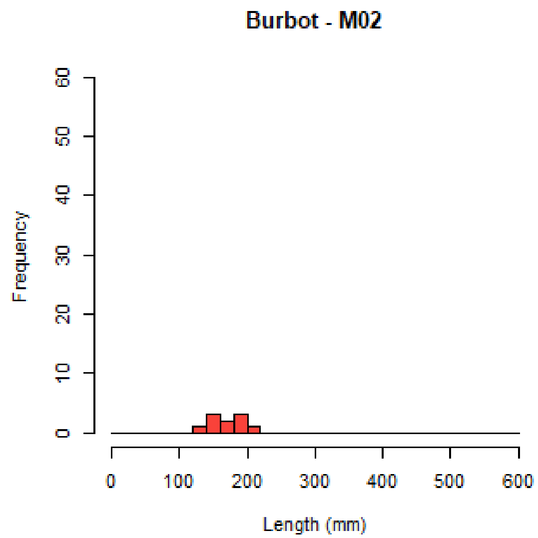
Burbot - D02

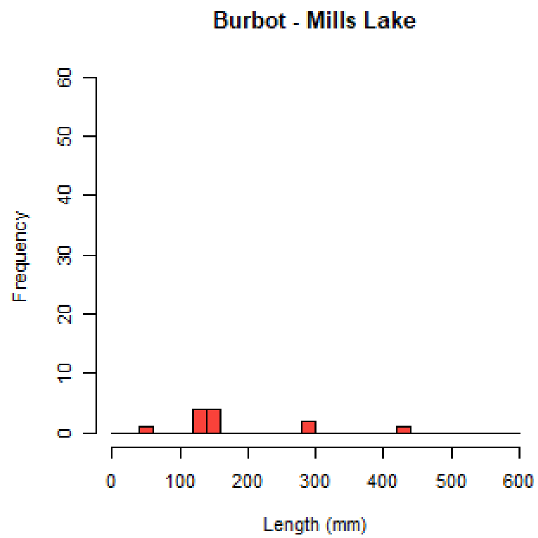


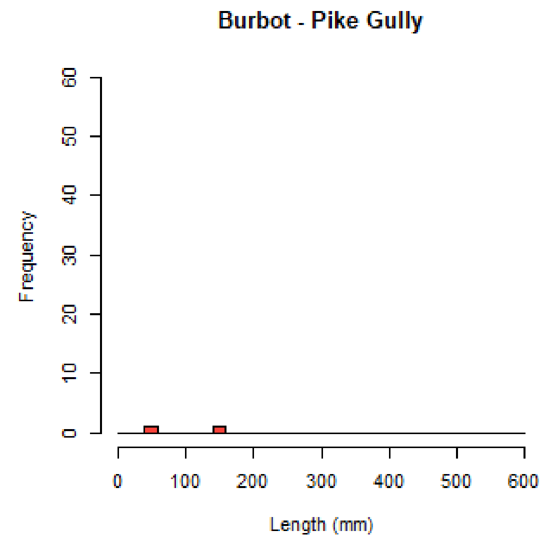
Burbot - Long Lake

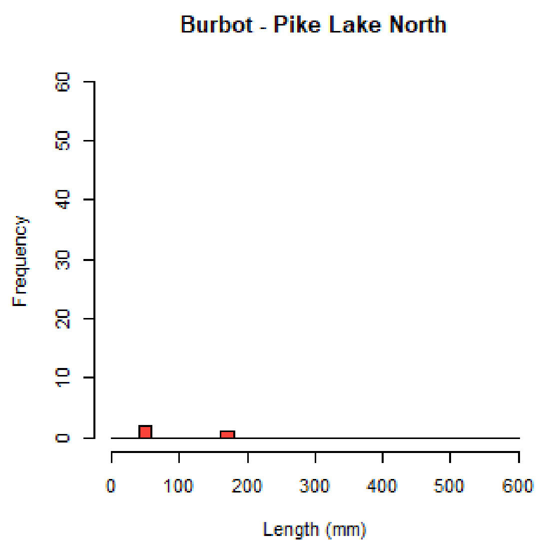


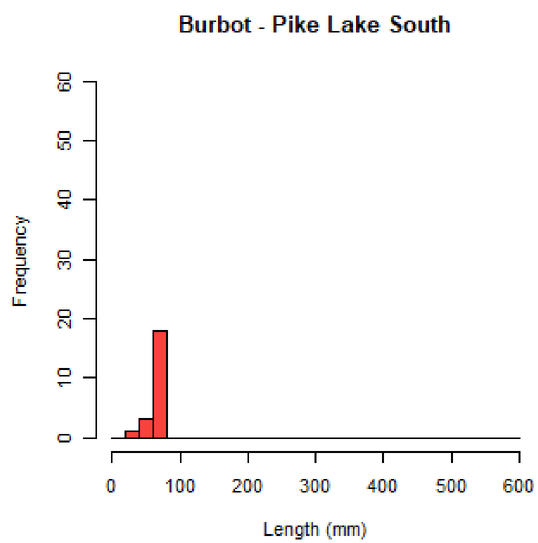
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions

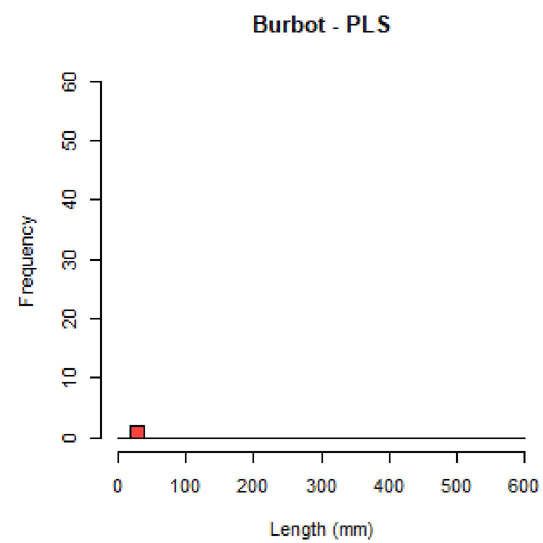




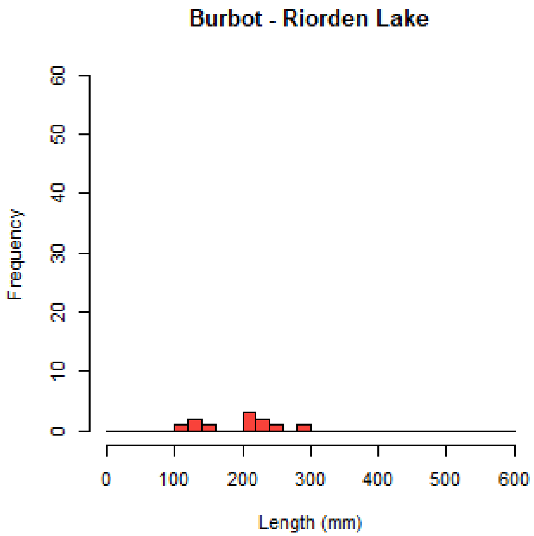


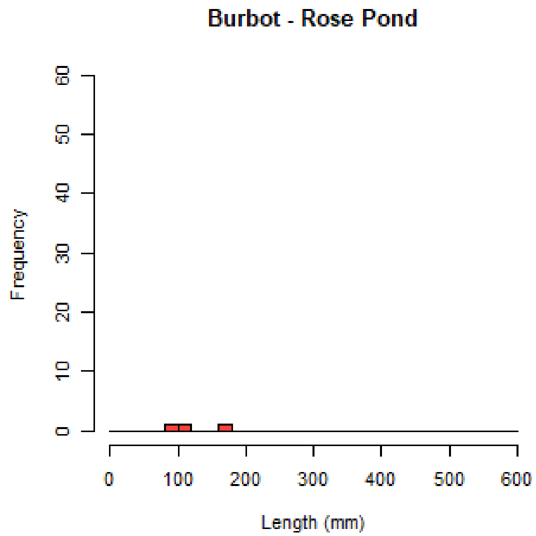


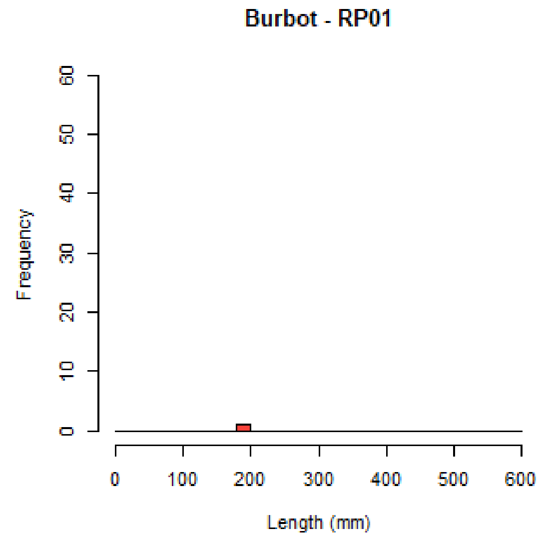


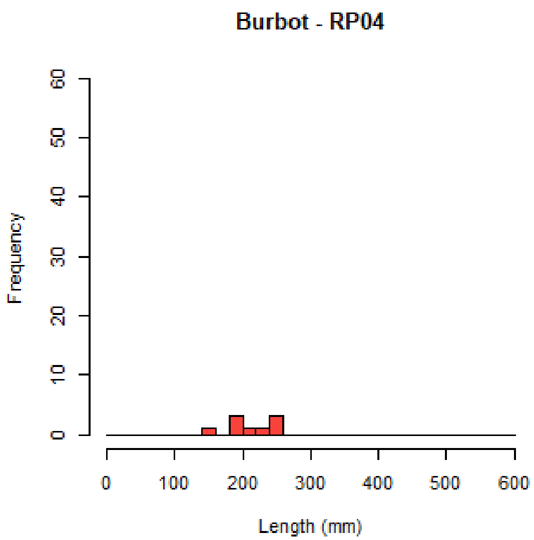


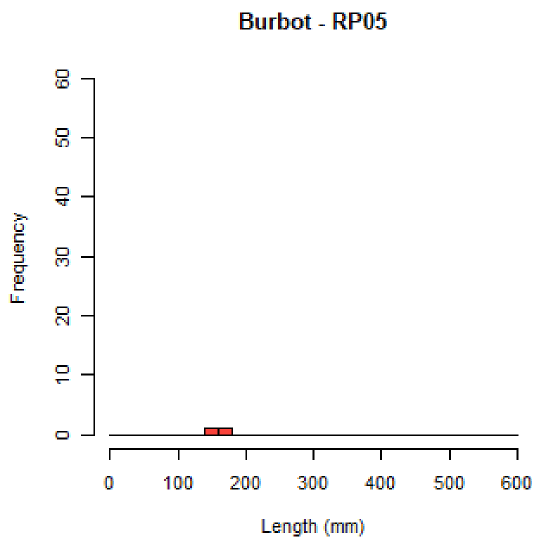
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions

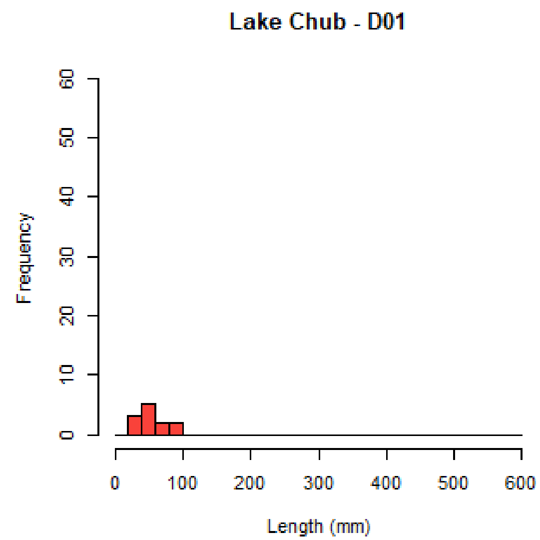




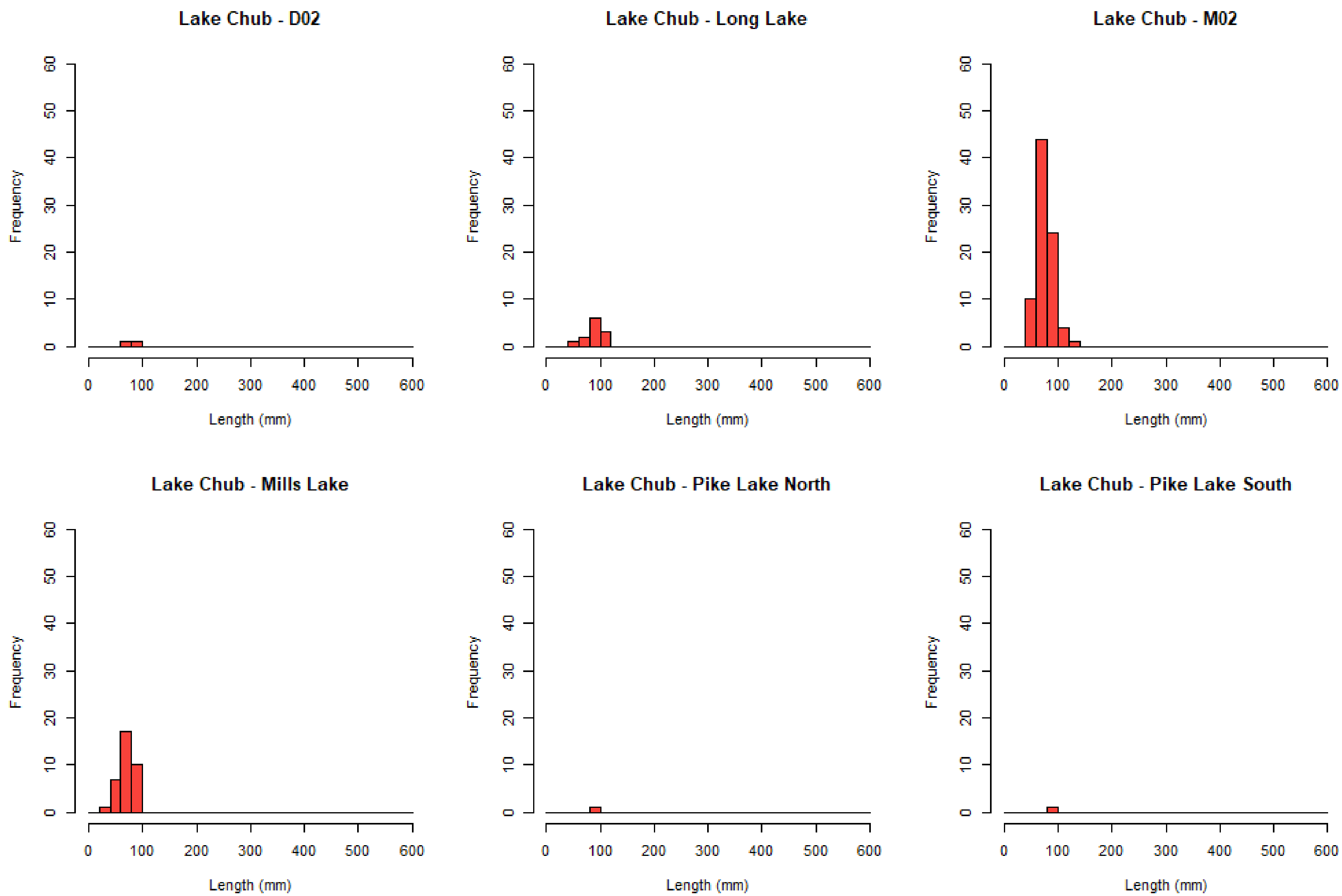






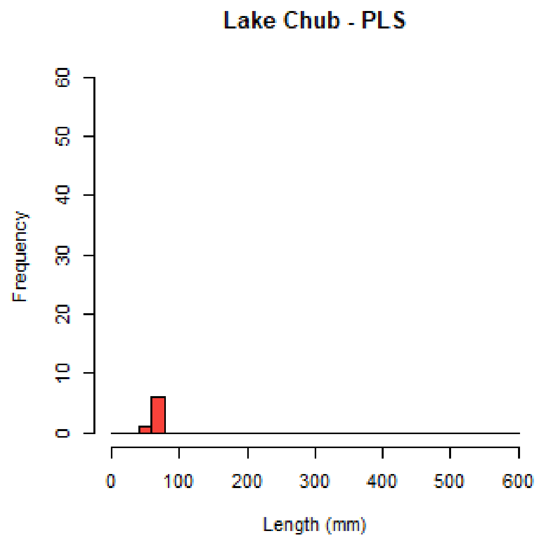


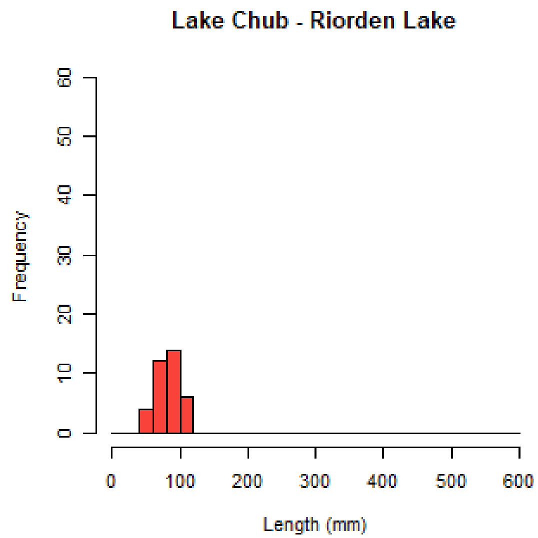
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions

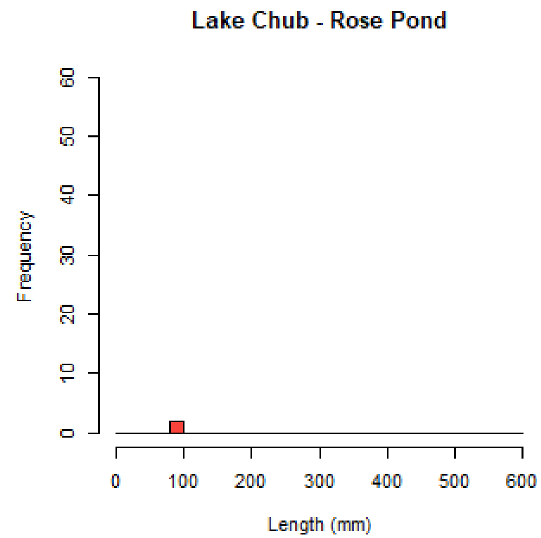


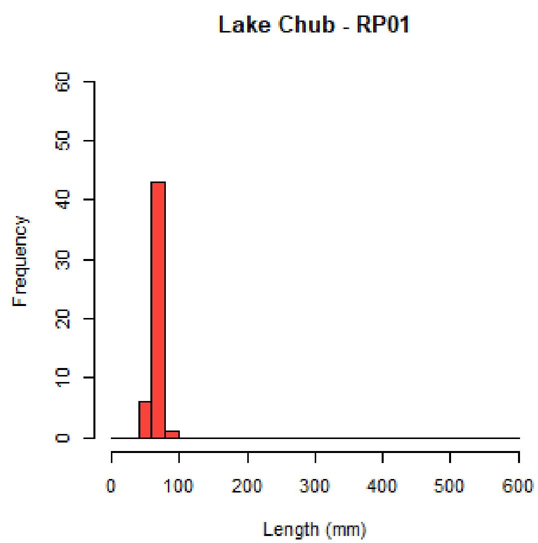
Appendix D

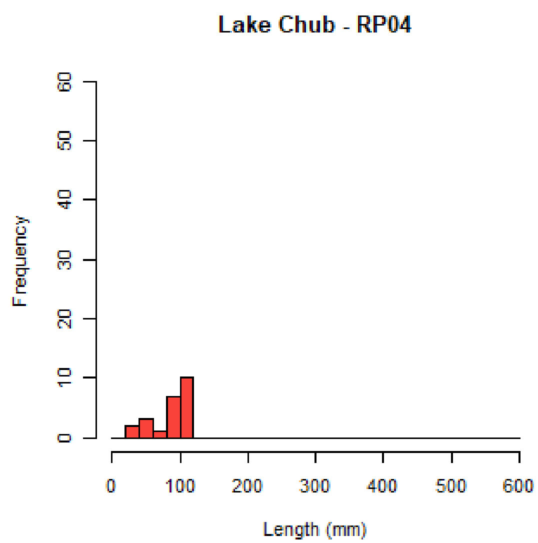
Fish Biometric Summaries – Lacustrine Fish Length Distributions

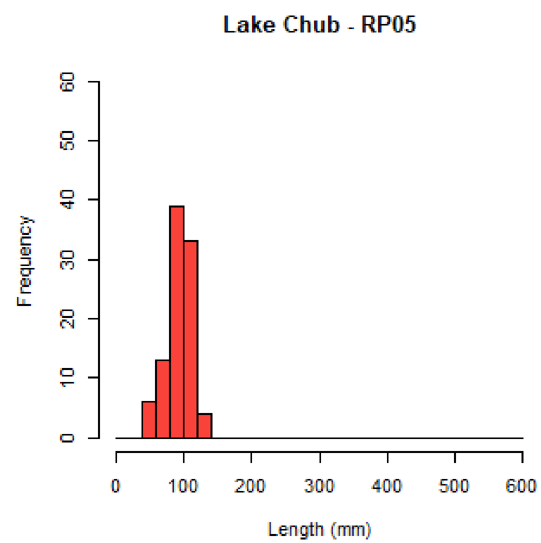




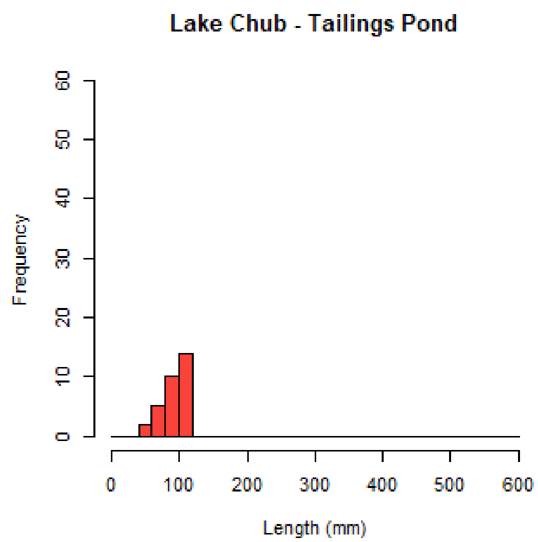


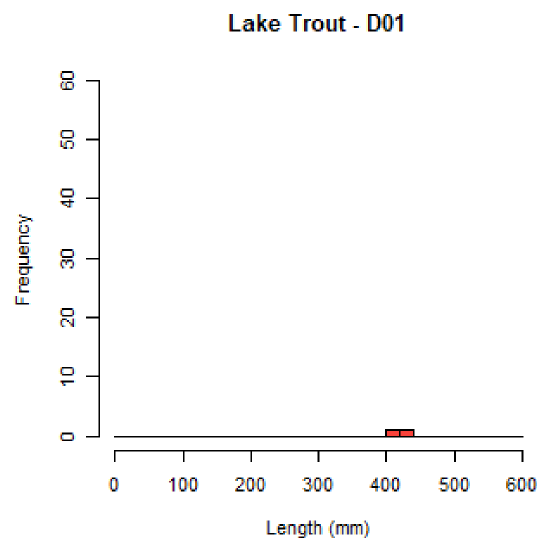


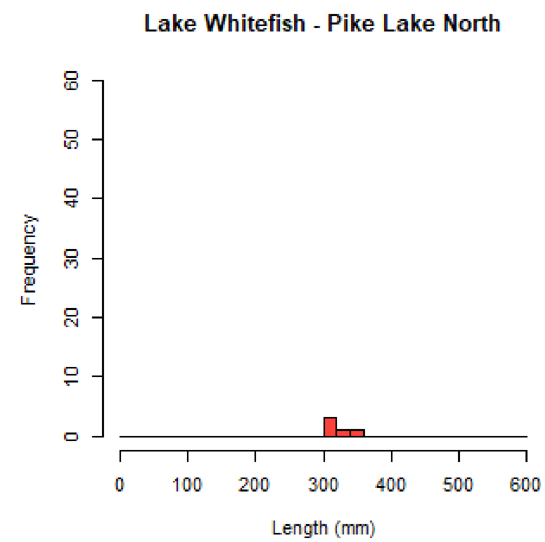


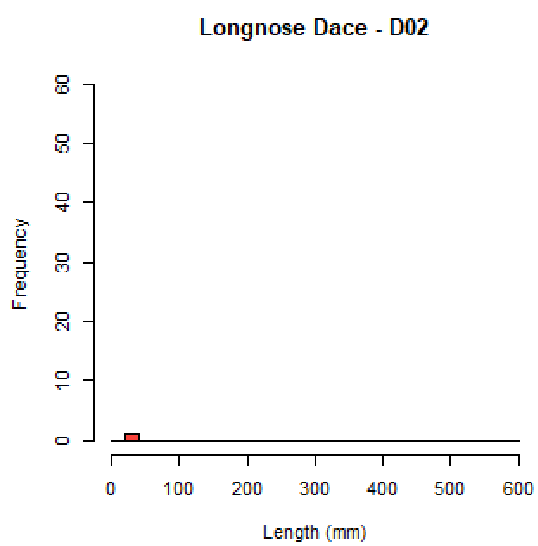


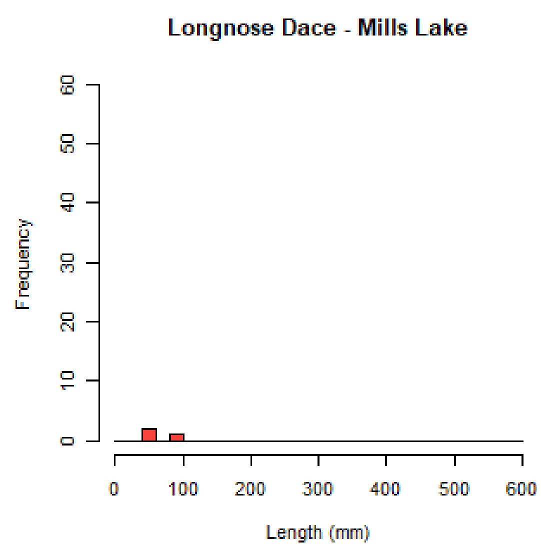
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions

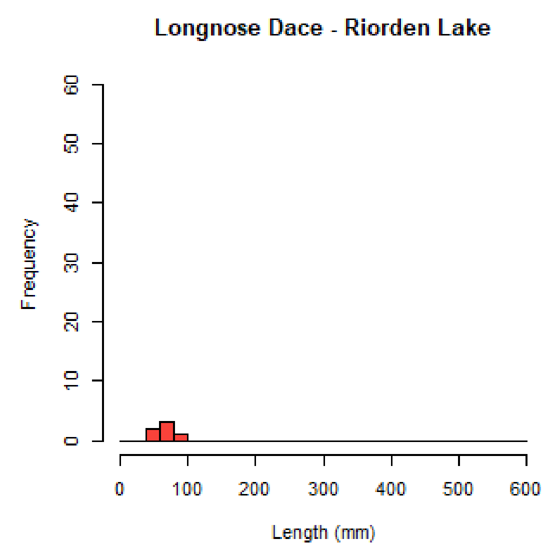








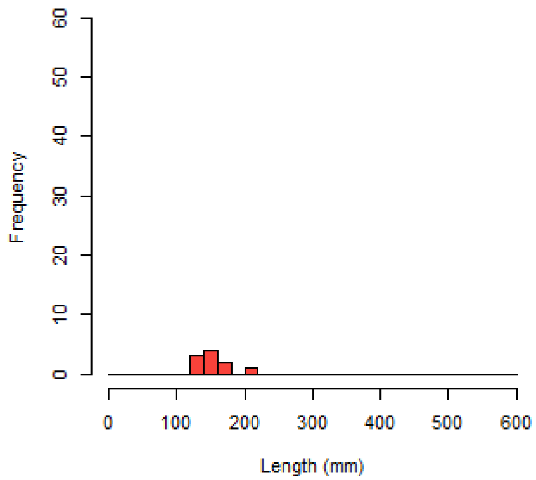




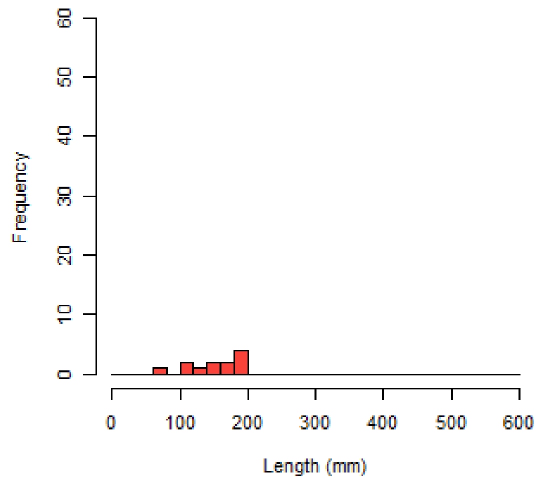
Appendix D

Fish Biometric Summaries – Lacustrine Fish Length Distributions

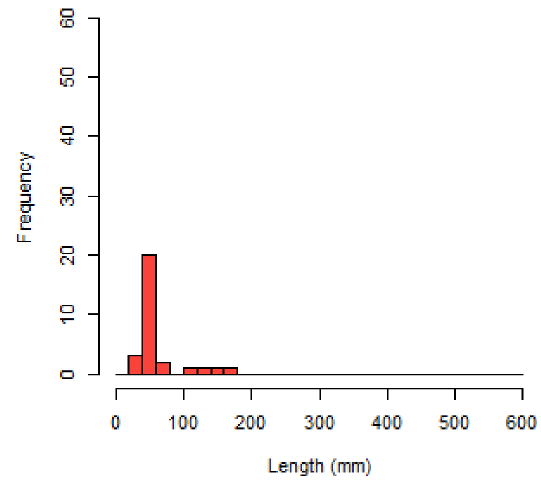
Longnose Sucker - D01



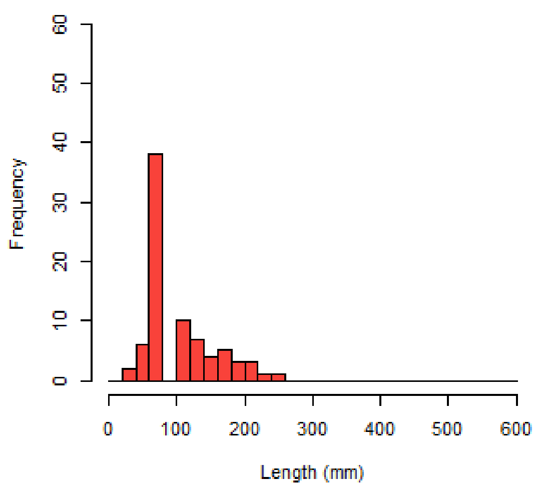
Longnose Sucker - D02



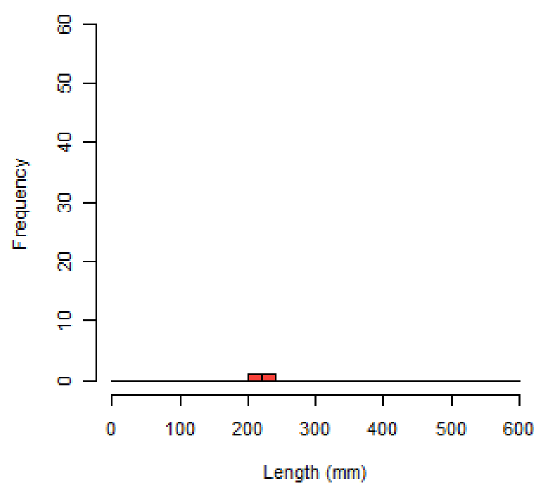
Longnose Sucker - Long Lake



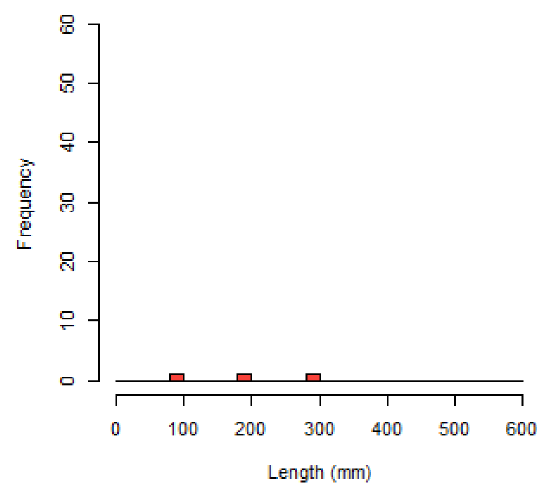
Longnose Sucker - Mills Lake



Longnose Sucker - Riorden Lake

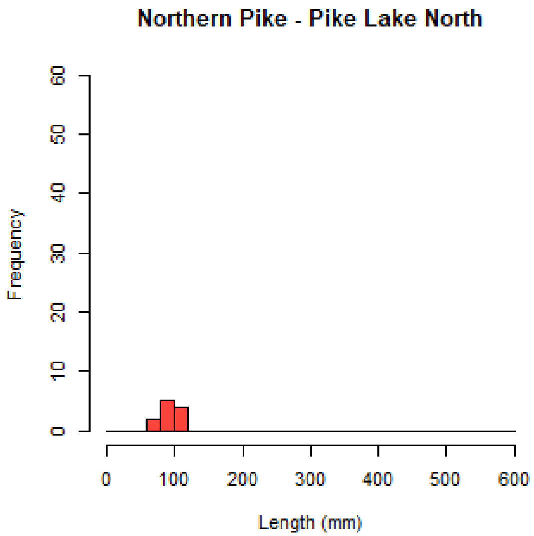


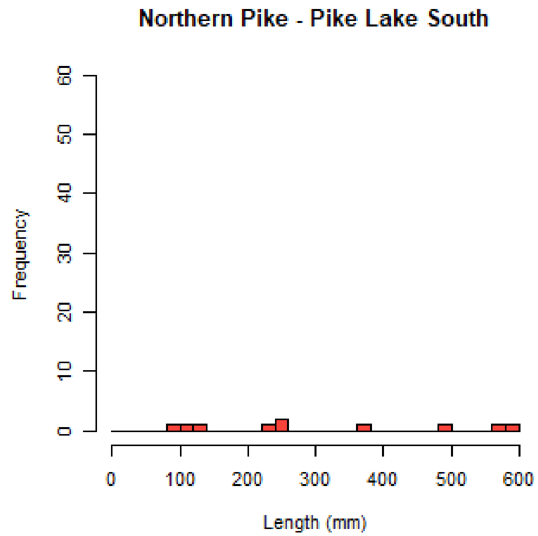
Northern Pike - Pike Gully

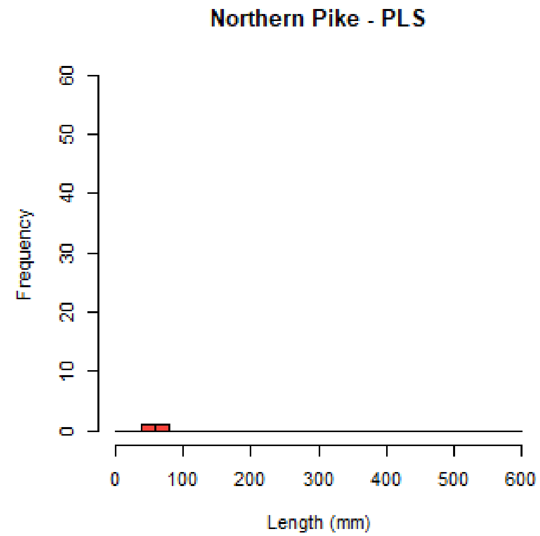


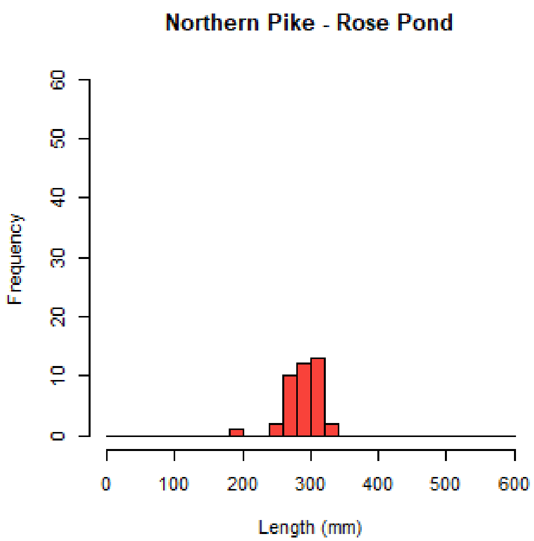
Appendix D

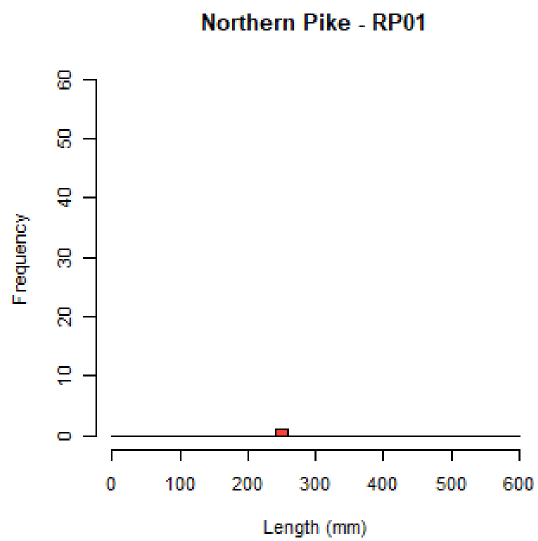
Fish Biometric Summaries – Lacustrine Fish Length Distributions

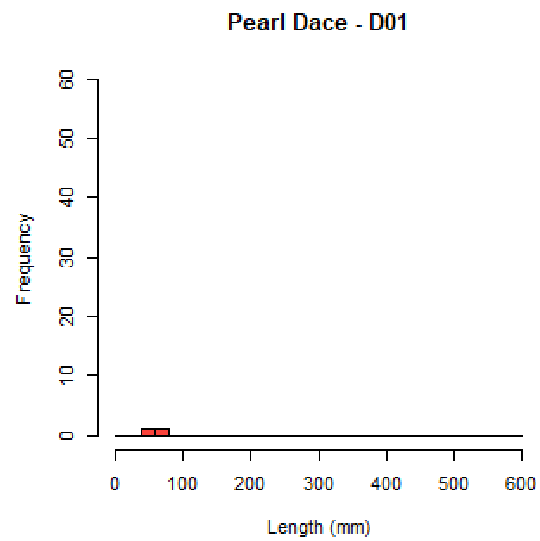




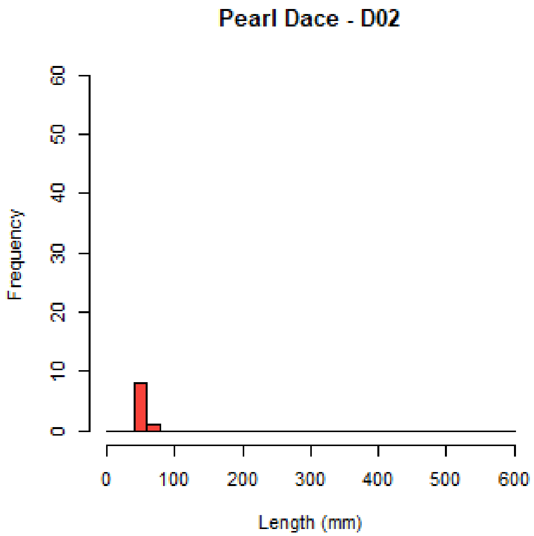


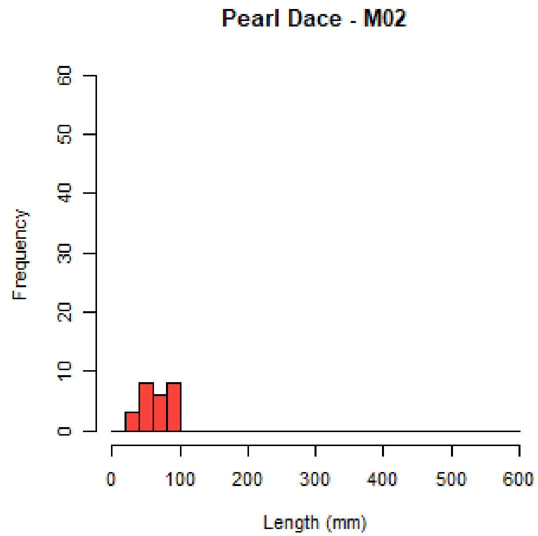


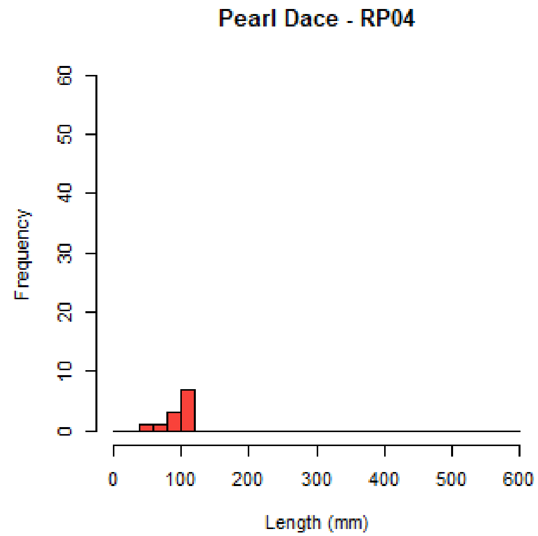


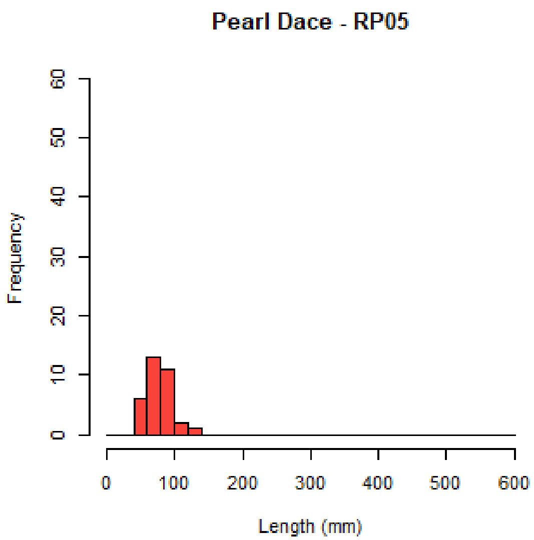


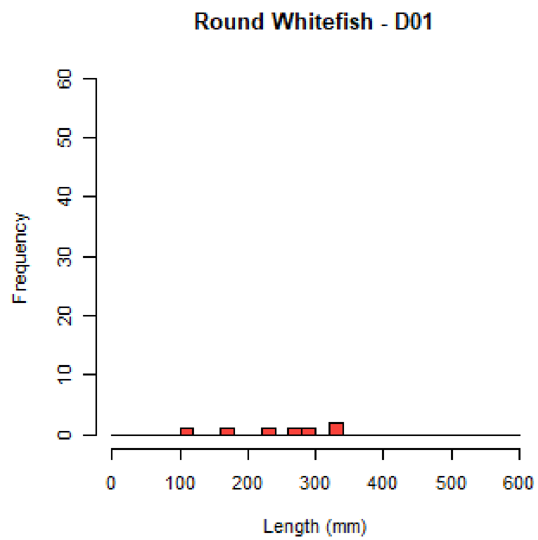
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions

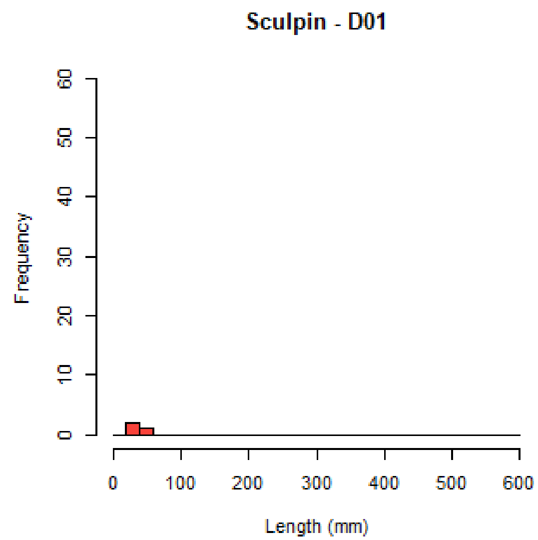




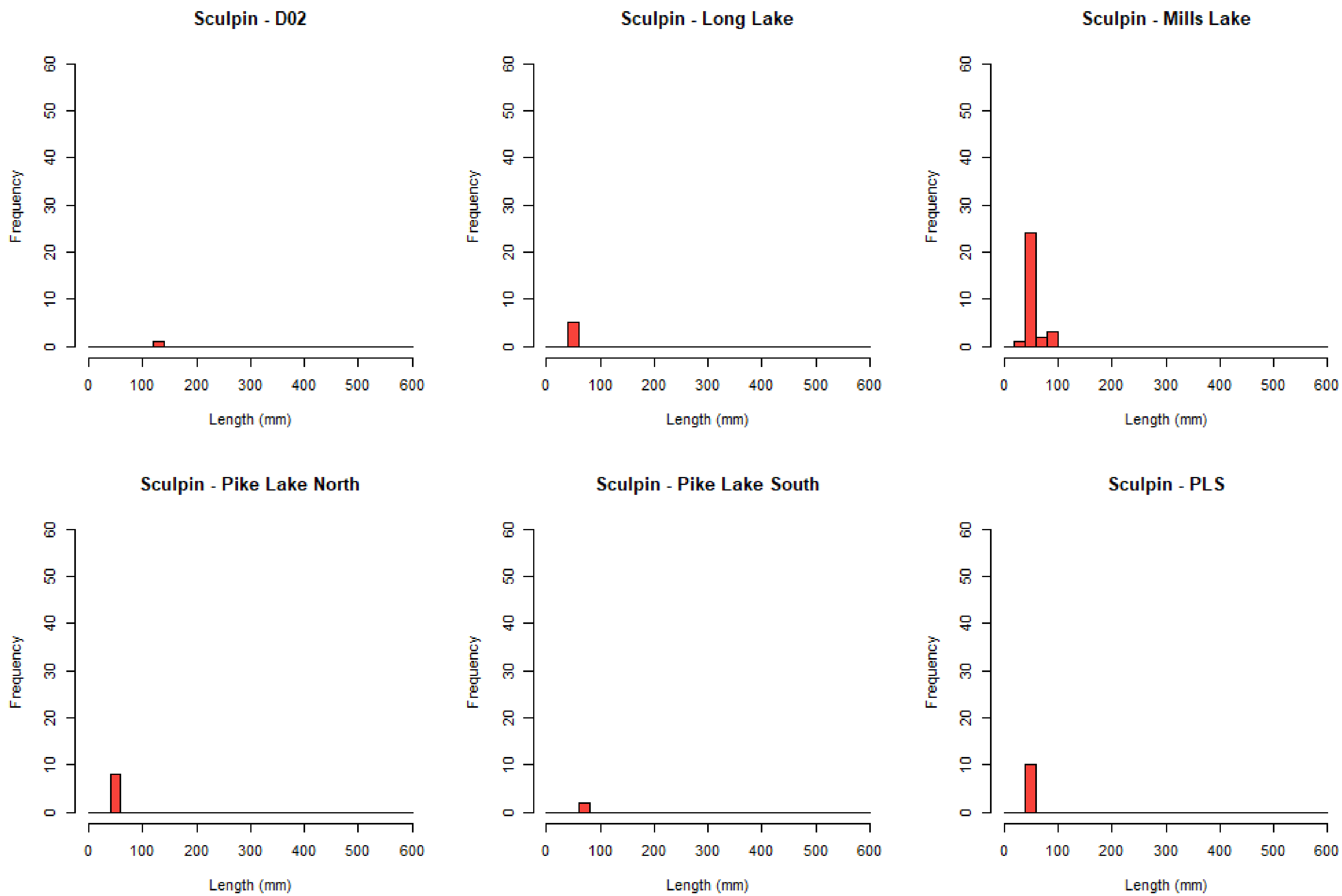








Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions



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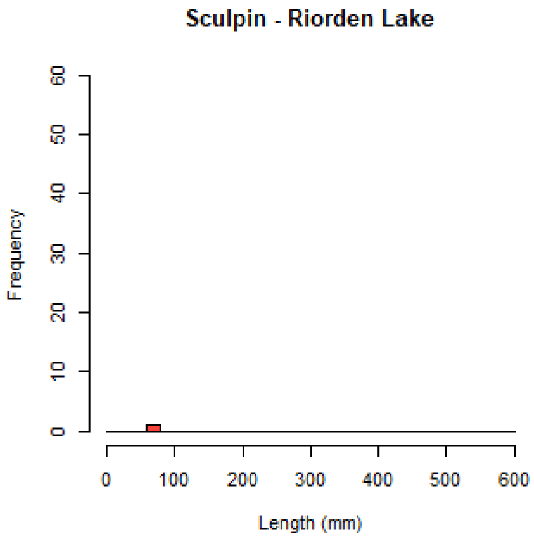
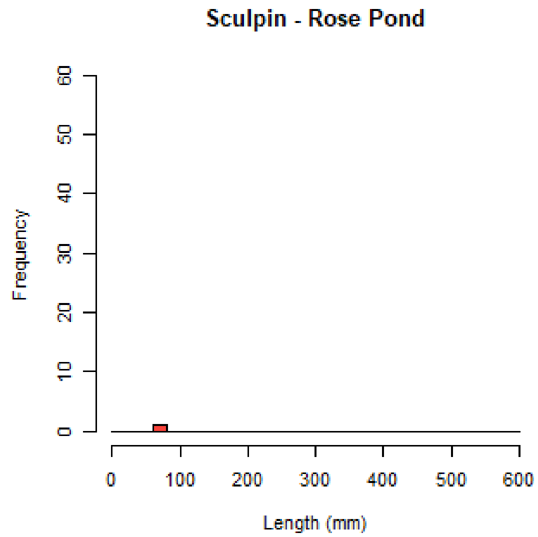
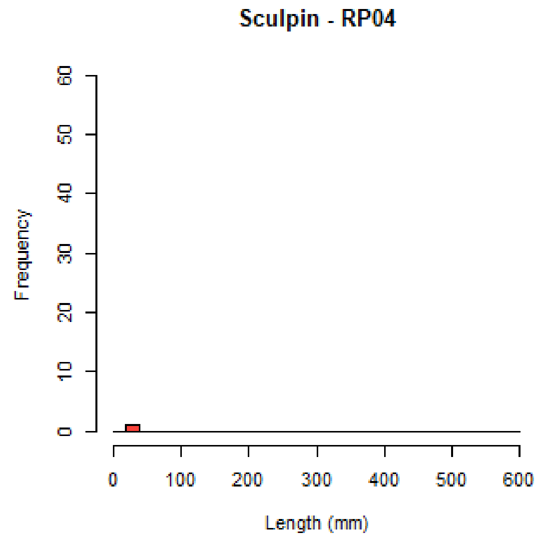
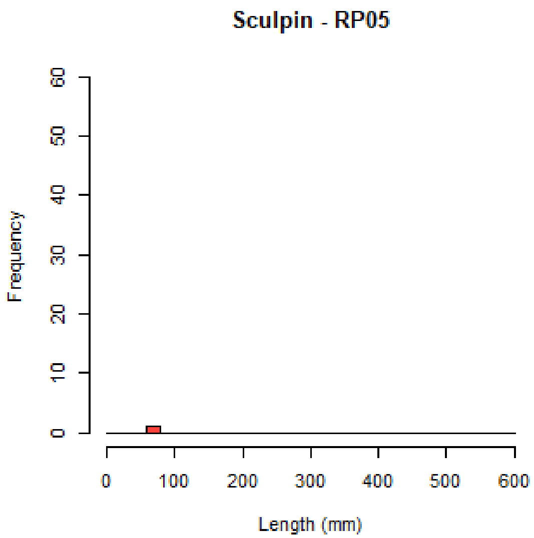
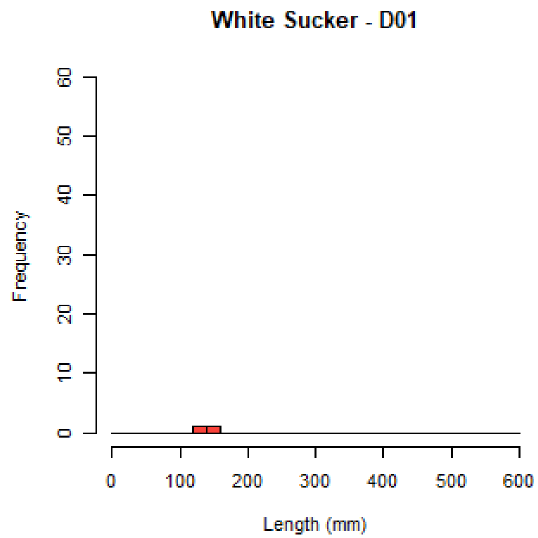
Fish Biometric Summaries – Lacustrine Fish Length Distributions

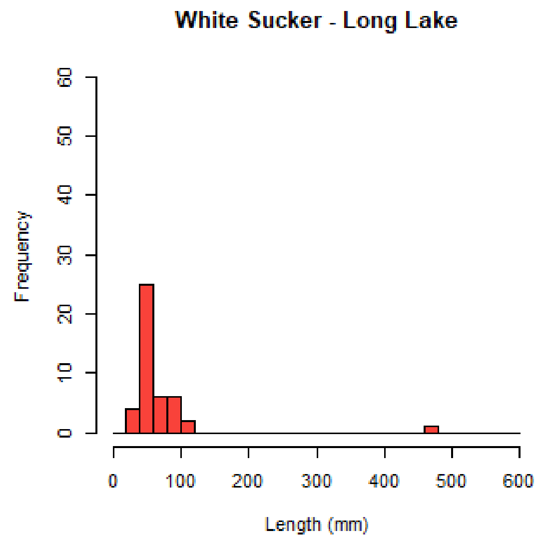




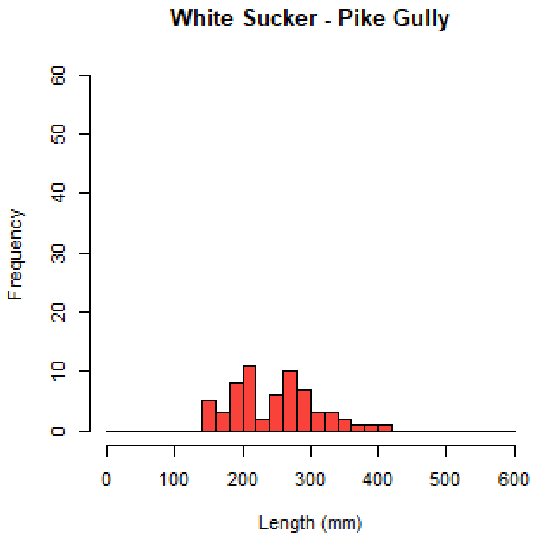


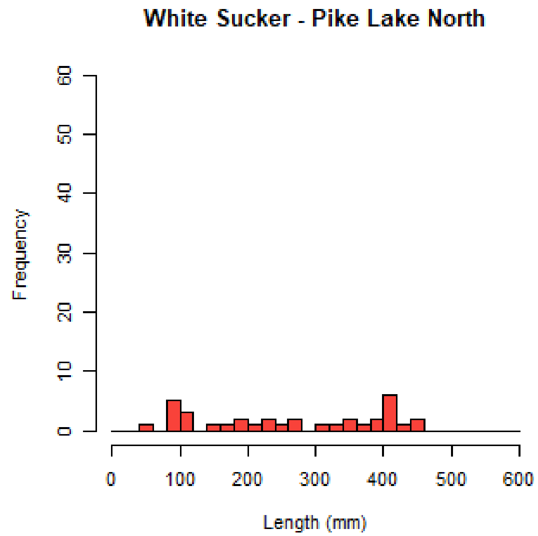


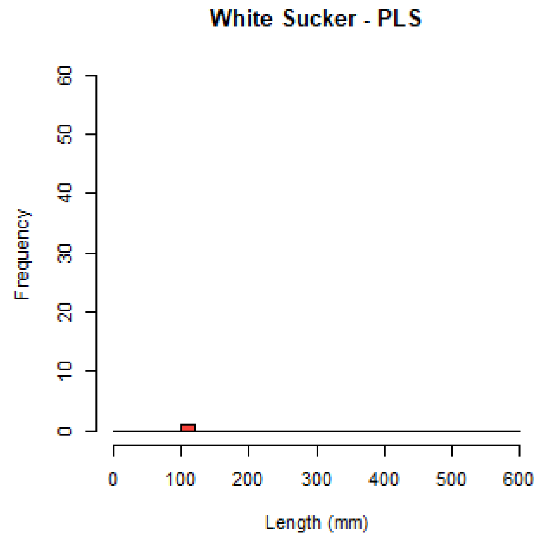


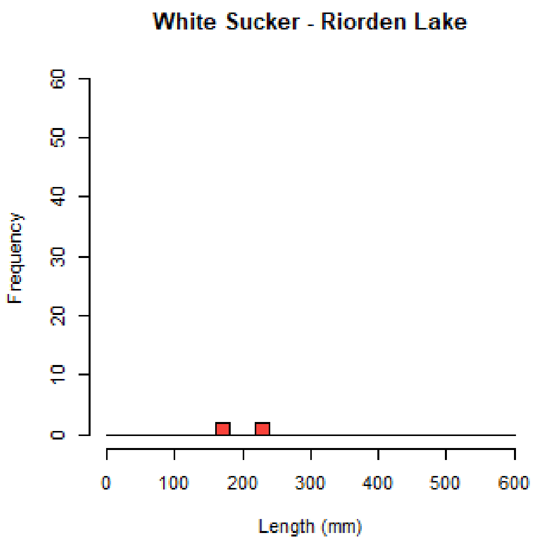


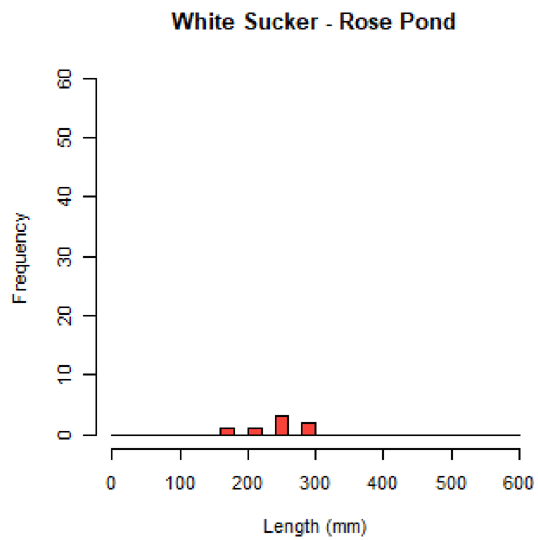
Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions

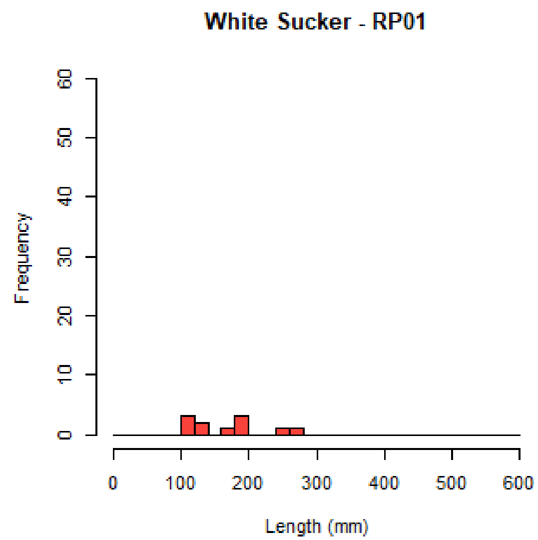




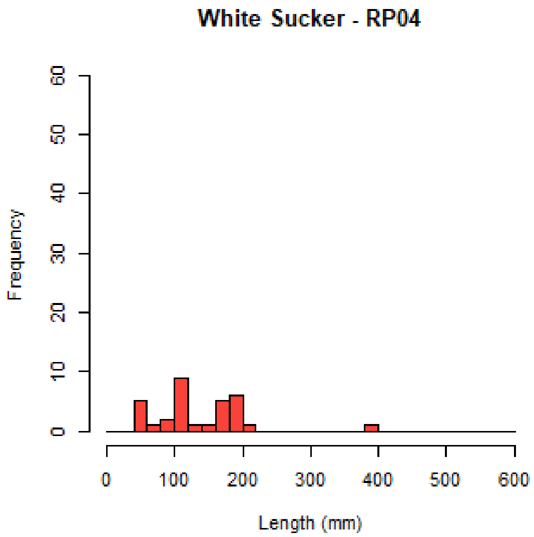


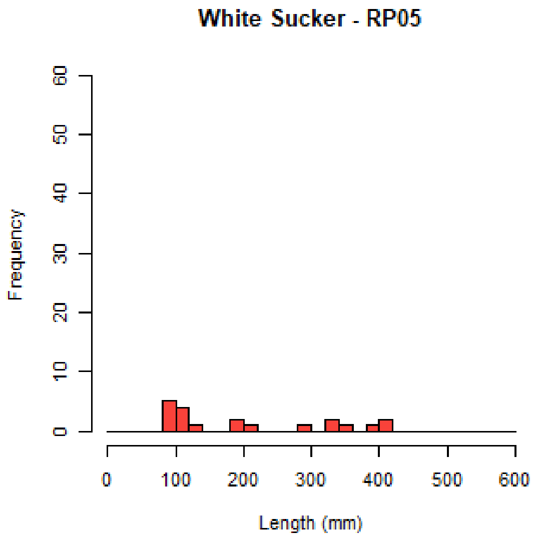






Appendix D
Fish Biometric Summaries – Lacustrine Fish Length Distributions





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