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APPENDIX H
VALENTINE GOLD PROJECT: 2020 FISH AND FISH HABITAT DATA REPORT

Valentine Gold Project: 2020 Fish and Fish Habitat Data Report

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VALENTINE GOLD PROJECT: 2020 FISH AND FISH HABITAT DATA REPORT

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Executive Summary

The 2020 Fish and Fish Habitat Study is the fourth aquatic environment baseline study completed by Stantec Consulting Ltd (Stantec) on behalf of Marathon Gold Corporation (Marathon) for the Valentine Gold Project, an open pit gold mine near Valentine Lake (the Project), in central Newfoundland. The 2020 Fish and Fish Habitat Study builds on previous studies conducted in 2011, 2018 and 2019 and provides information on lakes, ponds, streams, and bog holes potentially affected by development of the Project (Stantec 2012, 2019, 2020). The results of the baseline surveys are being used to support the environmental assessment (EA) of the Project.

The purpose of the 2020 study was to

1. Conduct fish sampling to determine fish presence within streams, proposed road crossings and a representative number of isolated waterbodies (bog holes) in the study area
2. Ground truth the existence of select stream locations on the Valentine Gold Site. If streams are present, characterize habitat for streams 12, 14, 15, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34 and the outlet of Valentine Lake
3. Characterize habitat at existing and potential stream crossings C0016a to C0061 to a distance 50 m upstream and 50 m downstream of the stream crossing
4. Identify potential areas for offsetting opportunities

Consistent with previous fish and fish habitat studies; Atlantic salmon/ouananiche (*Salmo salar*), brook trout (*Salvelinus fontinalis*) and threespine stickleback (*Gasterosteus aculeatus*) were captured during the 2020 surveys. Fish sampling (gillnetting and minnow traps) confirmed that fish were absent from bog holes IT06, IT15, IT18, IT24 and IT28 and provided substantial weight of evidence that fish are absent from other bog holes within the study area.

Streams surveyed near the Mine site are generally small, shallow, and slow flowing or intermittent/ephemeral in nature, with the exception of the outlet of Valentine Lake. Ground truthing of select stream locations identified no defined channel at the mapped location of stream 12 (the unnamed tributary to M1), stream 25 (the unnamed tributary to L1) or tributary A to stream 14 under the proposed tailings management facility. Electrofishing at small, isolated pockets of water near these locations confirmed the absence of fish. In addition, portions of streams 14E and F, stream 31, stream 32, and stream 33C were not fish habitat. No visible channel was present in the location of stream 33D. The fish-bearing portion of stream 15 extended approximately 220 m upstream of its original mapped location.

Surveys completed at 50 potential stream crossing locations along the access road indicated that 26 stream crossings are located in fish habitat, while the remainder do not constitute fish habitat or were determined to not actually be crossed by the access road. Two stream crossing locations were identified as having the potential to offer fish habitat offsetting opportunities through restoration of fish passage (i.e., C0040) and realignment of the stream channel (i.e., C0046).

Five locations were surveyed in 2020 to assess the potential for use as fish habitat offsetting projects, including Anstey Steady, Victoria River, a gravel pit, Long Lake Water Control Structure, the outlet of Valentine Lake and North Twin Brook. The most promising offsetting opportunities were on the outlet of Valentine Lake and North Twin Brook.

1.0 INTRODUCTION

Marathon Gold Corporation (Marathon) proposes to develop the Valentine Gold Project, an open pit gold mine near Valentine Lake (the Project), in central Newfoundland. The Project is located in central Newfoundland, approximately 57 km south of Buchans. Stantec Consulting Ltd. (Stantec) was retained by Marathon Gold Corporation (Marathon) to conduct a number of environmental surveys at the Valentine Gold Project Site, including Aquatic Baseline Surveys. The results of the baseline surveys have been used to support the environmental assessment (EA) of the Project. The Environmental Impact Statement (EIS) was submitted to the federal Impact Assessment Agency of Canada and the provincial Minister of Environment, Climate Change and Municipalities for regulatory review in September 2020 pursuant to the *Canadian Environmental Assessment Act* (CEAA 2012) and the NL *Environmental Protection Act*. The EIS includes an effects assessment for Project components which have the potential to interact with fish and fish habitat. These include, but are not limited to, open pit mining of the Marathon and Leprechaun deposits, waste rock piles, ore stockpiles, overburden piles, tailings management facility, water management infrastructure, water intakes, process plant facilities and access roads (Figure 1.1).

The 2020 Fish and Fish Habitat Study builds on previous aquatic environment studies conducted in 2011, 2018 and 2019 (Stantec 2012, 2019, 2020), and provides information on lakes, ponds, streams, and bog holes potentially affected by development of the Project.

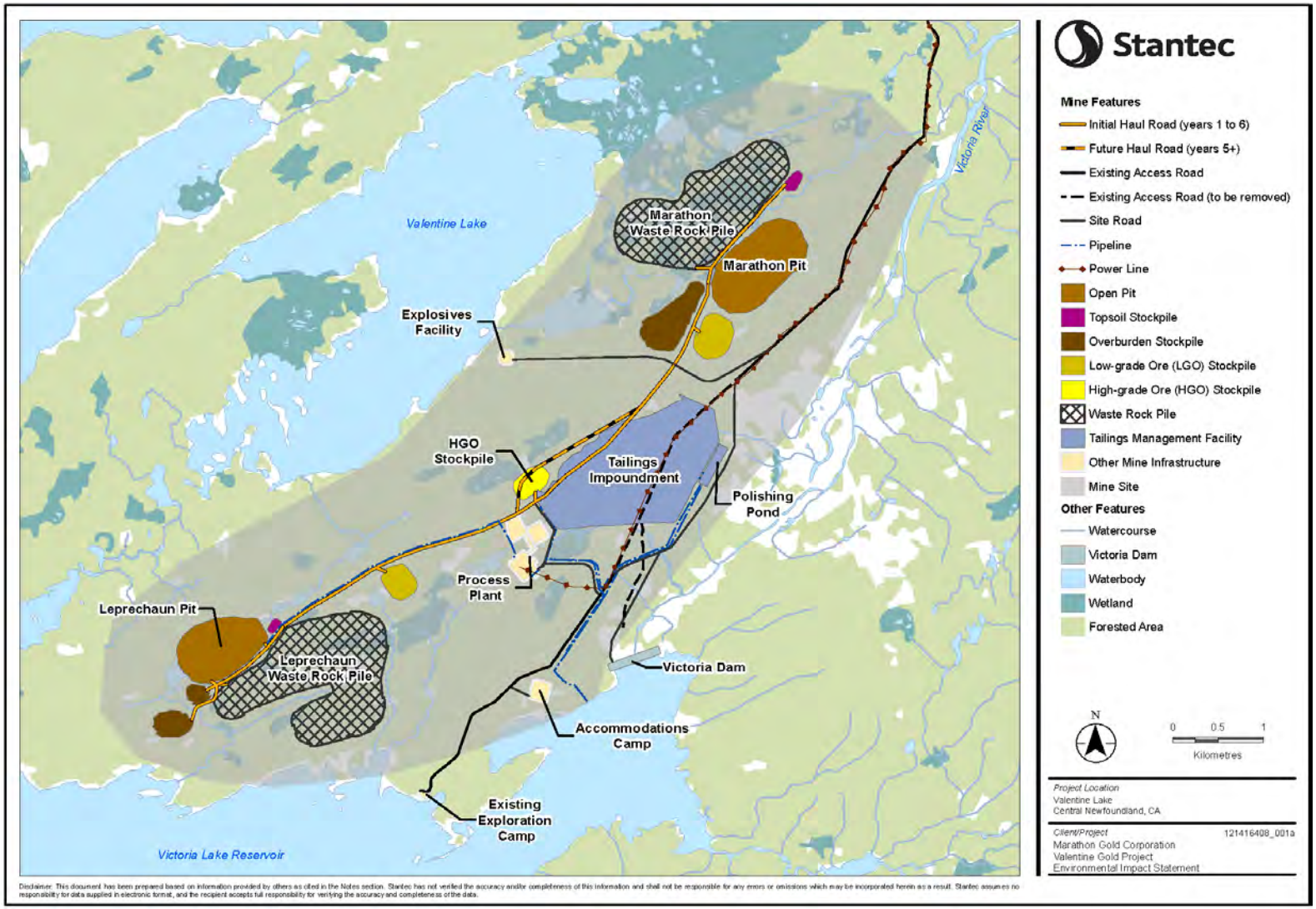

Figure 1.1 Valentine Gold Project Site Plan

2.0 AQUATIC BACKGROUND AND REGULATORY CONTEXT

2.1 OBJECTIVES

The following are the objectives of the 2020 Baseline Fish and Fish Habitat study are:

1. Conduct fish sampling to determine fish presence within streams, proposed road crossings and a representative number of isolated waterbodies (bog holes) in the study area
2. Ground truth the existence of select stream locations on the Valentine Gold Site. If streams are present, characterize habitat for streams 12, 14, 15, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34 and the outlet of Valentine Lake
3. Characterize habitat at existing and potential stream crossings C0016a to C0061 to a distance 50 m upstream and 50 m downstream of the stream crossing
4. Identify potential areas for offsetting opportunities

2.2 REGULATORY CONTEXT

The Project will require approval from the Government of Newfoundland and Labrador and is subject to an environmental assessment (EA) under the *Newfoundland and Labrador Environmental Protection Act* (NL EPA) and associated *Environmental Assessment Regulations*. Under the *Canadian Environmental Assessment Act 2012* (CEAA 2012) the Project is a designated project pursuant to Section 15(a) *Regulations Designating Physical Activities* and will require a federal EA.

The 2011, 2018, 2019, and 2020 Aquatic Studies were designed to:

- support the assessment of potential project interactions and environmental effects of the Project on the aquatic environment
- determine the presence of fish
- support the determination of harmful alteration, disruption or destruction (HADD) of fish habitat and the requirement for offsetting under the *Fisheries Act*
- identify fish bearing waters to support mine planning activities related to locating Project infrastructure to avoid waters frequented by fish, where feasible
- form part of the supporting documentation for the EA completed for the Project.

3.0 METHODS

The 2020 field study included an assessment of fish presence/absence in bog holes, habitat classification of streams and stream crossing assessments along the proposed access road (Figure 3.1). The field surveys for this study were conducted July 19 to 30, 2020, and additional bog holes assessments were completed between September 5 and November 7, 2020.

Fishing methods used in this study are described in Sooley et al. (1997). Methods associated with stream habitat classification are described in McCarthy et al. (2007 Draft).

3.1 STUDY AREA

The Study Area for the 2020 field study (Figure 3.1) is comprised of watersheds potentially affected by development of the Project, including upgrades to the access road and includes the bog holes, streams, and stream crossing locations noted below. For ease of reference, each stream location is given a descriptive name and identifying number on Figure 3.1.

- Bog Holes IT06, IT15, IT18, IT24 and IT28
- Streams 12, 14, 15, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34 and the outlet of Valentine Lake
- Stream Crossings C0016a to C0061

Proposed stream crossings surveyed during 2020 (C0016 to C0061) are shown on Figure 3.2. Note that stream crossings C001 to C0014 were sampled as part of the 2018 baseline study (Stantec 2019) and the Stream 17 associated with stream crossing C0015 was sampled as part of the 2011 baseline study (Stantec 2012) these are not shown on Figure 3.2. More detailed figures which show stream crossings at a finer scale is included in Section 4.2. This notation corresponds to the stream location names and proposed crossings in the appendices and in tables included in Section 4.

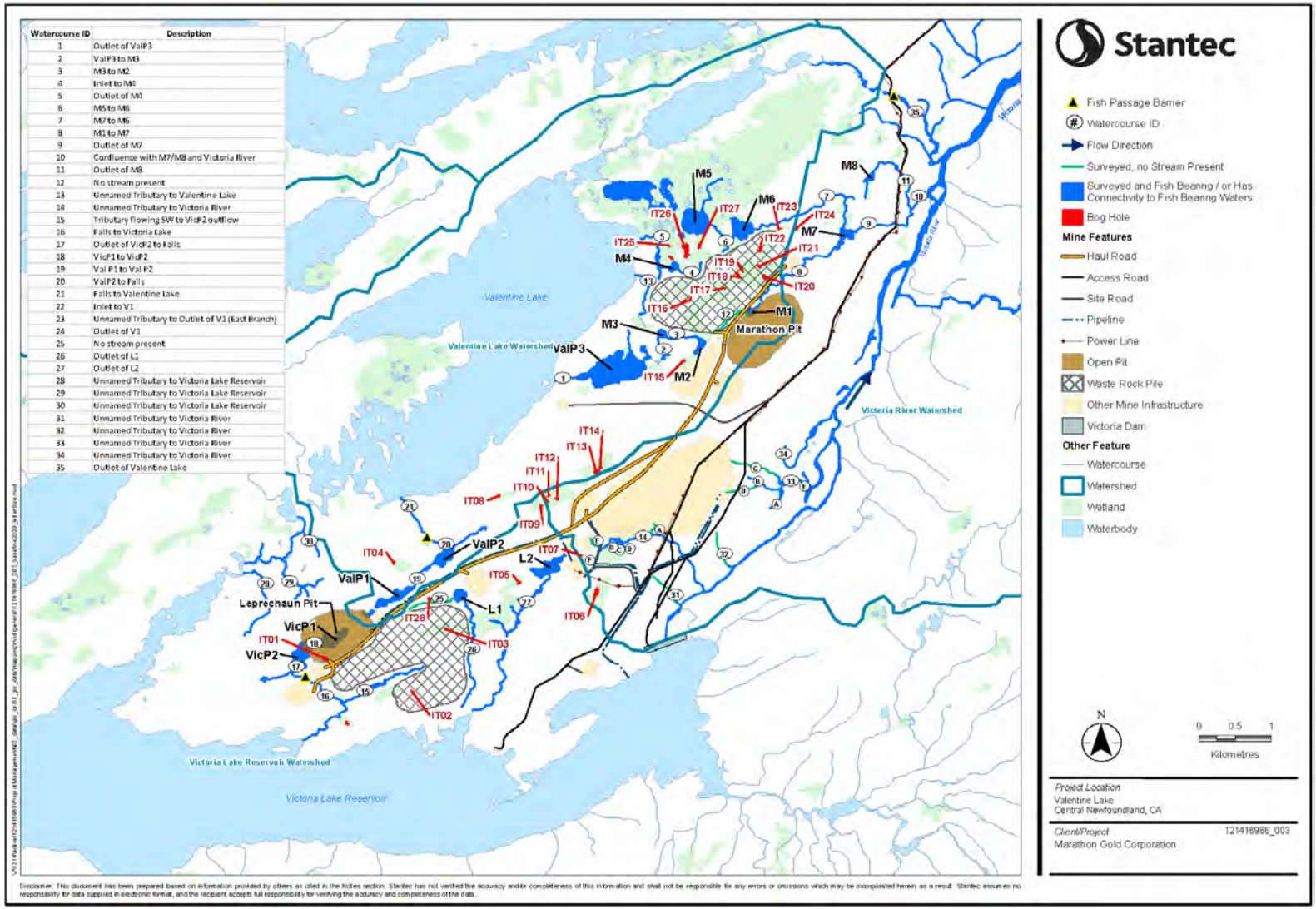

Figure 3.1 2020 Fish and Fish Habitat Survey Areas

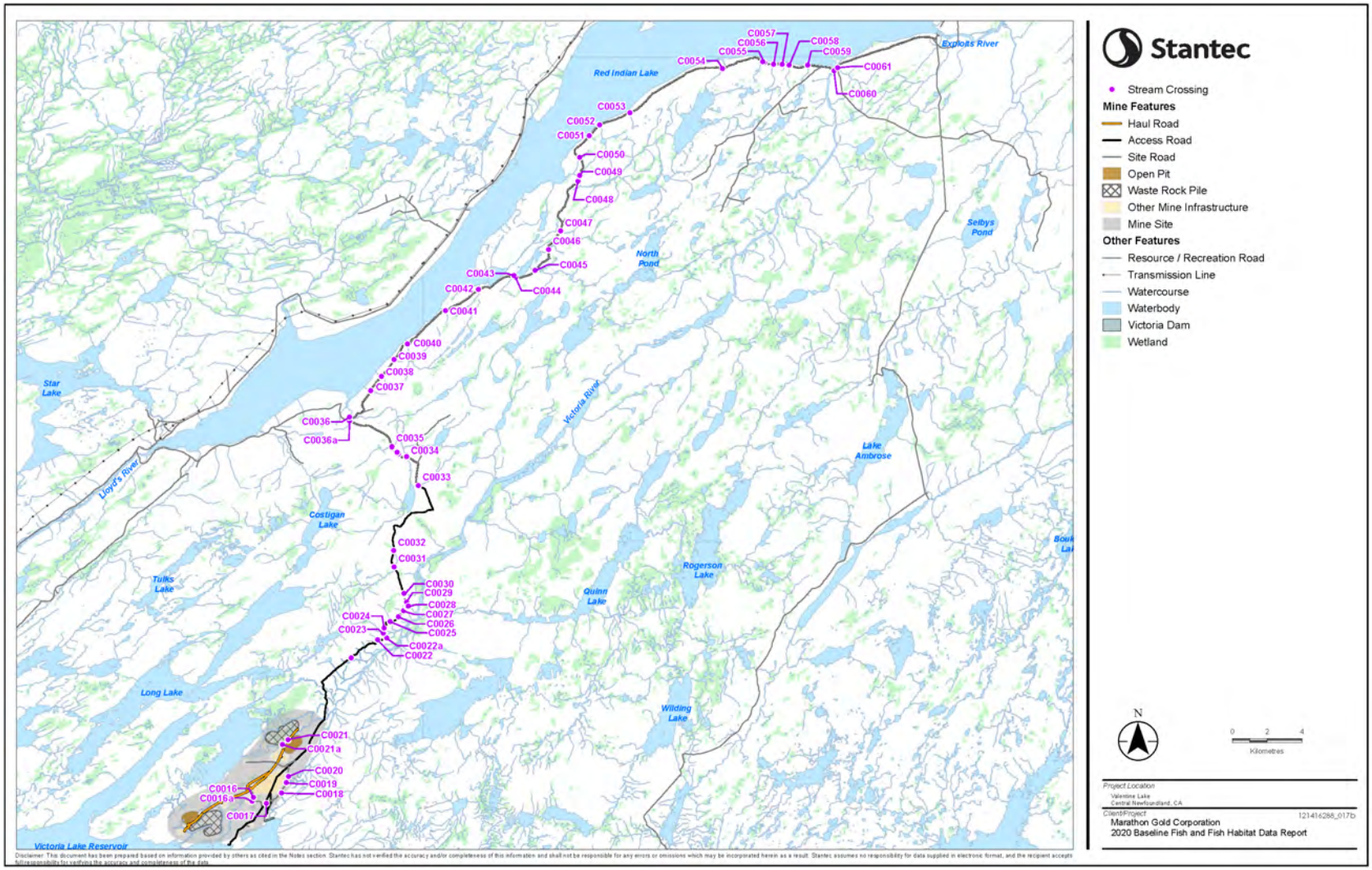

Figure 3.2 2020 Stream Crossing Survey Locations

3.2 STUDY TEAM

Experienced professionals were responsible for the design, logistical planning, and data collection for the 2020 aquatic study. The members of the study team are provided in Table 3.1.

Table 3.1 Study Team – 2020 Aquatic Study

Role	Personnel
Marathon Client Contact	Jamie Powell
Project Manager/Scientist	Barry Wicks, B.Sc.
Quality / Independent Review	Barry Wicks, B.Sc.
	Elizabeth Way, M.Sc.
Field Team	Jenny Reid, M.Sc. and Tony Parr, B.Sc.
Logistical Support	Nic Capps and Adam Wall (Marathon)
Data Analysis and Report Preparation	Jenny Reid, M.Sc.
Information Management / GIS	Megan Blackwood, B.Sc., Dip. GIS

Jenny Reid and Tony Parr conducted the field surveys for this study and compiled this report. Barry Wicks conducted the technical review and served as Project Manager. James Powell was the Marathon client contact. Nic Capps and Adam Wall provided logistical support for the field study.

3.3 FISH SAMPLING

Fishing activity was conducted in accordance with Experimental License NL-5960-20 obtained from Fisheries and Oceans Canada (DFO).

3.3.1 Bog Holes

Bog holes are isolated, small, waterbodies and are common within the Project Area. They have the potential to contain fish habitat, however they are thought to be fishless where analysis of LiDAR imagery shows no connectivity between bog holes and fish bearing waters. A total of 28 bog holes occurs within, or in close proximity to the Project footprint.

3.3.1.1 Bog Hole Selection for Additional Fish Sampling

The determination of which bog holes to fish for potential fish presence in summer/fall 2020 was informed by results of an ice thickness survey of 27 of the 28 bog holes completed on March 09 and 10, 2020. The Ice Thickness Survey Report was included in the EIS and is also included in Appendix A of this report. One bog hole (IT28) was not sampled for ice thickness in winter 2020, since at the time of the survey IT28 was thought to have connectivity to a fish bearing waterbody (Pond L1). However, habitat surveys completed in summer 2020 determined that IT28 is not connected to Pond L1 and is an isolated bog hole.

The ice thickness survey confirmed that nine bog holes (IT01, IT03, IT07, IT14, IT20, IT22, IT23, IT25, IT26) were frozen to the bottom and an additional eight bog holes (i.e., IT02, IT04, IT11, IT16, IT17, IT19, IT21, IT24) would have frozen to the bottom if greater than normal snow accumulation in the winter of 2020 had not insulated the ice. These 17 bog holes were assessed as not being fish habitat, since freezing of the entire water column and isolation from other waterbodies eliminates the ability of these bog holes to sustain fish life.

The 11 remaining bog holes (IT05, IT06, IT08, IT09, IT10, IT12, IT13, IT15, IT18, IT27 and IT28) had adequate water depth to prevent them from freezing to the bottom in winter, and therefore these were assessed as having potential to sustain fish life. A representative number of bog holes (five of eleven) were selected for additional fish sampling; given the potential need to use these bog holes for onsite water management.

3.3.1.2 Bog Hole Fishing Methods

Sampling was conducted using minnow traps and gill nets. Initially, gillnets were set for a short duration (10 min). If no fish were captured during short duration sets, fishing duration was increased to include overnight sets. Two gill nets consisting of one 15 m panel with 25 mm mesh size and another 15 m panel with 38 mm mesh size were deployed in each bog hole by stringing the gillnet across the bog hole using a rope (Photo 1). Minnow traps baited with cat food were also set to assist in confirming fish presence/absence (Photo 2). The gill nets and minnow traps were fished for one to two consecutive nights.

Photo 1 Gill Net Set in Bog Hole IT18

Photo 2 Minnow Trap Set in Bog Hole IT18

3.3.2 Streams

Fish sampling in streams was conducted by index (qualitative) electrofishing using a backpack electrofishing unit (Smith Root LR-24). Electrofishing was conducted at streams 12, 14, 15, 25, 26, 30, 31, 32, 33 and at stream crossings (C0016a to C0061). Potential habitats were sampled throughout the stream length unless sufficient habitat was lacking (i.e., channel ended, intermittent stream). Stream crossings were fished to a maximum distance 50 m upstream and downstream of the crossing, with a minimum targeted fishing effort of 500 seconds. The time fished for each stream section was recorded and captured fish were measured, a representative number weighed, identified to species, and released alive. Fish data obtained from the sampling are included in Appendix B.

3.4 FISH HABITAT CLASSIFICATION

Fish habitat classification was conducted on streams only in 2020, no pond or lake classification was conducted. Stream habitat was classified according to methods outlined in McCarthy et al. (2007 Draft) "Standard Methods Guide for the Classification of Riverine Habitats in Newfoundland and Labrador". Streams were classified from the ground and included streams 12, 14, 15, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34 the outlet of Valentine Lake, and stream crossings C0016a to C0061.

Streams were characterized by obtaining velocity measurements and depth readings at ¼, ½, and ¾ of the stream width within approximately 100 m reaches / segments of the stream. Within each 100 m segment the habitat was described based on substrate type, meso habitat type, stream gradient, riparian vegetation, and cover. Photos looking upstream (US) and downstream (DS) were taken within each stream segment at representative locations and GPS coordinates were recorded. Potential barriers to fish migration were noted, photographed and georeferenced. Since streams 28, 29, and 30, were located away from the immediate Project and effects are not anticipated, only photos and GPS coordinates were taken. Stream habitat in the outlet of Valentine Lake was characterized as above; however, data was collected based on each habitat unit (i.e., riffle, run, pool) instead of for 100 m reaches.

For stream crossings C0016a to C0061, habitat was characterized to a distance 50 m US and DS of the crossing location. Habitat was classified based on stream velocity, meso-habitat type, stream gradient, flow, depth, width, substrate type, and riparian vegetation according to methods described in McCarthy et al. (2007 draft). Potential barriers to fish migration were noted, photographed and georeferenced. Locations C0022 and C0043 were not crossed by the proposed access road but were located within the 20 m RoW; so only a visual assessment consisting of photos was completed.

To support habitat characterization*, in situ* water quality measurements of temperature, conductivity and turbidity were collected at select locations with a YSI2030 water quality meter and a Hach 2100Q Portable Turbidity Meter.

Photographs taken at each location are shown in Appendix C and detailed habitat information is provided in Appendix D.

3.5 OFFSETTING OPPORTUNITIES

Five locations were surveyed in summer 2020 to assess their potential to provide offsetting for project related HADD. The opportunities are listed below, and locations are shown on Figure 3.3.

- Anstey Steady
- Victoria River immediately downstream of the Victoria Dam
- A gravel pit adjacent to the Victoria River
- Outlet of Valentine Lake
- North Twin Brook

Each location was characterized to determine its restoration/remediation potential based on the type and quantity of habitat that could be restored. Photographs were taken of each site and are included in Appendix C.

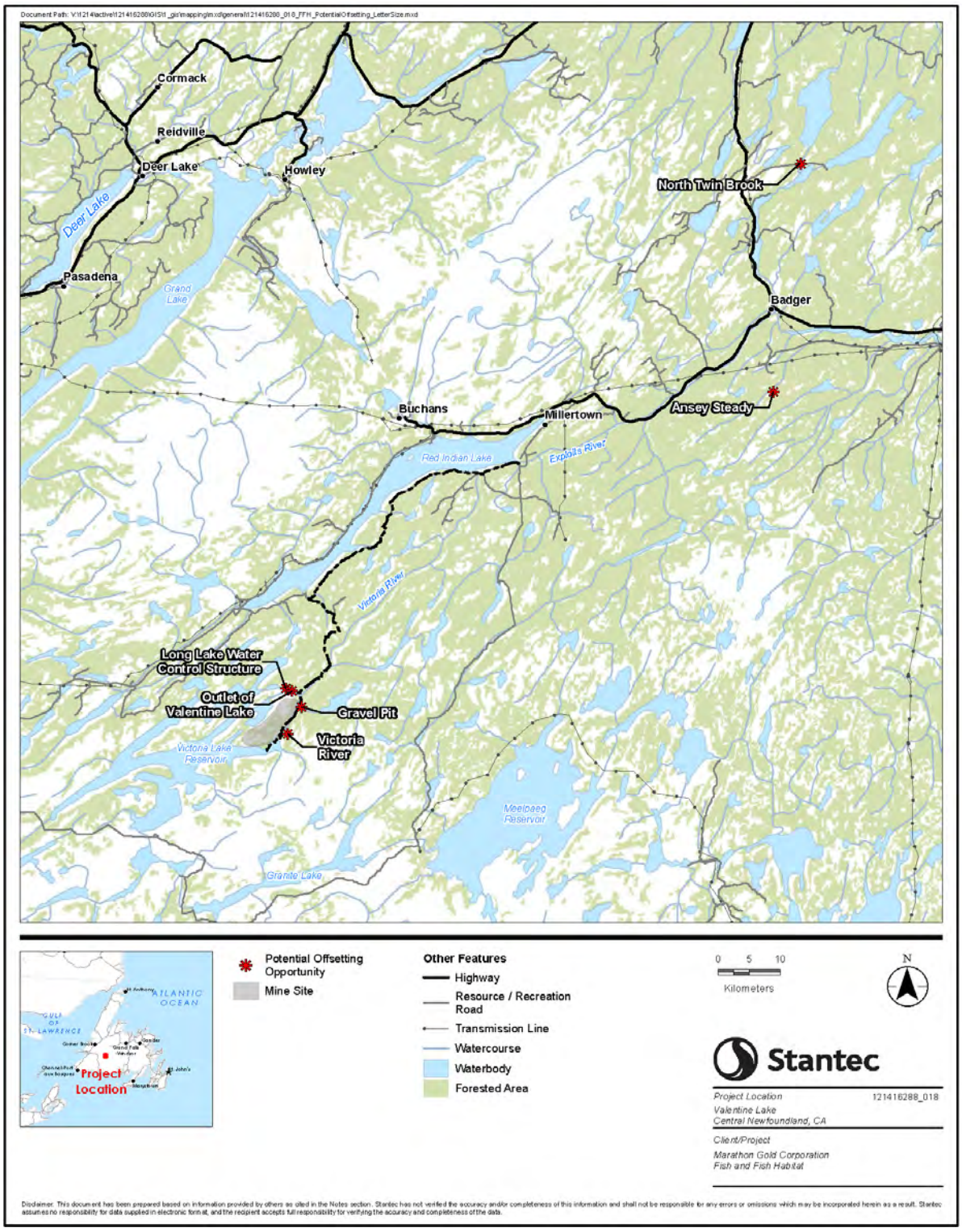

Figure 3.3 Location of Potential Offsetting Opportunities for the Valentine Gold Project

4.0 RESULTS

4.1 FISH SAMPLING

Bog holes, stream sections and proposed access road crossings potentially affected by the Valentine Gold Project were sampled to determine the fish species present and to determine if these areas represent fish habitat.

4.1.1 Bog Holes

Five bog holes (IT06, IT15, IT18, IT24 and IT28) were fished by use of gillnets and minnow traps and fishing effort is summarized in Table 4.1. No fish or species at risk (SAR) were captured in the bog holes. The fish sampling conducted confirmed that fish were not present in IT06, IT15, IT18, IT24 and IT28 and provides substantial weight of evidence that fish are not present in bog holes within the mine site. In addition, predaceous diving beetle larvae (Dytisidae) were noted at all of the bog holes. Predaceous diving beetle larva is a top invertebrate predator often associated with boreal fishless ponds (Cobbaert et al. 2010).

Table 4.1 Summary of 2020 Fish Sampling in Bog Holes

Bog Hole	Gear	Effort (hours)	Catch
IT06	Gill net	82.7	0
IT15	Gill net	94	0
	Minnow Trap	184.1	0
IT18	Gill net	93.75	0
	Minnow Trap	139.0	0
IT24	Gill net	90	0
	Minnow Trap	132.9	0
IT28	Gill net	51.5	0
	Minnow Trap	51.5	0

4.1.2 Streams

Consistent with previous baseline surveys (Stantec 2012, 2019, 2020), stream sampling confirmed the presence of Atlantic salmon/Ouananiche (Photo 3), brook trout (Photo 4) and threespine stickleback (Photo 5) within the Study Area. A summary of fish sampling is provided in Table 4.2. No fish SAR were captured in streams in the Study Area. The complete fish sampling data are provided in Appendix B.

No streams were present at locations 12, 14A and 25. However, isolated shallow pools occurred sporadically. The isolated pools were electrofished with multiple passes to confirm that these locations were not waters frequented by fish.

Electrofishing was not conducted in streams 14B and C, as the substrate made it unsafe for wading. Fish are assumed present in streams 14B and C, given the visible connectivity of these with the main stem of stream 14., Electrofishing was not conducted on stream 33 tributaries B, C and D due to insufficient water depth.

Fishing was also not conducted at stream crossings C0017 to C0020, C0024 to C0027, C0028a, C0029, C0030, C0032, C0051 and C056 as there was no visible channel, an intermittent or ephemeral channel with no connectivity to downstream watercourses or only wetland drainage present (Table 5.2). C0059 was fish habitat, however fish sampling was not conducted due to safety concerns associated with heavy rain.

Photo 3 Representative Photo of Atlantic Salmon

Photo 4 Representative Photo of Brook Trout

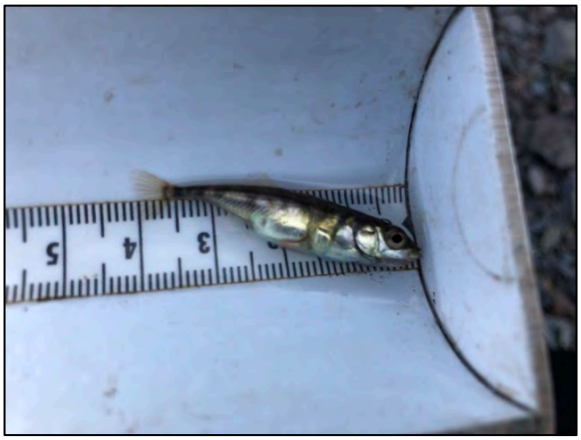

Photo 5 Representative Photo of Threespine Stickleback

Table 4.2 Summary of Fish Sampling for Streams and Stream Crossings 2020, Valentine Gold Project

Location	Effort (s)	Atlantic Salmon/Ouananiche Fork Length (mm)				Brook Trout Fork Length (mm)				TSSB	All Species CPUE (#fish/100 seconds)
		Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	
Stream Crossings											
C0016 and C0016a	247	0	-	-	-	0	-	-	-	0	0
C0017	No fish sampling conducted as no visible channel. Not fish habitat.										
C0018	No fish sampling conducted as no visible channel. Not fish habitat.										
C0019	No fish sampling conducted as no visible channel. Not fish habitat.										
C0020	No fish sampling conducted as no visible channel. Not fish habitat.										
C0021 and C0021a	340	0	-	-	-	0	-	-	-	0	0
C0022a[a]	56,016	0	-	-	-	0	-	-	-	2	2,800,800
C0023	181	0	-	-	-	0	-	-	-	0	0
C0024	No fish sampling conducted as no visible channel. Not fish habitat.										
C0025	No fish sampling conducted as intermittent ephemeral channel with no connectivity. Not fish habitat										
C0026	No fish sampling conducted as intermittent wetland drainage with no connectivity. Not fish habitat										
C0027	No fish sampling conducted as no visible channel. Not fish habitat.										
C0028	199	0	-	-	-	0	-	-	-	0	0
C0028a	No fish sampling conducted as surface water runoff into ditch. Not fish habitat.										
C0029	No fish sampling conducted as no visible channel. Not fish habitat.										
C0030	No fish sampling conducted as no visible channel US, wetland drainage downstream. Not fish habitat.										
C0031	510	0	-	-	-	0	-	-	-	7	73
C0032	No fish sampling conducted as intermittent braided channel of wetland seepage. Unlikely fish habitat.										
C0033	301	0	-	-	-	0	-	-	-	0	0
C0034	565	0	-	-	-	0	-	-	-	7	1
C0035	230	0	-	-	-	0	-	-	-	0	0

Table 4.2 Summary of Fish Sampling for Streams and Stream Crossings 2020, Valentine Gold Project

Location	Effort (s)	Atlantic Salmon/Ouananiche Fork Length (mm)				Brook Trout Fork Length (mm)				TSSB	All Species CPUE (#fish/100 seconds)
		Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	
C0036	399	0	-	-	-	0	-	-	-	0	0
C0036a	336	0	-	-	-	0	-	-	-	0	0
C0037	320	0	-	-	-	0	-	-	-	0	0
C0038	131	0	-	-	-	0	-	-	-	0	0
C0039	303	0	-	-	-	0	-	-	-	0	0
C0040	266	0	-	-	-	5	55	95	117	14	7
C0041	310	0	-	-	-	0	-	-	-	0	0
C0042	390	0	-	-	-	8	40	62	97	0	2
C0044	360	0	-	-	-	22	34	57	118	0	6
C0045	466	0	-	-	-	8	52	75	124	0	2
C0046	352	0	-	-	-	2	114	132	149	2	1
C0047	393	3	97	104	109	15	53	102	174	0	5
C0048	374	1	108	108	108	0	-	-	-	0	0
C0049	187	0	-	-	-	19	41	99	142	0	10
C0050	311	0	-	-	-	6	74	103	129	0	2
C0051	No fish sampling conducted as very steep drainage channel (40% slope). Completely dry unless there is a recent rain event. Not fish habitat.										
C0052	471	0	-	-	-	20	46	75	174	0	4
C0053	172	0	-	-	-	0	-	-	-	0	0
C0054	327	0	-	-	-	0	-	-	-	0	0
C0055	No fish sampling conducted as not fish habitat in right of way (ROW)										
C0056	No fish sampling conducted as drainage from road dissipates into forested wetland. No connectivity, not fish habitat.										
C0057	352	0	-	-	-	11	31	50	109	0	3
C0058	401	0	-	-	-	0	-	-	-	0	0

Table 4.2 Summary of Fish Sampling for Streams and Stream Crossings 2020, Valentine Gold Project

Location	Effort (s)	Atlantic Salmon/Ouananiche Fork Length (mm)				Brook Trout Fork Length (mm)				TSSB	All Species CPUE (#fish/100 seconds)
		Count	Minimum	Average	Maximum	Count	Minimum	Average	Maximum	Count	
C0059	No fish sampling conducted due to safety concerns (heavy rain). Trout and Atlantic salmon/Ouananiche observed.										
C0060	338	1	-	-	-	0	-	-	-	0	0
C0061	221	5	66	79.8	88	8	68	82	96	0	6
Streams											
Stream 12	340	0	-	-	-	0	-	-	-	0	0
Stream 14A	235	0	-	-	-		-	-	-	0	0
Stream 14E	118	0	-	-	-	1	91	91	91	0	
Stream 14F	105	0	-	-	-	-	-	-	-	0	
Stream 15	924	0	-	-	-	4	54	87	110	78	9
Stream 25	340	0	-	-	-	0	-	-	-	0	0
Stream 26	434	0	-	-	-	11	33	57	123	0	3
Stream 27	259	1	88	88	88	19	36	73	139	0	8
Stream 33A	185	0	-	-	-	1	94	-	-	0	3
Stream 33B[b]	-	-	-	-	-	2	62	-	-	0	-
Stream 33E	568	0	-	-	-	20	31	97	152	0	352

Note:
[a] Minnow traps were used
[b] Captured by dip net
TSSB =Threespine stickleback
CPUE = Catch per unit of effort

4.2 FISH HABITAT CLASSIFICATION

Fish habitat classification for streams located on the mine site and stream crossings associated with the access road are discussed in the following sections.

4.2.1 Mine Site Streams

Mine site streams surveyed in 2020 were generally small (<5 m wide), shallow (<0.5 m), and slow flowing (<0.2 m/s), and many intermittent or ephemeral in nature (Appendix D, Table D.1 and D.2). The exception is the outlet of Valentine Lake, which was perennial, moderate in size (approximately 22 m wide), shallow (<0.5 m) and swift flowing (<1 m/s). Water temperature ranged from 11.6 to 27.8°C, and conductivity ranged from 53.9 to 526.0 µS/cm. Habitat classification for streams surveyed in 2020 is provided in Table 4.3. Representative photos are provided in Appendix C while the complete habitat classification data, including *in situ* water quality data, is included in Appendix D.

There was no defined channel at the mapped location of Stream 12 (the unnamed tributary to M1), Stream 25 (the unnamed tributary to L1), tributary A to Stream 14 under the proposed tailings management facility, or Stream 33D (Figure 3.1 and Figure 4.1).

Portions of Streams 14, 31, 32, and 33 were ephemeral, intermittent, or perennial (Figure 3.1 and Figure 4.1). Streams 14B, C, and D contained fish habitat while portions of Streams 14E and F did not constitute fish habitat. The lower portions of Streams 31 and 32 were considered fish habitat, however the ephemeral channel upstream of the perched culvert at the old forestry road crossings on both streams was not considered fish habitat. Stream 33 consists of three tributaries (A, B, C) which merge into a single tributary (E), and a mapped portion of stream which was field verified as having no visible channel (D). Streams 33A and 33B are fish habitat, while the majority of Stream 33C is not fish habitat.

The fish-bearing portion of Stream 15 extended approximately 220 m upstream of its mapped location. The full extent of Stream 15 is shown on Figure 4.1.

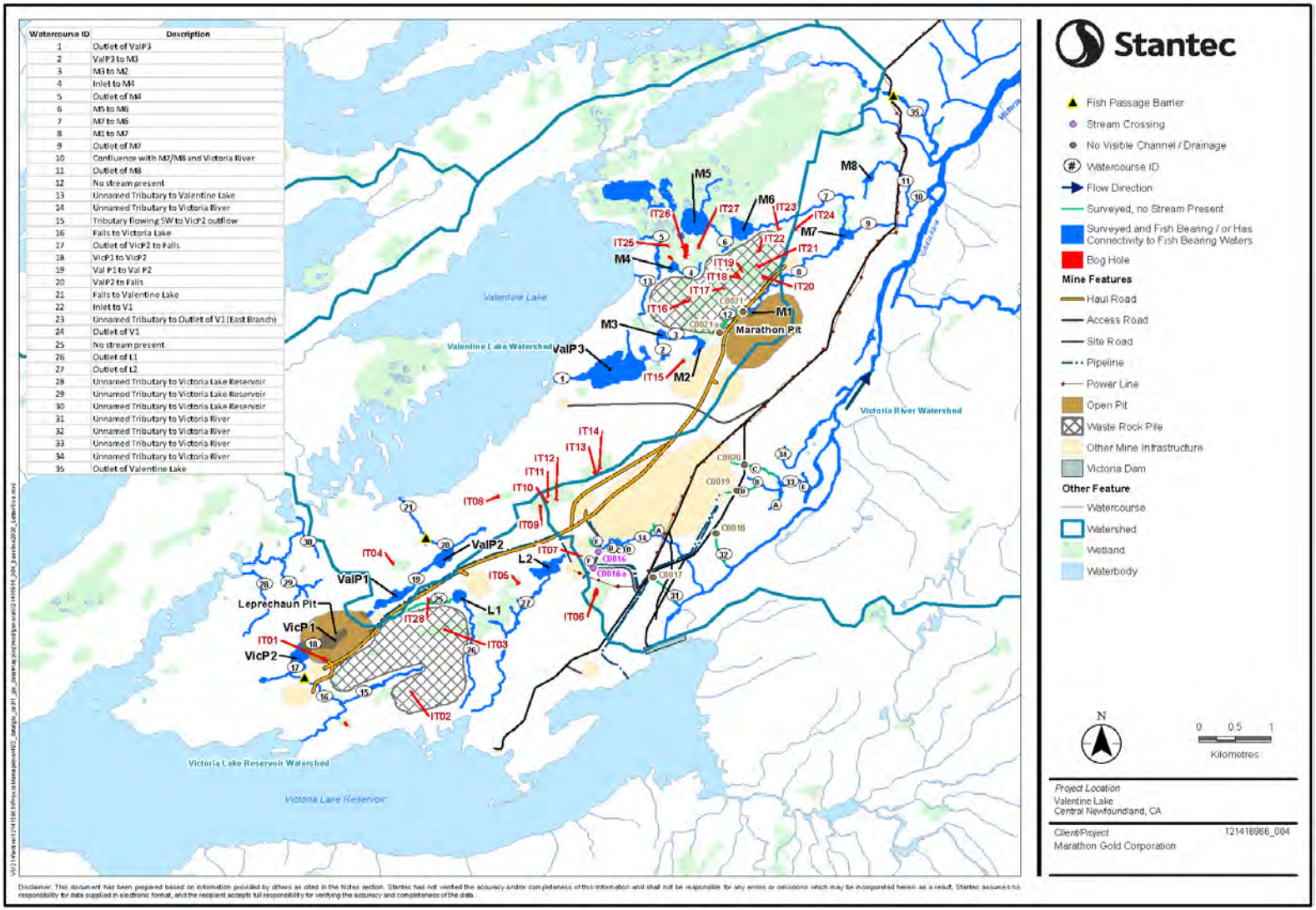

Figure 4.1 Ground-Truthed Streams and Stream Crossings 2020- Mine Site

Table 4.3 Summary of Habitat Characteristics for Streams Surveyed 2020

Location	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Average Slope (%)	Dominant Habitat Type	Dominant Substrate Type	Dominant Riparian Vegetation	Average Overhead Cover	Average Instream Cover	Comments
Stream 12	Not fish habitat. No stream channel exists at the location identified as Stream 12 and there is no connectivity to Pond M1. The area near Pond M1 where Stream 12 is supposed to enter Pond M1 is elevated, relative to a wetland area located to the west of Pond M1, preventing the formation of a stream channel. Shallow pools (<0.10 m) were intermittently dispersed throughout the wetland in the mapped location of the stream. Manganese precipitate was noted in the shallow pools throughout.										
Stream 14 B, C, D	1.41	1.79	0.36	-	0.5	Flat (~100%)	Fines (~100%)	Grass (~75%)	~50%	~80%	Small headwater tributaries constituting fish habitat which drain bogs and flow into stream 14
Stream 14A	Not fish habitat. No water exists until approximately 40 m north of Stream 14, where shallow pools (approximately 5 to 20 cm deep) are intermittently dispersed throughout the bog. There is no connectivity to Stream 14. Manganese precipitate was noted in the pooled wetland drainage throughout.										
Stream 14E	0.73	0.95	0.06	0.024	1.0	Riffle (50%)	Fines (50%)	Grass (50%)	~20%	~85%	A defined channel was observed within the first 80 m upstream (0 to 80 m) from the confluence with Stream 14. No visible channel was observed within the remaining 120 m upstream of stream 14E.
Stream 14F	8.18	8.43	0.21	0.0001	0.6	Pond (~70%)	Fines (~100%)	Grass (~40%)	~55%	~90%	Includes intermittent areas of no visible channel, poorly defined channels or no defined channel which flows into a large beaver impoundment. Likely accessible by fish during high flow events.
Stream 15	4.76	5.57	0.24	0.004	0.7	Flat (~40%)	Fines (~65%)	Trees (~40%)	~40%	~50%	Small headwater stream draining a bog flows into a large pond
Stream 25	Not fish habitat. No stream channel exists at the location identified as Stream 25 and there is no connectivity to Pond L1 or Bog Hole IT28. Shallow (<0.10 m) and dried pools are intermittently dispersed throughout the bog area in the general location of where the stream is mapped. Manganese precipitate was noted in all the shallow pools in the area.										

Table 4.3 Summary of Habitat Characteristics for Streams Surveyed 2020

Location	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Average Slope (%)	Dominant Habitat Type	Dominant Substrate Type	Dominant Riparian Vegetation	Average Overhead Cover	Average Instream Cover	Comments
Stream 26	0.26	1.00	0.01	-	1.0	Pool (~60%)	Fines (~70%)	Shrub (50%)	~55%	~5%	Intermittent or ephemeral throughout its length during low-flow period
Stream 27	1.80	7.00	0.12	0.112	1.5	Riffle (~90%)	Cobble/Rubble (~50%)	Tree/Shrub (~40%)	~25%	~5%	Perennial stream where surveyed
Stream 31	0.47	1.54	0.01	-	15	Riffle (~90%)	Boulder (~45%)	Shrub (45%)	~20%	~5%	Perched culvert at road crossing barrier to fish passage, intermittent or ephemeral upstream not fish habitat.
Stream 32	0.45	0.88	0.01	-	16.2	Pool (~90%)	Fines (~40%)	Shrub (50%)	~10%	~20%	Perched culvert at road crossing barrier to fish passage, intermittent or ephemeral upstream not fish habitat.
Stream 33 A, B and E	0.63	1.15	0.05	0.018	5.1	Riffle/run (~60%)	Fines (~50%)	Grass (~45%)	~30%	~30%	Reaches 33 (A, B, E) are fish habitat
Stream 33C	0.24	1.10	0.00	-	12.1	-	-	-	-	-	Not fish habitat 65 m upstream of the confluence with the other tributaries. Ephemeral overland drainage channel which contains steep gradients.
Stream 33D	Not fish habitat. No stream channel exists at the location identified as Stream 33D										
Outlet of Valentine Lake	-	22.00	0.38	0.6	8.3	Riffle/run (~50%)	Boulder (~60%)	Trees (~70%)	~15%	~20%	Series of riffle/run and cascades.

4.2.2 Stream Crossings

Fish habitat surveys were completed on 50 potential stream crossing locations in 2020. Two of the potential stream crossings were not actually crossed by the access road; however, the streams were located within the 20 m RoW. These two streams were only assessed visually. Surveys conducted at the remaining 48 locations, indicated that 26 stream crossings are located in fish habitat and 22 are located in areas that do not constitute fish habitat (Figures 4.2 to 4.5). Streams that constituted fish habitat had a mean stream width ranging from 4.6 to 34 m. Habitat types were primarily, riffle-run with some flat or pool habitats. Stream crossings determined to not constitute fish habitat included streams that had no visible channel, were ephemeral/intermittent or had no connectivity to fish bearing waters (i.e., isolated channels or small pools of standing water). A summary of habitat attributes for stream crossings is provided in Table 4.4. The complete habitat classification data set is included in Appendix D, Table D.4.

Fish surveys were used to confirm the absence of fish at locations identified as not constituting fish habitat, as applicable. In some cases, a berm on the upstream side of the access road appears to have altered the drainage and flow of the streams. Many drained through the existing roadside ditch, dissipated into the forest and were not connected to upstream or downstream watercourses/waterbodies. Additionally, six other culverts that provided surface drainage during rain events (no natural streambed, not fish habitat) occurred along the access road. These locations as well as the other stream crossing locations are identified in Figures 4.2 to 4.5.

Two stream crossing locations were identified as having the potential to offer fish habitat offsetting opportunities through restoration of fish passage (i.e., C0040) and realignment of the stream channel (i.e., C0046). Many other perched culverts were noted during the 2020 survey, however offered limited offsetting opportunity.

Water temperature at stream crossings ranged from 12.9 to 22.0°C, conductivity from 44.3 to 317 µS/cm and turbidity ranged from 0.7 to 1.6 nephelometric turbidity units (NTU). *In situ* water quality measurements are included in Appendix D, Table D.5.

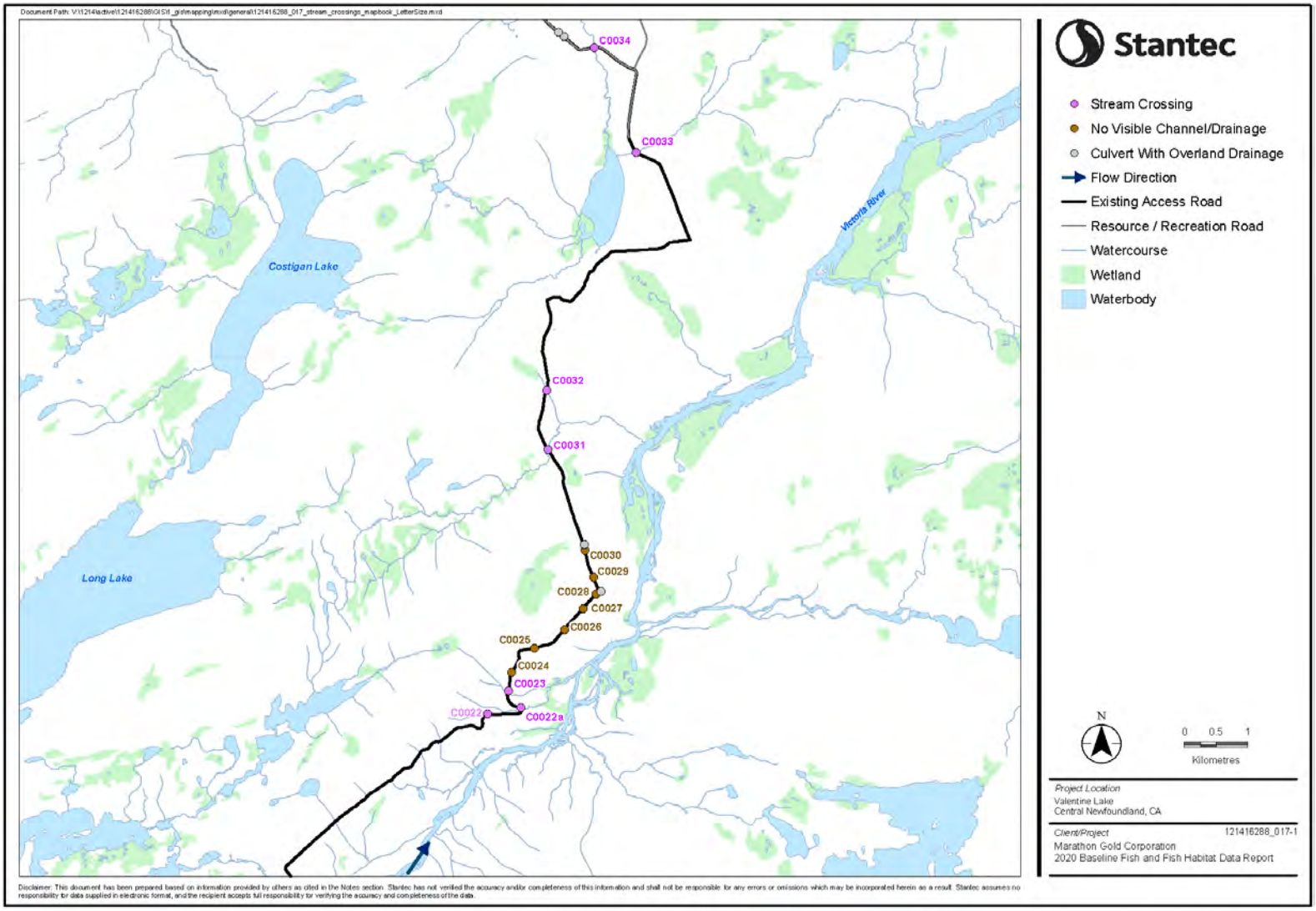

Figure 4.2 Ground-Truthed Streams and Stream Crossings 2020, C0022 to C0034

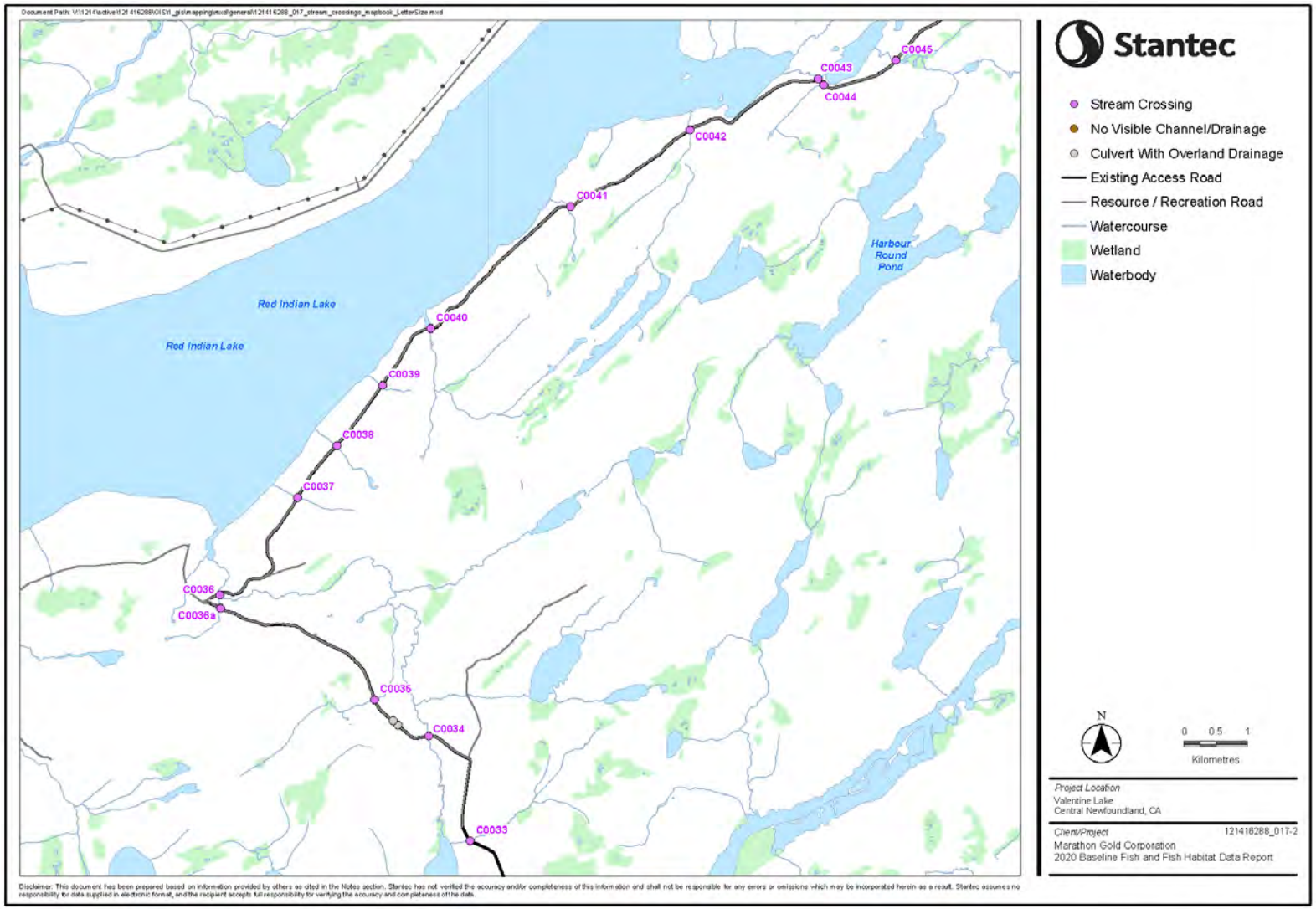

Figure 4.3 Ground-Truthed Streams and Stream Crossings 2020, C0033 to C0045

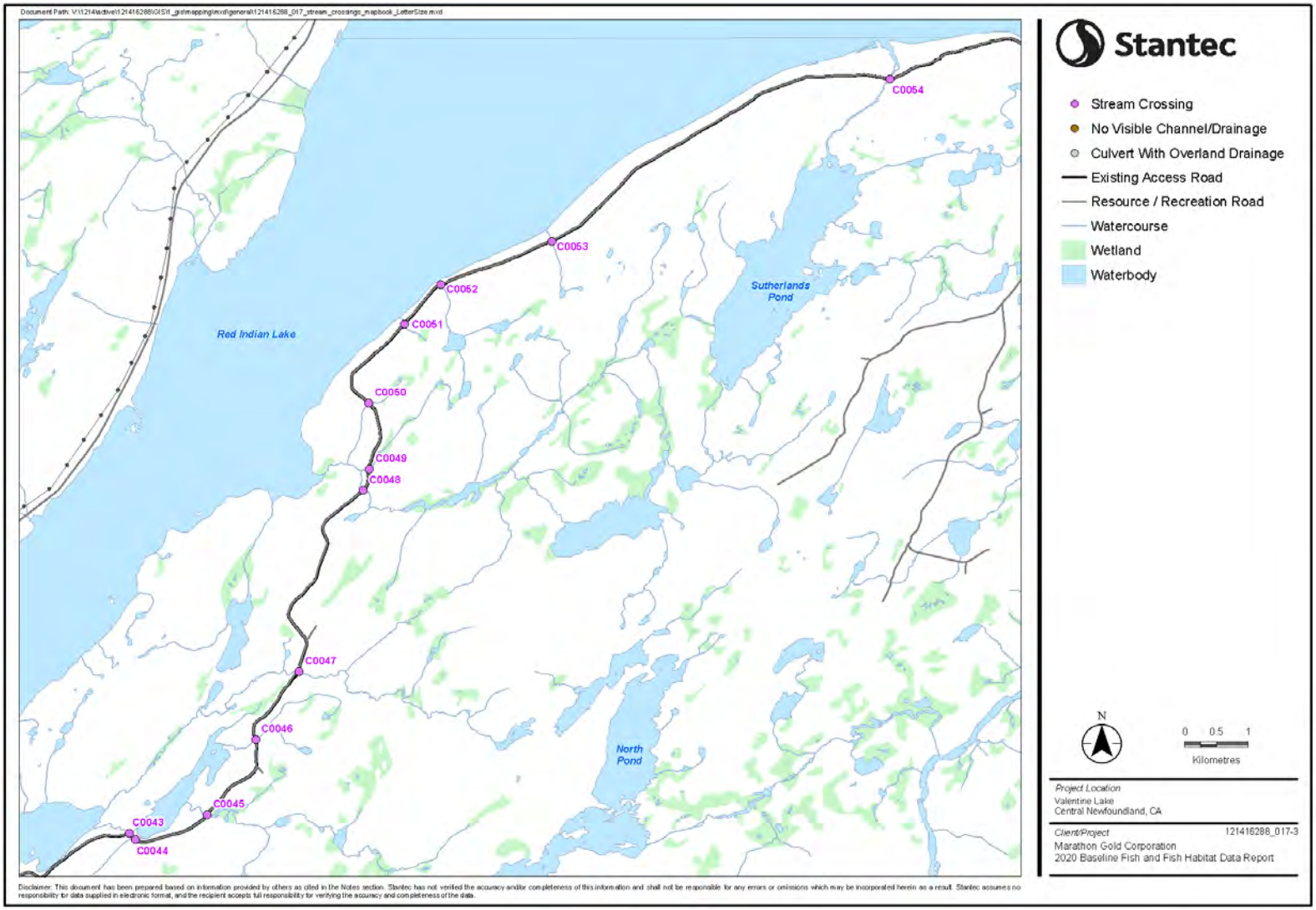

Figure 4.4 Ground-Truthed Streams and Stream Crossings 2020, C0043 to C0054

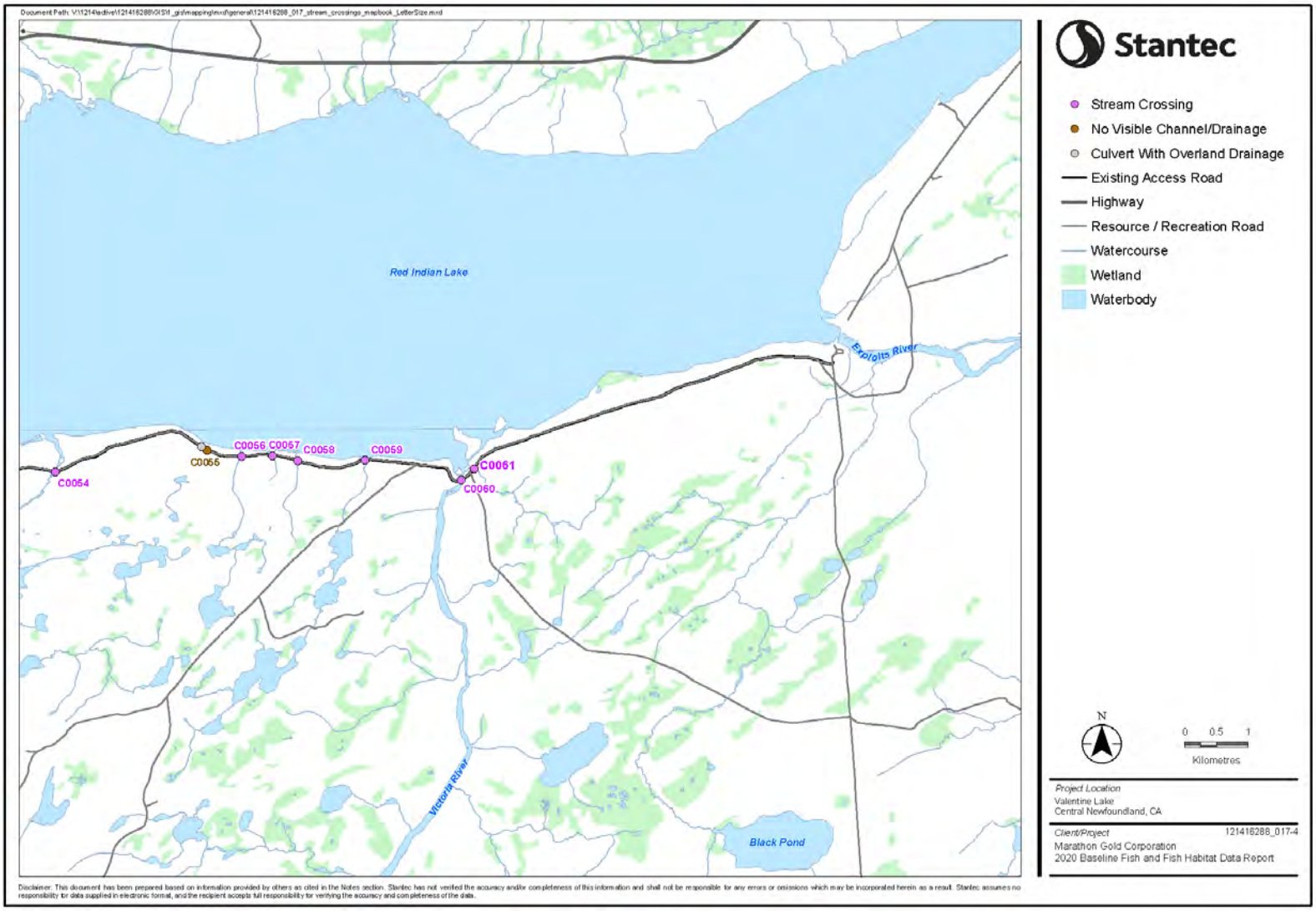

Figure 4.5 Ground-Truthed Streams and Stream Crossings 2020, C0054 to C0061

Table 4.4 Summary of Habitat Characteristics for Stream Crossings 2020

Location	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Average Slope (%)	Dominant Habitat Type	Dominant Substrate Type	Dominant Riparian Vegetation	Average Overhead Cover	Average Instream Cover	Comments	Existing Structure
C0016	13.83	14.00	0.44	-	0.5	Pond (100%)	Fines (100%)	Shrub (40%)	~30%	~85%	Fish habitat - confirmed fish present	NA
C0016a	1.37	1.37	0.05	-	0.5	Pond (70%)	Fines (100%)	Grass (50%)	~80%	~100%	Unlikely fish habitat - connectivity only during very high flows through wetland but no visible channel	NA
C0017	Not fish habitat											NA
C0018	Not fish habitat											NA
C0019	Not fish habitat											NA
C0020	Not fish habitat											NA
C0021	Not fish habitat											NA
C0021a	Not fish habitat											NA
C0022	Visual Assessment Only											NA
C0022a	3.57	8.23	0.21	-	0.5	Pool (55%)	Fines (100%)	Grass/Shrub (45%)	~55%	~30%	Fish habitat - confirmed fish present	Culvert - CPP
C0023	2.50	3.00	0.24	-	2.0	Riffle/run (90%)	Cobble/Rubble (~50%)	Grass/Shrub (50%)	~40%	~5%	Unlikely fish habitat - no visible channel upstream and dry ephemeral channel downstream	Culvert - perched CPP
C0024	Not fish habitat											No culvert present, surface water flows into ditch
C0025	Not fish habitat											No culvert present, surface water flows into ditch
C0026	Not fish habitat											No culvert present, surface water flows into ditch
C0027	Not fish habitat											No culvert present, surface water flows into ditch
C0028	Not fish habitat											Culvert - perched CSP
C0029	Not fish habitat											No culvert present, surface water flows into ditch
C0030	Not fish habitat											No culvert present, surface water drains through ditch to culvert 80 m north
C0031	2.47	4.60	0.16	0.061	2.0	Riffle/run (90%)	Cobble/Rubble/ Boulder (~45%)	Shrub (55%)	~35%	~15%	Fish habitat - confirmed fish present	Bridge
C0032	0.84	1.72	0.08	-	1.2	Riffle/run (100%)	Fines (~55%)	Shrub (60%)	~55%	~0%	Unlikely fish habitat - no fish observed.	Culvert - CSP (30 cm in diameter)
C0033	1.82	2.82	0.07	0.022	1.0	Riffle/run (80%)	Cobble/Rubble (~50%)	Shrub (70%)	~65%	~10%	Fish habitat - based on connectivity.	Bridge - old bridge or piles underneath
C0034	4.50	6.20	0.25	0.084	1.0	Riffle/run (60%)	Cobble/Rubble (~50%)	Shrub (80%)	~10%	~10%	Fish habitat - confirmed fish present	Bridge - old bridge or piles underneath
C0035	2.96	7.02	0.05	0.036	1.5	Riffle/run (70%)	Cobble/Rubble (~60%)	Shrub (50%)	~55%	~5%	Fish habitat - based on connectivity.	Culvert
C0036	8.25	15.37	0.30	0.933	17.3	Riffle/run (100%)	Cobble/Rubble/ Boulder (~40%)	Shrub (55%)	~10%	~10%	Fish habitat - perennial stream. Large falls.	Bridge
C0036a	1.30	1.87	0.09	0.387	1.0	Riffle/run (95%)	Cobble/Rubble (~70%)	Shrub (55%)	~20%	~0%	Fish habitat - perennial stream.	Culvert - CSP

Table 4.4 Summary of Habitat Characteristics for Stream Crossings 2020

Location	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Average Slope (%)	Dominant Habitat Type	Dominant Substrate Type	Dominant Riparian Vegetation	Average Overhead Cover	Average Instream Cover	Comments	Existing Structure
C0037	0.92	1.74	0.06	0.039	1.3	Riffle/run (90%)	Cobble/Rubble (~60%)	Grass (55%)	~15%	~0%	Not fish habitat - ephemeral and lack of connectivity.	Culvert - CSP (62 cm in diameter)
C0038	1.00	2.00	0.09	0.010	1.5	Flat (80%)	Fines (55%)	Grass (50%)	~40%	~0%	Not fish habitat - no connectivity, dissipates into forest.	No culvert present, surface water flows into ditch
C0039	1.72	2.46	0.18	0.010	1.7	Riffle/run (75%)	Fines (~60%)	Grass (40%)	~25%	~0%	Fish habitat - fish observed. Possible compensation option.	Culvert - CSP (90 cm in diameter)
C0040	2.33	6.70	0.14	0.300	1.5	Riffle/run (90%)	Cobble/Rubble (~60%)	Shrub (40%)	~20%	~5%	Fish habitat -fish confirmed present. Perched/crushed culvert. Possible compensation opportunity.	Culvert - CSP (160 cm in diameter). Crushed from weight of road. Perched and undermined.
C0041	1.07	1.83	0.05	0.230	2.0	Riffle/run (100%)	Cobble/Rubble (~55%)	Trees (50%)	~25%	~5%	Fish habitat - based on potential connectivity.	Culvert - CSP (60 cm in diameter)
C0042	2.58	3.28	0.10	0.289	1.3	Riffle/run (90%)	Cobble/Rubble (~50%)	Trees (50%)	~20%	~10%	Fish habitat - confirmed fish present	Culvert - CSP (160 cm in diameter)
C0043	Visual Assessment Only											NA
C0044	4.74	5.27	0.13	0.124	4.0	Riffle/run (90%)	Boulder (~40%)	Shrub (50%)	~40%	~5%	Fish habitat - confirmed fish present	Culvert - CSP (90 cm in diameter)
C0045	7.19	8.69	0.33	0.280	1.5	Riffle/run (95%)	Boulder (~35%)	Trees (45%)	~10%	~5%	Fish habitat - confirmed fish present	Bridge
C0046	1.61	2.05	0.14	0.138	0.8	Flat (65%)	Cobble/Rubble/ Boulder (~35%)	Trees (~45%)	~10%	~5%	Fish habitat - confirmed fish present. Possible compensation opportunity.	Culvert - CPP
C0047	4.51	5.23	0.16	0.231	1.7	Riffle/run (95%)	Cobble/Rubble (~45%)	Shrub (60%)	~20%	~10%	Fish habitat - confirmed fish present	Bridge - old culvert blown out, and left downstream
C0048	7.76	8.47	0.29	0.240	1.7	Riffle/run (95%)	Cobble/Rubble (~55%)	Shrub (45%)	~15%	~5%	Fish habitat - confirmed fish present	Bridge
C0049	0.86	1.75	0.07	0.186	3.7	Riffle/run (75%)	Fines/Gravel (~35%)	Shrub (55%)	~45%	~0%	Fish habitat - fish observed	Culvert - CSP (60 cm in diameter)
C0050	0.85	1.12	0.12	0.012	1.8	Riffle/run (80%)	Fines (50%)	Shrub (45%)	~50%	~50%	Fish habitat - confirmed fish present	Culvert - CSP (80 cm in diameter). Bottom rotted out.
C0051	0.00	0.90	0.00	-	30.0	Riffle/run (100%)	Fines (50%)	Trees (~70%)	~5%	~0%	Not fish habitat - very steep drainage channel for overland flow.	Culvert - CSP, rotted out in bottom. Road eroding.
C0052	2.39	3.50	0.09	0.186	6.0	Riffle/run (95%)	Cobble/Rubble/ Boulder (~40%)	Trees (50%)	~20%	~10%	Fish habitat - confirmed fish present	Culvert - two CSPs (each 90 cm in diameter)
C0053	0.80	1.28	0.05	0.044	2.0	Riffle/run (95%)	Cobble/Rubble (~45%)	Trees (40%)	~40%	~5%	Not fish habitat - lacks connectivity.	Culvert - CSP (63 cm in diameter)
C0054	6.66	11.10	0.18	0.392	3.7	Riffle/run (90%)	Boulder (~50%)	Trees (50%)	~15%	~15%	Fish habitat - based on connectivity.	Culvert - two CSP (each 180 cm in diameter). One CSP rotted out.
C0055	Not fish habitat											Culvert - buried under road
C0056	1.13	1.30	0.03	-	1.3	Riffle/run (75%)	Fines/Gravel (~30%)	Shrub (40%)	~35%	~0%	Not fish habitat - lacks connectivity.	Culvert - CSP. Hung ~10 cm.
C0057	5.96	8.53	0.10	0.140	1.0	Riffle/run (50%)	Cobble/Rubble (~40%)	Shrub/Trees (50%)	~40%	~20%	Fish habitat - confirmed fish present	Culvert - CSP, crushed at downstream end.

Table 4.4 Summary of Habitat Characteristics for Stream Crossings 2020

Location	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)	Mean Velocity (m/s)	Average Slope (%)	Dominant Habitat Type	Dominant Substrate Type	Dominant Riparian Vegetation	Average Overhead Cover	Average Instream Cover	Comments	Existing Structure
C0058	1.12	1.32	0.05	-	1.0	Riffle/run (90%)	Cobble/Rubble (~50%)	Grass (40%)	~45%	~0%	Fish habitat - based on connectivity.	Culvert - CSP
C0059	2.16	2.54	0.09	0.517	21.0	Riffle/run (95%)	Cobble/Rubble (~50%)	Trees (50%)	~20%	~5%	Fish habitat - confirmed fish present	Culvert - CSP (150 cm in diameter)
C0060	17.00	24.67	1.22	-	1.3	Riffle/run (55%)	Bedrock (~60%)	Grass (60%)	~15%	~15%	Fish habitat - confirmed fish present	Bridge
C0061	1.39	2.30	0.09	0.159	1.5	Riffle/run (85%)	Cobble/Rubble (~60%)	Shrub (50%)	~35%	~0%	Fish habitat - confirmed fish present	Culvert - CSP (90 cm in diameter). Water flows under culvert.

Note:
CSP = Corrugated Steel Pipe
CPP = Corrugated Plastic Pipe

4.3 OFFSETTING OPPORTUNITIES

Five offsetting opportunities were surveyed in 2020 to assess their potential use as fish habitat offsetting projects (Figure 3.3).

4.3.1 Anstey Steady

DFO has suggested Anstey Steady as a potential offsetting opportunity. A log driving dam constructed at the outlet of Anstey Steady may represent a barrier to fish passage.

Anstey Steady is located on Tom Joe Brook within the Exploits River watershed. The site was visited on July 19, 2020. The remains of the old forestry dam were apparent at the outlet of Anstey Steady, however did not present a barrier to fish passage (Appendix C, Photos 229 to 232). Cottage owners in the area indicated that the forestry dam and associated pulp wood had been removed approximately five years prior. Stantec verified the observations of the cottage owners and assessed the areas in the steadies further upstream of Anstey Steady. No large areas of pulp wood were observed that could merit an offsetting opportunity.

4.3.2 Victoria River

Victoria River formerly drained Victoria Lake prior to the construction of the Victoria Dam in 1967 and the creation of the Victoria Lake Reservoir. The decreased flow in Victoria River due to Victoria Dam construction has narrowed the previous riverbed. A review of aerial imagery indicated the potential for restoration of stream sections immediately downstream of the Dam. There appeared to be side channels that were disconnected from existing river flow and numerous beaver dams. Shrubs dominate the riparian area within the former riverbanks in lower lying areas. A potential offsetting opportunity to improve salmonid habitat exists if flow can be concentrated and side channels filled to create areas with flowing water for spawning.

Victoria River was visited on July 23, 2020. The fish habitat in Victoria River downstream of the Victoria River Dam was assessed visually from shore, while stream surveys were conducted nearby. The areas assessed generally consisted of short riffles with gravel or sand substrates and deeper pools resulting from beaver activity or previous river side channels (Appendix C, Photos 233 to 236). There was abundant overhead and instream cover. Water temperatures were cool (i.e., <18°C). Salmonids were abundant and multiple life stages were noted. Given the abundance of salmonids directly observed and the good quality of the habitat present, this opportunity was not pursued further.

4.3.3 Gravel Pit

A gravel pit that may be used for “borrow” material is located approximately 65 m from Victoria River. Following the removal of the borrow material during construction, the excavated area could be used to create a pond and a small stream could connect the pond with the Victoria River.

The gravel pit was visited on July 25, 2020. The general area of the gravel pit was assessed visually and potential channels to the Victoria River were assessed (Appendix C, Photos 237 to 240). The development of the gravel pit is constrained by its small size relative to the total area required for offsetting, the topography (e.g., steep slopes approaching the river) and potential lack of surface water inputs, therefore is not being pursued further.

4.3.4 Long Lake Water Control Structure

A review of publicly available literature and aerial imagery indicates there is a dam at the outlet of Long Lake. A potential offsetting opportunity to improve access to salmonid habitat in Long Lake could exist if the dam presents a complete barrier to fish passage and select fish species are absent upstream of the dam.

The Long Lake Water Control Structure was visited on July 25, 2020 and was in a state of disrepair. A sign indicated that the Long Lake Water Control Structure is owned by Abitibi-Bowater. The water control structure is constructed of timber and measures approximately 3 m high x 12 m wide m x 11 m long (Appendix C, Photos 241 to 246). The structure was likely constructed to allow for temporary damming of Long Lake, to facilitate log driving downstream. The bottom of the structure appears to consist of wood. Holes in the deck and side of the structure were observed in the site visits. The relatively smooth timber surface results in high velocities at the downstream end of the water control structure where it discharges into the pool below (Appendix C, Photos 245 and 246).

There is the potential that the water control structure creates a barrier to fish passage due to shallow water depth and high velocity. The water control structure is elevated relative to the downstream water's surface (~0.5 m); however, a deep pool downstream allows fish to jump the 0.5 m elevation. During the site visit a brook trout was observed jumping into the water control structure, then swept back downstream due to shallow depth and high velocity. Low water depths in the water control structure increase the likelihood of injury to leaping fish (Appendix C, Photo 243). The existing water control structure does not impound water in Long Lake.

A 250 m section in the downstream end of the steady immediately below the outlet of Long Lake was assessed for its potential for habitat restoration through the removal of pulp wood. Pulp wood was observed but represented less than 10% of the total area. The Long Lake Water Control Structure is limited as an offsetting project, since it is only a partial barrier to fish passage, and it may not be an abandoned structure. Insufficient quantities of historical pulp wood were observed to be considered for a stream restoration Project.

4.3.5 Outlet of Valentine Lake

A review of aerial imagery near the Project site indicates there are anthropogenic structures in the outlet of Valentine Lake. Based on the aerial imagery and history of logging around the lakes and rivers in the area, it is speculated that the structures may be rock walls related to log driving. A potential offsetting opportunity to restore salmonid habitat in the outlet of Valentine Lake exists if the structures have resulted in changes in the flow and/or substrate composition affecting the suitability or quality of salmonid habitat.

The unknown structures in the outlet of Valentine Lake were visited on July 25, 2020. The structures were observed to be rock walls constructed in the lower portion of the steady, likely to divert logs away from the side channels and contain them within the main river channel (Appendix C, Photos 247 to 253). In total there are three large walls, measuring 130, 20, and 55 m in length. The removal of the rock walls could facilitate increased flow through the downstream and southern portion of the steady, resulting in scouring of fine sediments to expose coarser sediments. As the majority of substrates consists of small and large boulders, the addition of small and large gravel would increase the available spawning habitats or provide additional areas for benthic invertebrates (i.e., food for salmonids). Small and large boulders which make up the rock walls could be used to create “boulder” clusters within the steady to provide structure for fish and additional areas for food production. The outlet of Valentine Lake has high potential as an offsetting project.

4.3.6 North Twin Brook

A review of aerial imagery in North Twin Brook indicates there are anthropogenic structures in North Twin Brook. Based on the aerial imagery and history of logging in the area, it is likely that the structures are rock walls used for river channelization to promote log driving. A potential offsetting opportunity to restore salmonid habitat in the North Twin Brook exists if the structures have resulted in changes in the flow and/or substrate composition affecting the suitability or quality of salmonid habitat.

Five locations on North Twin Brook that have been modified for historical logging operations were visited on July 30, 2020. The locations consisted of rock walls to channelize flow and divert logs away from side channels and concentrate flow within the main river channel. In some areas, the rock walls and channelization resulted in dewatering of side channels or substantially reduced flow (Appendix C, Photos 254 to 289). The channelized area of the main river was observed to have high velocities, even when water levels were very low. The modification or removal of the rock walls would facilitate flow to areas of North Twin Brook which were historically wetted, even during low flow periods. As the majority of substrates consists of small and large boulders the addition of small and large gravel would increase the available spawning habitats or provide additional areas for benthic invertebrates (i.e., food for salmonids). Small and large boulders which make up the rock walls could be used to create boulder clusters within slower moving areas or the main channel to reduce flows, provide resting places and structure for fish, and additional areas for food production. Remediation of channelized areas of North Twin Brook has high potential as an offsetting project.

5.0 SUMMARY

As during previous fish and fish habitat studies, Ouananiche, brook trout and threespine stickleback were captured during the 2020 surveys. Fish sampling (gillnetting and minnow traps) confirmed that fish were absent from bog holes IT06, IT15, IT18, IT24 and IT28 and provided substantial weight of evidence that fish are absent from other bog holes within the study area.

Streams surveyed near the mine site are generally small (<5 m), shallow (<0.5 m), and slow flowing (<0.2 m/s) or intermittent/ephemeral in nature, with the exception of the outlet of Valentine Lake. The area surveyed in the outlet of Valentine Lake was perennial, moderate in size (~22 m), shallow (<0.5 m) and swift flowing (<1 m/s).

There was no defined channel at the mapped location of Stream 12 (the unnamed tributary to M1), Stream 25 (the unnamed tributary to L1) or Tributary A to Stream 14 under the proposed tailings management facility. Where small, isolated pockets of water existed near these locations, electrofishing confirmed the absence of fish. In addition, portions of Streams 14E and F, Stream 31, Stream 32, and Stream 33C were not fish habitat. No visible channel was present in the location of Stream 33D. The fish-bearing portion of Stream 15 extended approximately 550 m upstream of its mapped location.

Fish habitat surveys were completed on 50 potential stream crossing locations in 2020. Of these, 26 stream crossings were determined to be located in fish habitat while, 22 do not constitute fish habitat and two were found to not be stream crossings, rather are located in the 20 m RoW.

Two stream crossing locations were identified as having the potential to offer fish habitat offsetting opportunities through restoration of fish passage (i.e., C0040) and realignment of the stream channel (i.e., C0046).

Five offsetting opportunities were surveyed in 2020 to assess their potential as fish habitat offsetting projects, including Anstey Steady, Victoria River, a gravel pit, Long Lake Water Control Structure, the outlet of Valentine Lake, and North Twin Brook. The most promising, offsetting opportunities were on the outlet of Valentine Lake and North Twin Brook.

6.0 REFERENCES

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APPENDIX A

2020 Ice Thickness Survey

Stantec

Memo

To:	Jamie Powell	From:	Barry Wicks
	Marathon Gold Corporation		Stantec Consulting Ltd. St. John's NL
File:	121416288 Task 800.001	Date:	April 1, 2020

Reference: Ice Thickness Survey

Marathon Gold Corporation (Marathon) contracted Stantec Consulting Limited (Stantec) to conduct an ice thickness survey of small waterbodies that occur within and in close proximity to the Valentine Gold Project (the Project) footprint. These waterbodies, often referred to as bog holes, are thought to be fishless because LIDAR imagery shows no connectivity between the bog holes and fish bearing waters.

An ice thickness survey was completed March 09 and 10, 2020 to determine if these bog holes freeze to the bottom in winter. If the bog holes freeze to bottom, this would provide additional weight of evidence for the determination that the bog holes are fishless. Sampling locations were identified from LIDAR imagery and the coordinates for the center of the bog hole were selected as target coordinates for the survey. A total of 27 bog holes were surveyed. A figure showing the bog hole locations in relation to the Valentine Gold Project footprint and confirmed or suspected fish habitat is provided in Attachment 1. The coordinates for each bog hole / survey location are provided in the top left corner of the figure in Attachment 1.

A two-person field team consisting of one Stantec and one Marathon employee completed the survey. The field team used a handheld GPS unit to navigate to each target sample location. Bog holes were accessed by snowmobile and/or by foot (snowshoes). The field team used a gas-powered auger, with 8-inch cutting blades, to cut a hole in the center of each bog hole. The ice thickness was determined by inserting an "improvised staff" into the hole, hooking the bottom of the ice with a flat disc attached to the base of the staff and determining the ice thickness by use of a meter stick attached to the staff (see photos 10 and 12 in Attachment 2). The water depth from the bottom of the ice to the bottom of the bog hole was also recorded. Photos were taken of each hole drilled for sampling and are provided in Attachment 2.

Of the 27 bog holes surveyed, eleven (IT01, IT02, IT03, IT07, IT16, IT17, IT18, IT19, IT20, IT21, and IT22) are within the footprint of the Project. The remainder are in close proximity but outside the footprint. Data for the bog holes that occur within the Project footprint are provided in Table 1, and includes ice thickness, water depth below the ice and total bog hole depth. The complete data set for the 27 bog holes surveyed are included in Attachment 3. Only the bog holes within the footprint are discussed further in this memo.

Table 1 Ice Thickness Survey Results for Bog Holes Occurring Within the Valentine Gold Project Footprint

Location	Ice Thickness (cm)	Water Depth Below Ice (cm)	Total Bog Hole Depth (cm)
IT01	54	0	54
IT02	54.5	7	61.5
IT03	56	0	56
IT07	53.5	0	53.5
IT16	58.5	9.5	68
IT17	49	6	55
IT18	53.5	45.5	99
IT19	44.5	7.5	52

Reference: Ice Thickness Survey

Table 1 Ice Thickness Survey Results for Bog Holes Occurring Within the Valentine Gold Project Footprint

Location	Ice Thickness (cm)	Water Depth Below Ice (cm)	Total Bog Hole Depth (cm)
IT20	83.5	0	83.5
IT21	55	16	71
IT22	46.5	0	46.5
Maximum	83.5	45.5	99
Minimum	44.5	0	46.5
Average	55.3	8.3	63.6

The average ice thickness for the 11 bog holes within the Project footprint is 55.3 cm, with thickness ranging from 44.5 cm at IT19 to 83.5 cm at IT20. At many locations, the ice was noted to be poor quality (soft, white ice, with unfrozen water layers; rather than hard, compact, blue ice). Similar ice conditions existed at many locations on the Island of Newfoundland in 2020 and is attributed to the large amount of snow cover that acted as an insulating layer, preventing ponds and lakes from freezing in a typical fashion.

Based on Marathon's past experience with winter drilling activities on the Valentine Gold Property, it was anticipated that maximum ice thickness would occur late February to early March 2020 and that ice thicknesses in excess of 80 cm would be encountered. Only one instance of ice thickness greater than 80 cm was recorded for the survey (IT20) and the difference between the maximum (83.5 cm) and the minimum ice thickness (44.5 cm) is 39 cm. The large range in ice thickness between bog holes was not expected and is most likely attributed to varying amounts of snow cover (insulating factor) at each bog hole location, throughout the winter.

Table 1 shows that the average total bog hole depth for locations within the Project footprint is 63.6 cm, with a range of 46.5 (IT22) to 99 cm (IT18). If the maximum ice thickness measured during the survey (83.5 cm at IT20) occurred at all bog hole locations, as expected during a typical winter, all surveyed bog holes with the possible exception of Bog Hole IT18, would be frozen to the bottom.

Reference: Ice Thickness Survey

Given the lack of connectivity of bog holes to fish bearing waterbodies and the likelihood that only IT18 would not freeze to the bottom during a typical winter; it is proposed that IT18 be further investigated for fish presence in Summer 2020. Absence of fish at this location will be used as an indicator of fish absence at other bog hole locations within the Project footprint.

Sincerely,

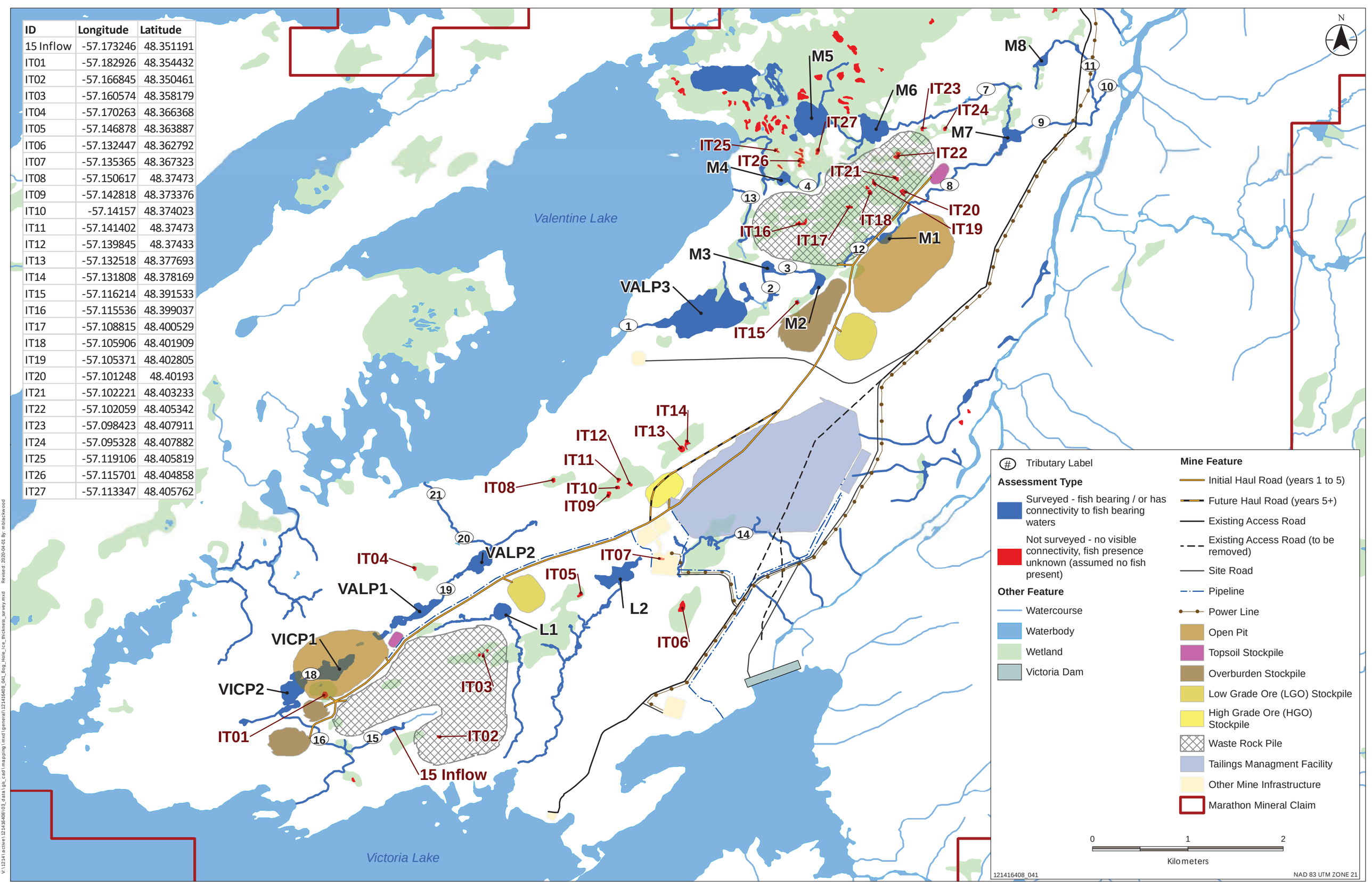
Stantec Consulting Ltd.

Digitally signed by Barry Wicks
Date: 2020.04.02 08:48:20 -02'30'

Barry Wicks
Team Lead, Environmental Services
Phone: 709 576 1458
Fax: 709 576 2126
Barry.Wicks@stantec.com

Attachment: Attachment 1 - Figure 1: Ice Thickness Survey Locations
Attachment 2 - Photos
Attachment 3 - Complete Data Set for all 27 Bog Holes

ID	Longitude	Latitude
15 Inflow	-57.173246	48.351191
IT01	-57.182926	48.354432
IT02	-57.166845	48.350461
IT03	-57.160574	48.358179
IT04	-57.170263	48.366368
IT05	-57.146878	48.363887
IT06	-57.132447	48.362792
IT07	-57.135365	48.367323
IT08	-57.150617	48.37473
IT09	-57.142818	48.373376
IT10	-57.14157	48.374023
IT11	-57.141402	48.37473
IT12	-57.139845	48.37433
IT13	-57.132518	48.377693
IT14	-57.131808	48.378169
IT15	-57.116214	48.391533
IT16	-57.115536	48.399037
IT17	-57.108815	48.400529
IT18	-57.105906	48.401909
IT19	-57.105371	48.402805
IT20	-57.101248	48.40193
IT21	-57.102221	48.403233
IT22	-57.102059	48.405342
IT23	-57.098423	48.407911
IT24	-57.095328	48.407882
IT25	-57.119106	48.405819
IT26	-57.115701	48.404858
IT27	-57.113347	48.405762



ICE THICKNESS SURVEY

Photo 1 IT01

Photo 2 IT02

Photo 3 IT03

Photo 4 IT04

ICE THICKNESS SURVEY

Photo 5 IT05

Photo 6 ITO6

Photo 7 ITO7

Photo 8 IT08

ICE THICKNESS SURVEY

Photo 9 IT09

Photo 10 IT10

Photo 11 IT11

Photo 12 IT12

ICE THICKNESS SURVEY

Photo 13 IT13

Photo 14 IT14

Photo 15 IT15

Photo 16 IT16

ICE THICKNESS SURVEY

Photo 17 IT17

Photo 18 IT18

Photo 19 IT19

Photo 20 IT20

ICE THICKNESS SURVEY

Photo 21 IT21

Photo 22 IT22

Photo 23 IT23

Photo 24 IT24

Photo 25 IT25

Photo 26 IT26

Photo 27 IT27

Complete Data Set for all 27 Bog Holes

Location	Ice Thickness (cm)	Water Depth Below Ice (cm)	Total Bog Hole Depth (cm)
IT01	**54**	**0**	**54**
IT02	**54.5**	**7**	**61.5**
IT03	**56**	**0**	**56**
IT04	56.5	12	68.5
IT05	58	32	90
IT06	52	49	101
IT07	**53.5**	**0**	**53.5**
IT08	54.5	35.5	90
IT09	71	18	89
IT10	73	16	89
IT11	64.5	3.5	68
IT12	73.5	31.5	105
IT13	56	32	88
IT14	63	0	63
IT15	64.5	35.5	100
IT16	**58.5**	**9.5**	**68**
IT17	**49**	**6**	**55**
IT18	**53.5**	**45.5**	**99**
IT19	**44.5**	**7.5**	**52**
IT20	**83.5**	**0**	**83.5**
IT21	**55**	**16**	**71**
IT22	**46.5**	**0**	**46.5**
IT23	49.5	0	49.5
IT24	54	29	83
IT25	51	0	51
IT26	54	0	54
IT27	59.5	65	124.5
15 Inflow1	30.5	0	30.5
15 inflow2	28	0	28

Bold/shaded indicates bog holes within the Valentine Gold Project footprint.

APPENDIX B

Fish Sampling Data

APPENDIX B: Fish Sampling Data 2020

Legend

Method:	Gillnet (GN), Electrofishing (EF), Minnow Trap (MT) and Dip Net (DN)
Coordinates:	Area of fish sampling in decimal degrees
Site:	Unique identifier assigned to each water body or stream fished.
Location:	fishing location described as stream segment electrofished, FN#, GN# or MT#
Start/End Date:	Date fishing commenced; date fishing ended
Fishing Time:	Number of seconds electrofishing was conducted, number of minutes gill netting and minnow trapping were conducted
Species:	Atlantic salmon/Ouananiche (AS), brook trout (BT), threespine stickleback (TSSB)
Count:	Number of fish associated with line entry
Length:	Fork length in mm
Weight:	Total weight in grams
(K) Condition:	Condition factor calculated as: $K = W \times 10^5 / L^3$
Where:	K = condition, W = Weight in g, L = Length in mm.

Table B.1 - Raw Fish Sampling Data 2020, Valentine Gold Project

Method	Latitude	Longitude	Site	Location	Start Date	End Date	Fishing Time	Species	Count	L (mm)	W (g)	K	Comment
MT	48.450087	-57.028592	C0022a	50 m DS to 50 m US	23-Jul-20		18,792	TSSB	1	26	-	-	
MT	48.450087	-57.028592	C0022a	50 m DS to 50 m US	23-Jul-20		18,792	TSSB	1	46	-	-	
MT	48.450115	-57.028743	C0022a	50 m DS to 50 m US	23-Jul-20		18,792		NC	-	-	-	
MT	48.45023	-57.028574	C0022a	50 m DS to 50 m US	23-Jul-20		18,432		NC	-	-	-	
EF	48.45215	-57.030962	C0023	50 m DS to 50 m US	23-Jul-20	-	181		NC	-	-	-	
EF	48.466291	-57.012284	C0028	50 m DS to 50 m US	22-Jul-20	-	199		NC	-	-	-	
EF	48.487359	-57.022716	C0031	50 m DS to 50 m US	19-Jul-20	-	510	TSSB	7	-	-	-	
EF	48.529082	-57.004515	C0033	50 m DS to 50 m US	19-Jul-20	-	301		NC	-	-	-	
EF	48.54387104	-57.01292369	C0034	50 m DS to 50 m US	19-Jul-20	-	565	TSSB	7	-	-	-	
EF	48.549371	-57.023976	C0035	50 m DS to 50 m US	19-Jul-20	-	230		NC	-	-	-	
EF	48.563655	-57.057557	C0036	50 m DS to 50 m US	27-Jul-20	-	399		NC	-	-	-	
EF	48.56198	-57.057792	C0036a	50 m DS to 50 m US	27-Jul-20	-	226		NC	-	-	-	
EF	48.577747	-57.040613	C0037	50 m DS to 50 m US	28-Jul-20	-	320		NC	-	-	-	
EF	48.585071	-57.032083	C0038	50 m DS to 50 m US	28-Jul-20	-	131		NC	-	-	-	
EF	48.593379	-57.022328	C0039	50 m DS to 50 m US	28-Jul-20	-	303		NC	-	-	-	
EF	48.601598	-57.012415	C0040	50 m DS to 50 m US	27-Jul-20	-	266	BT	1	55	1.8	1.1	Young of year
EF	48.601598	-57.012415	C0040	50 m DS to 50 m US	27-Jul-20	-	266	BT	1	90	9.9	1.4	
EF	48.601598	-57.012415	C0040	50 m DS to 50 m US	27-Jul-20	-	266	BT	1	100	10.9	1.1	
EF	48.601598	-57.012415	C0040	50 m DS to 50 m US	27-Jul-20	-	266	BT	1	117	17.4	1.1	Very fat, gorging on worms
EF	48.601598	-57.012415	C0040	50 m DS to 50 m US	27-Jul-20	-	266	BT	1	114	18.7	1.3	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	19	-	-	Young of year
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	33	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	39	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	42	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	43	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	43	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	44	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	45	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	45	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	46	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	46	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	46	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	47	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	50	-	-	
EF	48.602245	-57.012772	C0040	50 m DS to 50 m US	27-Jul-20	-	266	TSSB	1	50	-	-	
EF	48.619418	-56.983199	C0041	50 m DS to 50 m US	28-Jul-20	-	310		NC	-	-	-	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	40	0.7	1.1	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	44	0.8	0.9	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	45	0.8	0.9	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	42	1	1.3	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	70	3.8	1.1	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	79	5.6	1.1	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	80	5.7	1.1	
EF	48.630391	-56.95701	C0042	50 m DS to 50 m US	28-Jul-20	-	390	BT	1	97	8.2	0.9	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	34	0.2	0.5	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	34	0.5	1.3	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	35	0.5	1.2	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	37	0.5	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	40	0.6	0.9	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	42	0.8	1.1	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	46	0.9	0.9	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	47	1.1	1.1	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	49	1.2	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	49	1.2	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	49	1.2	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	51	1.2	0.9	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	52	1.3	0.9	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	59	2.4	1.2	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	62	2.4	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	62	2.4	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	63	2.5	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	65	2.7	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	63	2.8	1.1	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	90	7.3	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	104	11.2	1.0	
EF	48.636673	-56.927347	C0044	50 m DS to 50 m US	29-Jul-20	-	360	BT	1	118	16.4	1.0	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	52	1.5	1.1	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	55	1.7	1.0	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	56	2	1.1	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	65	2.7	1.0	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	66	3	1.0	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	67	3.3	1.1	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	112	14.7	1.0	
EF	48.639896	-56.913098	C0045	50 m DS to 50 m US	29-Jul-20	-	466	BT	1	124	18.5	1.0	
EF	48.650509	-56.902353	C0046	50 m DS to 50 m US	29-Jul-20	-	352	TSSB	1	47	0.9	0.9	
EF	48.650509	-56.902353	C0046	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	114	17.3	1.2	
EF	48.650509	-56.902353	C0046	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	149	37.6	1.1	
EF	48.650509	-56.902353	C0046	50 m DS to 50 m US	29-Jul-20	-	352	TSSB	1	51	-	-	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	AS	1	106	13.8	1.2	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	53	1.4	0.9	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	71	3.6	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	80	5.2	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	87	6.6	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	89	7.3	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	96	8.9	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	96	9.1	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	97	9.3	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	95	9.5	1.1	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	AS	1	97	10.6	1.2	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	99	11.1	1.1	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	104	11.8	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	AS	1	109	13.5	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	112	14.3	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	116	15.3	1.0	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	174	48.8	0.9	
EF	48.660132	-56.892704	C0047	50 m DS to 50 m US	29-Jul-20	-	393	BT	1	168	49.4	1.0	
EF	48.685921	-56.87922	C0048	50 m DS to 50 m US	29-Jul-20	-	374	AS	1	108	12.6	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	41	0.7	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	48	1.1	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	69	3.5	1.1	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	87	6.4	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	87	6.4	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	89	6.6	0.9	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	96	8.4	0.9	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	103	10.7	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	104	11.1	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	110	11.6	0.9	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	107	12.2	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	109	13.1	1.0	

Table B.1 - Raw Fish Sampling Data 2020, Valentine Gold Project

Method	Latitude	Longitude	Site	Location	Start Date	End Date	Fishing Time	Species	Count	L (mm)	W (g)	K	Comment
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	114	13.5	0.9	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	72	-	-	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	142	-	-	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	120	16.6	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	126	19.5	1.0	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	125	21	1.1	
EF	48.688425	-56.878034	C0049	50 m DS to 50 m US	29-Jul-20	-	187	BT	1	138	26	1.0	
EF	48.698054	-56.87825	C0050	50 m DS to 50 m US	29-Jul-20	-	311	BT	1	74	4.2	1.0	
EF	48.698054	-56.87825	C0050	50 m DS to 50 m US	29-Jul-20	-	311	BT	1	86	6.9	1.1	
EF	48.698054	-56.87825	C0050	50 m DS to 50 m US	29-Jul-20	-	311	BT	1	95	9.2	1.1	
EF	48.698054	-56.87825	C0050	50 m DS to 50 m US	29-Jul-20	-	311	BT	1	116	15.4	1.0	
EF	48.698054	-56.87825	C0050	50 m DS to 50 m US	29-Jul-20	-	311	BT	1	117	15.4	1.0	
EF	48.698054	-56.87825	C0050	50 m DS to 50 m US	29-Jul-20	-	311	BT	1	129	23.6	1.1	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	46	0.9	0.9	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	46	1	1.0	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	50	1.2	1.0	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	48	1.3	1.2	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	52	1.4	1.0	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	53	1.9	1.3	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	100	11	1.1	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	107	13.1	1.1	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	106	15.6	1.3	
EF	48.714972	-56.862458	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	140	32.3	1.2	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	50	1.3	1.0	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	50	1.4	1.1	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	65	-	-	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	59	2.2	1.1	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	58	2.3	1.2	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	59	2.3	1.1	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	59	2.5	1.2	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	106	12.6	1.1	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	106	12.6	1.1	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	174	53.5	1.0	
EF	48.715089	-56.862569	C0052	50 m DS to 50 m US	28-Jul-20	-	471	BT	1	78	-	-	Lost before weighed
EF	48.721329	-56.838498	C0053	50 m DS to 50 m US	31-Jul-20	-	172		NC	-	-	-	
EF	48.743979	-56.765993	C0054	50 m DS to 50 m US	29-Jul-20	-	327		NC	-	-	-	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	34	0.3	0.8	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	37	0.4	0.8	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	38	0.4	0.7	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	36	0.5	1.1	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	38	0.5	0.9	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	39	0.5	0.8	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	31	-	-	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	35	0.7	1.6	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	72	3.7	1.0	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	80	5.1	1.0	
EF	48.746595	-56.719335	C0057	50 m DS to 50 m US	29-Jul-20	-	352	BT	1	109	12.9	1.0	
EF	48.746016	-56.714332	C0058	50 m DS to 50 m US	30-Jul-20	-	401		NC	-	-	-	
EF	48.742367	-56.678616	C0060	50 m DS to 50 m US	19-Jul-20	-	338	AS	1	-	-	-	1+ Parr
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	AS	1	66	3.1	1.1	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	69	3.2	1.0	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	74	3.8	0.9	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	83	4.7	0.8	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	AS	1	81	5	0.9	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	AS	1	82	5.1	0.9	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	84	5.8	1.0	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	AS	1	82	6.8	1.2	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	88	7.1	1.0	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	AS	1	88	7.4	1.1	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	96	9.3	1.1	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	92	9.6	1.2	
EF	48.744448	-56.676586	C0061	50 m DS to 50 m US	31-Jul-20	-	221	BT	1	68	-	-	
GN	48.363068	-57.132159	IT06	-	5-Sep-20	7-Sep-20	2474		NC	-	-	-	
GN	48.362373	-57.132626	IT06	-	5-Sep-20	7-Sep-20	2485		NC	-	-	-	
MT	48.391468	-57.115972	IT15	-	6-Nov-20	8-Nov-20	2762		NC	-	-	-	
GN	48.391471	-57.11634	IT15	-	6-Nov-20	8-Nov-20	2760		NC	-	-	-	
MT	48.39169	-57.116478	IT15	-	6-Nov-20	8-Nov-20	2763		NC	-	-	-	
MT	48.391709	-57.116091	IT15	-	6-Nov-20	8-Nov-20	2760		NC	-	-	-	
GN	48.391537	-57.116368	IT15	-	6-Nov-20	8-Nov-20	2881		NC	-	-	-	
MT	48.391416	-57.116583	IT15	-	6-Nov-20	8-Nov-20	2758		NC	-	-	-	
GN	48.402051	-57.105784	IT18	-	20-Jul-20	22-Jul-20	2817		NC	-	-	-	
MT	48.401974	-57.106295	IT18	-	20-Jul-20	22-Jul-20	2715		NC	-	-	-	
GN	48.402094	-57.105774	IT18	-	20-Jul-20	22-Jul-20	2806		NC	-	-	-	
MT	48.402051	-57.105784	IT18	-	20-Jul-20	22-Jul-20	2816		NC	-	-	-	
MT	48.402173	-57.105926	IT18	-	20-Jul-20	22-Jul-20	2811		NC	-	-	-	
MT	48.407754	-57.095399	IT24	-	6-Nov-20	8-Nov-20	2618		NC	-	-	-	
GN	48.407912	-57.095481	IT24	-	6-Nov-20	8-Nov-20	2755		NC	-	-	-	
MT	48.40804	-57.09549	IT24	-	6-Nov-20	8-Nov-20	2741		NC	-	-	-	
GN	48.407885	-57.095188	IT24	-	6-Nov-20	8-Nov-20	2641		NC	-	-	-	
MT	48.407824	-57.0952	IT24	-	6-Nov-20	8-Nov-20	2616		NC	-	-	-	
MT	48.361931	-57.163867	IT28	-	7-Nov-20	8-Nov-20	1539		NC	-	-	-	
MT	48.3618	-57.163411	IT28	-	7-Nov-20	8-Nov-20	1547		NC	-	-	-	
GN	48.361834	-57.163526	IT28	-	7-Nov-20	8-Nov-20	1530		NC	-	-	-	
GN	48.361796	-57.163612	IT28	-	7-Nov-20	8-Nov-20	1557		NC	-	-	-	
EF	48.396146	-57.108571	Stream 12, C0021 and C0021a	375 m US of M1	20-Jul-20	-	123		NC	NA	NA	-	Fished small bog holes of standing water
EF	48.397574	-57.106006	Stream 12, C0021 and C0021a	100 m US of M1	20-Jul-20	-	102		NC	NA	NA	-	Fished small bog holes of standing water
EF	48.396636	-57.107944	Stream 12, C0021 and C0021a	300 m US of M1	21-Jul-20	-	115		NC	NA	NA	-	Fished small bog holes of standing water
EF	48.36635	-57.132986	Stream 14A	80 to 150 m US	25-Jul-20	-	235		NC	-	-	-	
EF	48.368487	-57.132204	Stream 14E	40 to 180 m US	25-Jul-20	-	118	BT	1	91	-	-	Fished pools of wetland drainage
EF	48.371146	-57.121638	Stream 14F, C0016 and C0016a	240 to 295 m US	21-Jul-20	-	105		NC	-	-	-	Fished areas with defined channel or standing water from wetland seepage
EF	48.350433	-57.175506	Stream 15	70 to 190 m US	22-Jul-20	-	455	BT	1	54	-	-	
EF	48.350433	-57.175506	Stream 15	70 to 190 m US	22-Jul-20	-	455	BT	1	101	-	-	
EF	48.350433	-57.175506	Stream 15	70 to 190 m US	22-Jul-20	-	455	BT	1	110	-	-	
EF	48.350433	-57.175506	Stream 15	70 to 190 m US	22-Jul-20	-	455	TSSB	1		-	-	Observed downstream from outflow
EF	48.35087	-57.174766	Stream 15	260 to 270 m US	22-Jul-20	-	194		NC			-	Pond
GN	48.351169	-57.172676	Stream 15	410 m US	22-Jul-20		46		NC			-	Pond
DN	48.3514798	-57.17208613	Stream 15	550 m US	22-Jul-20	-	-	TSSB	77		-	-	Congregated in stream
EF	48.353512	-57.164675	Stream 15	1030 to 1130 m US	29-Jul-20	-	275	BT	1	82	-	-	

Table B.1 - Raw Fish Sampling Data 2020, Valentine Gold Project

Method	Latitude	Longitude	Site	Location	Start Date	End Date	Fishing Time	Species	Count	L (mm)	W (g)	K	Comment
EF	48.361577	-57.160135	Stream 25	0 to 100 m US	22-Jul-20	-	247		NC	NA	NA	-	Fished small pools of standing water
EF	48.347769	-57.158065	Stream 26	45 to 120 m US	24-Jul-20	-	118		NC	-	-	-	
EF	48.350833	-57.155603	Stream 26	420 to 490 m US	24-Jul-20	-	197	BT	1	33	-	-	
EF	48.350833	-57.155603	Stream 26	420 to 490 m US	24-Jul-20	-	197	BT	1	35	-	-	
EF	48.350833	-57.155603	Stream 26	420 to 490 m US	24-Jul-20	-	197	BT	1	35	-	-	
EF	48.350833	-57.155603	Stream 26	420 to 490 m US	24-Jul-20	-	197	BT	1	35	-	-	
EF	48.350833	-57.155603	Stream 26	420 to 490 m US	24-Jul-20	-	197	BT	1	38	-	-	
EF	48.350833	-57.155603	Stream 26	420 to 490 m US	24-Jul-20	-	197	BT	1	42	-	-	
EF	48.350833	-57.155603	Stream 26	420 to 490 m US	24-Jul-20	-	197	BT	1	55	-	-	
EF	48.357604	-57.15545	Stream 26	1300 to 1340 US	24-Jul-20	-	119	BT	1	89	-	-	
EF	48.357604	-57.15545	Stream 26	1300 to 1340 US	24-Jul-20	-	119	BT	1	98	-	-	
EF	48.357604	-57.15545	Stream 26	1300 to 1340 US	24-Jul-20	-	119	BT	1	123	-	-	
DN	48.360797	-57.156448	Stream 26	1750 m US	24-Jul-20	-	-	BT	1	48	-	-	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	36	0.4	0.9	Young of year
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	38	0.6	1.1	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	39	0.6	1.0	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	42	0.7	0.9	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	47	0.7	0.7	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	44	0.8	0.9	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	44	0.9	1.1	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	46	1.1	1.1	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	46	1.1	1.1	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	52	1.3	0.9	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	47	1.7	1.6	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	AS	1	88	6.9	1.0	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	89	7.4	1.0	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	96	9.5	1.1	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	105	10.2	0.9	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	106	10.7	0.9	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	111	13.3	1.0	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	123	18.5	1.0	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	138	23.3	0.9	
EF	48.348183	-57.154158	Stream 27	0 to 50 m DS	23-Jul-20	-	259	BT	1	139	28.3	1.1	
EF	48.37479	-57.098077	Stream 33A	680 to 730 m US	24-Jul-20	-	185	BT	1	94	-	-	
DN	48.375534	-57.099403	Stream 33B	715 m US	24-Jul-20	-	-	BT	1	62	-	-	Caught in isolated pool
DN	48.376323	-57.102306	Stream 33B	660 m US	24-Jul-20	-	-	BT	1			-	YOY caught in intermittent pool
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	87	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	88	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	92	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	94	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	100	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	101	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	110	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	111	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	114	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	114	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	117	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	120	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	126	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	131	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	142	-	-	
EF	48.376358	-57.097802	Stream 33E	460 to 480 m US	24-Jul-20	-	266	BT	1	152	-	-	
EF	48.376489	-57.093393	Stream 33E	100 to 130 m US	24-Jul-20	-	302	BT	1	31	-	-	
EF	48.376489	-57.093393	Stream 33E	100 to 130 m US	24-Jul-20	-	302	BT	1	36	-	-	
EF	48.376489	-57.093393	Stream 33E	100 to 130 m US	24-Jul-20	-	302	BT	1	36	-	-	
EF	48.376489	-57.093393	Stream 33E	100 to 130 m US	24-Jul-20	-	302	BT	1	42	-	-	

APPENDIX C

Photos

Streams	
	
Photo 1 Stream 12 (0 to 100 m) Facing Upstream	**Photo 2** Stream 12 (100 to 200 m) Facing Upstream
	
Photo 3 Stream 12 (200 to 300 m) Facing Upstream	**Photo 4** Stream 12 (300 to 400 m) Facing Upstream

Streams	
	
Photo 5 Tributary to Stream 14 A (0 to 200 m) Facing Upstream	**Photo 6** Tributary to Stream 14 A (100 to 200 m) Facing Upstream
	
Photo 7 Stream 14 1B (0 to 100 m) Facing Upstream	**Photo 8** Stream 14 1B (100 to 120 m) Facing Upstream

Streams	
	
Photo 9 Tributary to Stream 14 1C (0 to 100 m) Facing Upstream	**Photo 10** Tributary to Stream 14 1D (0 to 50 m) Facing Upstream
	
Photo 11 Tributary to Stream 14 1E (0 to 100 m) Facing Upstream	**Photo 12** Tributary to Stream 14 1E (100 to 200 m) Facing Upstream

Streams	
	
Photo 13 Tributary to Stream 14 1F (0 to 100 m) Facing Upstream	**Photo 14** Tributary to Stream 14F (100 to 200 m) Facing Upstream
	
Photo 15 Tributary to Stream 14F (200 to 300 m) Facing Upstream	**Photo 16** Stream 14F (300 to 400 m) Facing Downstream

Streams	
	
Photo 17 Stream 15 (0 m) Facing Upstream	**Photo 18 Stream 15 (100 m) Facing Upstream**
	
Photo 19 Stream 15 (200 m) Facing Upstream	**Photo 20 Stream 15 (300 m) Facing Upstream**

Streams	
	
Photo 21 Stream 15 (400 m) Facing Upstream	**Photo 22 Stream 15 (500 m) Facing Downstream**
	
Photo 23 Stream 15 (600 m) Facing Upstream	**Photo 24 Stream 15 (700 m) Facing Upstream**

Streams	
	
Photo 25 Stream 15 (800 m) Facing Downstream	**Photo 26 Stream 15 (900 m) Facing Upstream**
	
Photo 27 Stream 15 (1000 m) Facing Upstream	**Photo 28 Stream 15 (1100 m) Facing Upstream**

Streams	
	
Photo 29 Stream 15 (1200 m) Facing Upstream	**Photo 30 Stream 25 (0 to 50 m) Facing East**
	
Photo 31 Stream 25 (50 to 100 m) Facing Upstream	**Photo 32 Stream 25 (100 to 150 m) Facing Upstream**

Streams	
	
Photo 33 Stream 25 (150 to 200 m) Facing Upstream	**Photo 34 Stream 25 (200 to 300 m) Facing Upstream**
	
Photo 35 Stream 26 (0 to 100 m) Facing Upstream	**Photo 36 Stream 26 (100 to 200 m) Facing Upstream**

Streams	
	
Photo 37 Stream 26 (200 to 300 m) Facing Upstream	**Photo 38 Stream 26 (300 to 400 m) Facing Upstream**
	
Photo 39 Stream 26 (400 to 500 m) Facing Upstream	**Photo 40 Stream 26 (500 to 600 m) Facing Upstream**

Streams	
	
Photo 41 Stream 26 (600 to 700 m) Facing Upstream	**Photo 42 Stream 26 (700 to 800 m) Facing Upstream**
	
Photo 43 Stream 26 (800 to 900 m) Facing Upstream	**Photo 44 Stream 26 (900 to 1000 m) Facing Upstream**

Streams	

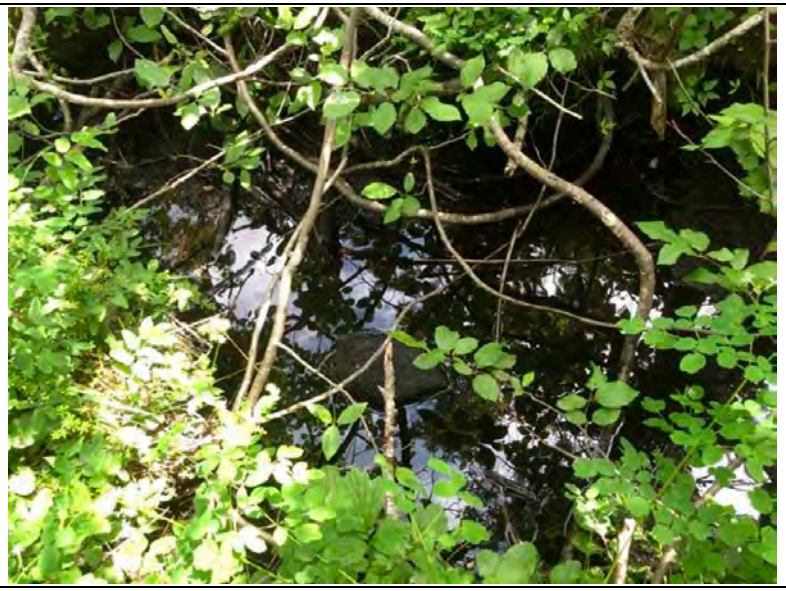



Photo 45 Stream 26 (1000 to 1100 m) Facing Downstream	**Photo 46 Stream 26 (1100 to 1200 m) Facing Upstream**
	
Photo 47 Stream 26 (1200 to 1300 m) Facing Downstream	**Photo 48 Stream 26 (1300 to 1400 m) Facing Downstream**

Streams	
	
Photo 49 Stream 26 (1400 to 1500 m) Facing Upstream	**Photo 50 Stream 26 (1500 to 1600 m) Facing Upstream**
	
Photo 51 Stream 26 (1600 to 1700 m) Facing Upstream	**Photo 52 Stream 26 (1700 to 1800 m) Facing Upstream**

Streams	
	
Photo 53 Stream 26 (1800 to 1900 m) Facing Upstream	**Photo 54** Stream 26 (1900 to 2000 m) Facing Downstream
	
Photo 55 Stream 26 (2000 to 2050 m) Facing Upstream	**Photo 56** Stream 26 at Outlet of L1 Facing Upstream

Streams	
	
Photo 57 Stream 27 (0 to 50 m) Facing Upstream	**Photo 58** Stream 27 (0 to 50 m) Facing Downstream
	
Photo 59 Stream 28 (100 to 200 m) Facing Downstream	**Photo 60** Stream 28 (100 to 200 m) Facing Downstream

Streams	
	
Photo 61 Stream 28 (100 to 200 m) Facing Upstream	**Photo 62** Stream 28 (100 to 200 m) Facing Upstream
	
Photo 63 Stream 29 (300 m) Mainstem Facing Upstream	**Photo 64** Stream 29 (400 m) Western Tributary Facing Upstream

Streams	
	
Photo 65 Stream 29 (450 m) Small Falls on Western Tributary Facing Upstream	**Photo 66** Stream 29 (400 m) Middle Tributary Facing Upstream
	
Photo 67 Stream 29 (500 m) Facing Upstream	**Photo 68** Stream 29 (600 m) Facing Upstream

Streams	
	
Photo 69 Stream 30 (1000 m) Facing Upstream	**Photo 70 Stream 30 (1000 m) Facing Upstream**

Streams	
	
Photo 71 Stream 31 (0 m) Facing Upstream Near Confluence with Victoria River	**Photo 72** Stream 31 (100 m) Facing Upstream

Streams	
	
Photo 73 Stream 31 (200m) Facing Upstream	**Photo 74** Stream 31 (300m) (0 m) Facing Upstream

Streams	
	
Photo 75 Stream 32 (0m) Facing Upstream	**Photo 76** Stream 32 (100 m) Facing Upstream
	
Photo 77 Stream 32 (200 m) Facing Upstream	**Photo 78** Stream 32 (300 m) Facing Upstream

Streams

Photo 79 Stream 32 (300 m) Facing Upstream

Photo 80 Stream 33/34 (0 to 100 m) Facing Downstream

Photo 81 Stream 33/34 (100 to 200 m) Facing Upstream

Photo 82 Stream 33/34 (200 to 300 m) Facing Downstream

Streams	
	
Photo 83 Stream 33/34 (300 to 400 m) Facing Upstream	**Photo 84** Stream 33/34 (400 to 500 m) Facing Upstream
	
Photo 85 Stream 33/34 (500 to 600m) Facing Upstream	**Photo 86** Stream 33/34 (600 to 650 m) Facing Upstream

Streams	
	
Photo 87 Stream 33/34 A (650 to 750 m) Facing Upstream	**Photo 88** Stream 33/34 A (750 to 850 m) Facing Upstream
	
Photo 89 Stream 33/34A (850 to 950 m) Facing Upstream	**Photo 90** Stream 33/34A (950 to 1050 m) Facing Downstream (10a)

Streams	
	
Photo 91 Stream 33/34A (1050 1150 m) Facing Upstream	**Photo 92** Stream 33/34B (750 to 850 m) Facing Upstream
	
Photo 93 Stream 33/34B (850 to 950 m) Facing Downstream	**Photo 94** Stream 33/34B (950 to 1050 m) Facing Upstream

Streams

Photo 95 Stream 33/34B (1050 to 1150 m) Facing Upstream

Photo 96 Stream 33/34B (1150 to 1250 m) Facing Upstream

Photo 97 Stream 33/34C (700 to 800 m) Facing Downstream

Photo 98 Stream 33/34C (800 to 900 m) Facing Upstream

Streams	
	
Photo 99 Stream 33/34C (900 to 1000 m) Facing Upstream	**Photo 100** Stream 33/34C (1000 to 1100 m) Facing Upstream
	
Photo 101 Stream 33/34C (1100 to 1200 m) Facing Downstream	**Photo 102** Stream 33/34C (1200 to 1300 m) Facing Upstream

Streams

Photo 103 Outlet of Valentine Lake (0 to 25 m) Facing Upstream

Photo 104 Outlet of Valentine Lake (110 to 245 m) Facing Upstream

Photo 105 Outlet of Valentine Lake (245 to 345 m) Facing Upstream

Photo 106 Outlet of Valentine Lake (345 to 365 m) Facing Upstream

Streams

Photo 107 Outlet of Valentine Lake (405 to 453 m) Facing Upstream

Photo 108 Outlet of Valentine Lake (503 to 544 m) Facing Upstream. Note Rock Wall on Right Bank Facing Upstream

Photo 109 Outlet of Valentine Lake (609 to 719 m) Facing Upstream

Photo 110 Outlet of Valentine Lake (719 to 789 m) Facing Upstream

Streams

Photo 111 Outlet of Valentine Lake (869 to 919 m) Facing Upstream

Photo 112 Outlet of Valentine Lake (964 to 984 m) Facing Upstream

Photo 113 Outlet of Valentine Lake (1016 to 1086 m) Facing Upstream

Photo 114 Outlet of Valentine Lake (1136 to 1146 m) Facing Downstream

Streams

Photo 115 Outlet of Valentine Lake (1236 to 1326 m) Facing Downstream

Photo 116 Outlet of Valentine Lake (1326 to 1391 m) Facing Downstream

Photo 117 Outlet of Valentine Lake (1186 to 1331 m) Facing Downstream. Side Channel Downstream of Steady.

Photo 118 Outlet of Valentine Lake (1423 to 1458 m) Facing Upstream Behind Rock Wall

Stream Crossings

Photo 119 Stream Crossing C0016 0 to 50 m Upstream Facing Upstream

Photo 120 Stream Crossing C0016 0 to 50 m Downstream Facing Downstream

Photo 121 Stream Crossing C0016a 0 to 50 m Upstream Facing Upstream

Photo 122 Stream Crossing C0016a 0 to 50 m Downstream Facing Downstream

Stream Crossings

Photo 123 Stream Crossing C0017 0 to 50 m Upstream Facing Upstream

Photo 124 Stream Crossing C0017 0 to 50 m Downstream Facing XXX

Photo 125 Stream Crossing C0018 0 to 50 m Upstream Facing Upstream

Photo 126 Stream Crossing C0018 0 to 50 m Downstream Facing Downstream

Stream Crossings

Photo 127 Stream Crossing C0019 0 to 50 m Upstream Facing

Photo 128 Stream Crossing C0019 0 to 50 m Downstream Facing Downstream

Photo 129 Stream Crossing C0020 0 to 50 m Upstream Facing Upstream

Photo 130 Stream Crossing C0020 0 to 50 m Downstream Facing XXX

Stream Crossings

Photo 131 Stream Crossing C0021 0 to 50 m Upstream Facing Upstream

Photo 132 Stream Crossing C0021 0 to 50 m Downstream Facing Downstream

Photo 133 Stream Crossing C0021a 0 to 50 m Upstream Facing Upstream

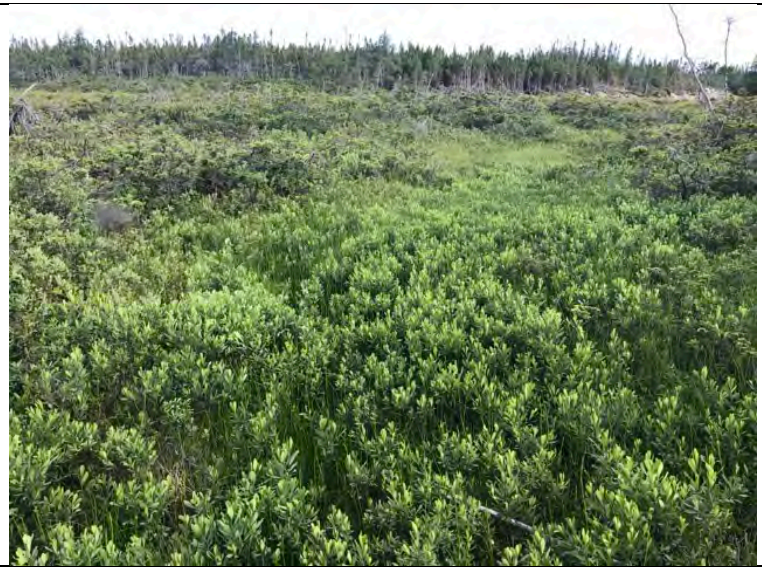


Photo 134 Stream Crossing C0021a 0 to 50 m Downstream Facing Downstream

Stream Crossings

Photo 135 Stream Crossing C0022 at Crossing (0 m) Facing Upstream

Photo 136 Stream Crossing C0022 at Crossing (0 m) Facing Downstream

Photo 137 Stream Crossing C0022a 0 to 50 m Upstream Facing Upstream

Photo 138 Stream Crossing C0022a 0 to 50 m Downstream Facing Downstream

Stream Crossings	
	
Photo 139 Stream Crossing C0023 0 to 50 m Upstream Facing Upstream	**Photo 140** Stream Crossing C0023 0 to 50 m Downstream Facing Downstream
	
Photo 141 Stream Crossing C0024 0 to 50 m Upstream Facing Upstream	**Photo 142** Stream Crossing C0024 0 to 50 m Downstream Facing Downstream

Stream Crossings	
	
Photo 143 Stream Crossing C0025 0 to 50 m Upstream Facing Upstream	**Photo 144** Stream Crossing C0025 0 to 50 m Downstream Facing Upstream

Stream Crossings

Photo 145 Stream Crossing C0026 0 to 50 m Upstream Facing Upstream

Photo 146 Stream Crossing C0026 0 to 50 m Downstream Facing Downstream

Photo 147 Stream Crossing C0027 0 to 50 m Upstream Facing Upstream

Photo 148 Stream Crossing C0027 0 to 50 m Downstream Facing Downstream

Stream Crossings	
	
Photo 149 Stream Crossing C0028 0 to 50 m Upstream Facing Upstream	**Photo 150** Stream Crossing C0028 0 to 50 m Downstream Facing Downstream
	
Photo 151 Stream Crossing C0028a 0 to 50 m Ditch Facing East	**Photo 152** Stream Crossing 28a 0 to 50 m Downstream Facing Upstream

Stream Crossings	
	
Photo 153 Stream Crossing C0029 0 to 50 m Upstream Facing Upstream	**Photo 154** Stream Crossing C0029 0 to 50 m Downstream Facing Downstream
	
Photo 155 Stream Crossing C0030 0 to 50 m Upstream Facing Upstream	**Photo 156** Stream Crossing C0030 0 to 50 m Downstream Facing Downstream

Stream Crossings	
	
Photo 157 Stream Crossing C0031 0 to 50 m Upstream Facing Downstream	**Photo 158** Stream Crossing C0031 0 to 50 m Downstream Facing Downstream
	
Photo 159 Stream Crossing C0032 0 to 50 m Upstream Facing Upstream	**Photo 160** Stream Crossing C0032 0 to 50 m Downstream Facing Upstream

Stream Crossings

Photo 161 Stream Crossing C0033 0 to 50 m Upstream Facing Upstream

Photo 162 Stream Crossing C0033 0 to 50 m Downstream Facing Downstream

Photo 163 Stream Crossing C0034 0 to 50 m Upstream Facing Downstream

Photo 164 Stream Crossing C0034 0 to 50 m Downstream Facing Downstream

Stream Crossings

Photo 165 Stream Crossing C0035 0 to 50 m Upstream Facing Upstream (Side Channel)

Photo 166 Stream Crossing C0035 0 to 50 m Upstream Facing Downstream (Main Channel)

Photo 167 Stream Crossing C0035 0 to 50 m Upstream Facing Upstream (Side Channel)

Photo 168 Stream Crossing C0035 0 to 50 m Downstream Facing Downstream

Stream Assessments	
	
Photo 169 Stream Crossing C0036 0 to 50 m Upstream Facing Upstream	**Photo 170** Stream Crossing C0036 0 to 50 m Downstream Facing Upstream
	
Photo 171 Stream Crossing C0036a 0 to 50 m Upstream Facing Downstream	**Photo 172** Stream Crossing C0036a 0 to 50 m Downstream Facing Upstream

Stream Assessments	
	
Photo 173 Stream Crossing C0037 0 to 50 m Upstream Facing Upstream	**Photo 174** Stream Crossing C0037 0 to 50 m Downstream Facing Upstream
	
Photo 175 Stream Crossing C0038 0 to 50 m Upstream Facing Upstream	**Photo 176** Stream Crossing C0038 0 to 50 m Downstream Facing Upstream

Stream Assessments	
	
Photo 177 Stream Crossing C0039 0 to 50 m Upstream Facing Upstream	**Photo 178** Stream Crossing C0039 0 to 50 m Downstream Facing Upstream
	
Photo 179 Stream Crossing C0040 0 to 50 m Upstream Facing Upstream	**Photo 180** Stream Crossing C0040 0 to 50 m Downstream Facing Upstream

Stream Assessments	
	
Photo 181 Stream Crossing C0041 0 to 50 m Upstream Facing Upstream	**Photo 182** Stream Crossing C0041 0 to 50 m Downstream Facing Downstream
	
Photo 183 Stream Crossing C0042 0 to 50 m Upstream Facing Upstream	**Photo 184** Stream Crossing C0042 0 to 50 m Downstream Facing Downstream

Stream Assessments

Photo 185 Stream Crossing C0043 at Crossing (0 m) Facing Upstream

Photo 186 Stream Crossing C0043 At Crossing (0 m) Facing Downstream

Photo 187 Stream Crossing C0044 0 to 50 m Upstream Facing Downstream (Side Channel)

Photo 188 Stream Crossing C0044 0 to 50 m Upstream Facing Upstream

Stream Assessments	
	
Photo 189 Stream Crossing C0044 0 to 50 m Downstream Facing Upstream	**Photo 190** Stream Crossing C0045 0 to 50 m Upstream Facing Upstream
	
Photo 191 Stream Crossing C0045 0 to 50 m Downstream Facing Upstream	

Stream Crossings

Photo 192 Stream Crossing C0046 0 to 50 m Upstream Facing Upstream

Photo 193 Stream Crossing C0046 0 to 50 m Downstream Facing Upstream

Photo 194 Stream Crossing C0047 0 to 50 m Upstream Facing Upstream

Photo 195 Stream Crossing C0047 0 to 50 m Downstream Facing Upstream

Stream Crossings

Photo 196 Stream Crossing C0048 0 to 50 m Upstream Facing Upstream

Photo 197 Stream Crossing C0048 0 to 50 m Downstream Facing Upstream

Photo 198 Stream Crossing C0049 0 to 50 m Upstream Facing Upstream

Photo 199 Stream Crossing 49 0 to 50 m Downstream Facing Upstream

Stream Crossings

Photo 200 Stream Crossing C0050 0 to 50 m Upstream Facing Upstream

Photo 201 Stream Crossing C0050 0 to 50 m Downstream Facing Downstream

Photo 202 Stream Crossing C0051 0 to 50 m Upstream Facing Upstream

Photo 203 Stream Crossing C0051 0 to 50 m Downstream Facing Upstream

Stream Crossings

Photo 204 Stream Crossing C0052 0 to 50 m Upstream Facing Upstream

Photo 205 Stream Crossing C0052 0 to 50 m Downstream Facing Upstream

Photo 206 Stream Crossing C0053 0 to 50 m Upstream Facing Upstream

Photo 207 Stream Crossing C0053 0 to 50 m Downstream Facing Downstream

Stream Crossings	
	
Photo 208 Stream Crossing C0054 0 to 50 m Upstream Facing Downstream (Main Channel)	**Photo 209** Stream Crossing C0054 0 to 50 m Upstream Facing Downstream (Side Channel)
	
Photo 210 Stream Crossing C0054 0 to 50 m Downstream Facing Upstream	**Photo 211** Stream Crossing C0055 0 to 50 m Upstream Facing Upstream

Stream Crossings	
	
Photo 212 **Stream Crossing C0055 0 to 50 m Downstream Facing Downstream**	

Stream Crossings

Photo 213 Stream Crossing C0056 0 to 50 m Upstream Facing Upstream

Photo 214 Stream Crossing C0056 0 to 50 m Downstream Facing Upstream

Photo 215 Stream Crossing C0057 0 to 50 m Upstream Facing Upstream

Photo 216 Stream Crossing C0057 0 to 50 m Upstream Facing Upstream

Stream Crossings	
	
Photo 217 Stream Crossing C0057 0 to 50 m Downstream Facing Upstream	**Photo 218** Stream Crossing C0057 0 to 50 m Downstream Facing Upstream
	
Photo 219 Stream Crossing C0058 0 to 50 m Upstream Facing Upstream	**Photo 220** Stream Crossing C0058 0 to 50 m Downstream Facing Downstream

Stream Crossings	
	
Photo 221 Stream Crossing C0059 0 to 50 m Upstream Facing Upstream	**Photo 222** Stream Crossing C0059 0 to 50 m Downstream Facing Upstream
	
Photo 223 Stream Crossing C0060 0 to 50 m Upstream Facing Upstream	**Photo 224** Stream Crossing C0060 0 to 50 m Downstream Facing Downstream

Stream Crossings	
	
Photo 225 Stream Crossing C0061 0 to 50 m Upstream Facing Upstream	**Photo 226** Stream Crossing C0061 0 to 50 m Downstream Facing Upstream

Offsetting Opportunities

Photo 229 Remains of Old Forestry Dam in Tom Joe Brook (Outlet of Ansey Steady)

Photo 230 Representative Habitat in Ansey Steady

Photo 231 Shoreline Habitat in Ansey Steady

Photo 232 Few Remains of Pulpwood in Tom Joe Brook

Offsetting Opportunities

Photo 233 Representative Habitat in Victoria River Downstream of Victoria River Dam

Photo 234 Representative Habitat in Victoria River Downstream of Victoria River Dam

Photo 235 Representative Habitat in Victoria River Downstream of

Photo 236 Representative Habitat in Victoria River Downstream of

Offsetting Opportunities	
Victoria River Dam	Victoria River Dam
	
Photo 237 Gravel Pit	Photo 238 Forest in Direction of Victoria River Facing Downhill
	
Photo 239 Forest in Direction of Victoria River Facing Uphill	Photo 240 Elevation Change in To Victoria River Facing Downhill

Offsetting Opportunities	
	
Photo 241 Long Lake Water Control Structure Facing Downstream	**Photo 242** Deck of Long Lake Water Control Structure Facing Downstream
	
Photo 243 Deck of Long Lake Water Control Structure Facing Downstream	**Photo 244** Substrate in Riffle in Front of Water Control Structure

Offsetting Opportunities

Photo 245 Long Lake Water Control Structure Facing Upstream

Photo 246 Long Lake Water Control Structure Facing Upstream

Photo 247 Main Channel Rock Wall (~130 m) in Outlet to Valentine Lake

Photo 248 Fish Habitat Immediately Behind Rock ~130 m Rock Wall

Offsetting Opportunities

Photo 249 Upstream (20 m) Rock Wall in Outlet to Valentine Lake

Photo 250 Fish Habitat Immediately Behind Rock 20 m Rock Wall

Photo 251 Downstream (55 m) Rock Wall in Outlet to Valentine Lake

Photo 252 Downstream (55 m) Rock Wall in Outlet to Valentine Lake

Offsetting Opportunities

Photo 253 Downstream Portion of Steady - Outlet to Valentine Lake

Photo 254 North Twin Brook Area 1 - Channelized Flow Facing Upstream

Photo 255 North Twin Brook Area 1 – Channelized Flow Facing Upstream

Photo 256 North Twin Brook Area 1 – Area Behind Boulder Wall Facing

Offsetting Opportunities

Photo 257 North Twin Brook Area 1 – Area Behind Boulder Wall, Submerged Pulpwood

Photo 258 North Twin Brook Area 1 – Submerged Pulpwood

Photo 259 North Twin Brook Area 2 – Behind Rock Wall

Photo 260 North Twin Brook Area 2 – Rock Wall

Offsetting Opportunities

Photo 261 North Twin Brook Area 3 – Head of Riffle Facing Downstream

Photo 262 North Twin Brook Area 3 – Old River Bed Behind Rock Wall

Photo 263 North Twin Brook Area 3 – Channelized Flow Facing Upstream

Photo 264 North Twin Brook Area 3 – Left Hand Bank Facing Upstream, Old River Bed Behind Rock Wall

Offsetting Opportunities	
	
Photo 265 North Twin Brook Area 3 – Submerged Pulpwood	**Photo 266** North Twin Brook Area 3 – Rock Wall
	
Photo 267 North Twin Brook Area 3 – Slow Moving Water Behind Rock Wall	**Photo 268** North Twin Brook Area 3 – Right Bank Facing Upstream, Old River Bed Behind Rock Wall

Offsetting Opportunities

Photo 269 North Twin Brook Area 4 – Rock Wall and Old Pulpwood at Head of Riffle on Right Bank

Photo 270 North Twin Brook Area 4 – Old Pulpwood at Head of Riffle Left Bank

Photo 271 North Twin Brook Area 4 – Channelized Banks

Photo 272 North Twin Brook Area 4 – River Bottom

Offsetting Opportunities

Photo 273 North Twin Brook Area 4 – Old Stream Channel Behind Rock Wall on Right Bank

Photo 274 North Twin Brook Area 4 – Old Stream Channel Behind Rock Wall on Right Bank

Photo 275 North Twin Brook Area 4 – Substrate in Old Stream Channel

Photo 276 North Twin Brook Area 4 – Old Stream Channel Behind Rock Wall on Left Bank

Offsetting Opportunities	
	
Photo 277 North Twin Brook Area 4 – Old Stream Channel Behind Rock Wall on Left Bank	**Photo 278** North Twin Brook Area 4 – Old Stream Channel Behind Rock Wall on Left Bank
	
Photo 279 North Twin Brook Area 5 – Channelized Banks Facing Downstream	**Photo 280** North Twin Brook Area 5 – Channelized Banks Facing Downstream

Offsetting Opportunities	
	
Photo 281 North Twin Brook Area 5 – Old River Channel on Right Hand Bank	**Photo 282** North Twin Brook Area 5 - Old River Channel on Right Hand Bank
	
Photo 283 North Twin Brook Area 5 - Old River Channel on Right Hand Bank	**Photo 284** North Twin Brook Area 5 - Old Side Channel on Right Hand

Offsetting Opportunities	
	
Photo 285 North Twin Brook Area 5 – Old Steady With No Flow	**Photo 286** North Twin Brook Area 5 - Old Side Channel on Right Hand Bank
	
Photo 287 North Twin Brook Area 5 - Old Steady With No Flow	**Photo 288** North Twin Brook Area 5 – Old River Channel on Right Hand Bank

Offsetting Opportunities	
	
Photo 289 **North Twin Brook Area 5 – Wall Keeping Flow in Main Channel**	

APPENDIX D

Stream Habitat Classification Data

Table D.1 - Habitat Classification Data from Streams 2020, Valentine Gold Project

Location		Sub-section	Distance [1] (m)				Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)			Velocity [2] (m/s)			Slope	Habitat Type (%)				Substrate [3] (%)					Riparian Vegetation [4] (%)			Overhead Cover (%)	Instream Cover (%)	Comment
				Photo	Latitude	Longitude			1/4	1/2	3/4	1/4	1/2	3/4		Riffle/ Run	Pool	Flat	Pond	Fines	Gravel	Cobble/ Rubble	Boulder	Bedrock	Grass	Shrub	Trees			
Stream 12	1	0 to 100 m US	0	-	48.3976	-57.1058	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	60	35	5	-	-	Wetland drainage dissipates through rise in terrain before seeping into M1. Not fish habtiat.
Stream 12	2	100 to 200 m US	100	-	48.3976	-57.1060	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	60	35	5	-	-	No visisble channel seepage through wetland. Not fish habitat.
Stream 12	3	200 to 300 m US	200	-	48.3968	-57.1080	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	60	35	5	-	-	No visible channel. Seepage through low lying areas of wetland. Not fish habitat.
Stream 12	4	300 to 400 m US	300	-	48.3960	-57.1090	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	60	35	5	-	-	Isolated pools of wetland seepage. Precipitate observed. Not fish habtiat.
Stream 14A	A1	0 to 100 m US	0	-	48.3701	-57.1221	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	95	0	5	-	-	Wetland drainage. No connectivity to Stream 14. Water pools in places and dissipates through wetland from 0 to 40 m US. Large amount of precipitate in pooled wetland drainage. Not fish habitat.
Stream 14A	A2	100 to 150 m US	100	-	48.3711	-57.1216	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	95	0	5	-	-	Wetland drainage with poorly defined drainage channel. No bed or banks. Large amount of precipitate in pooled wetland drainage. Not fish habitat.
Stream 14B	B1	0 to 125 m US	0	41324	48.3680	-57.1282	1.80	2.80	0.39	0.44	0.37	-	-	-	0.5	0	0	100	0	100	0	0	0	0	80	10	10	30	60	Trout observed. Poorly defined channel at upper end of survey area. Defined channel in downstream end of reach.
Stream 14C	C1	0 to 100 m US	0	41322	48.3692	-57.1285	-	-	-	-	-	-	-	-	0.5	0	0	100	0	100	0	0	0	0	50	40	10	60	100	Poorly formed channel, precipitate noted, likely stagnant during low flow. Flowing at time of Survey. Connectivity DS through wetland during rain events.
Stream 14D	D1	0 to 50 m US	0	41323	48.3690	-57.1286	1.02	0.77	0.25	0.42	0.31	-	-	-	0.5	0	0	100	0	100	0	0	0	0	100	0	0	60	100	At 30 m channel dissipates into wetland, overland flow during high rain events.
Stream 14E	E1	0 to 100 m US	0	41269	48.3686	-57.1325	0.73	0.95	0.04	0.06	0.08	0.0300	0.0125	0.0300	1.0	50	10	40	0	50	0	10	40	0	50	20	30	20	85	Small stream connected to beaver pond draining areas of wetland seepage. Fish habitat (0 to 90 m).
Stream 14E	E2	100 to 200 m US	100	-	48.3685	-57.1285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No visible channel. Shallow stagnant pooled drainage from wetland with manganese precipitate. Not fish habitat.
Stream 14F	F1	0 to 100 m US	0	41267	48.3678	-57.1321	27.00	28.00	0.30	0.50	0.70	0.0001	0.0001	0.0001	0.5	0	0	0	100	100	0	0	0	0	25	40	35	20	80	Beaver pond
Stream 14F	F2	100 to 200 m US	100	41271	48.3674	-57.1323	3.00	3.00	0.30	0.30	0.20	0.0001	0.0001	0.0001	0.5	0	0	0	100	100	0	0	0	0	25	40	35	40	90	Beaver pond, turning into small channel
Stream 14F	F3	200 to 300 m US	300	41268	48.3674	-57.1323	1.50	1.50	0.05	0.06	0.02	-	-	-	0.5	0	0	70	0	100	0	0	0	0	70	20	10	70	100	15 m upstream channel poorly defined, wetland seepage, precipitate, floating bog, no defined channel at 60 m. Standing water in bog. No standing water at 70m then stream starts to rechannelize at 100 m. Unlikely fish habitat.
Stream 14F	F4	300 to 400 m US	400	41270	48.3665	-57.1329	1.20	1.20	0.05	0.07	0.02	-	-	-	0.1	0	0	20	0	100	0	0	0	0	30	20	50	90	100	Lower 10 m is bog with no visible channel. At 40 m US the area forms a channels of standing water draining the surrounding bogs. Questionable access and habitat for fish. No fish caught or observed.
							5.74	5.90		0.21			0.0081		0.5	8%	2%	56%	34%	93%	0%	1%	6%	0%	50%	26%	24%	51	94	
Stream 15	1	0 to 100 m US	0	41318	48.3498	-57.1769	1.01	2.00	0.06	0.03	0.03	0.0100	0.0100	0.0100	1.0	90	10	0	0	5	10	40	45	0	30	30	40	30	15	Trout and stickleback observed
Stream 15	2	100 to 200 m US	100	41316	48.3503	-57.1757	1.52	1.69	0.10	0.18	0.02	-	-	-	1.0	90	10	0	0	30	0	5	65	0	40	50	10	30	20	Well defined stream
Stream 15	3	200 to 300 m US	200	41313	48.3508	-57.1748	0.80	0.80	0.08	0.11	0.10	0.0140	0.0160	0.0100	1.0	0	0	100	0	50	0	0	50	0	40	50	10	40	10	Stickleback observed. Stream flows through low lying area draining pond. Remnants of very old beaver dam.
Stream 15	4	300 to 400 m US	300	41320	48.3507	-57.1746	39.00	40.00	0.20	0.30	0.20	0.0001	0.0001	0.0001	0.5	0	0	0	100	95	0	0	5	0	0	30	70	30	40	Very shallow pond
Stream 15	5	400 to 500 m US	400	41312	48.3511	-57.1733	7.00	7.50	1.30	1.00	0.30	0.0001	0.0001	0.0001	0.5	0	0	0	100	100	0	0	0	0	0	30	70	30	40	Very shallow pond, deepens where it narrows
Stream 15	6	500 to 600 m US	500	41319	48.3512	-57.1720	6.00	6.20	0.10	0.60	0.30	0.0001	0.0001	0.0001	0.1	0	0	0	100	100	0	0	0	0	0	40	60	35	50	Upstream end of pond
Stream 15	7	600 to 700 m US	600	41317	48.3518	-57.1716	1.13	1.21	0.20	0.21	0.20	0.0001	0.0001	0.0001	2.0	90	10	0	0	15	0	0	85	0	10	30	60	50	100	School of stickleback observed in stream inflow to pond
Stream 15	8	700 to 800 m US	700	41314	48.3522	-57.1703	0.70	7.00	0.45	0.02	0.03	-	-	-	0.5	0	10	90	0	60	0	0	40	0	35	40	25	40	90	No velocity too shallow. 0.4 m width for stream
Stream 15	9	800 to 900 m US	800	41321	48.3526	-57.1692	0.71	1.53	0.23	0.11	0.26	-	-	-	0.5	0	40	60	0	95	0	0	5	0	15	50	35	30	90	Sticklebacks observed
Stream 15	10	900 to 1000 m US	900	41315	48.3525	-57.1679	0.70	0.85	0.19	0.24	0.27	-	-	-	0.5	0	0	100	0	90	0	0	10	0	60	20	20	70	100	Intermittent channel 10m from start and 20 m from end. Small overland channel, most of water dissipates into wetland. Poor fish habitat.
Stream 15	11	1000 to 1100 m US	1000	41769	48.3530	-57.1669	0.55	0.60	0.22	0.23	0.29	-	-	-	0.5	50	0	50	0	40	0	0	60	0	15	40	45	70	10	Very, very, low flow. Brown manganese precipitate on water surface.
Stream 15	12	1100 to 1200 m US	1100	41770	48.3532	-57.1658	1.00	1.20	0.29	0.29	0.25	-	-	-	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Channel dissipates within wetland and is poorly defined at 35 m. Becomes defined again at 59 m.
Stream 15	13	1200 to 1300 m US	1200	41771	48.3535	-57.1647	1.80	1.80	0.07	0.08	0.10	-	-	-	0.5	0	0	0	0	100	0	0	0	0	40	20	40	80	100	Wetland seepage ends and spring upwells from wetland. End of visisble channel.
							4.76	5.57		0.24			0.0040		0.7	29%	7%	36%	27%	65%	1%	4%	30%	0%	24%	36%	40%	41	51	
Stream 25	1	0 to 100 m US	0	-	48.3619	-57.1592	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90%	5%	5%	-	-	Intermittent pools of wetland drainage with no connectivity to L1. No fish habitat.
Stream 25	2	100 to 200 m US	0	-	48.3618	-57.1605	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90%	5%	5%	-	-	Intermittent pools of wetland drainage. No defined bed or banks. Not fish habitat.
Stream 25	3	200 to 300 m US	0	-	48.3617	-57.1615	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	90%	5%	5%	-	-	Intermittent pools of wetland drainage with no connectivity to L1. Not fish habitat.
Stream 26	1	0 to 100 m US	0	41235	48.3475	-57.1581	0.37	0.80	0.02	0.02	0.06	-	-	-	1.0	10	10	80	0	80	0	0	20	0	25	45	30	50	100	Hung CSP culvert where stream flows into Victoria Lake Reservoir. Neglible flow.
Stream 26	2	100 to 200 m US	100	41239	48.3481	-57.1575	0.00	0.60	0.00	0.00	0.00	-	-	-	0.5	10	20	0	0	90	0	0	10	0	20	50	30	70	5	Dissipates into braided intermittent channels through wetland. Very poor fish habitat if any. Dry at time of survey except pools with precipitate.
Stream 26	3	200 to 300 m US	200	41234	48.3486	-57.1573	0.00	0.60	0.00	0.00	0.00	-	-	-	0.5	0	0	0	0	95	0	0	5	0	15	65	20	60	0	Single channel through alder forest, drainage between two conifer forests. Ephemeral channel.
Stream 26	4	300 to 400 m US	300	41240	48.3493	-57.1566	0.00	0.60	0.00	0.00	0.00	-	-	-	0.5	0	0	0	0	100	0	0	0	0	20	60	20	50	0	Intermittent pools for ponded water. Stream generally dry at time of survey.
Stream 26	5	400 to 500 m US	400	41241	48.3501	-57.1565	1.10	1.80	0.07	0.08	0.05	-	-	-	0.5	0	10	0	0	85	10	0	5	0	20	60	20	50	0	Stream braids at 60 m upstream. Water observed in intermittent pools within channel at 90 m. No flow observed between intermittent pools.
Stream 26	6	500 to 600 m US	500	41237	48.3508	-57.1558	0.65	1.90	0.02	0.03	0.01	-	-	-	0.5	40	20	0	0	40	10	15	25	10	20	60	20	40	5	Intermittent pools with negligble flow between cracks of rocks.
Stream 26	7	600 to 700 m US	600	41242	48.3512	-57.1551	0.00	1.70	0.00	0.00	0.00	-	-	-	5.0	20	30	0	0	60	5	20	15	0	20	60	20	50	0	Braided channel at 50 m then stream dries up through alder wetland. Dry ephemeral channel runs up ridge with 10 % slope.
Stream 26	8	700 to 800 m US	700	41238	48.3519	-57.1555	0.00	1.55	0.00	0.00	0.00	-	-	-	1.0	0	10	0	0	30	10	30	30	0	20	60	20	50	0	Trout observed in pooled water at 63 m. Dry channel rest of length.
Stream 26	9	800 to 900 m US	800	41243	48.3526	-57.1560	0.00	1.70	0.00	0.00	0.00	-	-	-	1.0	0	5	0	0	30	10	30	30	0	20	60	20	40	0	Trout observed in pooled water at 60 m. Dry channel rest of length.
Stream 26	10	900 to 1000 m US	900	41236	48.3535	-57.1560	0.70	1.20	0.02	0.03	0.02	-	-	-	0.5	0	50	50	0	30	0	25	45	0	30	30	40	25	0	Trout observed in intermittent pools of water throughout. No flow observed between pools.
Stream 26	11	1000 to 1100 m US	1000	41233	48.3544	-57.1563	0.65	1.00	0.02	0.01	0.03	-	-	-	0.5	0	50	30	0	40	0	20	40	0	30	30	40	25	0	Trout observed in intermittent pools of water throughout. No flow observed. Braids through alder wetland at 70 m.
Stream 26	12	1100 to 1200 m US	1100	41252	48.3552	-57.1555	0.00	0.70	0.00	0.00	0.00	-	-	-	-	0	5	0	0	75	0	15	10	0	20	30	50	60	0	Fish observed in mud hole 50 m upstream, dry channel rest of length.
Stream 26	13	1200 to 1300 m US	1200	41253	48.3561	-57.1555	0.00	0.75	0.00	0.00	0.00	-	-	-	0.5	0	5	0	0	90	0	0	10	0	35	35	30	40	0	Trout observed in tiny intermittent pool. Dry channel rest of length.

Table D.1 - Habitat Classification Data from Streams 2020, Valentine Gold Project

Location		Sub-section	Distance [1] (m)				Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)			Velocity [2] (m/s)			Slope	Habitat Type (%)				Substrate [3] (%)					Riparian Vegetation [4] (%)			Overhead Cover (%)	Instream Cover (%)	Comment
				Photo	Latitude	Longitude			1/4	1/2	3/4	1/4	1/2	3/4		Riffle/ Run	Pool	Flat	Pond	Fines	Gravel	Cobble/ Rubble	Boulder	Bedrock	Grass	Shrub	Trees			
Stream 26	14	1300 to 1400 m US	1300	41251	48.3570	-57.1556	0.11	0.84	0.02	0.02	0.02	-	-	-	0.5	0	5	0	0	95	0	0	5	0	20	35	45	50	0	One trout observed in intermittent pool. Dry channel rest of length.
Stream 26	15	1400 to 1500 m US	1400	41248	48.3575	-57.1552	0.25	0.65	0.02	0.02	0.02	-	-	-	0.5	0	30	0	0	90	5	0	5	0	20	35	45	50	0	Stream heavily covered by shrubs.
Stream 26	16	1500 to 1600 m US	1500	41249	48.3581	-57.1555	0.60	0.80	0.04	0.08	0.03	-	-	-	0.5	0	30	0	0	90	5	0	5	0	20	35	45	70	0	Stream heavily covered by shrubs.
Stream 26	17	1600 to 1700 m US	1600	41246	48.3586	-57.1552	0.30	0.70	0.00	0.00	0.03	-	-	-	0.5	0	30	20	0	90	5	0	5	0	20	35	45	90	0	Stream heavily covered by shrubs. Fish caught.
Stream 26	18	1700 to 1800 m US	1700	41250	48.3592	-57.1559	0.00	0.72	0.00	0.00	0.00	-	-	-	1.0	0	0	0	0	95	5	0	0	0	20	60	20	90	0	Channel totally dry.
Stream 26	19	1800 to 1900 m US	1800	41245	48.3599	-57.1554	0.00	0.79	0.00	0.00	0.00	-	-	-	0.5	0	5	0	0	75	0	10	15	0	20	60	20	90	0	Few small pockets of water in dry channel.
Stream 26	20	1900 to 2000 m US	1900	41247	48.3606	-57.1562	0.32	0.72	0.01	0.01	0.02	-	-	-	0.5	0	5	0	0	40	5	30	25	0	20	55	25	70	0	Few small intermittent pockets of water in dry channel. Fish observed trapped in small intermittent pools.
Stream 26	21	2000 to 2050 m US	2000	41244	48.3614	-57.1568	0.39	0.85	0.03	0.04	0.03	-	-	-	1.0	0	30	0	0	40	5	30	25	0	20	35	45	50	0	Few small pockets of water in dry channel. Fish observed.
							0.26	1.00		0.01			-		1.0	13%	57%	30%	0%	70%	4%	11%	16%	0%	22%	47%	31%	56	5	
Stream 27	1	0 to 50 m DS	0	41071	48.3482	-57.1546	1.80	7.00	0.16	0.18	0.09	0.1000	0.1500	0.0500	1.0	95	5	0	0	5	20	45	20	10	20	45	35	0	0	Debris jam 10 m from bottom
Stream 27	2	0 to 50 m US	100	41070	48.3482	-57.1539	1.80	7.00	0.15	0.08	0.06	0.1600	0.2000	0.0100	2.0	90	10	0	0	5	10	60	20	5	25	35	40	50	5	Nice flowing stream through forest
							1.80	7.00		0.12			0.1117		1.5	93%	8%	0%	0%	5%	15%	53%	20%	8%	23%	40%	38%	25	3	
Stream 31	1	0 to 100 m US	0	41263	48.3615	-57.1165	0.47	1.55	0.02	0.04	0.05	-	-	-	25.0	90	10	0	0	0	15	40	45	0	20	60	20	30	5	Lower portion of reach at the confluence with Victoria River was dry. Brook trout observed in pools 30 m US of confluence before steep gradient. Steep sections (20% slope) observed 40 m upstream. Perched culvert at old road crossing (barrier to fish passage). 0 to 80 m fish habitat.
Stream 31	2	100 to 300 m US	200	41265	48.3619	-57.1177	-	1.52	0.00	0.00	0.00	-	-	-	5.0	95	5	0	0	5	15	35	45	0	30	30	40	20	5	Dry steep channel with 25-45 % slope. Ephemeral (dry), steep and between two perched culverts. Not fish habitat.
Stream 31	1a	0 to 60 m US	60	41261	48.3617	-57.1163	-	-	0.00	0.00	0.00	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	Dry channel for overland flow. Not fish habitat.
							0.47	1.54		0.01			-		15.0	93%	8%	0%	0%	3%	15%	38%	45%	0%	25%	45%	30%	17	3	
Stream 32	1	0 to 100 m US	0	41256	48.3659	-57.1083	0.60	0.80	0.06	0.05	0.02	-	-	-	1.0	0	0	10	-	40	40	20	0	0	30	70	0	40	100	Generally dry channel. Brook trout trapped in shallow pool 25m US from confluence with Victoria River. 0 to 90 m fish habitat.
Stream 32	2	100 to 200 m US	100	41259	48.3661	-57.1086	-	0.70	0.00	0.00	0.00	-	-	-	20.0	-	-	-	-	10	5	45	35	5	20	40	40	0	0	Perched CSP culvert at old road crossing. Barrier to fish passage. Stream dry except 3 small pools in first 10 m. Steep gradient. Braided at 40 m US.
Stream 32	3	200 to 300 m US	200	41260	48.3666	-57.1093	0.30	1.40	0.00	0.00	0.00	-	-	-	30.0	0	100	0	0	35	10	25	30	0	40	15	45	0	0	Unlikely fish habitat as culvert is perched and channel was ephemeral.
Stream 32	4a	300 to 375 m US	75	41258	48.3673	-57.1100	-	0.60	0.00	0.00	0.00	-	-	-	20.0	-	-	-	-	65	10	0	25	0	20	60	20	0	0	Braided at 25 m, channel dissipates into forested wetland at 75m US. Not fish habitat. No flow only wetland seepage in depressions.
Stream 32	4b	300 to 420 m US	120	41257	48.3686	-57.1103	-	-	0.00	0.00	0.00	-	-	-	10.0	-	-	-	-	65	10	0	25	0	25	60	25	0	0	Channel dissipates into forested wetland. Not fish habitat. Defined channel ends here.
							0.45	0.88		0.01			-		16.2	0%	91%	9%	0%	43%	15%	18%	23%	1%	26%	48%	25%	8	20	
Stream 33	1	0 to 100 m US	0	41036	48.3765	-57.0933	1.33	1.50	0.04	0.03	0.06	0.0002	0.0002	0.0002	1.0	70	10	20	0	45	25	30	0	0	30	70	0	60	0	Top of reach flows through bog, middle is nice gravel and bottom is deeper and slower. Fish Habitat.
Stream 33	2	100 to 200 m US	100	41034	48.3766	-57.0943	0.80	0.80	0.20	0.17	0.08	0.0100	0.0200	0.0100	1.0	0	10	90	0	50	25	20	5	0	80	20	0	60	100	Flows through wetland
Stream 33	3	200 to 300 m US	200	41028	48.3765	-57.0952	0.89	0.90	0.09	0.13	0.04	0.0500	0.0500	0.0400	1.0	100	0	0	0	75	25	0	0	0	40	60	0	60	0	-
Stream 33	4	300 to 400 m US	300	41032	48.3763	-57.0965	0.95	1.80	0.13	0.15	0.09	0.0010	0.0010	0.0010	5.0	70	10	20	0	60	30	0	10	0	40	60	0	50	0	Nice trout spawning habitat
Stream 33	5	400 to 500 m US	400	41038	48.3763	-57.0976	1.25	1.70	0.14	0.16	0.14	0.0160	0.0200	0.0170	6.0	90	10	0	0	25	20	20	35	0	40	40	20	75	20	
Stream 33	6	500 to 600 m US	500	41037	48.3767	-57.0983	1.50	1.60	0.08	0.08	0.14	0.0500	0.0500	0.0500	1.0	10	50	40	0	30	25	25	20	0	35	55	10	80	0	Trout observed
Stream 33A	A South 1	650 to 750 m US	650	41062	48.3764	-57.0982	0.51	0.28	0.05	0.06	0.08	-	-	-	0.5	60	40	0	0	50	30	20	0	0	50	50	0	50	100	YOY and older brook trout observed.
Stream 33A	A South 2	750 to 850 m US	750	41061	48.3756	-57.0981	0.33	0.54	0.14	0.14	0.11	-	-	-	0.5	10	10	80	0	70	20	10	0	0	40	60	0	50	85	
Stream 33A	A South 4	950 to 1050 m US	950	41063	48.3742	-57.0986	0.44	0.49	0.02	0.03	0.03	-	-	-	0.5	95	5	0	0	65	15	20	0	0	40	40	20	35	100	Stream flows through wetland in lower reach. Substrates are coarsers at the top. Well defined channel. Brook trout observed.
Stream 33A	A South 3	850 to 950 m US	850	41066	48.3748	-57.0981	0.79	0.99	0.04	0.04	0.03	0.0060	0.0060	0.0060	0.5	0	0	100	0	100	0	0	0	0	50	30	20	80	100	Stream flows through old drained beaver meadow. Braids as it flows into wetland.
Stream 33A	A South 5	1050 to 1120 m US	1050	41064	48.3735	-57.0994	0.53	0.55	0.06	0.12	0.14	0.0100	0.0100	0.0100	1.0	90	10	0	0	85	5	10	0	0	40	40	20	25	0	Stream ends in spring coming out of forested wetland. Well defined channel. Brook trout observed.
Stream 33B	B Central 1	750 to 850 m US	750	41065	48.3756	-57.0980	0.00	2.00	0.00	0.00	0.00	-	-	-	-	60	40	0	0	50	35	15	0	0	50	50	0	50	100	Flow reduced, braids 20 m upstream, brook trout observed in disconnected pool at 75 m.
Stream 33B	B Central 2	850 to 950 m US	850	41040	48.3755	-57.0996	1.20	2.00	0.07	0.07	0.04	-	-	-	-	100	0	0	0	20	15	25	40	0	50	0	50	15	10	Steep gradient through birch forest
Stream 33B	B Central 3	950 to 1050 m US	950	41027	48.3757	-57.1008	0.65	1.49	0.02	0.05	0.02	-	-	-	10.0	90	10	0	0	5	10	45	40	0	55	10	35	20	10	No fish observed. Intermittent pools between rocks.
Stream 33B	B Central 4	1050 to 1150 m US	1050	41029	48.3762	-57.1018	0.80	1.00	0.00	0.00	0.00	-	-	-	-	100	0	0	0	15	15	40	30	0	50	15	35	25	10	Dry ephemeral channel 10 m upstream from start of reach. Lots of debris jams
Stream 33B	B Central 5	1150 to 1250 m US	1150	41041	48.3768	-57.1027	-	1.00	-	-	-	-	-	-	4.0	-	-	-	-	0	0	0	0	0	0	0	0	0	0	Dry channel
Stream 33C	C North 1	600 to 700 m US	600	41031	48.3773	-57.0991	0.00	-	0.00	0.00	0.00	-	-	-	0.5	-	-	-	-	90	0	5	5	0	30	70	0	0	0	Wetted channel at 40 m then dissipates into wetland. Dry ephemeral channel. Not fish habitat.
Stream 33C	C North 2	700 to 800 m US	700	41043	48.3777	-57.1004	1.20	1.40	0.00	0.00	0.00	-	-	-	20.0	-	-	-	-	0	0	0	0	0	0	0	0	0	0	Braids at 65 m and becomes overland drainage channel. Dissipates over hill through wetland. Not fish habitat.
Stream 33C	C North 3	800 to 900 m US	800	41039	48.3782	-57.1016	0.00	-	0.00	0.00	0.00	-	-	-	15.0	-	-	-	-	0	0	0	0	0	0	0	0	0	0	Drainage channel. Steep 15%. Not fish habitat.
Stream 33C	C North 4	900 to 1000 m US	900	41042	48.3784	-57.1033	0.00	1.30	0.00	0.00	0.00	-	-	-	15.0	-	-	-	-	0	0	0	0	0	0	0	0	0	0	Slope quite steep. Not fish habitat.
Stream 33C	C North 5	1000 to 1200 m US	1000	41035	48.3787	-57.1047	0.00	0.60	0.00	0.00	0.00	-	-	-	10.0	-	-	-	-	0	0	0	0	0	0	0	0	0	0	Dry channel at 35 m, drops over steep section of hill then defined overland flow channel. Not fish habitat.
Stream 33C	C North 6	1100 to 1200 m US	1100	41030	48.3787	-57.1060	-	-	0.00	0.00	0.00	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	Terrestrial area full of alders. No sign of stream or channel. No drainage downstream for 50 m. Not fish habitat.
Stream 33C	C North 7	1200 to 1300 m US	1200	41033	48.3791	-57.1073	0.00	-	0.00	0.00	0.00	-	-	-	0.5	-	-	-	-	0	0	0	0	0	0	0	0	0	0	No visible channel only intermittent drainage pools in wetland. Not fish habitat.
							0.63	1.15		0.05			0.0181		5.1	63%	14%	23%	0%	52%	18%	18%	12%	0%	45%	42%	13%	32	28	

Table D.2 - Habitat Classification Data from Outlet of Valentine Lake 2020, Valentine Gold Project

Location	Sub-section	Distance [1] (m)	Cumulative Distance (m)	Photo	Latitude	Longitude	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)			Velocity [2] (m/s)			Slope	Habitat Type	Substrate [3] (%)					Riparian Vegetation [4] (%)			Overhead Cover (%)	Instream Cover (%)	Comment
									1/4	1/2	3/4	1/4	1/2	3/4			Fines	Gravel	Cobble/ Rubble	Boulder	Bedrock	Grass	Shrub	Trees			
Outlet of Valentine	0 to 25 m US	25	25	41272	48.42479	-57.07888	-	8	-	-	-	1	1	1	-	Cascade/Rapid	0	0	0	0	100	0	20	80	0	0	-
Outlet of Valentine	25 to 50 m US	25	50	41297	48.42474	-57.07916	-	20	0.34	0.41	0.15	0.4	0.4	0.4	-	Riffle	0	0	10	70	20	0	20	80	0	0	-
Outlet of Valentine	50 to 110 m US	60	110	41277	48.42519	-57.07978	-	8	0.4	0.5	0.6	1	1	1	30	Cascade/Rapid	0	0	0	40	60	0	20	80	0	0	-
Outlet of Valentine	110 to 245 m US	135	245	41307	48.42526	-57.08143	-	24.7	0.36	0.25	0.25	0.4	0.4	0.4	1	Riffle	0	5	50	45	0	0	20	80	0	0	-
Outlet of Valentine	245 to 345 m US	100	345	41310	48.42578	-57.08288	-	19.5	0.39	0.47	0.16	0.4	0.4	0.4	3	Riffle	0	0	25	50	25	0	20	80	0	0	-
Outlet of Valentine	345 to 365 m US	20	365	41283	48.42582	-57.08268	-	46.5	0.58	0.44	0.3	0.1	0.1	0.1	-	Pool (unclassified)	0	0	65	35	0	0	20	80	0	0	-
Outlet of Valentine	365 to 385 m US	20	385	41289	48.42594	-57.08269	-	42.6	0.32	0.35	0.17	0.4	0.4	0.4	-	Riffle	0	0	45	55	0	0	20	80	0	0	-
Outlet of Valentine	385 to 405 m US	20	405	41301	48.42612	-57.0827	-	39	0.23	0.27	0.26	0.4	0.4	0.4	-	Run (Unclassified)	0	5	50	45	0	0	20	80	0	0	-
Outlet of Valentine	405 to 457 m US	52		41286	48.42654	-57.08338	-	11.9	-	-	-	0.2	0.2	0.2	-	Flat	0	0	55	45	0	0	20	80	0	0	-
Outlet of Valentine	457 to 502 m US	45		41287	48.42668	-57.08364	7	7.5	0.27	0.27	0.28	0.4	0.4	0.4	6	Run (Unclassified)	0	0	0	90	10	0	20	80	15	15	Small rock wall at upstream end
Outlet of Valentine	405 to 453 m US	48	453	41274	48.4266	-57.08282	-	12.4	-	-	-	1	1	1	-	Cascade/Rapid	0	5	20	25	50	0	20	80	0	0	-
Outlet of Valentine	453 to 503 m US	50	503	41276	48.42697	-57.08328	9	10	0.39	0.32	0.36	0.4	0.4	0.4	-	Riffle	0	0	35	55	10	0	20	80	20	20	River channelized on both sides
Outlet of Valentine	503 to 544 m US	41	544	41311	48.4273	-57.08361	-	42.8	-	-	-	0.4	0.4	0.4	-	Run (Unclassified)	10	35	35	20	0	0	20	80	25	25	-
Outlet of Valentine	544 to 589 m US	45	589	41281	48.42763	-57.08398	-	14.4	0.35	0.29	0.34	0.4	0.4	0.4	-	Riffle	0	0	20	80	0	0	20	80	20	20	Bank channelized by rock wall on left bank facing downstream
Outlet of Valentine	589 to 609 m US	20	609	41308	48.42764	-57.08429	-	53	0.54	0.5	0.38	0.2	0.2	0.2	0.5	Flat	20	5	45	30	0	0	20	80	20	20	-
Outlet of Valentine	609 to 719 m US	110	719	41304	48.4283	-57.08523	-	9.8	0.5	0.41	0.27	1	1	1	4	Cascade/Rapid	0	5	10	65	20	0	20	80	20	20	Bank channelized by rock wall on left bank facing downstream
Outlet of Valentine	719 to 869 m US	150	869	41306	48.42847	-57.08723	9	10.5	0.62	0.58	0.61	0.4	0.4	0.4	-	Riffle	0	5	30	60	5	0	20	80	10	10	-
Outlet of Valentine	869 to 919 m US	50	919	41295	48.42834	-57.08764	-	30.5	0.7	0.53	0.49	0.2	0.2	0.2	-	Flat	5	10	50	35	0	0	20	80	10	10	-
Outlet of Valentine	919 to 964 m US	45	964	41309	48.42856	-57.0885	-	15.4	0.27	0.48	0.32	0.4	0.4	0.4	2	Riffle	0	0	35	65	0	0	20	80	20	20	-
Outlet of Valentine	964 to 984 m US	20	984	41291	48.42859	-57.08861	-	51.5	0.34	0.64	0.68	0.2	0.2	0.2	1	Flat	0	0	70	30	0	0	20	80	10	10	-
Outlet of Valentine	984 to 1016 m US	32	1016	41290	48.42835	-57.08942	-	46.4	0.22	0.38	0.5	0.4	0.4	0.4	-	Riffle	0	0	80	20	0	0	20	80	10	10	-
Outlet of Valentine	1016 to 1086 m US	70	1086	41293	48.42832	-57.0893	-	9.6	0.26	0.3	0.54	0.4	0.4	0.4	3	Riffle	0	0	40	60	0	0	20	80	30	30	Rock wall between two channels
Outlet of Valentine	1086 to 1136 m US	50	1136	41285	48.42846	-57.09057	11.5	12	0.29	0.29	0.21	1	1	1	3	Cascade/Rapid	0	0	5	80	15	5	35	60	20	20	-
Outlet of Valentine	1136 to 1146 m US	10	1146	41273	48.42842	-57.09113	-	18.3	-	-	-	1	1	1	-	Cascade/Rapid	0	0	10	85	5	5	35	60	20	20	-
Outlet of Valentine	1146 to 1236 m US	90	1236	41305	48.42821	-57.09155	-	14.1	0.26	0.3	0.51	0.4	0.4	0.4	3	Riffle	0	0	10	85	5	5	35	60	20	20	-
Outlet of Valentine	1236 to 1326 m US	90	1326	41294	48.42848	-57.09269	8	9.5	0.33	0.37	0.22	1	1	1	20	Cascade/Rapid	0	0	0	60	40	5	35	60	20	20	-
Outlet of Valentine	1326 to 1391 m US	65	1391	41292	48.4289	-57.09345	-	35.9	0.21	0.14	0.2	-	-	-	-	Riffle	0	0	40	60	0	5	35	60	20	20	-
Outlet of Valentine	1016 to 1076 m US	60	1076	41303	48.42865	-57.08977	-	29.5	0.25	0.35	0.45	0.4	0.4	0.4	-	Riffle	0	0	30	60	10	0	20	80	30	30	Side channel downstream of steady
Outlet of Valentine	1076 to 1136 m US	60	1136	41300	48.42898	-57.0904	-	18.8	0.33	0.27	0.42	0.4	0.4	0.4	-	Riffle	0	0	30	70	0	0	20	80	30	30	Side channel downstream of steady
Outlet of Valentine	1136 to 1186 m US	50	1186	41278	48.42857	-57.09061	7	8	0.45	0.35	0.37	1	1	1	5	Cascade/Rapid	0	0	5	80	15	5	35	60	20	20	-
Outlet of Valentine	1186 to 1331 m US	145	1331	41296	48.42926	-57.09264	-	5.9	-	-	-	1	1	1	-	Cascade/Rapid	0	0	5	90	5	0	20	80	20	20	Side channel downstream of steady
Outlet of Valentine	1331 to 1382 m US	50	1381	41275	48.42947	-57.09131	-	3.4	0.36	0.49	0.58	1	1	1	40	Cascade/Rapid	0	0	5	90	5	0	20	80	20	20	Side channel downstream of steady
Outlet of Valentine	1391 to 1423 m US	32	1423	41232	48.42959	-57.09336	-	50.7	-	-	-	-	-	-	-	Flat	15	0	40	45	0	0	30	70	20	20	Area behind rock berms
Outlet of Valentine	1423 to 1458 m US	35	1458	41230	48.4291	-57.09388	-	66.5	-	-	-	-	-	-	-	Flat	10	0	30	60	0	0	0	0	20	20	Area behind rock berms
Outlet of Valentine	1458 to 1570 m US	112	1570	41229	48.4291	-57.09388	-	76.2	-	-	-	-	-	-	-	Flat	85	0	0	15	0	25	20	55	60	60	Back eddy behind island, river divered along edge of boulder wall.
Outlet of Valentine	1570 to 1580 m US	10	1580	41231	48.42956	-57.09544	-	17.9	-	-	-	-	-	-	-	Flat	0	0	40	60	0	25	40	35	15	15	Area behind rock berms

Table D.3 - Summary of Water Quality Characteristics for Streams 2020, Valentine Gold Project

Location	Latitude	Longitude	Date	Time (GMT)	Temperature (°C)	Specific Conductivity (µS/cm)
Stream 27	48.348248	-57.153879	2020-07-23	21:42:08	14.4	55.3
Stream 26	48.358007	-57.155436	2020-07-24	17:14:21	14.6	103.5
Stream 14	48.368509	-57.132293	2020-07-25	12:08:06	16.5	526.0
Stream 15	48.353225	-57.165773	2020-07-25	19:28:39	18.2	475.0
Stream 15	48.351179	-57.172893	2020-07-21	15:43:22	27.1	-
Stream 15	48.352644	-57.169069	2020-07-21	16:52:32	27.8	267.0
Stream 15	48.351777	-57.171627	2020-07-21	16:16:22	23.5	294.0
Stream 15	48.350739	-57.174920	2020-07-21	14:38:20	25.5	146.0
Stream 29	48.363587	-57.187844	2020-07-27	11:21:44	14.6	63.2
Stream 32	48.365460	-57.107422	2020-07-23	12:44:58	17.5	410.0
Stream 33	48.376366	-57.097811	2020-07-20	16:23:13	13.3	100.2
Stream 33	48.374648	-57.098125	2020-07-23	15:05:45	11.6	104.3
Outlet of Valentine Lake	48.428999	-57.094632	2020-07-25	14:51:57	21.5	53.9

Note: - indicates no data collected

Table D.4 - Habitat Classification Data from Stream Crossings 2020, Valentine Gold Project

Location	Sub-section	Distance [1] (m)	Photo US	Latitude	Longitude	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)			Velocity [2] (m/s)			Slope	Habitat Type (%)				Substrate [3] (%)					Riparian Vegetation [4] (%)			Overhead Cover (%)	Instream Cover (%)	Comment
								1/4	1/2	3/4	1/4	1/2	3/4		Riffle/Run	Pool	Flat	Pond	Fines	Gravel	Cobble/ Rubble	Boulder	Bedrock	Grass	Shrub	Trees			
C0016	0 to 50 m DS	50	41267	48.3678	-57.1321	26.50	27.00	0.30	0.50	0.70	-	-	-	0.5	0	0	0	100	100	0	0	0	0	25	40	35	20	80	Beaver pond.
C0016	0 m (Crossing)	0	-	48.3679	-57.1321	12.0	12.0	0.60	0.60	0.50	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Beaver pond.
C0016	0 to 50 m US	50	41271	48.3674	-57.1323	3.00	3.00	0.30	0.30	0.20	-	-	-	0.5	0	0	0	100	100	0	0	0	0	25	40	35	40	90	Beaver pond
Summary						13.83	14.00		0.44			-		0.5	0%	0%	0%	100%	100%	0%	0%	0%	0%	25%	40%	35%	30	85	Fish habitat - confirmed fish present
C0016a	0 to 50 m DS	50	41268	48.3674	-57.1323	1.50	1.50	0.05	0.06	0.02	-	-	-	0.5	-	-	30	70	100	0	0	0	0	70	20	10	70	100	Wetland drainage with no defined channel at 10 m upstream, bog with intermittent standing water. Rechannelize near proposed crossing.
C0016a	0 m (Crossing)	0	-	48.3679	-57.1321	1.4	1.4	0.05	0.05	0.05	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Insufficient flows to get velocity
C0016a	0 to 50 m US	50	41270	48.3665	-57.1329	1.20	1.20	0.05	0.07	0.02	-	-	-	0.5	-	-	-	-	100	0	0	0	0	30	20	50	90	100	Lower 10 m is bog with NVC but rechannelizes as pooled water upstream. Questionable access for fish. No fish caught or observed.
Summary						1.37	1.37		0.05			-		0.5	0%	0%	30%	70%	100%	0%	0%	0%	0%	50%	20%	30%	80	100	Unlikely fish habitat, connectivity only during very high flows through wetland but no visible channel
C0017	**50 m DS to 50 m US**	**No visible channel**																											
C0018	**50 m DS to 50 m US**	**No visible channel**																											
C0019	**50 m DS to 50 m US**	**No visible channel**																											
C0020	0 to 50 m DS	**No visible channel**																											
C0020	0 to 50 m US	**No visible channel**																											
C0021	**50 m DS to 50 m US**	**No visible channel**																											
C0021a	**50 m DS to 50**	**No visible channel**																											
C0022	**At Crossing**	**Visual Assessment Only**																											
C0022a	0 to 50 m DS	50	41067	48.4503	-57.0280	1.40	2.20	0.13	0.20	0.15	-	-	-	0.5	90	10	0	0	100	0	0	0	0	45	45	10	60	0	Insufficient flows to get velocity
C0022a	0 m (Crossing)	0	-	48.4502	-57.0286	4.2	4.5	0.35	0.40	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Insufficient flows to get velocity
C0022a	0 to 50 m US	50	41068	48.4501	-57.0287	5.10	18.00	0.30	0.15	0.10	-	-	-	0.5	0	100	0	0	95	0	0	5	0	15	20	65	50	55	Unsafe to get velocity.
Summary						3.57	8.23		0.21			-		0.5	45%	55%	0%	0%	98%	0%	0%	3%	0%	30%	33%	38%	55	27.5	Fish habitat - confirmed fish present
C0023	0 to 50 m DS	50	41069	48.4522	-57.0310	0.00	0.90	0.00	0.00	0.00	-	-	-	2.0	90	10	0	0	15	20	50	15	0	50	50	0	40	5	Dry Channel.
C0023	0 m (Crossing)	0	-	48.4524	-57.0313	5	5.1	0.25	0.80	0.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Pool downstream of existing culvert
C0023	0 to 50 m US	50	-	48.4524	-57.0314	No visible channel upstream of berm. Dry pools for wetland seepage.																							
Summary						2.50	3.00		0.24			-		2.0	90%	10%	0%	0%	15%	20%	50%	15%	0%	50%	50%	0%	40	5	Not fish habitat given ephemeral nature and absence of channel downstream
C0024	**50 m DS to 50 m US**	No visible channel - Signs that surface runoff pools in front of berm before entering ditch. Dry. Not fish habitat.																											
C0025	**50 m DS to 50 m US**	No culvert located. No flow at time of survey, intermittent ephermeral channel. No connectivity downstream to ditch. Not fish habitat.																											
C0026	**50 m DS to 50 m US**	Upstream of crossing is dry intermittent drainage pools from forested wetland. No connection to stagnant water in ditch downstream of proposed crossing. No flow. Not fish habitat.																											
C0027	**50 m DS to 50 m US**	No visible channel. Few signs of dry ephermeral pools in forested wetland. Not connected downstream of road. Not fish habitat.																											
C0028	**50 m DS to 50 m US**	No visible channel. Pools holding overland flow were observed upstream of proposed crossing, but dry at time of survey. Downstream channel braids through forest then dissipates. No connectivity to downstream watercourses/waterbodies. Not fish habitat.																											
C0029	0 to 50 m DS	No visible channel or signs of drainage. All runoff drains through ditch on wetstern side of road. No culvert present. Not fish habitat.																											
C0030	**50 m DS to 50 m US**	No visible channel upstream of proposed crossing. Defined channel with stagnant water from wetland drainage and neglible flow is present within last 15 m of downstream survey area. Not fish habitat.																											
C0031	0 to 50 m US	50	41011	48.4869	-57.0228	3.10	4.40	0.08	0.30	0.17	0.007	0.028	0.082	2.0	80	20	0	0	5	5	45	45	0	35	50	15	35	20	Stream not as mapped upstream of road crossing
C0031	0 m (Crossing)	0	-	48.4869	-57.0227	0.92	4.1	0.07	0.14	0.09	0.011	0.045	0.060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0031	0 to 50 m DS	50	41012	48.4873	-57.0227	3.40	5.30	0.18	0.20	0.22	0.151	0.010	0.153	2.0	100	0	0	0	5	10	40	45	0	20	60	20	30	10	-
Summary						2.47	4.60		0.16			0.061		2.0	90%	10%	0%	0%	5%	8%	43%	45%	0%	28%	55%	18%	32.5	15	Fish habitat - confirmed fish present
C0032	0 to 50 m DS	50	41021	48.4958	-57.0234	0.77	0.98	0.10	0.09	0.06	-	-	-	2.0	100	0	0	0	20	10	40	30	0	40	60	0	60	0	Intermittent braided channel draining forested wetland. Little noticeable flow. 20 m upstream of culvert crossing seepage drains through existing ditch.
C0032	0 m (Crossing)	0	-	48.4955	-57.0232	1.03	3	0.11	0.12	0.08	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Insufficient flows to get velocity
C0032	0 to 50 m US	50	41022	48.4950	-57.0228	0.71	1.17	0.05	0.05	0.04	-	-	-	1.0	100	0	0	0	90	5	5	0	0	30	65	5	50	0	Intermittent channel for first 40 m then dries up into pools.
Summary						0.84	1.72		0.08			-		1.2	100%	0%	0%	0%	55%	8%	23%	15%	0%	35%	63%	3%	55	0	Unlikely fish habitat, no fish observed.
C0033	0 to 50 m US	50	41019	48.5291	-57.0041	1.70	2.25	0.05	0.05	0.04	0.027	0.022	0.017	1.0	80	20	0	0	0	5	55	40	0	10	80	10	80	10	Low flow pooled in places and trickles between boulders
C0033	0 m (Crossing)	0	-	48.5291	-57.0041	2.2	3.4	0.14	0.07	0.10	0.011	0.008	0.005	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0033	0 to 50 m DS	50	41020	48.5291	-57.0045	1.55	2.80	0.06	0.07	0.06	0.010	0.032	0.062	1.0	80	20	0	0	0	5	65	30	0	35	65	0	50	5	
Summary						1.82	2.82		0.07			0.022		1.0	80%	20%	0%	0%	0%	5%	60%	35%	0%	23%	73%	5%	65	7.5	Fish habitat, based on connectivity.
C0034	0 to 50 m DS	50	41013	48.5443	-57.0129	5.10	6.70	0.25	0.26	0.06	0.220	0.200	0.003	1.0	50	50	0	0	5	10	35	50	0	10	75	15	10	10	Flowing stream
C0034	0 m (Crossing)	0	-	48.5440	-57.0130	3.5	5.2	0.21	0.54	0.66	0.000	0.019	0.016	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0034	0 to 50 m US	50	41014	48.5439	-57.0129	4.90	6.70	0.09	0.06	0.15	0.090	0.130	0.082	1.0	70	30	0	0	5	5	60	30	0	5	80	15	5	5	Flows under bridge, neglible flow through pools
Summary						4.50	6.20		0.25			0.084		1.0	60%	40%	0%	0%	5%	8%	48%	40%	0%	8%	78%	15%	7.5	7.5	Fish habitat - confirmed fish present
C0035	0 to 50 m US	50	41015	48.5490	-57.0245	0.80	0.90	0.03	0.04	0.05	-	-	-	-	20	20	60	0	50	5	45	0	0	10	70	20	70	0	Southern most braided upstream channel
C0035	0 to 50 m US	50	41016	48.5492	-57.0245	1.00	2.10	0.04	0.04	0.02	-	-	-	2.0	80	20	0	0	0	5	60	35	0	5	30	65	60	10	Northern most braided upstream channel
C0035	0 m (Crossing)	0	-	48.5492	-57.0245	1.53	3.77	0.03	0.02	0.05	0.000	0.088	0.003	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0035	0 to 50 m US	50	41018	48.5492	-57.0245	1.53	3.77	0.03	0.02	0.05	-	0.088	0.003	1.0	100	0	0	0	10	20	70	0	0	30	50	20	60	0	Braided channel upstream of culvert
C0035	0 to 50 m DS	50	41017	48.5494	-57.0240	1.05	3.50	0.12	0.08	0.06	-	-	-	2.0	90	10	0	0	5	5	60	30	0	15	55	30	30	10	Stream is single channel down stream. Small amount of flow through perched CSP culvert. Overflow culvert present.
Summary						2.96	7.02		0.05			0.036		1.0	67%	13%	20%	0%	20%	10%	58%	12%	0%	15%	50%	35%	63.33333	3.333333	Fish habitat, based on connectivity.

Table D.4 - Habitat Classification Data from Stream Crossings 2020, Valentine Gold Project

Location	Sub-section	Distance [1] (m)	Photo US	Latitude	Longitude	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)			Velocity [2] (m/s)			Slope	Habitat Type (%)				Substrate [3] (%)					Riparian Vegetation [4] (%)			Overhead Cover (%)	Instream Cover (%)	Comment
								1/4	1/2	3/4	1/4	1/2	3/4		Riffle/Run	Pool	Flat	Pond	Fines	Gravel	Cobble/ Rubble	Boulder	Bedrock	Grass	Shrub	Trees			
C0036	0 to 50 m US	50	41344	48.5638	-57.0576	8.50	13.50	0.28	0.32	0.15	0.500	0.500	0.500	1.0	100	0	0	0	0	5	50	40	5	10	60	30	10	10	Baily bridge
C0036	0 m (Crossing)	0	-	48.5640	-57.0575	8	10.5	0.45	0.35	0.24	1.000	1.600	1.500	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0036	0 to 50 m DS	50	41345	-	-	-	22.10	-	-	-	-	-	-	50.0	100	0	0	0	0	5	25	35	35	25	20	55	10	5	Large impassible falls 10 m downstream of existing road crossing
Summary						8.25	15.37		0.30			0.933		17.3	100%	0%	0%	0%	0%	5%	38%	38%	20%	18%	40%	43%	10	7.5	Fish habitat, perennial stream.
C0036a	0 to 50 m DS	50	41751	48.5622	-57.0576	1.60	2.00	0.21	0.16	0.08	0.250	0.260	0.200	1.0	100	0	0	0	0	10	70	20	0	20	55	25	10	0	Stream runs west of mapped location
C0036a	0 m (Crossing)	0	-	48.5639	-57.0576	1.6	2	0.03	0.02	0.08	-	-	0.500	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0036a	0 to 50 m US	50	41752	48.5626	-57.0578	0.70	1.60	0.08	0.08	0.05	0.500	0.500	0.500	1.0	90	10	0	0	10	20	65	5	0	25	55	20	30	0	-
Summary						1.30	1.87		0.09			0.387		1.0	95%	5%	0%	0%	5%	15%	68%	13%	0%	23%	55%	23%	20	0	Fish habitat, perennial stream.
C0037	0 to 50 m DS	50	41767	48.5779	-57.0410	0.70	0.80	0.08	0.07	0.07	0.063	0.030	0.023	1.0	90	10	0	0	5	25	60	10	0	55	20	25	25	0	Overland flow at 45 m, looks like channel was straightened when road was built then dissipates into forest downstream. Likely ephemeral. Tadpoles observed in pool below culvert.
C0037	0 m (Crossing)	0	-	48.5778	-57.0409	1.14	2.67	0.06	0.04	0.02	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Insufficient flows to get velocity
C0037	0 to 50 m US	50	41768	48.5778	-57.0408	-	-	-	-	-	-	-	-	1.0	0	0	0	-	-	-	-	-	-	-	-	-	0	0	Wetland drainage with no connectivity between pools. Appears like channel was dry prior to rainfall. NVC 30 m US of proposed crossing.
Summary						0.92	1.74		0.06			0.039		1.3	90%	10%	0%	0%	5%	25%	60%	10%	0%	55%	20%	25%	12.5	0	Not fish habitat - ephemeral and lack of connectivity.
C0038	0 to 50 m US	50	41782	48.5851	-57.0325	0.90	0.90	0.14	0.11	0.10	0.005	0.010	0.005	1.0	20	0	80	0	55	10	20	15	0	50	40	10	40	0	Braided at 34 m and becomes subterranean at 45 m US. Drainage from wetland that becomes a consolidated channel DS and 5 m US. Intermittent. Ditch looked to be dry a few days ago.
C0038	0 m (Crossing)	0	-	48.5853	-57.0323	1.1	3.1	0.07	0.09	0.04	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0038	0 to 50 m DS			48.5855	-57.0331	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No visible channel or culvert. Ditch runs along road downstream to convey surface flow.
Summary						1.00	2.00		0.09			0.01		1.5	20%	0%	80%	0%	55%	10%	20%	15%	0%	50%	40%	10%	40	0	Not fish habitat, no connectivity, dissipates into forest.
C0039	0 to 50 m US	50	41342	48.5937	-57.0227	0.40	0.40	0.14	0.10	0.21	0.001	0.002	0.003	2.0	50	30	0	20	75	5	0	20	0	35	15	50	25	0	Subterranean at 30 m upstream of proposed crossing, trout observed in beaver pond immediately upstream.
C0039	0 m (Crossing)	0	-	48.5937	-57.0227	4	6	0.16	0.31	0.50	-	-	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0039	0 to 50 m DS	50	41343	48.5938	-57.0228	0.77	0.97	0.07	0.09	0.08	0.001	0.033	0.020	2.0	95	5	0	0	45	25	30	0	0	45	15	40	20	0	Poor degraded habitat from erosion near culvert downstream.
Summary						1.72	2.46		0.18			0.010		1.7	73%	18%	0%	10%	60%	15%	15%	10%	0%	40%	15%	45%	22.5	0	Fish habitat , fish observed.
C0040	0 to 50 m US	50	41332	48.6017	-57.0124	2.40	4.10	0.19	0.14	0.20	0.200	0.300	0.150	2.0	95	5	0	0	0	15	40	35	10	40	10	50	25	10	Steep bank from existing road. Great brook trout stream.
C0040	0 m (Crossing)	0	-	48.6015	-57.0123	1.1	6	0.08	0.12	0.08	0.500	0.500	0.550	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0040	0 to 50 m DS	50	41333	48.6019	-57.0125	3.50	10.00	0.18	0.17	0.10	0.200	0.160	0.140	1.0	90	10	0	0	5	10	75	10	0	30	70	0	10	0	Delta looks like gravel from road and erosion around existing culvert evident. Old washed out culvert present downstream. Flows into back bay of Red Indian Lake.
Summary						2.33	6.70		0.14			0.300		2.0	93%	8%	0%	0%	3%	13%	58%	23%	5%	35%	40%	25%	17.5	5	Fish habitat -fish confirmed present. Perched/crushed culvert. Possible compensation opportunity.
C0041	0 to 50 m US	50	41336	48.6190	-56.9827	0.90	1.30	0.13	0.10	0.07	0.200	0.200	0.067	1.0	95	5	0	0	5	15	60	20	0	50	30	20	20	5	Stream located west of where mapped
C0041	0 m (Crossing)	0	-	48.6190	-56.9827	1	2.3	0.04	0.05	0.01	0.250	0.330	0.330	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0041	0 to 50 m DS	50	41337	48.6191	-56.9828	1.30	1.90	0.03	0.02	0.02	-	-	-	4.0	100	0	0	0	15	5	50	30	0	25	35	40	25	5	Channel braids at 20 m DS, looks flashy. Too shallow for velocity.
Summary						1.07	1.83		0.05			0.230		2.0	98%	3%	0%	0%	10%	10%	55%	25%	0%	38%	33%	30%	22.5	5	Fish habitat, based on potential connectivity.
C0042	0 to 50 m US	50	41325	48.6300	-56.9568	2.51	3.15	0.14	0.22	0.18	0.250	0.200	0.160	2.0	90	10	0	0	10	20	45	25	0	15	20	65	20	10	Flowing stream
C0042	0 m (Crossing)	0	-	48.6299	-56.9569	3.12	4	0.06	0.09	0.05	0.250	0.330	0.330	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0042	0 to 50 m DS	50	41326	48.6301	-56.9569	2.10	2.70	0.08	0.09	0.03	0.500	0.250	0.330	1.0	90	10	0	0	10	10	50	30	0	30	40	30	20	5	
Summary						2.58	3.28		0.10			0.289		1.3	90%	10%	0%	0%	10%	15%	48%	28%	0%	23%	30%	48%	20	7.5	Fish habitat - confirmed fish present
C0043	At Crossing	Visual Assessment Only																											
Summary																													
C0044	0 to 50 m DS	50	41761	48.6366	-56.9280	2.93	3.00	0.04	0.24	0.20	0.055	0.051	0.057	4.0	90	10	0	0	15	20	30	35	0	10	60	30	35	5	Stream degraded and fans out from erosion. Single channel downstream.
C0044	0 m (Crossing)	0	-	48.6365	-56.9283	2.56	2.96	0.10	0.08	0.05	0.000	0.250	0.250	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0044	0 to 50 m US	50	41762	48.6365	-56.9282	1.86	2.30	0.16	0.22	0.13	0.150	0.050	0.001	4.0	90	10	0	0	10	10	35	40	5	10	50	40	45	5	Southern upstream braided channel. Ditch drainage flows into culvert. Fish observed.
C0044	0 to 50 m US	50	41763	48.6365	-56.9288	2.12	2.28	0.06	0.17	0.08	-	0.250	0.250	4.0	90	10	0	0	10	10	35	40	5	10	50	40	45	5	Northern upstream braided channel. Ditch drainage flows into culvert. Fish observed.
Summary						4.74	5.27		0.13			0.124		4.0	90%	10%	0%	0%	12%	13%	33%	38%	3%	10%	53%	37%	41.66667	5	Fish habitat - confirmed fish present
C0045	0 to 50 m DS	50	41780	48.6398	-56.9126	4.00	4.90	0.23	0.27	0.29	0.200	0.330	0.500	3.0	95	5	0	0	0	5	35	40	20	10	40	50	10	5	
C0045	0 m (Crossing)	0	-	48.6398	-56.9126	5.57	7.17	0.17	0.19	0.19	0.330	0.500	0.520	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0045	0 to 50 m US	50	41781	48.6398	-56.9126	12.00	14.00	0.65	0.68	0.34	0.050	0.050	0.040	0.5	95	5	0	0	0	5	30	30	35	30	35	35	10	5	Drains a large steady upstream
Summary						7.19	8.69		0.33			0.280		1.5	95%	5%	0%	0%	0%	5%	33%	35%	28%	20%	38%	43%	10	5	Fish habitat - confirmed fish present
C0046	0 to 50 m DS	50	41759	48.6506	-56.9021	0.97	1.18	0.20	0.14	0.20	0.200	0.015	0.200	1.0	20	20	60	0	55	0	5	30	10	0	80	20	80	15	
C0046	0 m (Crossing)	0	-	48.6505	-56.9023	1.36	2.46	0.07	0.12	0.07	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0046	0 to 50 m US	50	41760	48.6506	-56.9022	2.50	2.50	0.15	0.15	0.15	-	-	-	1.0	20	10	70	0	90	5	5	0	0	15	20	65	60	30	Stream not in original channel. Currently flows through forest and alder wetland. Potential compensation opportunity.
Summary						1.61	2.05		0.14			0.138		0.8	20%	15%	65%	0%	73%	3%	5%	15%	5%	8%	50%	43%	70	22.5	Fish habitat - confirmed fish present
C0047	0 to 50 m US	50	41753	48.6601	-56.8928	3.85	4.65	0.26	0.20	0.11	0.330	0.250	0.100	2.0	95	5	0	0	5	5	50	35	5	5	60	35	20	10	Camp within RoW. Old culvert washed out in stream.
C0047	0 m (Crossing)	0	-	48.6601	-56.8928	3.53	4.75	0.11	0.16	0.15	0.250	0.250	0.330	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0047	0 to 50 m DS	50	41754	48.6602	-56.8928	6.14	6.30	0.23	0.13	0.10	0.160	0.080	0.330	1.0	95	5	0	0	0	5	40	25	30	0	60	40	20	5	
Summary						4.51	5.23		0.16			0.231		1.7	95%	5%	0%	0%	3%	5%	45%	30%	18%	3%	60%	38%	20	7.5	Fish habitat - confirmed fish present
C0048	0 to 50 m DS	50	41338	48.6858	-56.8790	10.00	10.50	0.24	0.47	0.40	0.140	0.200	0.100	1.0	95	5	0	0	0	5	55	35	5	15	50	35	10	5	
C0048	0 m (Crossing)	0	-	48.6858	-56.8790	6.08	7.1	0.16	0.29	0.15	0.300	0.500	0.400	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0048	0 to 50 m US	50	41340	48.6858	-56.8790	7.21	7.82	0.28	0.44	0.20	0.200	0.250	0.070	2.0	45	5	0	0	0	10	55	35	0	30	40	30	15	5	

Table D.4 - Habitat Classification Data from Stream Crossings 2020, Valentine Gold Project

Location	Sub-section	Distance [1] (m)	Photo US	Latitude	Longitude	Wetted Stream Width (m)	Channel Stream Width (m)	Mean Depth (m)			Velocity [2] (m/s)			Slope	Habitat Type (%)				Substrate [3] (%)					Riparian Vegetation [4] (%)			Overhead Cover (%)	Instream Cover (%)	Comment
								1/4	1/2	3/4	1/4	1/2	3/4		Riffle/Run	Pool	Flat	Pond	Fines	Gravel	Cobble/ Rubble	Boulder	Bedrock	Grass	Shrub	Trees			
Summary						7.76	8.47		0.29			0.240		1.7	93%	7%	0%	0%	0%	8%	55%	35%	3%	23%	45%	33%	12.5	5	Fish habitat - confirmed fish present
C0049	0 to 50 m DS	50	41339	48.6884	-56.8779	0.70	1.80	0.12	0.13	0.18	0.100	0.050	0.025	5.0	90	10	0	0	20	30	40	10	0	20	60	20	50	0	Dry braided channel at 30m downstream from crossing. Signs of road erosion (i.e., gravel) ~20 m downstream. Stream not as mapped.
C0049	0 m (Crossing)	0	-	48.6884	-56.8778	1.37	2.04	0.03	0.05	0.04	0.300	0.250	0.200	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0049	0 to 50 m US	50	41341	48.6884	-56.8778	0.50	1.40	0.06	0.03	0.03	0.300	0.250	0.200	4.0	60	40	0	0	50	40	10	0	0	25	50	25	40	0	Trout observed in ditch. Stream drains forested wetland. Stagnant pockets of water eventually consolidating US of ditch ~25 m into forest.
Summary						0.86	1.75		0.07			0.186		3.7	75%	25%	0%	0%	35%	35%	25%	5%	0%	23%	55%	23%	45	0	Fish habitat - fish observed
C0050	0 to 50 m US	50	41783	48.6983	-56.8777	0.71	0.84	0.14	0.11	0.13	-	-	-	0.5	80	20	0	0	45	30	5	20	0	30	40	30	50	100	Stream runs through ditch the up berm into old beaver meadow/wetland. Unable to measure velocity.
	0 m (Crossing)	0	-	48.6983	-56.8777	0.94	1.21	0.04	0.05	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Insufficient flows to get velocity
C0050	0 to 50 m DS	50	41784	48.6982	-56.8779	0.90	1.30	0.10	0.21	0.22	0.001	0.003	0.033	3.0	80	5	15	0	50	5	45	0	0	25	50	25	50	0	Small single channel
Summary						0.85	1.12		0.12			0.012		1.8	80%	13%	8%	0%	48%	18%	25%	10%	0%	28%	45%	28%	50	50	Fish habitat - confirmed fish present
C0051	0 to 50 m DS	50	41734	48.7095	-56.8704	0.00	1.50	0.00	0.00	0.00	-	-	-	40.0	-	-	-	-	-	-	-	-	-	25	10	65	0	0	Very steep drainage channel for overland flow. Dry on previous visit. Channel very erosional. Road has and is continuing to erode. Culvert rotted out on bottom.
C0051	0 m (Crossing)	0	-	48.7095	-56.8702	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0051	0 to 50 m US	50	41735	48.7094	-56.8703	0.00	0.30	0.00	0.00	0.00	-	-	-	20.0	100	0	0	0	50	10	35	5	0	20	10	70	10	0	Very steep drainage channel. Dry on previous visit. Low amounts of flow draining forested wetland at top of upstream reach. Not fish habitat.
Summary						0.00	0.90		0.00			-		30.0	100%	0%	0%	0%	50%	10%	35%	5%	0%	23%	10%	68%	5	0	Not fish habitat, very steep drainage channel for overland flow.
C0052	0 to 50 m DS	50	41772	48.7151	-56.8626	3.40	3.60	0.04	0.05	0.03	0.200	0.160	0.200	10.0	90	10	0	0	15	15	30	40	0	25	20	55	15	5	Flows through steep ravine. Fish observed.
C0052	0 m (Crossing)	0	-	48.7149	-56.8624	1.12	4.2	0.07	0.13	0.15	0.250	0.150	0.160	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0052	0 to 50 m US	50	41773	48.7150	-56.8625	2.65	2.70	0.12	0.13	0.11	0.200	0.200	0.150	5.0	100	0	0	0	5	10	45	40	0	60	0	40	20	10	Nice stream
Summary						2.39	3.50		0.09			0.186		6.0	95%	5%	0%	0%	10%	13%	38%	40%	0%	43%	10%	48%	17.5	7.5	Fish habitat - confirmed fish present
C0053	0 to 50 m US	50	41755	48.7212	-56.8386	0.60	0.65	0.08	0.06	0.05	-	-	-	2.0	95	5	0	0	20	20	35	25	0	35	35	30	45	5	To shallow to collect velocity
C0053	0 m (Crossing)			48.7211	-56.8385	1	2.2	0.05	0.05	0.02	-	-	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0053	0 to 50 m DS	50	41756	48.7213	-56.8385	0.80	1.00	0.03	0.05	0.05	0.050	0.080	0.001	3.0	95	5	0	0	30	10	50	10	0	35	15	50	30	0	Very erosional and dispersed 20 m downstream of proposed crossing.
Summary						0.80	1.28		0.05			0.044		2.0	95%	5%	0%	0%	25%	15%	43%	18%	0%	35%	25%	40%	37.5	2.5	Not fish habitat, lacks connectivity.
C0054	0 to 50 m US	50	41764	48.7437	-56.7667	2.31	2.77	0.15	0.22	0.18	0.500	0.500	0.200	3.0	90	10	0	0	0	10	30	50	10	30	35	35	15	15	Single channel
C0054	0 to 50 m US	50	41765	48.7440	-56.7660	3.80	5.70	0.14	0.20	0.21	0.250	0.150	0.200	4.0	90	10	0	0	0	10	30	50	10	30	35	35	15	15	Eastern braid/main channel
C0054	0 m (Crossing)	0	-	48.7440	-56.7660	3.7	10	0.13	0.20	0.18	0.250	0.150	0.200	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0054	0 to 50 m DS	50	41766	48.7441	-56.7660	3.51	3.72	0.12	0.20	0.21	1.000	0.250	0.300	3.0	20	0	0	0	0	0	35	45	20	5	25	70	10	10	Western braid of channel
Summary						6.66	11.10		0.18			0.329		3.7	91%	9%	0%	0%	0%	7%	32%	48%	13%	22%	32%	47%	13	13	Fish habitat, based on connectivity.
C0055	**50 m DS to 50 m US**	100	-	48.7470	-56.7332	No visible channel in upstream RoW. Ephemeral drainage channel downstream of RoW. Dry on previous visit, flow barely noticible after two days of rain. Not fish habitat within RoW.																							
C0056	0 to 50 m DS	50	41334	48.7462	-56.7258	1.30	1.50	0.01	0.01	0.03	-	-	-	1.0	60	0	0	-	40	25	35	0	0	30	30	40	30	0	Poorly defined banks 10m beyond culvert. Substrate appears consistent with erosion from road. NVC at 20 m DS, drainage from road dissipates into forested wetland.
C0056	0 m (Crossing)	0	-	48.7462	-56.7258	1.3	1.5	0.01	0.01	0.03	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Insufficient flows to get velocity
C0056	0 to 50 m US	50	41335	48.7462	-56.7258	0.80	0.90	0.05	0.04	0.04	-	-	-	1.0	60	0	40	0	20	30	30	20	0	30	45	25	40	0	Drainage from spruce bog. Braided channel. Unlikely fish habitat. Flows through ditch for 30m before entering culvert.
Summary						1.13	1.30		0.03			-		1.3	75%	0%	25%	0%	30%	28%	33%	10%	0%	30%	38%	33%	35	0	Not fish habitat, lacks connectivity.
C0057	0 to 50 m US	50	41786	48.7463	-56.7192	1.32	1.50	0.09	0.11	0.08	0.143	0.167	0.167	2.0	25	0	25	0	35	10	25	30	0	10	40	50	40	0	Eastern braid, upstream not as mapped
C0057	0 to 50 m US	50	41788	48.7462	-56.7194	0.93	1.05	0.08	0.10	0.07	-	-	-		100	0	0	0	35	10	30	25	0	20	50	30	40	0	Western most braid, nice stream after braid
C0057	0 to 25 m US	50	41789	48.7460	-56.7193	1.27	2.10	0.09	0.07	0.07	0.200	0.200	0.200	1.0	25	0	25	0	35	10	25	30	0	10	40	50	40	0	Middle braid, nice stream downstream of braid
C0057	0 m (Crossing)	0	-	48.7463	-56.7192	1.27	2.1	0.09	0.07	0.07	0.200	0.200	0.200	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0057	20 to 30 m DS	50	41785	48.7467	-56.7191	0.93	1.05	0.08	0.10	0.07	-	-	-		0	0	100	0	0	20	80	0	0	0	50	50	15	0	Braided side channel
C0057	0 to 50 m DS	50	41790	48.7464	-56.7192	1.40	2.50	0.16	0.23	0.18	0.001	0.001	0.001	1.0	60	10	30	0	35	15	50	0	0	0	50	50	60	100	Main downstream channel does not flow as mapped (enters Red Indian Lake at a different location)
Summary						5.96	8.53		0.10			0.140		1.0	53%	3%	45%	0%	28%	13%	42%	17%	0%	8%	46%	46%	39	20	Fish habitat - confirmed fish present
C0058	0 to 50 m DS	50	41787	48.7458	-56.7144	1.20	1.20	0.04	0.00	0.00	-	-	-	1.0	85	5	10	0	5	20	65	10	0	40	45	20	40	0	Does not drain to Red Indian Lake as mapped.
C0058	0 m (Crossing)	0	-	48.7455	-56.7138	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C0058	0 to 50 m US	50	41791	48.7457	-56.7145	1.03	1.44	0.09	0.08	0.10	-	-	-	1.0	100	0	0	0	15	40	35	10	0	40	20	40	50	0	Unable to collect velocity. Stream runs through ditch for 90 m. Not as mapped.
Summary						1.12	1.32		0.05			-		1.0	93%	3%	5%	0%	10%	30%	50%	10%	0%	39%	32%	29%	45	0	Fish habitat, based on connectivity.
C0059	0 to 50 m US	50	41774	48.7455	-56.6995	1.11	1.71	0.10	0.15	0.08	0.500	0.750	0.300	40.0	90	10	0	0	5	5	45	10	35	35	15	50	20	0	1 m high falls and debris jam 25 m upstream.
C0059	0 m (Crossing)	0	-	48.7455	-56.6995	2.68	2.95	0.10	0.04	0.12	-	-	-	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Insufficient flows to get velocity
C0059	0 to 50 m DS	50	41775	48.7459	-56.6993	2.68	2.95	0.10	0.04	0.12	-	-	-	2.0	100	0	0	0	5	15	60	20	0	20	30	50	20	5	Nice little stream, runs through forest and into Red Indian below the high water mark. Trout and salmon observed.
Summary						2.16	2.54		0.09			0.517		14.7	95%	5%	0%	0%	5%	10%	53%	15%	18%	28%	23%	50%	20	2.5	Fish habitat - confirmed fish present
C0060	0 to 50 m DS	50	41023	48.7427	-56.6787	20.00	30.00	1.30	0.70	0.50	-	-	-	1.0	10	90	0	0	0	0	5	5	90	60	20	20	5	5	Large bedrock pool. Unable to collect velocity due to depth of river.
C0060	0 m (Crossing)	0	-	48.7427	-56.6787	17	18	2.00	3.00	2.00	-	-	-	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Unable to collect velocity due to depth of river.
C0060	0 to 50 m US	50	41024	48.7427	-56.6788	14.00	26.00	0.60	0.40	0.50	-	-	-	2.0	100	0	0	0	0	0	5	65	30	65	15	20	20	20	Falls 80 m upstream of existing crossing, potential barrier during low flow.
Summary						17.00	24.67		1.22			-		1.3	55%	45%	0%	0%	0%	0%	5%	35%	60%	63%	18%	20%	12.5	12.5	Fish habitat - confirmed fish present
C0061	0 to 50 m DS	50	41749	48.7443	-56.6762	0.95	1.60	0.04	0.11	0.18	0.200	0.150	0.010	1.0	80	20	0	0	25	35	40	0	0	20	50	30	35	0	Debris jam and large amount of gravel at 35 m. Really nice stream until 50 m downstream, then diverts with overland flow into wetland. Not as mapped.
C0061	0 m (Crossing)	0	-	48.7442	-56.6761	1.54	2.52	0.11	0.09	0.05	0.200	0.250	0.170	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C0061	0 to 50 m US	50	41750	48.7442	-56.6761	1.68	2.78	0.08	0.07	0.06	0.330	0.050	0.070	2.0	90	10	0	0	5	10	75	10	0	20	50	30	35	0	Braided at 30 m US, then forms single channel.
Summary						1.39	2.30		0.09			0.159		1.7	85%	15%	0%	0%	15%	23%	58%	5%	0%	20%	50%	30%	35	0	Fish habitat - confirmed fish present

Note: Additional stream measurements were collected at the stream crossing locations, with habitat information associated with the stream crossing is included in the sub-section surveys (50 m US and DS).

Table D.5 - Summary of Water Quality Characteristics for Stream Crossings 2020, Valentine Gold Project

Location	Latitude	Longitude	Date	Time (GMT)	Temperature (°C)	Specific Conductivity (µS/cm)	Turbidity (NTU)
C0016	-	-	-	-	-	-	-
C0016a	-	-	-	-	-	-	-
C0017	Not fish habitat						
C0018	Not fish habitat						
C0019	Not fish habitat						
C0020	Not fish habitat						
C0021	Not fish habitat						
C0021a	Not fish habitat						
C0022	Visual Assessment Only						
C0022a	48.450238	-57.028599	2020-07-22	16:55:44	20.8	156.3	
C0023	48.452356	-57.031299	2020-07-22	16:31:30	17.7	258.4	
C0024	Not fish habitat						
C0025	Not fish habitat						
C0026	Not fish habitat						
C0027	Not fish habitat						
C0028	Not fish habitat						
C0029	Not fish habitat						
C0030	Not fish habitat						
C0031	48.486519	-57.023162	2020-07-19	20:56:23	19.3	125.2	-
C0032	48.495376	-57.023034	2020-07-19	19:29:58	13.7	128.9	0.8
C0033	48.529264	-57.003266	2020-07-19	18:28:17	20.1	127.4	0.9
C0034	48.543871	-57.012918	2020-07-19	17:02:58	18.2	67.2	0.9
C0035	48.549202	-57.024487	2020-07-19	15:41:53	14.3	88.9	-
C0036	48.563854	-57.057525	2020-07-27	18:08:37	20.1	79.7	-
C0036a	48.562191	-57.057597	2020-07-27	17:03:48	16.5	79.4	-
C0037	48.577802	-57.040943	2020-07-28	12:13:31	12.9	76.4	-
C0038	-	-	-	-	-	-	-
C0039	48.593555	-57.022451	2020-07-28	13:53:30	14.3	114.9	
C0040	48.601414	-57.012489	2020-07-27	19:08:27	16.3	102.4	1.6
C0041	48.619039	-56.982683	2020-07-28	15:07:39	15.7	70.1	-
C0042	48.62988	-56.9569	2020-07-28	16:25:03	16.9	98.7	0.7
C0043	Visual Assessment Only						
C0044	48.636534	-56.928222	2020-07-29	13:55:40	15.7	101.6	0.1
C0045	48.639803	-56.91254	2020-07-29	12:57:38	16.8	94.2	0.9
C0046	48.650627	-56.902039	2020-07-29	15:46:27	17.4	317.0	1.5
C0047	48.660124	-56.892807	2020-07-29	11:57:23	16.1	191.8	-
C0048	48.686112	-56.879549	2020-07-29	11:02:23	18.0	130.4	1.6
C0049	48.689027	-56.877573	2020-07-29	17:10:42	13.8	69.8	-
C0050	48.698255	-56.877639	2020-07-29	17:46:59	15.9	228.5	0.8
C0051	-	-	-	-	-	-	-
C0052	48.714994	-56.86248	2020-07-28	17:14:55	16.3	151.8	-
C0053	48.721176	-56.838502	2020-07-28	18:43:22	20.1	86.0	-
C0054	48.743891	-56.766089	2020-07-28	19:12:46	22.0	77.7	-
C0055	Not fish habitat						
C0056	48.746173	-56.725827	2020-07-28	20:07:40	18.3	167.9	-
C0057	48.74638	-56.719305	2020-07-29	20:13:00	15.6	142.5	-
C0058	-	-	-	-	-	-	-
C0059	48.745687	-56.699418	2020-07-30	11:39:30	15.7	70.4	-
C0060	48.742384	-56.67859	2020-07-19	13:19:09	18.8	44.3	-
C0061	48.744363	-56.676295	2020-07-30	13:32:50	14.7	164.2	-

Note: - indicates no data collected