Appendix N

NWPA Permit Application

ALDERON IRON ORE CORP
KAMI IRON ORE PROJECT (Labrador Components)

Navigable Waters Protection Act – Overview Document
Identification and Evaluation of
Proposed Project Works Within and Across Water

ADDENDUM

Submitted by:
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October 30, 2012, 2012

AMEC TF1280809

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1.0 INTRODUCTION

Alderon Iron Ore Corp (Alderon) is proposing to construct and operate the Kami Iron Ore Project, which will include an open-pit iron ore mine and associated infrastructure in Labrador West.

The Project was registered under the provincial and federal environmental assessment (EA) processes in October 2011, and requires the completion and submission of an Environmental Impact Statement (EIS) under the Newfoundland and Labrador *Environmental Protection Act*, which also meets the requirements for a Comprehensive Study under the *Canadian Environmental Assessment Act*. The Project's EIS was completed and submitted by Alderon in September 2012, and is currently undergoing governmental and public review.

In addition to required approvals under provincial and federal EA legislation, particular Project components and activities will also require various other provincial, federal and municipal permits and authorizations. This may include requirements for approval(s) under Section 5 of the federal *Navigable Waters Protection Act* (NWPA) for any works that will be built or placed "in, on, over, under, through or across navigable water". The potential requirement for *NWPA* approval(s) from Transport Canada (TC) was also one of the original "Law List" triggers that resulted in a requirement for the Project to be reviewed under the (previous) *Canadian Environmental Assessment Act*.

Amendments to the *NWPA* came into force in March 2009 through the *Minor Works and Waters Order*, which established various types of waters and works which are considered minor in nature, and for which *NWPA* approvals are therefore not required. Transport Canada has established a number of factors and criteria to be used in determining whether or not a waterbody or watercourse meets the definition of a minor waterway.

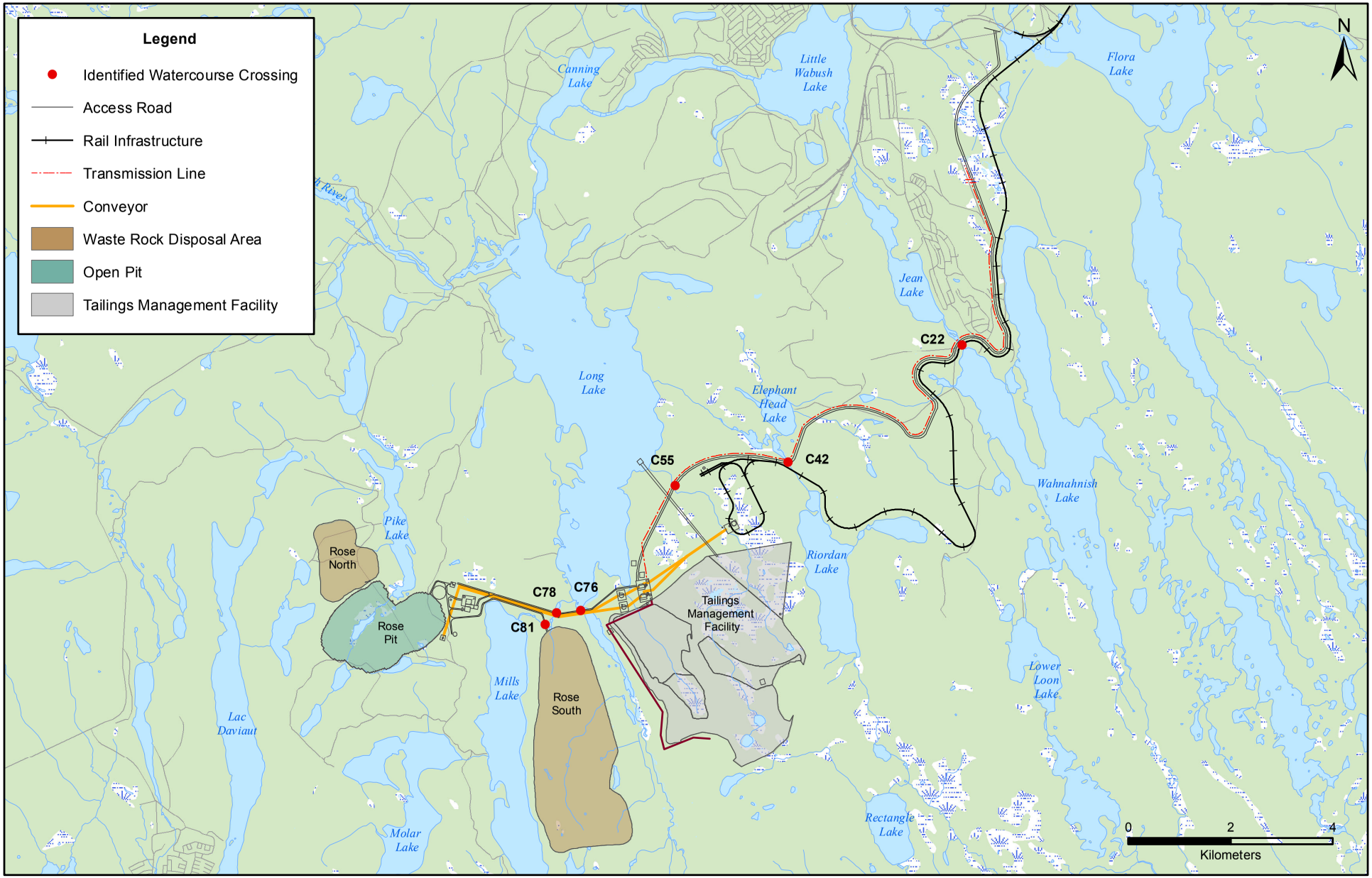
A key, early step in Project permitting is therefore the preparation and presentation of appropriate information on Project-related watercourse crossings (road, rail and otherwise) and any other Project components and works within waterbodies and its submission to Transport Canada. This will allow the regulator to determine whether – and what – specific approvals will be required under the *NWPA* as Project implementation and permitting proceed.

An overview document of each proposed watercourse crossing and other water components that will be associated with the Project, was submitted to Transport Canada on September 24, 2012. This overview document provided a characterization of each and an evaluation against the established criteria for "minor waters" that have been established by Transport Canada. Alderon met with Transport Canada on September 28, 2012 at which time, additional information and detail regarding select crossings and water bodies was requested. Specifically, additional information and detail was requested regarding:

1. Additional Information on Engineering Details related to Crossings C22 (Jean Lake) and C76 (Waldorf River);

2. Revised Engineering Drawings related to Crossings C42 (between Riordian Lake and Elephant Head), C55 (stream draining to Long Lake), C78 (between Mills Lake and Long Lake), and C81 (between Mills Lake and Long Lake);
3. Additional Information related to the inflow (RP13) and outflow (RP12) streams of Rose Pond (RP1) within the Rose Pit area;
4. Additional Information regarding Rose Pond (RP1); and
5. Additional Information regarding the preparation of the Rose Pit (Preparation Plan).

This addendum has been completed and submitted to fulfil the information requests to allow for determinations by Transport Canada around which (if any) of these proposed works will require subsequent approval(s) under the *NWPA*. The additional information has been provided from additional engineering design at identified crossings as well as field survey information. A brief summary overview of the general location of all crossings and watercourses is provided in Figure 1.1.



ALDERON IRON ORE CORP

Figure 1.1

Overview of general project layout and crossings within Addendum report

amec

2.0 ENGINEERING DETAILS: LARGE CROSSINGS

Additional engineering details regarding the design of the Jean Lake (C22) and Waldorf River (C76) crossings were requested by Transport Canada. Provided below is a summary of the existing data at each crossing as well as the detailed engineer drawings for each location. Additional information can be obtained from the initial Overview Document submitted September 24, 2012 (see Appendix A).

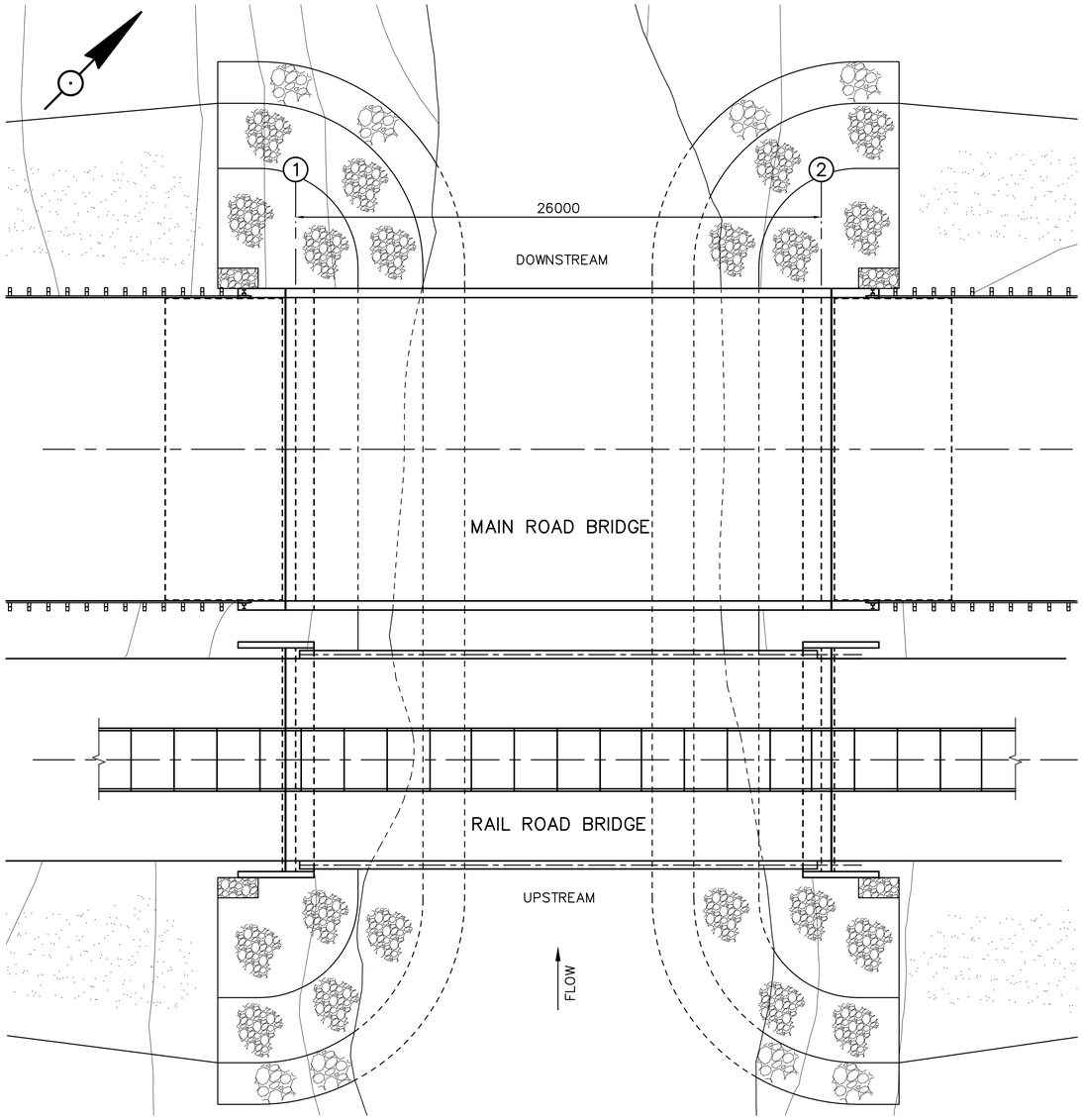
2.1 CROSSING C22 (JEAN LAKE)

This site has an existing road crossing, consisting of five culverts, that is currently used by the general public and others. The stream crossed connects Wahnahnish Lake to Jean Lake. The crossing is approximately 100 m downstream from the outflow from Wahnahnish Lake and 500 m upstream of Jean Lake.

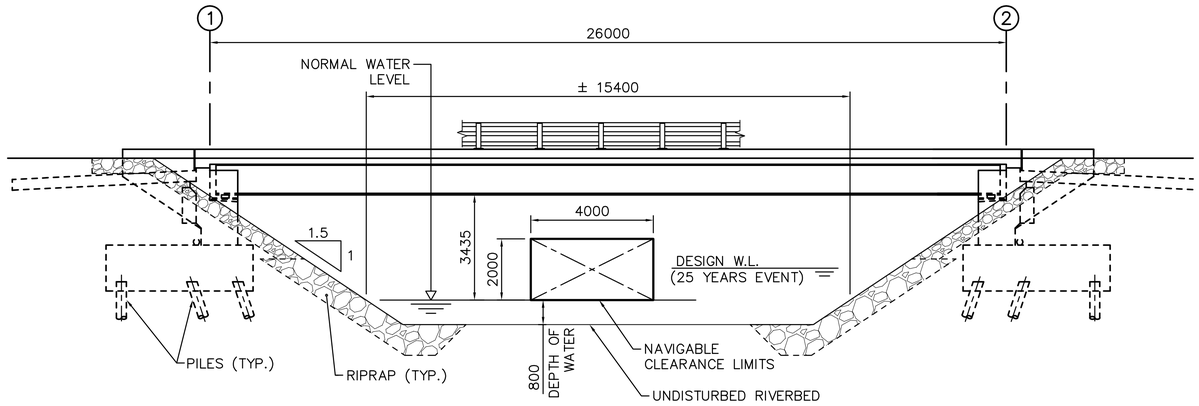
Field survey data showed that channel widths ranged from 10 – 23 m and depths ranged from 0.12 – 0.80 m (Figure 2.1). This stream crossing has been identified as potentially not meeting the criteria to be considered a "minor" waterway under the *NWPA* because it is has a much width greater than 1.2 m (field surveyed at 15.4 m), and was not determined to meet any of the other criteria for exclusion.

The Project will require this crossing to accommodate a single rail line, main road access, power line, and snowmobiles. As per the attached original overview document, options for this crossing location are specified as either rehabilitate and expand the existing structure of culverts, or to build a new crossing at the same location, as seen in Figure 4.3 of the original submission. Further analysis and design indicates that the required crossing will be a single span precast concrete structure and will be constructed adjacent to the existing crossing. The structure will be designed to maintain navigability by allowing for a navigable envelope of at least 4 meters wide by 2 meters high above mean annual summer low flows. Additional engineer design detail is provided in Figure 2.2 below.

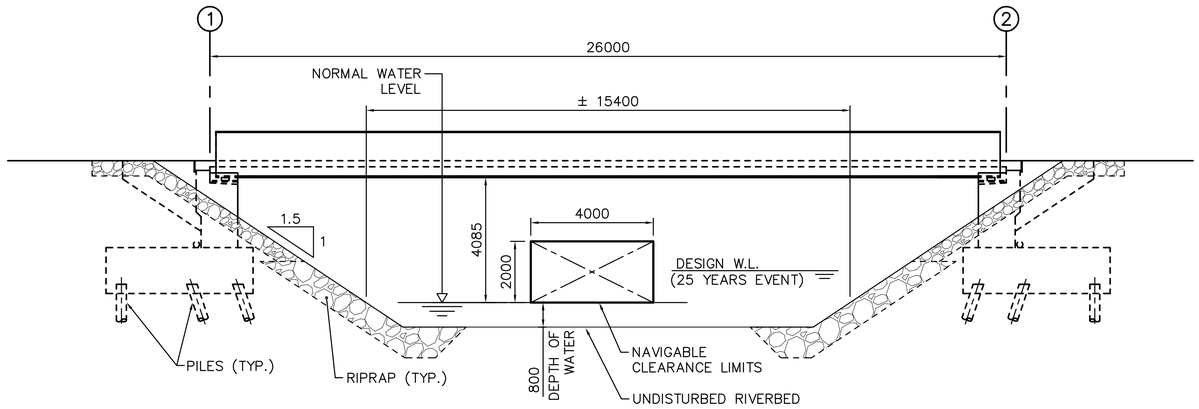
Figure 2.1. Aerial View of the Jean River Crossing Looking Northwest



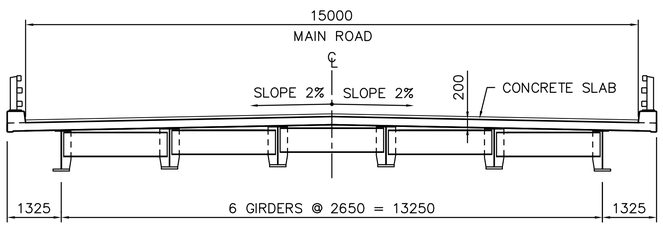
PLAN VIEW
SCALE 1:150



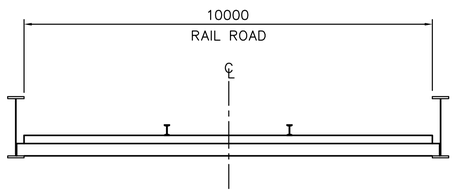
MAIN ROAD BRIDGE
ELEVATION
SCALE 1:100



RAIL ROAD BRIDGE
ELEVATION
SCALE 1:100



MAIN ROAD BRIDGE
TYPICAL SECTION
SCALE 1:75



RAIL ROAD BRIDGE
TYPICAL SECTION
SCALE 1:75

NOTES :

1. DESIGNED TO CANADIAN HIGTWAY BRIDGE DESIGN CODE CAN/CSA-S6-06
2. DESIGN WATER LEVEL = 25 YEARS EVENT
3. DIMENSIONS ARE IN MILLIMETER.
4. CHAINAGES, COORDINATES AND ELEVATIONS ARE IN METERS.
5. THE EXACT ELEVATION OF THE ROAD AND THE WIDTH OF THE RIVERBED ARE SUBJECT TO CHANGE ONCE THE FULL TOPOGRAPHIC STUDY OF THE SITE IS AVAILABLE.

LEGEND

W.L. = WATER LEVEL

DO NOT USE FOR CONSTRUCTION

No	Rev.	Description	Date
A	0	FOR THE N.W.P.A. REPORT	2012-10-26

EMISSION REGISTRY

No	Description	Date	Engineer	No OIQ
0	INITIAL DESIGN	2012-10-26	M.-O. BESSETTE	128245

REVISION

Client: ALDERON IRON ORE CORP

Project: KAMI IRON ORE PROJECT

Cegertec WorleyParsons

Speciality: STRUCTURE

Title: C22 - WAHNAHNISH LAKE TO JEAN LAKE
GENERAL LAYOUT
PLAN VIEW, ELEVATION, SECTION

Seal

Approved Date

Design by: MARC-OLIVIER BESSETTE ing.

Drafted by: CYNTHIA LAVOIE

Scale: AS NOTED

Date: 2012-10-16

Project	Lot	Format	Scale	Spec.	Seq.	Rev.
19488	0	A1	PM	ST	001	0

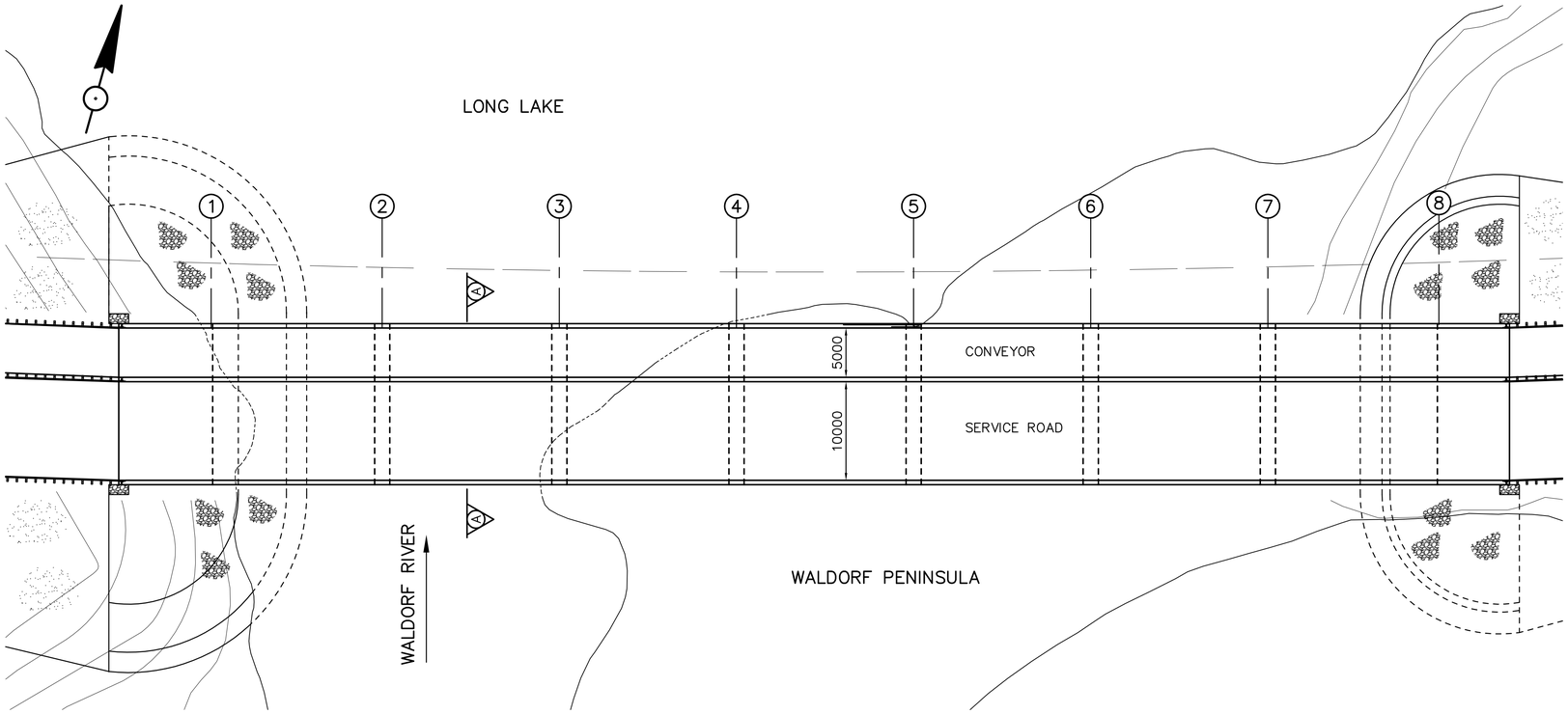
2.2 CROSSING C76 (WALDORF RIVER)

In order to connect the processing infrastructure located in the eastern part of the property to the mining infrastructure located in the western part of the property, a crossing at Waldorf Lake will be required (see Figure 1.1). The Waldorf River crossing is located between the Project's main crusher and process plant, and will support a single conveyor line, plant service road, and power line.

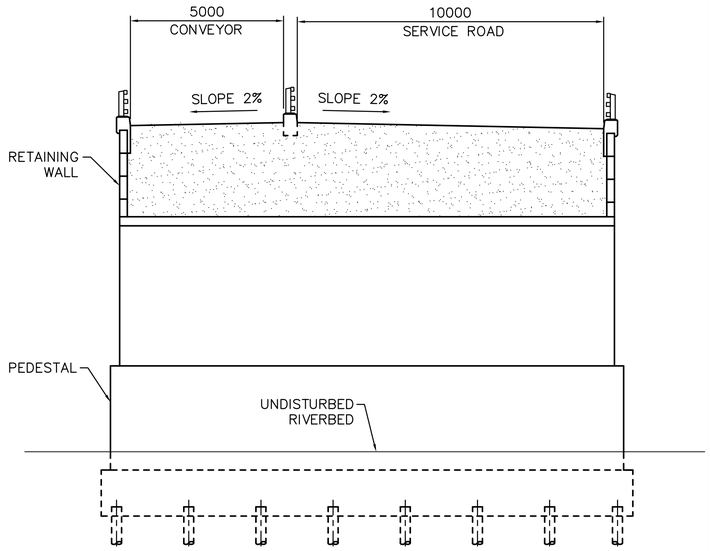
This crossing is located at a constriction point between the main body of Long Lake and the inflow of Waldorf River. Field survey data showed that channel widths ranged from 21.0 – 33.0 m and the mean depths at transects ranged from 0.67 – 1.11 m (Figure 2.3). This stream crossing has been identified as potentially not meeting the criteria to be considered a "minor" waterway under the NWPA because it is has a width greater than 1.2 m (field surveyed at 26 m) and was not determined to meet any of the other criteria for exclusion.

As per the attached original overview document (Appendix A), the crossing structure at this location was initially anticipated to be a 3-span concrete arch bridge with two central piers, as seen in Figure 4.5 of the original submission. Further analysis and understanding of the mining equipment and trucks that will be required to cross the watercourse in this location has led to the conclusion that the required crossing will be a multi span concrete arch structure. This structure will also be designed to maintain navigability by allowing for a navigable envelope of at least 4 meters wide by 2 meters high above average summer water level. Additional engineer design detail is provided in Figure 2.4 below.

Figure 2.3. Aerial View of the Waldorf River Crossing Looking Southeast



PLAN VIEW
SCALE 1:300



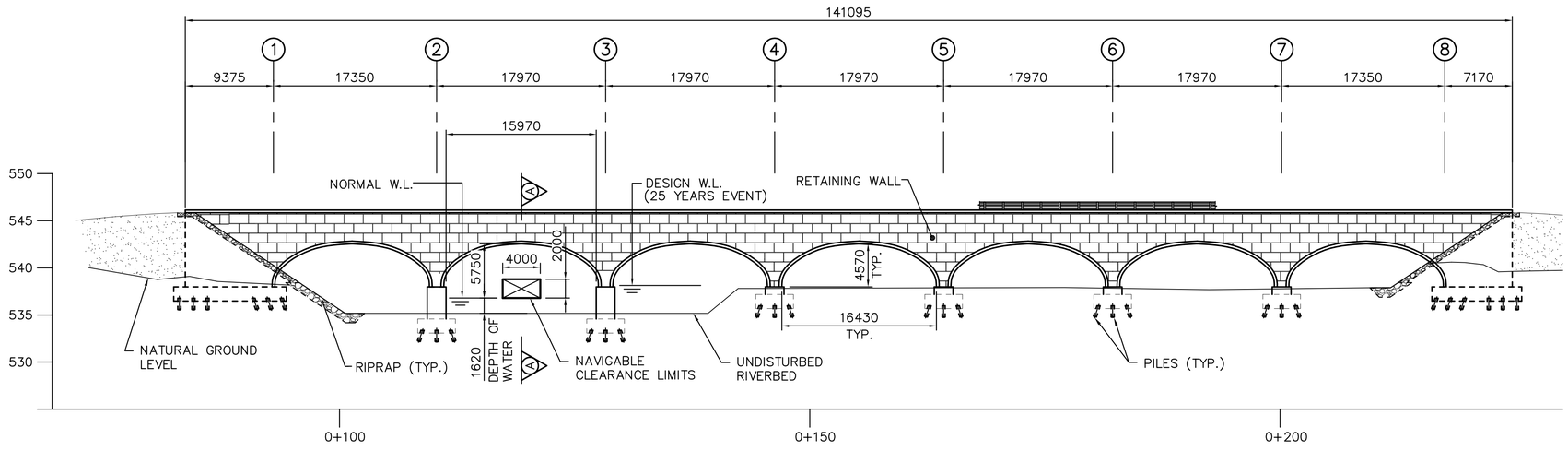
SECTION A–A
SCALE 1:100

NOTES :

1. DESIGNED TO CANADIAN HIGTWAY BRIDGE DESIGN CODE CAN/CSA–S6–06
2. DESIGN WATER LEVEL = 25 YEARS EVENT
3. DIMENSIONS ARE IN MILLIMETER.
4. CHAINAGES, COORDINATES AND ELEVATIONS ARE IN METERS.
5. THE EXACT ELEVATION OF THE ROAD AND THE WIDTH OF THE RIVERBED ARE SUBJECT TO CHANGE ONCE THE FULL TOPOGRAPHIC STUDY OF THE SITE IS AVAILABLE.

LEGEND

W.L. = WATER LEVEL



ELEVATION
SCALE 1:300

DO NOT USE FOR CONSTRUCTION

No	Rev.	Description	Date
A	0	FOR THE N.W.P.A. REPORT	2012-10-26

EMISSION REGISTRY

No	Description	Date	Engineer	No OIQ
0	INITIAL DESIGN	2012-10-26	M.-O. BESSETTE	128245

REVISION

Client: ALDERON IRON ORE CORP

Project: KAMI IRON ORE PROJECT

Cegertec WorleyParsons

Speciality: STRUCTURE

Title: C76 - WALDORF RIVER
GENERAL LAYOUT
PLAN VIEW, ELEVATION, SECTION

Seal

Approved Date

Design by: MARC-OLIVIER BESSETTE ing.
Drafted by: CYNTHIA LAVOIE
Scale: AS NOTED
Date: 2012-10-16

Project	Lot	Format	Scale	Spec.	Seq.	Rev.
19488	0	A1	PM	ST	004	0

3.0 REVISED ENGINEERING DRAWINGS C42, C55, C78, C81

Additional engineering details regarding the design of several smaller crossings were also requested by Transport Canada. Provided below is a summary of the existing data at each crossing as well as the detailed engineer drawings for each location. Additional information can be obtained from the initial Overview Document submitted September 24, 2012 (see Appendix A).

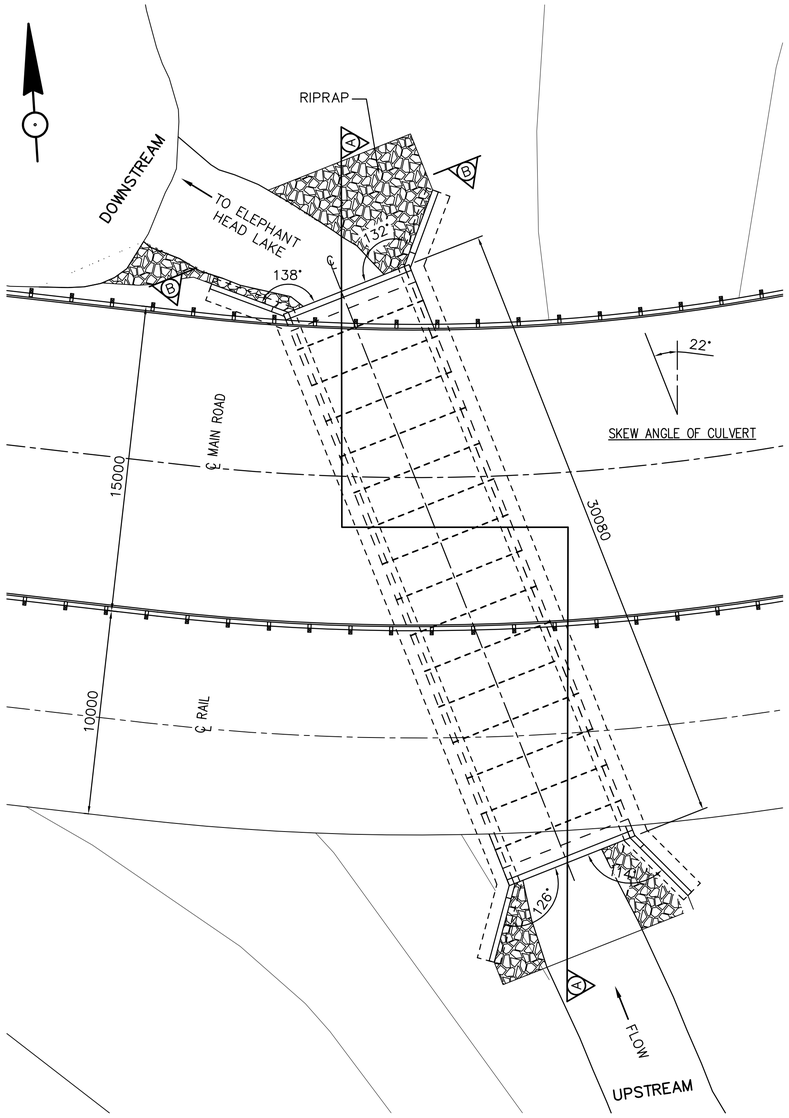
As per the attached original overview document, the initial anticipated design for each watercourse crossing was closed bottom culvert structures as shown in Figures 4.7, 4.9, 4.11 and 4.14 of the original submission. Further analysis and design has indicated that to maintain the potential for navigability, the required crossing structure at each location will be a single span open bottom structure. Each structure will clearly span the designated watercourse and will maintain navigability by allowing a navigable envelope of at least 2 meters by 1.2 meters above average summer low flow water levels.

3.1 RIORDIAN LAKE TO ELEPHANT HEAD *(CROSSING C42)*

This watercourse crossing is located on the stream that connects Riordan Lake with Elephant Head Lake (Figure 1.1). Field data showed that channel widths ranged from 1.0 – 5.0 m and mean water depths at transects ranged from 0.11 – 057 m (Figure 3.1). This stream crossing has been identified as potentially not meeting the criteria to be considered a "minor" waterway under the NWPA as it is has a width greater than 1.2 m (field surveyed at 3.2 m) and was not determined to meet any of the other criteria for exclusion.

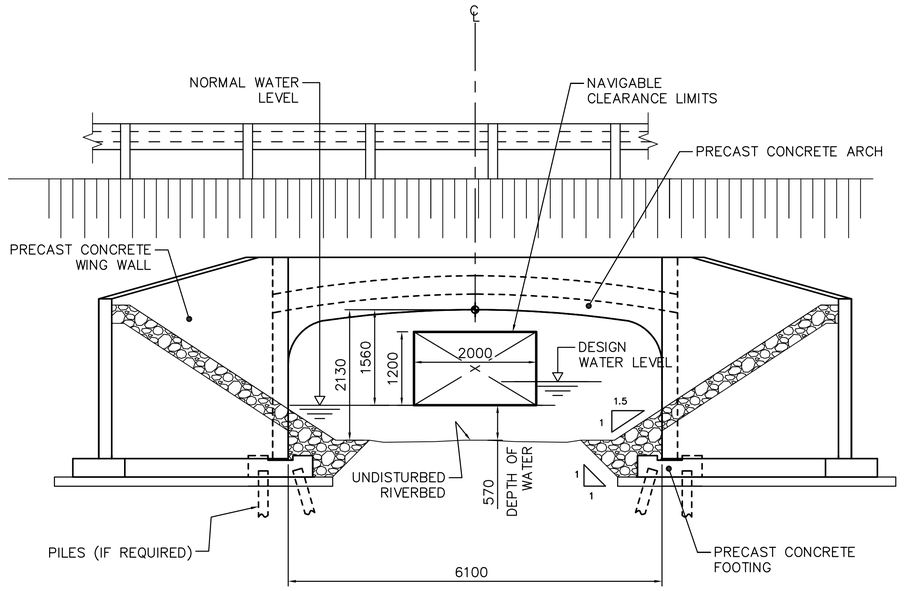
The proposed structure for this watercourse crossing is a single span open bottom structure that will clearly span the designated watercourse and will maintain navigability by allowing a navigable envelope of at least 2 meters by 1.2 meters above the average summer low flow water levels. Additional engineer design detail is provided in Figure 3.2.

Figure 3.1. Aerial View of Riordian Lake to Elephant Head Crossing and Survey Photo (50 m upstream)



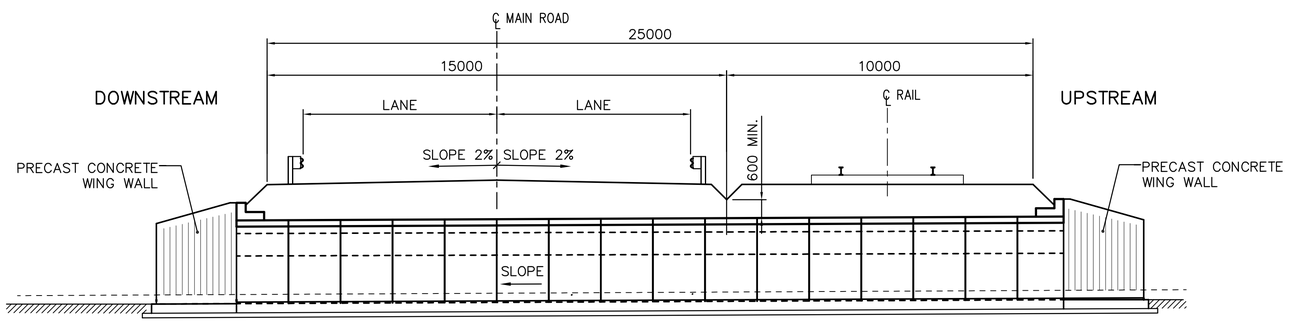
PLAN VIEW

SCALE: 1:150



SECTION B–B

SCALE: 1:50



ELEVATION (SECTION A–A)

SCALE: 1:100

NOTES:

1. DESIGNED TO CANADIAN HIGTWAY BRIDGE DESIGN CODE CAN/CSA–S6–06
2. DESIGN WATER LEVEL = 25 YEARS EVENT
3. DIMENSIONS ARE IN MILLIMETER.
4. CHAINAGES, COORDINATES AND ELEVATIONS ARE IN METERS.
5. THE EXACT ELEVATION OF THE ROAD AND THE WIDTH OF THE RIVERBED ARE SUBJECT TO CHANGE ONCE THE FULL TOPOGRAPHIC STUDY OF THE SITE IS AVAILABLE.

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EMISSION REGISTRY				REVISION					
No	Rev.	Description	Date	No	Description	Date	Engineer	No OIQ	
A	0	FOR THE N.W.P.A. REPORT	2012–10–26	0	INITIAL DESIGN	2012–10–26	M.–O. BESSETTE	128245	

Client: ALDERON IRON ORE CORP

Project: KAMI IRON ORE PROJECT

Cegertec WorleyParsons

Speciality: STRUCTURE

Title: C42 - RIORDIAN LAKE TO ELEPHANT HEAD
GENERAL LAYOUT
PLAN VIEW, ELEVATION AND SECTION

Seal

Approuved Date

Design by	Drafted by
MARC-OLIVIER BESSETTE eng.	SANDRA TREMBLAY
Scale	**Date**
AS NOTED	2012-10-16

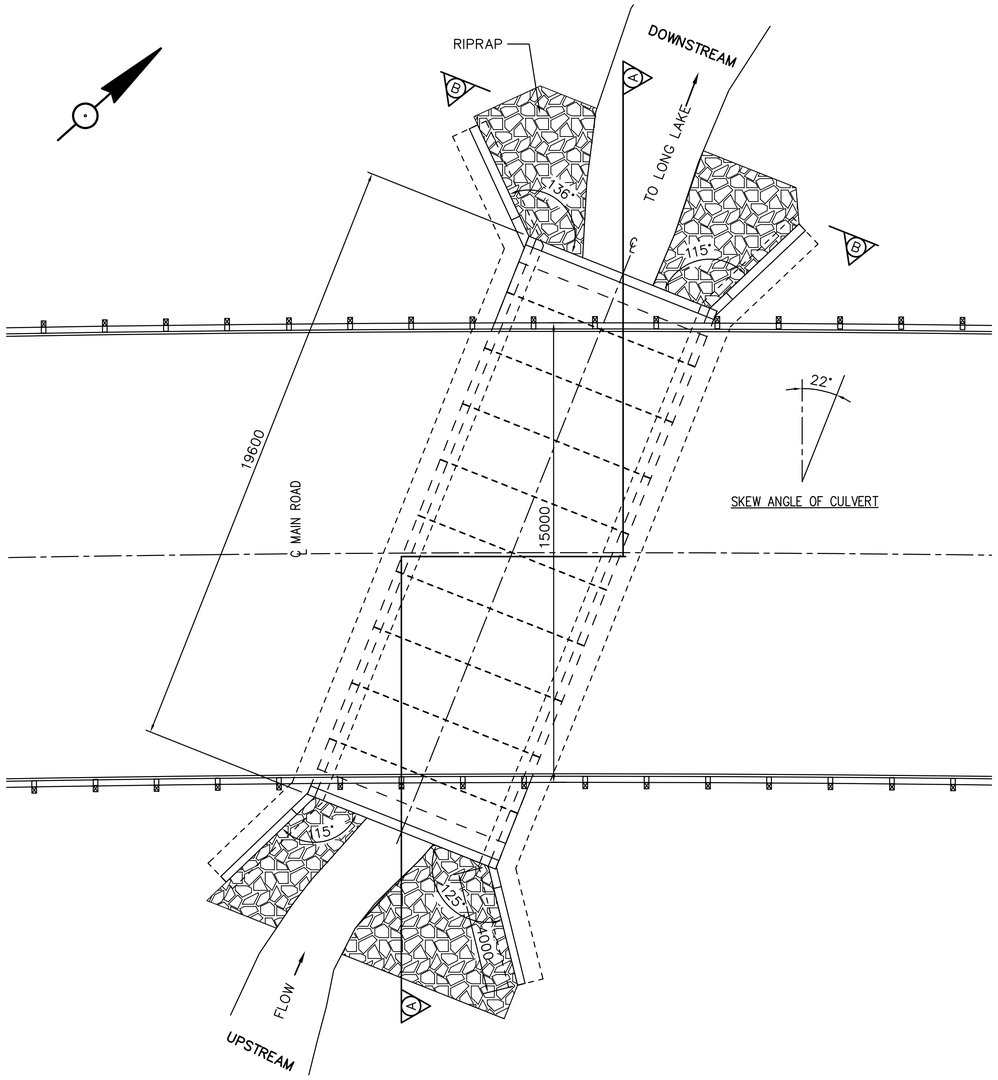
Project	Lot	Format	Scale	Spec.	Seq.	Rev.
19488	0	A1	PM	ST	002	0

3.2 WEST OF LONG LAKE *(CROSSING C55)*

This crossing is west of Long Lake on a stream that drains into Long Lake (Figure 1.1). Field data showed that channel widths ranged from 2.4 – 5.2 m with measured mean water depths at transects ranging from 0.31 – 0.88 m (see Figure 3.3). This stream crossing has been identified as potentially not meeting the criteria to be considered a "minor" waterway under the *NWPA* because it is has a width greater than 1.2 m (field surveyed at 3.4 m) and was not determined to meet any of the other criteria for exclusion.

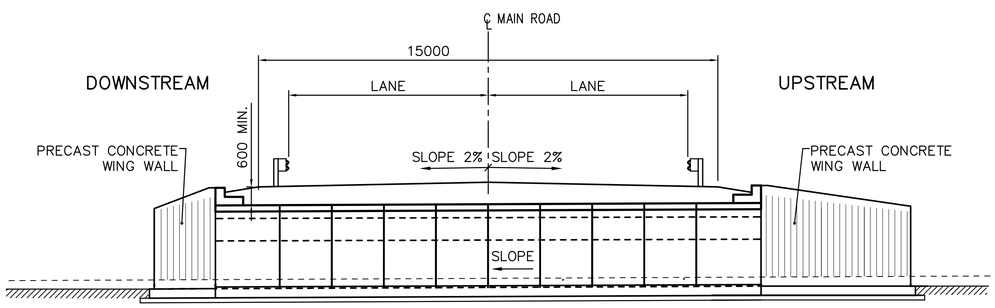
The proposed structure for this watercourse crossing is a single span open bottom structure that will clearly span the designated watercourse and will maintain navigability by allowing a navigable envelope of at least 2 meters by 1.2 meters above the average summer low flow water levels. Additional engineer design detail is provided in Figure 3.4.

Figure 3.3. Aerial View of West of Long Lake Crossing and Survey Photo



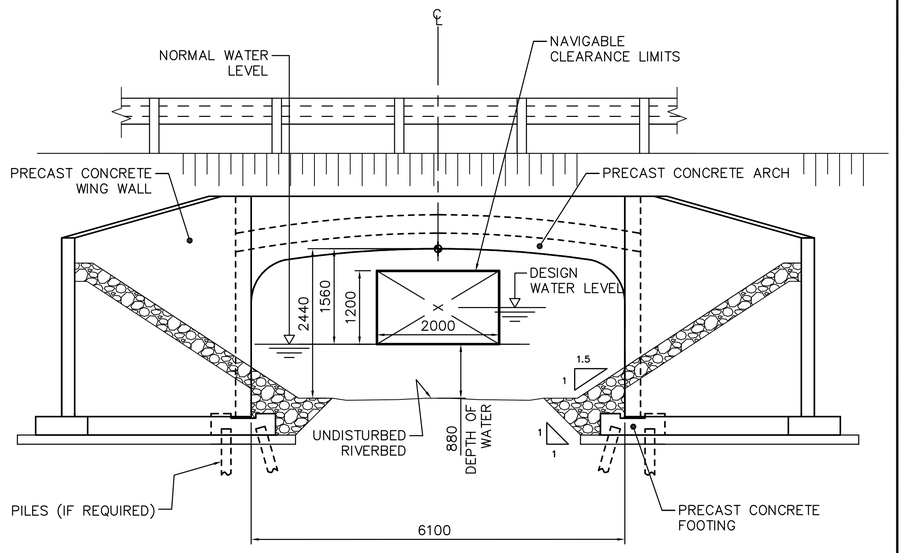
PLAN VIEW

SCALE: 1:100



ELEVATION (SECTION A–A)

SCALE: 1:100



SECTION B–B

SCALE: 1:50

NOTES:

1. DESIGNED TO CANADIAN HIGTWAY BRIDGE DESIGN CODE CAN/CSA–S6–06
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No	Rev.	Description	Date
A	0	FOR THE N.W.P.A. REPORT	2012–10–26

EMISSION REGISTRY

No	Description	Date	Engineer	No OIQ
0	INITIAL DESIGN	2012–10–26	M.–O. BESSETTE	128245

REVISION

Client: ALDERON IRON ORE CORP

Project: KAMI IRON ORE PROJECT

Cegertec WorleyParsons

Speciality: STRUCTURE

Title: C55 - WEST OF LONG LAKE
GENERAL LAYOUT
PLAN VIEW, ELEVATION, SECTION

Seal

Approved Date

Design by	Drafted by
MARC-OLIVIER BESSETTE eng.	SANDRA TREMBLAY
Scale: AS NOTED	Date: 2012-10-16

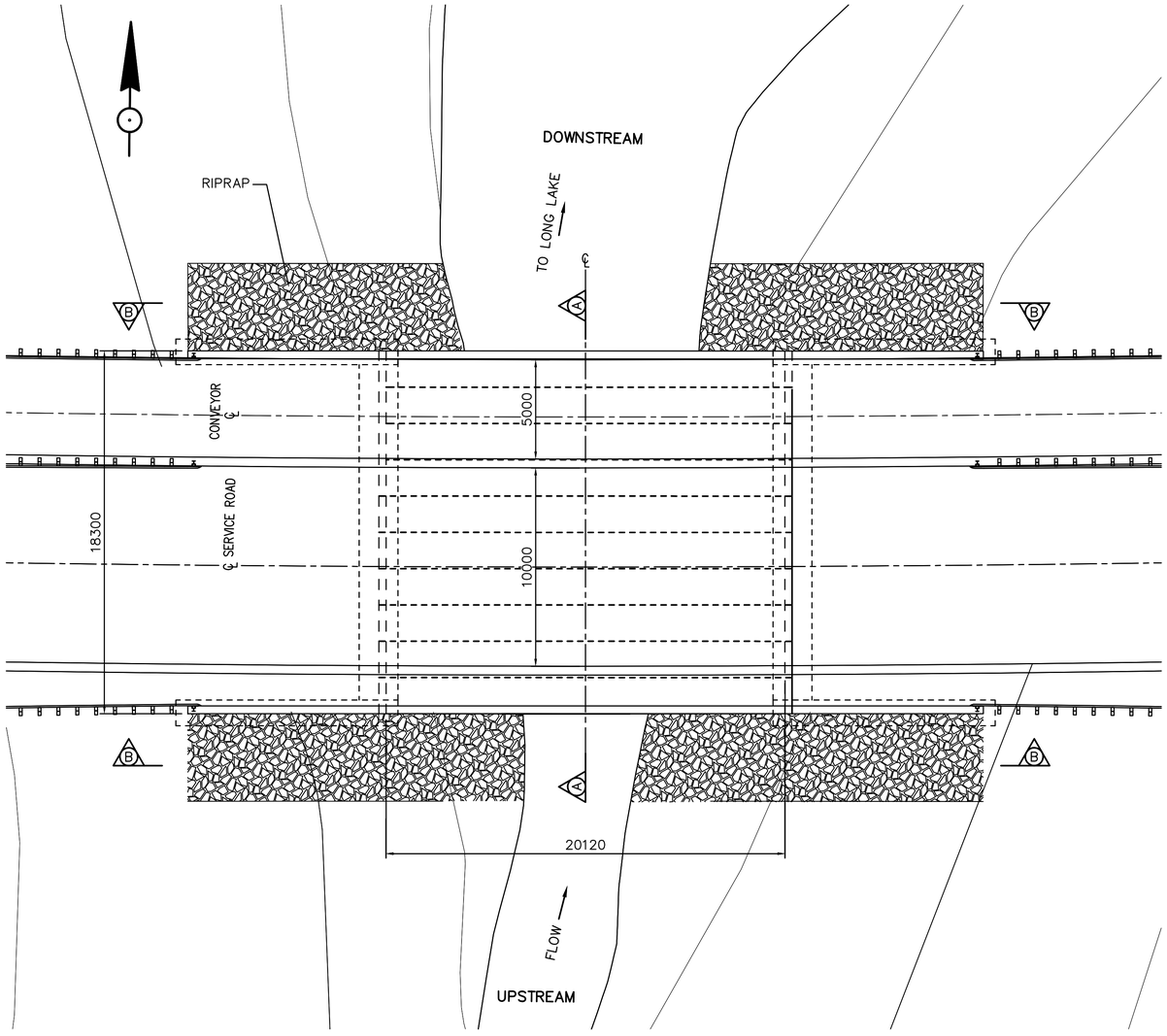
Project	Lot	Format	Scale	Spec.	Seq.	Rev.
19488	0	A1	PM	ST	003	0

3.3 BETWEEN MILLS LAKE AND LONG LAKE (*CROSSING C78*)

This crossing is located between Mills Lake and Long Lake. The surrounding area is comprised of upland bog area that drains into a series of small ponds prior to flowing northwest into Long Lake. Field data showed that channel widths ranged from 6.0 – 18.5 m with measured mean water depths at transects ranging from 0. 61 – 0.64 m. This stream crossing has been identified as potentially not meeting the criteria to be considered a "minor" waterway under the *NWPA* because it is has a width greater than 1.2 m (field surveyed at 11.7 m) and was not determined to meet any of the other criteria for exclusion. The proposed structure for this watercourse crossing is a culvert.

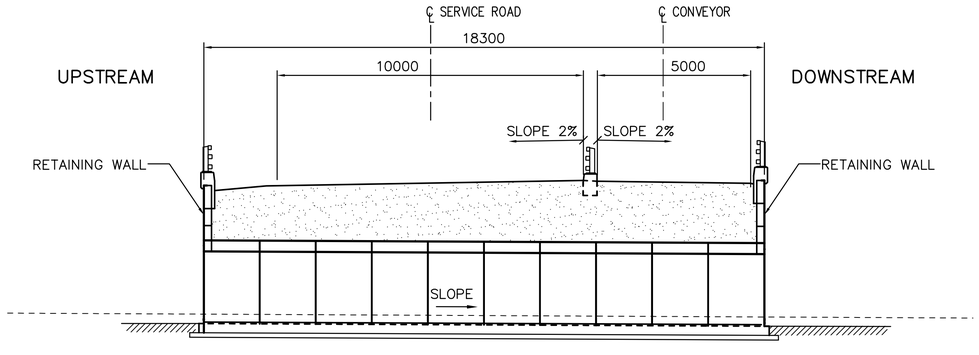
The proposed structure for this watercourse crossing is a single span open bottom structure that will clearly span the designated watercourse and will maintain navigability by allowing a navigable envelope of at least 2 meters by 1.2 meters above the average summer low flow water levels. Additional engineer design detail is provided in Figure 3.6 and 3.6b.

Figure 3.5. Aerial View of Crossing between Mills Lake and Long Lake and Survey Photo



PLAN VIEW

SCALE: 1:150



ELEVATION (SECTION A–A)

SCALE: 1:100

NOTES:

1. DESIGNED TO CANADIAN HIGTWAY BRIDGE DESIGN CODE CAN/CSA–S6–06
2. DESIGN WATER LEVEL = 25 YEARS EVENT
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DO NOT USE FOR CONSTRUCTION

No	Rev.	Description	Date
A	0	FOR THE N.W.P.A. REPORT	2012–10–26

EMISSION REGISTRY

No	Description	Date	Engineer	No OIQ
0	INITIAL DESIGN	2012–10–26	M.–O. BESSETTE	128245

REVISION

Client: ALDERON IRON ORE CORP

Project: KAMI IRON ORE PROJECT

Cegertec WorleyParsons

Speciality: STRUCTURE

Title: C78 - BETWEEN MILLS LAKE AND LONG LAKE
GENERAL LAYOUT (1 OF 2)
PLAN VIEW AND ELEVATION

Seal

Approuved Date

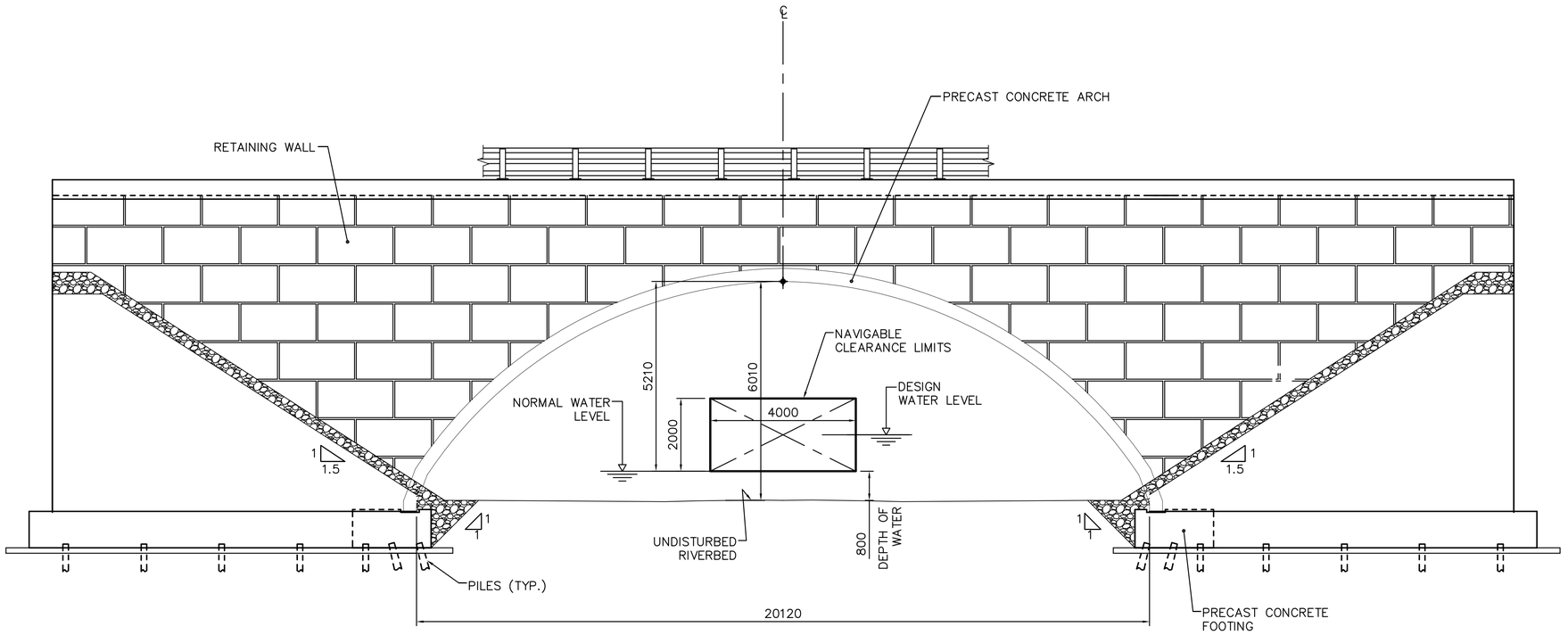
Design by: MARC-OLIVIER BESSETTE eng.

Drafted by: SANDRA TREMBLAY

Scale: AS NOTED

Date: 2012-10-19

Project	Lot	Format	Scale	Spec.	Seq.	Rev.
19488	0	A1	PM	ST	005	0



SECTION B–B

SCALE: 1:75

NOTES:

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EMISSION REGISTRY

No	Description	Date	Engineer	No OIQ
0	INITIAL DESIGN	2012–10–26	M.–O. BESSETTE	128245

REVISION

Client: ALDERON IRON ORE CORP

Project: KAMI IRON ORE PROJECT

Cegertec WorleyParsons

Speciality: STRUCTURE

Title: C78 - BETWEEN MILLS LAKE AND LONG LAKE
GENERAL LAYOUT (2 OF 2)
SECTION B-B

Seal

Approved Date

Design by: MARC-OLIVIER BESSETTE eng.

Drafted by: SANDRA TREMBLAY

Scale: AS NOTED

Date: 2012-10-19

Project	Lot	Format	Scale	Spec.	Seq.	Rev.
19488	0	A1	PM	ST	005	0

3.4 STREAM CONNECTING MILLS LAKE TO LONG LAKE (CROSSING C81)

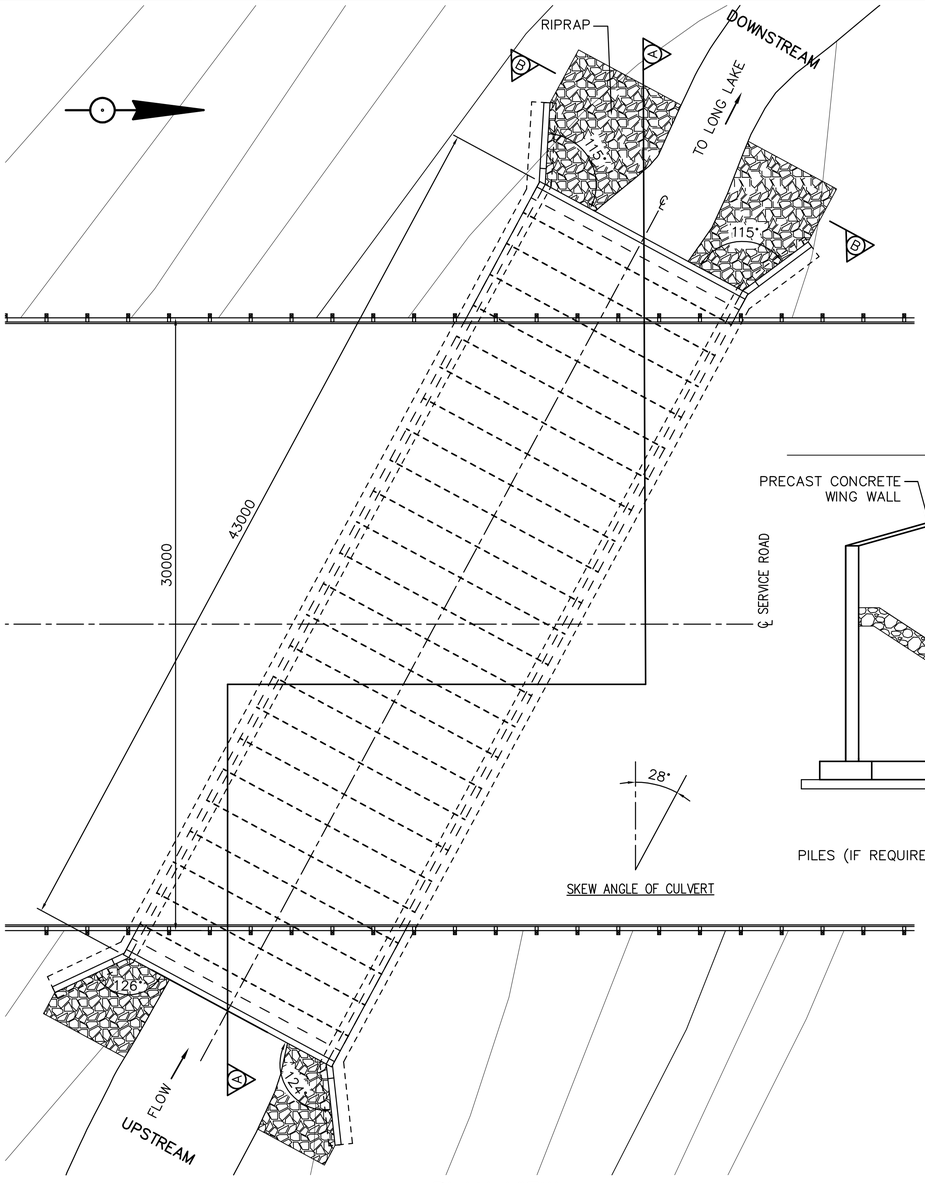
This crossing occurs on a stream that connects Mills Lake to Long Lake, just north of the Rose South Waste Rock Disposal Area (Figure 1.1 and Figure 3.7)). Field data has not been collected in this area to date, but it was possible to calculate stream data using LiDAR imagery that identified the crossing as potentially not meeting the criteria to be considered a “minor” waterway under the NWPA. Large sections of the stream were surveyed in 2012 as part of the baseline fish and fisheries surveys. A similar, representative photo of the area is presented in Figure 3.8.

The data has shown that the stream crossing is greater than 1.2 m in width (field surveyed at 8.2 m), with a slope of 4.2 percent. However, because the width is greater than 3.0 m, the slope of 4 percent does not allow it to meet the criteria for a “minor” water.

Figure 3.8. Aerial View of the Crossing (LiDar Imagery)

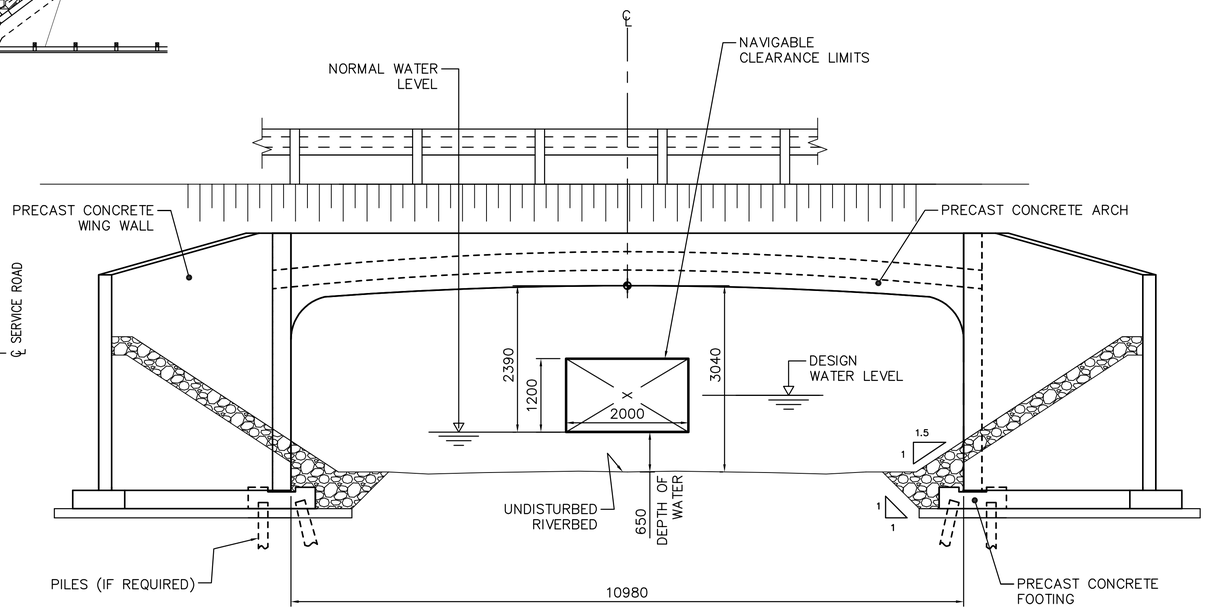
Figure 3.9. Representative Photo of the Crossing Location (General Area and Similar Type)

The proposed structure for this watercourse crossing is a single span open bottom structure that will clearly span the designated watercourse and will maintain navigability by allowing a navigable envelope of at least 2 meters by 1.2 meters above the average summer low flow water levels. Additional engineer design detail is provided in Figure 3.9.



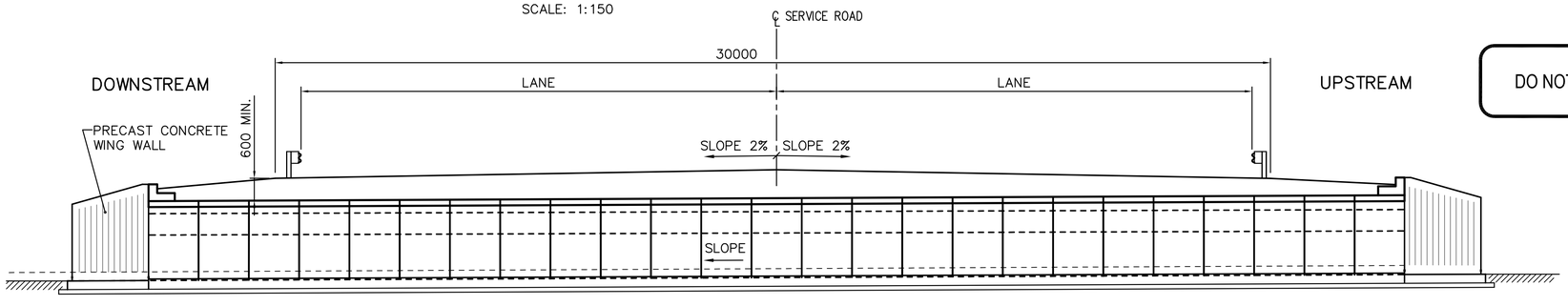
PLAN VIEW

SCALE: 1:150



SECTION B–B

SCALE: 1:50



ELEVATION (SECTION A–A)

SCALE: 1:100

DO NOT USE FOR CONSTRUCTION

NOTES:

1. DESIGNED TO CANADIAN HIGTWAY BRIDGE DESIGN CODE CAN/CSA–S6–06
2. DESIGN WATER LEVEL = 25 YEARS EVENT
3. DIMENSIONS ARE IN MILLIMETER.
4. CHAINAGES, COORDINATES AND ELEVATIONS ARE IN METERS.
5. THE EXACT ELEVATION OF THE ROAD AND THE WIDTH OF THE RIVERBED ARE SUBJECT TO CHANGE ONCE THE FULL TOPOGRAPHIC STUDY OF THE SITE IS AVAILABLE.

No	Rev.	Description	Date
A	0	FOR THE N.W.P.A. REPORT	2012–10–26

EMISSION REGISTRY

No	Description	Date	Engineer	No OIQ
0	INITIAL DESIGN	2012–10–26	M.–O. BESSETTE	128245

REVISION

Client: ALDERON IRON ORE CORP

Project: KAMI IRON ORE PROJECT

Cegertec WorleyParsons

Speciality: STRUCTURE

Title: C81 - MILLS LAKE TO LONG LAKE
GENERAL LAYOUT
PLAN VIEW, ELEVATION AND SECTION

Seal

Approuved Date

Design by: MARC-OLIVIER BESSETTE eng.

Drafted by: SANDRA TREMBLAY

Scale: AS NOTED

Date: 2012-10-18

Project	Lot	Format	Scale	Spec.	Seq.	Rev.
19488	0	A1	PM	ST	006	0

4.0 ADDITIONAL INFORMATION RP12 AND RP13 (ROSE POND OUTFLOW AND INFLOW)

The proposed Project will include an open pit mine (Rose Pit), which will be located just south of Pike Lake, and approximately 8 km south of the communities of Wabush and Labrador City in Western Labrador (Figure 1.1). The surface area of the pit footprint will be approximately 2.80 km^2 (280 ha), with an overall perimeter of 8,637 m. Open pit mine construction will include tree removal and overburden stripping. It will also include removing a small pond within the pit area (Rose Pond). Associated with pit development and operation, perimeter drains and ditches installed around the open pit mine will route runoff around the open pit mine. Headwater runoff from the Project location will be diverted around the open pit. Further information regarding this is also provided.

Additional details regarding the characterization and potential navigability of the small pond within the Kami open pit area (Rose Pond – RP1) as well as its outflow (RP12) and inflow (RP13) were requested by Transport Canada. Provided below is additional survey information as well as further comparison to Transport Canada's *Minor Waters User Guide* (2010), where applicable. Additional information has also been provided in the initial Overview Document submitted September 24, 2012 (see Appendix A), however, where appropriate, sections of that information have been brought forward in order to provide a more complete description under one cover.

4.1 ROSE POND OUTFLOW (RP12)

The only watercourse within the Rose Pit area that can be identified on mapping/imagery other than LiDAR is Rose Pond (RP1) and its outflow and inflow (Figure 1.1). The outflow of Rose Pond (RP12) flows north into Pike Lake. Its overall length is 450 m with varying channel widths between 2.0 and 35.0 m and water depths ranging from 0.18 – 0.95 m. Substrates in the wider, deeper reaches consist primarily of fines (silt and muck) with the narrower, shallower reaches consisting of a mixture of boulders, rubble, cobble, gravel and fines. Because of the wider reaches of stream within RP12, it does not have an average width of less 1.2m, and cannot therefore be determined a minor navigable water based on this initial review criteria. It should also be noted that within the initial submission, all secondary reviews were completed using only the first two criteria (water depth and slope). As such, sinuosity ratio and natural obstructions were not presented or used. The outflow of Rose Pond, however does contain narrow sections and obstructions that would determine it not to be navigable under Section 7.12 of the Minor Navigable Waters Guidelines based on definitions of natural obstructions (Section 6.1.5 of the guideliens).

Section 6.1.5 of the guidelines state that "*a natural obstruction is a natural physical obstacle that prevents the passage of a vessel on a navigable water and requires portaging in order to continue along the navigable water. For this purpose of determining if a particular navigable water can be deemed to be a minor navigable water, at least one of the natural obstacles must be upstream and another much be downstream from the midpoint. Natural obstructions may include, but are not limited to, beaver dams, deadfalls, large steep drops or thick vegetation growing in the channel. Some of these obstructions, such as beaver dams and deadfalls, may be short-lived. However, it is likely that new ones will replace these obstructions. The determination of frequency of natural obstructions will require field inspection to determine the number of natural obstructions along the 200m long sections of the navigable water, up and down stream. Natural obstructions do not include man-made structures such as bridges, culverts, dams or weirs.*"

A summary of the stream characterization based on field surveys is provided in Table 4.1. As shown, a 50m long section near the mouth of the stream (75-125m upstream from Pike Lake) is classed as rapids. While measurements at the time of the survey do not indicate any large increase in water velocity, the section narrows and has at least five obstructions such as deadfalls, heavy vegetation, and a beaver/muskrat dam within stream RP12 (Figures 4.1 – 4.6). It should also be noted that while low flows are not within the guideline criteria to determine minor navigable waters, the pro-rated flow duration curves and hydrograph indicate very little flow (Figures 4.7 and 4.8) through this watercourse. This additional information allows for self-determination of a minor navigable water under Section 7.1.2 of the guidelines.

Table 4.1. Summary of habitat measurements and classifications for RP12.

		Section	Wetted	Area	Average	Average	Substrate (%)							Classification	
Transect #	Distance	Length	Width (m)	(Units)	Depth (m)	Velocity	Be	B	R	C	G	S	F	Beak	New
1	0	0	4.0	0.00	-	-	0	30	15	10	0	0	45	IV	Pool
2	25	25	2.4	0.60	-	-	0	30	15	10	0	0	45	IV	Pool
3	50	25	2.4	0.60	0.34	0.29	0	30	15	10	0	0	45	IV	Pool
4	75	25	4.1	1.03	0.18	0.26	0	30	50	20	0	0	0	II	Rapids
5	100	25	2.5	0.63	0.25	0.28	0	30	50	20	0	0	0	II	Rapids
6	125	25	2.5	0.63	-	-	0	0	15	15	10	0	60	IV	Pool
7	150	25	7.0	1.75	0.80	0.00	0	0	15	15	10	0	60	IV	Pool
8	175	25	30.0	7.50	-	-	0	0	0	0	0	0	100	IV	Pool
9	200	25	35.0	8.75	0.90	0.01	0	0	0	0	0	0	100	IV	Pool
10	225	25	35.0	8.75	-	-	0	0	0	0	0	0	100	IV	Pool
11	250	25	35.0	8.75	0.95	0.00	0	0	0	0	0	0	100	IV	Pool
12	275	25	12.0	3.00	-	-	0	0	0	0	0	0	100	IV	Pool
13	300	25	2.5	0.63	0.85	0.09	0	0	0	0	0	0	100	IV	Pool
14	325	25	3.0	0.75	-	-	0	30	10	0	0	0	60	IV	Pool
15	350	25	3.0	0.75	0.80	0.03	0	30	10	0	0	0	60	IV	Pool
16	375	25	2.0	0.50	-	-	0	30	10	0	0	0	60	IV	Pool
17	400	25	2.0	0.50	0.65	0.03	0	30	10	0	0	0	60	IV	Pool
18	425	25	30.0	7.50	-	-	0	30	10	0	0	0	60	IV	Pool
19	450	25	4.2	1.05	0.77	0.05	0	30	10	0	0	0	60	IV	Pool

Orange cells were estimated based on field observations and photos.

Figure 4.1. Rose Pond Outflow showing obstruction approximately 50m upstream from Pike Lake South.

Figure 4.2. Rose Pond Outflow showing obstruction approximately 100m upstream from Pike Lake South.

Figure 4.3. Rose Pond Outflow showing additional obstruction approximately 100m upstream from Pike Lake South.

Figure 4.4. Rose Pond Outflow showing obstruction approximately 150m upstream from Pike Lake South.

Figure 4.5. Rose Pond Outflow showing obstruction approximately 350m upstream from Pike Lake South.

Figure 4.6. Rose Pond Outflow showing obstruction approximately 400m upstream from Pike Lake South.

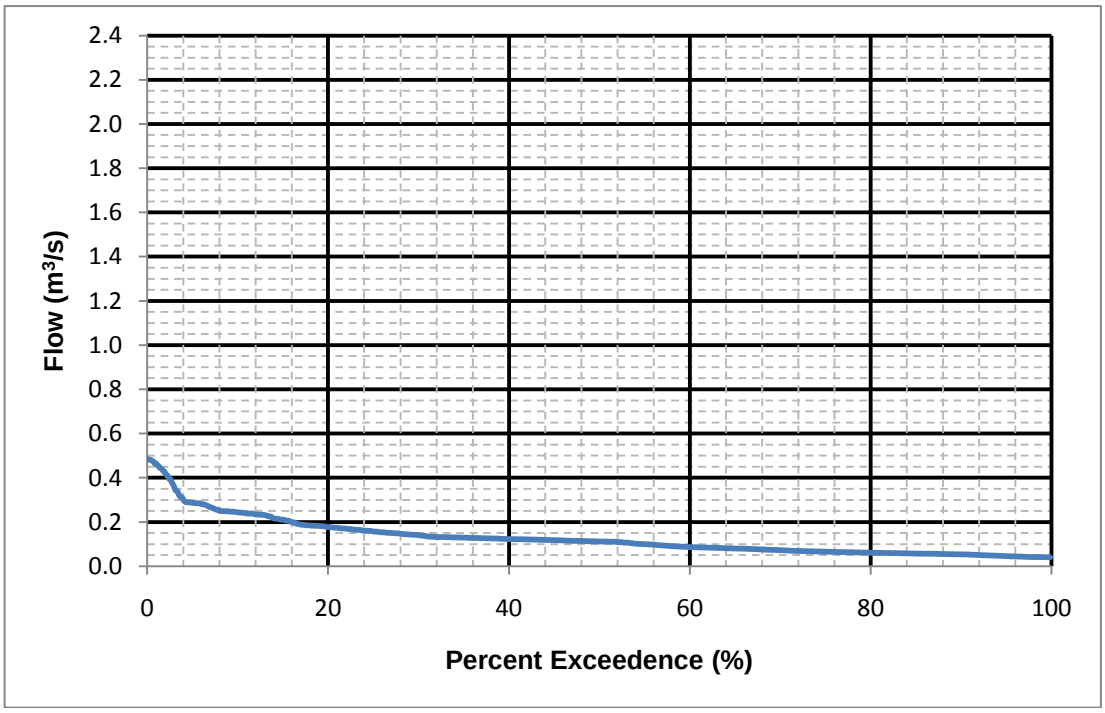


Figure 4.7. Flow Duration Curve for outflow of RP12. Pro-rated flows from Wabush Lake.

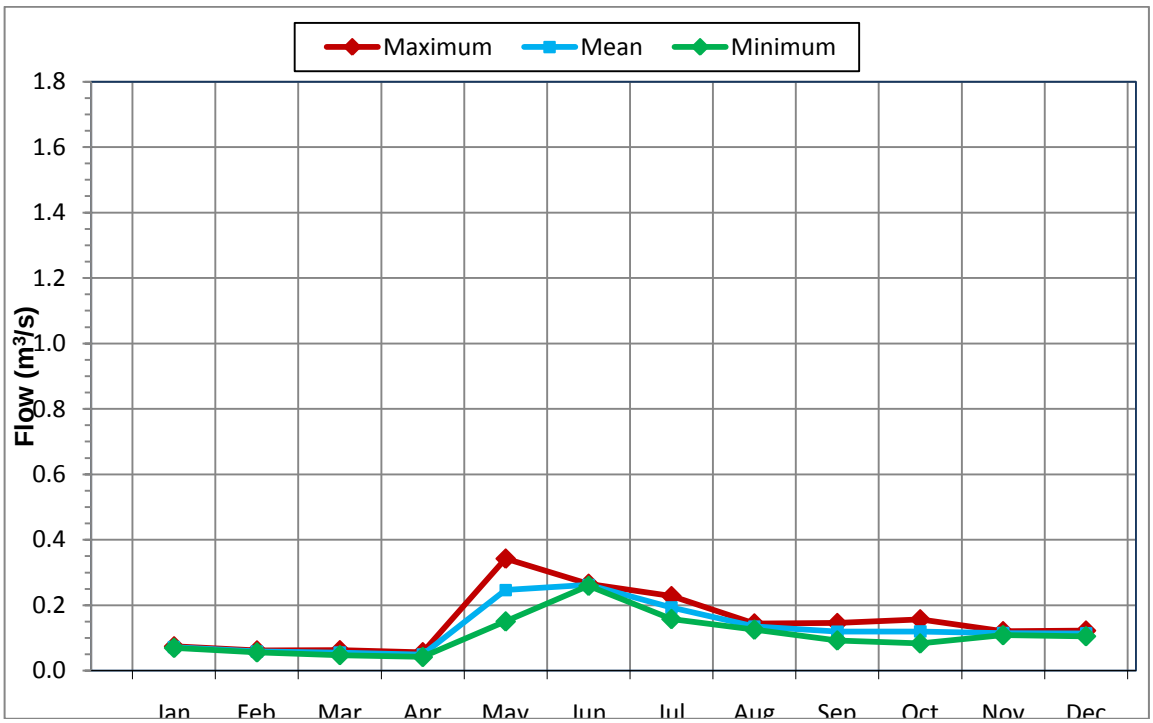


Figure 4.8. Hydrograph for outflow of RP12. Pro-rated flows from Wabush Lake.

4.2 ROSE POND INFLOW (RP13)

Stream section RP13 is considered the inflow stream to Rose Pond as it is located between the pond upstream of Rose Pond and Rose Pond itself. It is approximately 300 m in length and flows in a general northeast direction into RP1. Channel widths ranged from 0.8-4.9 m and depths ranged from 0.02-0.74 m. Mean water velocities were low and ranged from 0.00-0.14 m/s.

A summary of the stream characterization based on field surveys is provided in Table 4.2. As shown, eight of the thirteen reaches (over 60% of the stream) have average water depths less than 0.30 m and two of these reaches are less than 1.2m in average width, allowing for self determination of a minor navigable water. In addition, stream surveys indicate many obstructions throughout RP13 that would also determine this to be a minor navigable water with at least four reaches with obstructions such as deadfalls and heavy vegetation (Figures 4.9 - 4.12). Because RP13 has less overall drainage than that of the outflow of Rose Pond, the pro-rated flow duration curves and hydrograph indicate even less flow (Figures 4.13 and 4.14) through this upper portion of the watercourse.

Table 4.2. Summary of habitat measurements and classifications for RP13.

		Section	Wetted	Area	Average	Average	Substrate (%)							Classification	
Transect #	Distance	Length	Width (m)	(Units)	Depth (m)	Velocity	Be	B	R	C	G	S	F	Beak	New
1	0	-	4.9	-	0.44	0.04	0	0	0	0	0	0	100	IV	Pool
2	25	25	3.2	0.80	0.67	0.05	0	0	0	0	0	0	100	IV	Pool
3	50	25	3.6	0.90	0.74	0.02	0	0	0	0	0	0	100	IV	Pool
4	75	25	2.7	0.68	0.49	0.03	0	0	15	15	0	0	70	IV	Pool
5	100	25	2.0	0.50	0.19	0.14	0	0	15	15	0	0	70	IV	Steady
6	125	25	1.4	0.35	0.25	0.11	0	15	15	0	0	0	70	IV	Pool
7	150	25	1.9	0.48	0.53	0.08	0	15	15	0	0	0	70	IV	Pool
8	175	25	3.7	0.93	0.27	0.10	0	0	5	20	0	0	75	IV	Pool
9	200	25	2.1	0.53	0.27	0.05	0	0	5	20	0	0	75	IV	Pool
10	225	25	2.0	0.50	0.27	0.07	0	0	30	20	0	0	50	IV	Pool
11	250	25	1.0	0.25	0.02	-	0	0	30	20	0	0	50	IV	Steady
12	275	25	0.8	0.20	0.02	-	0	5	5	0	0	0	90	IV	Steady
13	300	25	1.5	0.38	0.02	-	0	5	5	0	0	0	90	IV	Steady

Figure 4.9. Rose Pond Inflow (RP13) showing obstruction approximately 100m upstream from Rose Pond.

Figure 4.10. Rose Pond Inflow (RP13) showing obstruction approximately 150m upstream from Rose Pond.

Figure 4.11. Rose Pond Inflow (RP13) showing obstruction approximately 200m upstream from Rose Pond.

Figure 4.12. Rose Pond Inflow (RP13) showing obstruction approximately 250m upstream from Rose Pond.

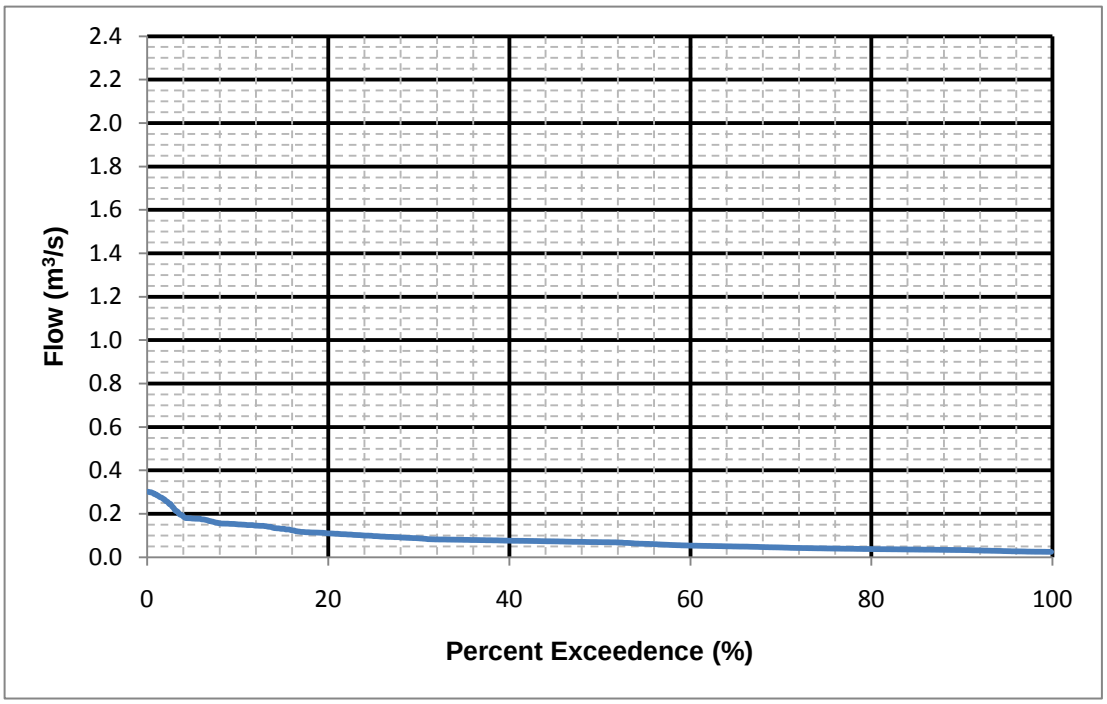


Figure 4.13. Flow Duration Curve for headwater of RP13. Pro-rated flows from Wabush Lake.

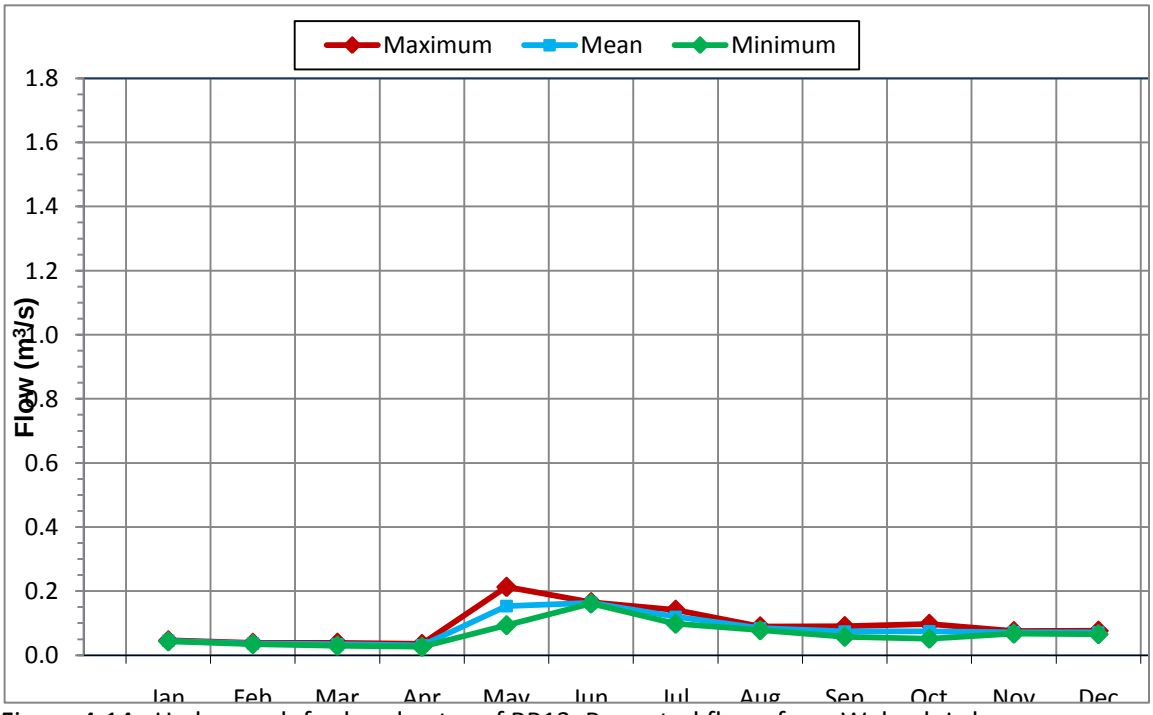


Figure 4.14. Hydrograph for headwater of RP13. Pro-rated flows from Wabush Lake.

5.0 ADDITIONAL INFORMATION RP1 (ROSE POND)

Additional details regarding the characterization and potential navigability of the small pond within the Kami open pit area (Rose Pond – RP1) was requested by Transport Canada. Provided below is additional survey information as well as further comparison to Transport Canada's *Navigable Waters Protection Act* and the *Minor Waters User Guide* (2010), where applicable. Additional information has also been provided in the initial Overview Document submitted September 24, 2012 (see Appendix A), however, where appropriate, sections of that information have been brought forward in order to provide a more complete description under one cover.

Field survey data from both 2011 and 2012 indicate that the pond is shallow, with mean water depth of 0.74m and maximum depth of 1.4 m. Secchi depth (i.e., the depth of light penetration) was also determined to be 1.4m. The bathymetry of the pond is provided in Figure 5.1. The overall surface area of the lake is 87,388 m² (8.7 ha), all of which is classified as littoral. The bottom substrate of the pond consists primarily of organic detritus and muck. Rose Pond has vegetation present / visible, primarily in the north and south ends with an estimated coverage of 11,181 m² (approximately 13 percent of the pond's surface area). The total drainage of the Rose Pond outflow has been estimated at 6.1 km^2 with 3.8 km^2 of the drainage entering the pond from the south inflow stream.

As a result of the small drainage area, the calculated mean daily flow for the outflow of Rose Pond is 0.13m^3/s (median daily flow estimate of 0.11m^3/s) with a maximum mean daily flow of 0.48m^3/s (see Figures 4.7 and 4.8). It should be noted that the flow from the drainage area will be diverted around the pit and will still inflow to Pike Lake.

Based on the characterization and self-determination of both the inflow and outflow streams (RP12 and RP13) above as being minor navigable waters, Rose Pond is a small isolated pond with respect to navigation (Figure 5.2). There is also no known existing use of Rose Pond by the public for navigation, likely a result of the aforementioned obstructions and narrow stream reaches throughout its inflow and outflow. It is therefore concluded that Rose Pond would be part of the Rose Pond system and considered non navigable.

As part of mine preparation, Rose Pond will be removed as it sits within the perimeter of the open pit (Figure 1.1). The removal of this waterbody (and portions of RP12 and RP13) will require authorization under Section 35 of the Fisheries Act and as such, any loss in productive habitat will require compensation to offset these losses. If any alteration in flows from the Rose Pit area also affects the habitat downstream, such as a reduction in habitat suitability or production, it too will require adequate compensation to offset any losses. Therefore, any loss of streams and ponds determined by Fisheries and Oceans Canada (DFO) to require authorization will be completed under the Fisheries Act. The removal of any watercourse (or reaches) will be completed during the Rose Pit preparation process prior to any operations (details regarding the pit preparation are provided in Appendix B). As a result of the removal of Rose Pond under authorization of the Fisheries Act during pit preparation, there will be no work built or placed in, on, over, under, through or across any navigable water within the Rose Pit area and hence Section 5 of the NWPA would not apply.

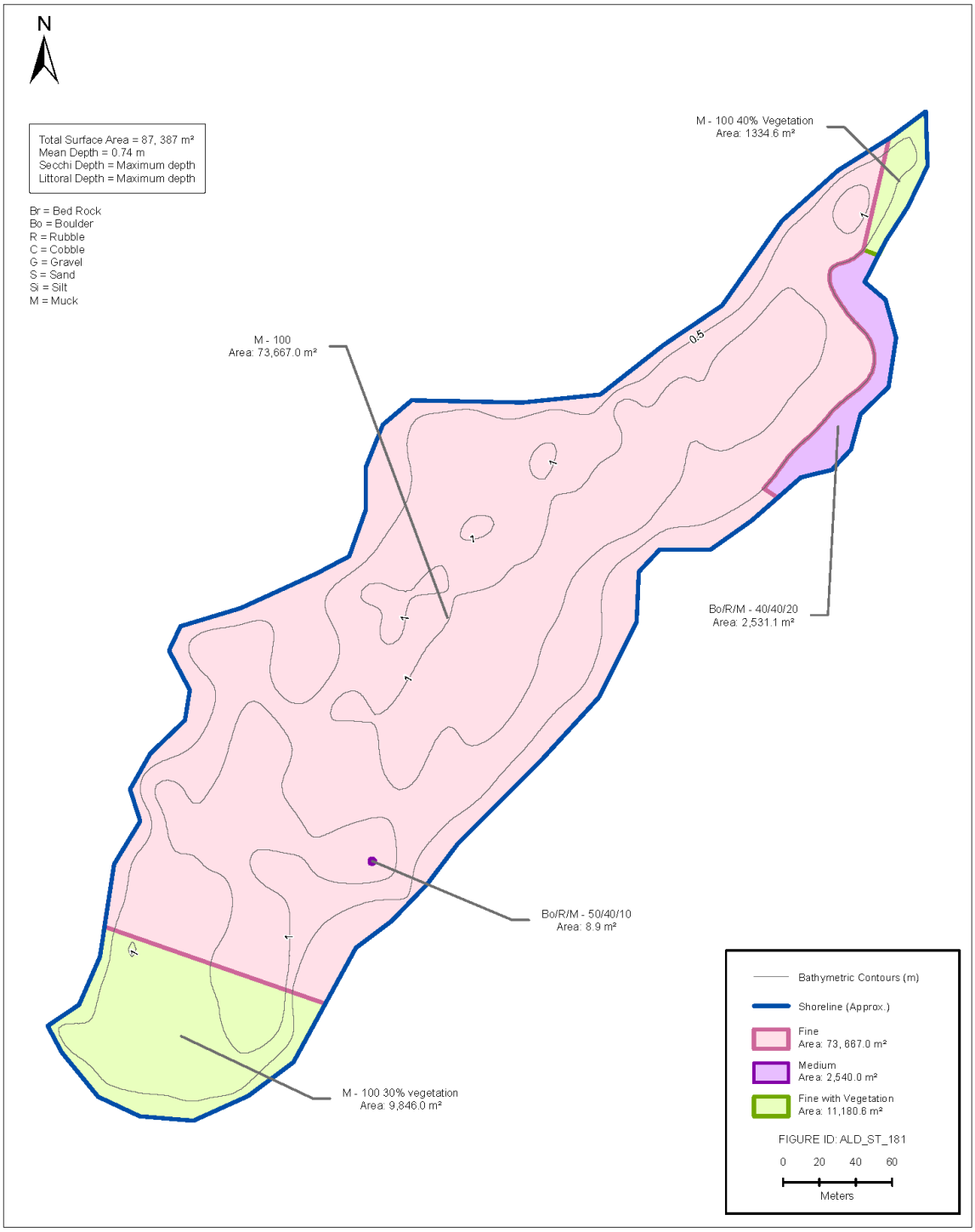


Figure 5.1. Rose Pond (RP1) bathymetric contouring and substrate/vegetation mapping.

Figure 5.2. Rose Pond (RP1) showing existing inflow (right-hand side) and outflow (left-hand side).

6.0 SUMMARY AND CONCLUSIONS

Alderon is proposing to construct and operate the Kami Iron Ore Project, which will include an open-pit iron ore mine and associated infrastructure in Labrador West. The proposed Project will involve a number of watercourse crossings associated with its proposed access roads, rail infrastructure, conveyor, pipelines and combinations thereof, as well as necessitating the alteration, diversion or removal of a number of watercourses and waterbodies within the footprints of key Project components such as the open pit mine (Rose Pit), waste rock disposal areas (north and south) and the TMF.

As stated in the initial overview document, aspects of the Project components and activities may therefore require approval(s) under the federal *Navigable Waters Protection Act* (*NWPA*) for any works that will be built or placed "in, on, over, under, through or across navigable water". This addendum has been completed and submitted to fulfil the information requests to allow for determinations by Transport Canada around which (if any) of these proposed works will require subsequent approval(s) under the *NWPA*.

Specifically, additional information and detail was requested regarding:

1. Additional Information on Engineering Details related to Crossings C22 (Jean Lake) and C76 (Waldorf River). These have been provided in Sections 2.1 and 2.2. A summary of the stream characterization based on field surveys is provided in Table 7.1 below including a description of the proposed structure at each location. It should be noted that all watercourse crossing structures described in this report for the Kami Iron Ore project will be designed to effectively span the required distance and will use modular technology to minimize in-water work during construction. Steps will be taken to ensure no silt/sediment enters the watercourse system, as well as minimal disturbance to the stream bed and local fisheries due to construction.

2. Revised Engineering Drawings related to Crossings C42 (between Riordian Lake and Elephant Head), C55 (stream draining to Long Lake), C78 (between Mills Lake and Long Lake), and C81 (between Mills Lake and Long Lake). A summary of the stream characterization based on field surveys is provided in Table 7.1 below including a description of the proposed structure at each location.

3. Additional Information related to the inflow (RP13) and outflow (RP12) streams of Rose Pond (RP1) within the Rose Pit area.

   As shown in RP12, a 50m long section near the mouth of the stream (75-125m upstream from Pike Lake) is classed as rapids. While measurements at the time of the survey do not indicate any large increase in water velocity, the section narrows and has at least five obstructions such as deadfalls, heavy vegetation, and a beaver/muskrat dam. It should also be noted that while low flows are not within the guideline criteria to determine minor navigable waters, the pro-rated flow duration curves and hydrograph indicate very little flow through this watercourse. This additional information allows for self-determination of a minor navigable water under Section 7.1.2 of the guidelines.

Table 6.1. Summary of Watercourse Crossings that may not meet the criteria for a "minor waterway"

Crossing Code	Watercourse	Project Components	Wetted Width (m)	Average Depth (m)	Easting	Northing	Proposed Structure
C22	Stream from Wahnahnish Lake to Jean Lake	Road Access, Rail Infrastructure	15.4	0.4	644382.83	5861148.01	Single Span Precast Concrete Structure
C42	Stream connecting Riordan Lake to Long Lake	Road Access, Rail infrastructure	3.2	0.2	640854.61	5859559.23	Single Span Open Bottom Structure
C55	Stream draining to Long Lake	Road Access	3.4	0.4	639073.90	5858954.50	Single Span Open Bottom Structure
C76	Waldorf River	Road Access, Conveyor System	26	0.8	637513.22	5856450.97	Multi-span concrete arch structure
C78	Stream connecting Mills Lake to Long Lake	Road Access, Conveyor System	11.7	0.3	637365.32	5856411.53	Single Span Open Bottom Structure
C81	Stream connecting Mills Lake to Long Lake	Road Access	8.2*	N/A	636523.95	5855755.12	Single Span Open Bottom Structure

* Measured using LiDAR because field data unavailable

As shown in RP13, eight of the thirteen reaches (over 60% of the stream) have average water depths less than 0.30 m and two of these reaches are less than 1.2m in average width, allowing for self determination of a minor navigable water under Section 7.1.1 of the guidelines. In addition, stream surveys indicate many obstructions throughout RP13 that would also determine this to be a minor navigable water under Section 7.1.2 of the guidelines with at least four reaches with obstructions such as deadfalls and heavy vegetation.

4. Additional Information regarding Rose Pond (RP1).

   Based on the characterization and self-determination of both the inflow and outflow streams (RP12 and RP13) above as being minor navigable waters, Rose Pond is a small isolated pond with respect to navigation. There is also no known existing use of Rose Pond by the public for navigation, likely a result of the aforementioned obstructions and narrow stream reaches throughout its inflow and outflow. It is therefore concluded that Rose Pond would be part of the Rose Pond system and considered non navigable.

   As part of mine preparation, Rose Pond will be removed as it sits within the perimeter of the open pit. The removal of this waterbody (and portions of RP12 and RP13) will require authorization under Section 35 of the Fisheries Act and as such, any loss in productive habitat will require compensation to offset these losses. The removal of any watercourse (or reaches) will be completed during the Rose Pit preparation process prior to any operations. As a result of the removal of Rose Pond under authorization of the Fisheries Act during pit preparation, there will be no work built or placed in, on, over, under, through or across any navigable water within the Rose Pit area and hence Section 5 of the NWPA would not apply.

5. Additional Information regarding the preparation of the Rose Pit (Preparation Plan). This is provided within Appendix B.

Most of the preceding information is included in the Environmental Impact Statement Kami Iron Ore Mine and Rail Infrastructure, Labrador. The EIS contains a detailed Project Description and other information on the Project components and associated construction and operations activities.

APPENDIX A

Navigable Waters Protection Act – Overview Document

Identification and Evaluation of

Proposed Project Works Within and Across Water

September 24, 2012

APPENDIX B

Rose Pit Preparation Plan

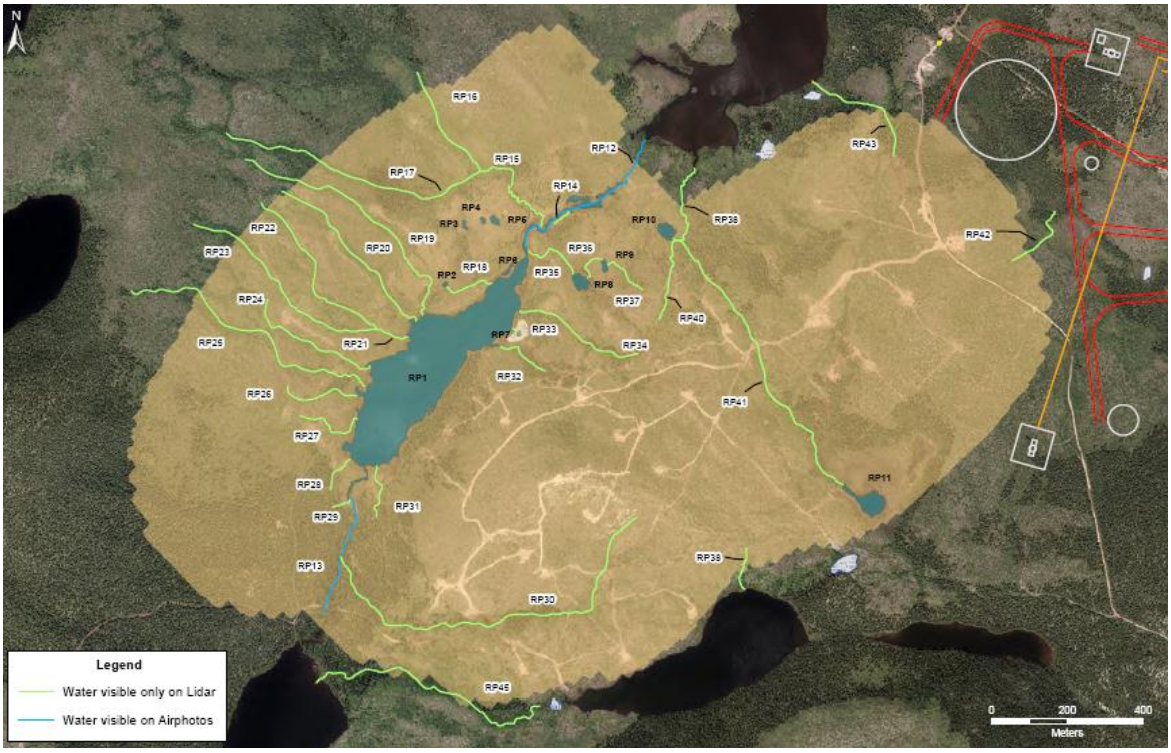
Appendix B

Rose Pit Preparation Plan

PIT PREPARATION

Prior to the commencement of any construction, all existing water bodies and water courses within the footprint of the Rose Pit will be removed under the conditions outlined in the Section 35 Fisheries Act Authorization and associated Habitat Compensation Plan as approved by the Department of Fisheries and Oceans.

Figure A Rose Pit Area Showing Waterbodies Present



Source: *AMEC Navigable Waters Protection Act – Overview document – Identification and Evaluation of Proposed Project Works Within and Across Water.*

The general sequence of activities to prepare Rose Pit will be as follows:

- All security and health and safety measures will be implemented across the site to facilitate site preparation in anticipation of construction and throughout the project. Trees, vegetation and overburden will be removed to facilitate the construction of access roads to construct the dam across stream RP13);
- Completion of access roads Northwards to facilitate access to the North waste rock disposal area;
- Construction of the sediment pond located near RP12
- Waterbody RP1, and sections of watercourses RP 12 and RP 13 will be removed under the conditions and requirements of the Section 35 Fisheries Act Authorization and the Habitat Compensation Plan as approved by the Department of Fisheries and Oceans
- Diversion of the upstream watercourse RP13 around the interior perimeter of the Rose Pit footprint to the downstream watercourse (RP12) will be constructed;

- A perimeter ditch will be constructed to divert storm water;
- Clearing, grubbing and further tree removal will be completed in the area that will be removed to create Rose Pit;

1. Clearing

Vegetation clearing may be required in two stages. Stage 1 will occur to allow the construction of the access road. The second stage will be completed to prepare the Rose Pit footprint for mining operations. The environmental protection procedures that will be followed for all clearing operations are the following:

- Clearing activities will be in accordance with the requirements of all applicable permits;
- Clearing or removal of trees will be kept to a minimum;
- Clearing will consist to cutting within 15cm of the ground and disposing of all standing trees as well as removing all shrubs, debris and other vegetation from the area;
- Disposing of cleared un-merchantable timber, slash and cuttings by burning will comply with applicable legislation;
- Slash and any other material or debris will not be permitted to enter any watercourse, and will be piled above spring flood levels;
- Chain saws and other hand-held equipment will be used in clearing vegetation except where alternative methods or equipment is approved by Alderon Iron Ore Corp, such as mechanical harvesters. The use of mechanical clearing methods, such as bulldozers, will not be permitted except where it can be demonstrated that there is no merchantable timber and where the resulting terrain disturbance and erosion will not result in the loss of topsoil or the sedimentation of nearby water bodies;
- Where possible, a minimum of 15m of undisturbed vegetation will be maintained as a buffer zone between the development area and all other water bodies;
- Timber shall be felled inward toward the work area to avoid damaging any standing trees outside the immediate work area; and
- Workers will not destroy or disturb any features indicative of a cultural or archaeological site
- Where feasible, vegetation clearing will be scheduled to avoid disturbance during the critical nesting period.

2. Grubbing and Disposal of Related Debris

Grubbing and the disposal of related debris may also be required in two stages. Stage 1 will occur to allow the construction of the access road. The second stage will be completed to prepare the Rose Pit footprint for mining operations. The main concern associated with grubbing and the disposal of related debris is the possible adverse effects on freshwater ecosystem and water quality through the release of sediment or materials into the nearby remaining watercourses. The environmental protection procedures that will be followed for both stages are as follows:

- Grubbing of the organic vegetation or upper overburden soil will be restricted to the minimum area required;
- The organic vegetation and overburden soil material that has been grubbed will be stored or stockpiled for progressive site rehabilitation and revegetation purposes. Topsoil and organics will be stored in low (1 to 2 metre high) stable piles that will be managed with erosion control measures including covering with soil, revegetated and using silt curtains to protect nearby

watercourses. The location of the stockpiles will be recorded and accessible for future rehabilitation purposes;
- Measures will be implemented to reduce and control runoff of sediment laden water into remaining water courses during grubbing. Erosion control measures will be implemented in areas prone to soil loss;
- The length of time that that inactive grubbed areas will be left exposed to the natural elements will be minimized to prevent unnecessary erosion. Mitigations such as placement and maintenance of silt curtains will be used to prevent erosion from exposed areas; and
- Grubbed material will not be pushed into areas that are to be left undisturbed.

3. Access Roads

Access roads will be required to allow access to Rose Pit and the Rose North waste rock disposal area located North East of Rose Pit. The access road will provide personnel with access for construction, maintenance, repair and rehabilitation of Rose Pit / Rose North disposal area and associated infrastructure. The road construction will be kept to the minimum area required with sufficient distance between construction activities as to limit interference with remaining watercourses near the project area. Sufficient silt fencing and control measures will be implemented to ensure that there is no ingress of any deleterious material into the watercourses.

4. Sedimentation Pond

An appropriately lined sedimentation pond will be constructed and connected to the perimeter ditching to allow any sediment that may be present from the surface run-off water or groundwater to settle prior to water being allowed to enter the watercourse at RP12. This water will be tested as per all permit and regulatory requirements prior to discharge to ensure that the quality of the water in the watercourses is not changed or in any way harmful to the aquatic population of RP12 and Pike Lake.

5. Removal of water bodies/water courses

As stated previously, waterbody RP1, and sections of watercourses RP 12 and RP 13 will be removed under the conditions and requirements of the Section 35 Fisheries Act Authorization and the Habitat Compensation Plan as approved by the Department of Fisheries and Oceans.

6. Diversion of RP13 to RP12

It is intended to use an appropriately sized pipe (allowing for all flows including design storm events) to divert the water from RP13 around Rose Pit to maintain water levels in upstream and downstream waterbodies. The diversion will start at the dam across RP13, will continue around the inside perimeter of Rose Pit and then end at RP12 at the South end of Pike Lake. The pipe will be placed on the bedrock or close to the level of the first mine bench. The pipe will be properly protected from construction work and future mining operations to ensure consistent diversion of the water from the dam into Pike Lake to prevent any loss of water quality. Water will be discharged through the sedimentation pond to allow any sediment to be removed prior to discharge into Pike Lake.

7. Perimeter Ditching

Perimeter ditching will be constructed to redirect any surface water that would have normally flowed into the Rose Pit area and divert it into the sedimentation pond. The ditching will be designed to divert the run-off generated by a 1:100 year storm event. This perimeter ditch will be appropriately lined with geotextile material and rock to prevent ingress of materials into the ditching from the soil but also to prevent the escape of materials in the surface run-off water into the groundwater. The water will be directed to the sedimentation pond then to the downstream watercourse (RP12) to maintain existing flow and water levels in RP12 and Pike Lake at all times.