APPENDIX 6-G

Whale Tail Pit Core Receiving Environment Monitoring Program 2014-2015 Baseline Studies

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AGNICO EAGLE

Golder Associates

FINAL

Whale Tail Pit Core Receiving Environment Monitoring Program (CREMP): 2014-2015 Baseline Studies

Prepared for:

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- Gary Mann (Azimuth) – Gary was responsible for overall management of this project. He also provided oversight and logistical support for the field crew, collaborated on the study design, and reviewed the report.
- Eric Franz (Azimuth) – Eric was responsible for overall coordination of the 2015 baseline program. He coordinated field sampling logistics, completed the August sampling event, and was the primary author of the report.
- Morgan Finley (Azimuth) – Morgan completed the July and September sampling events and helped coordinate the field program.

PROFESSIONAL LIABILITY STATEMENT

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

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ACRONYMS

AEM	Agnico Eagle Mines Ltd.
BAER	Baseline Aquatic Ecosystem Report
CCME	Canadian Council of Ministers of the Environment
CREMP	Core Receiving Environment Monitoring Program
CRM	Certified Reference Material
DQO	Data Quality Objective
dw	dry weight
EIA	Environmental Impact Assessment
GCDWQ	Guidelines for Canadian Drinking Water Quality
GPS	Global Positioning System
INUG	Inuggugayualik Lake
ISQG	Interim sediment quality guidelines (CCME sediment quality guidelines)
KIA	Kivalliq Inuit Association
LPL	Lowest practical level (taxonomic identification)
MAM	Mammoth Lake
MB	Method blank
MDL	Method detection limit
MS	Matrix spike
MTG	Major taxa group
NEM	Nemo Lake
NF	Near-field
NTI	Nunavut Tunngavik Incorporated
NWB	Nunavut Water Board
PAHs	Polycyclic aromatic hydrocarbons
PEL	Probable effect level (CCME sediment quality guidelines)
PDL	Pipedream Lake
QA/QC	Quality Assurance / Quality Control
REF	Reference
RPD	Relative percent difference
SOP	Standard Operating Procedure
SQG	Sediment quality guidelines
UTM	Universal Transverse Mercator

WQG	Water quality guidelines
WTN	Whale Tail Lake North Basin
WTN-Ex	Whale Tail Lake North Basin (shallow)
WTS	Whale Tail Lake South Basin
ww	wet weight

1. INTRODUCTION

1.1. Background

The Amaruq Exploration Property is a 408-square kilometer area located on Inuit Owned Land, approximately 150 kilometers north of Baker Lake and approximately 50 kilometers northwest of the Meadowbank mine (**Figure 1ï1**). Agnico Eagle Mines Limited (AEM) leased exploration rights to the Amaruq Exploration Property from Nunavut Tunngavik Incorporated (NTI) in April 2013. AEM's exploration activities have been conducted under a land use permit issued by the Kivalliq Inuit Association (KIA) and a water licence issued by the Nunavut Water Board (NWB).

AEM intends to pursue development of the Whale Tail satellite open pit located on the Amaruq site as an extension to the operational Meadowbank Mine. This report presents results of the aquatic baseline sampling studies carried out in support of the environmental impact assessment (EIA) process for the proposed development of the Whale Tail Pit.

1.2. Environmental Setting

The Whale Tail Pit and Meadowbank projects are situated in the barren-ground central Arctic region of Nunavut within an area of continuous permafrost known as the Wager Bay Plateau (Campbell et al. 2012). The landscape around the Amaruq property consists of rolling hills and relief with low-growing vegetative cover and poor soil development. Numerous lakes are interspersed among boulder fields, eskers and bedrock outcrops, with indistinct and complex drainages (**Figure 1ï2**). The near-field (NF) lakes within the Amaruq Exploration Property are Whale Tail Lake (WTL), Nemo Lake (NEM), and Mammoth Lake (MAM). These are headwater ultra-oligotrophic/oligotrophic (nutrient poor with low biological productivity) lakes, situated on the watershed boundary that separates the Arctic and Hudson Bay drainages. Only a few hundred meters to the north of Third Portage Lake is the divide between water that flows north to the Arctic Ocean or to Chesterfield Inlet and Hudson Bay. Lakes near the Meadowbank project (i.e., Third Portage, Second Portage, and Tehek) flow into the Quoich River system while the CREMP reference lakes (Pipedream [PDL] and Inuggugayualik [INUG]) and lakes within the Amaruq Exploration Property flow north via the Meadowbank and Back River system.

As is common of headwater lakes, all of the project lakes have small drainage areas relative to the surface area of the lakes themselves. A drainage divide separates Nemo Lake to the north from Mammoth and Whale Tail Lake to the south (Golder 2015a). Local inflow from surrounding terrain is the predominant influence on water movement within the system. Small stream channels connect the project area lakes, although there is little flow between lakes except during freshet and possibly none during winter months. Movement by fish between lakes is also rare, as populations remain quite isolated from one another (Portt and Associates 2015b). The ice-free season on these lakes is short, with ice break-up in late-June to mid-July and ice-up beginning in late September or early October.

1.3. Baseline Sampling Overview

This document presents results of the baseline monitoring program completed by Azimuth Consulting Group Partnership (Azimuth) in 2015, as well as baseline data collected by C. Portt and Associates (Portt and Associates) in 2014 and water quality data collected by Golder Associates Ltd (Golder) in 2015. An overview of the sampling programs is provided below.

In addition to characterizing water quality, sediment quality and lower trophic aquatic communities in support of the EIA process, these baseline studies were intended to support the development and

implementation of a long-term receiving environment monitoring program consistent with that being implemented at the Meadowbank Mine (i.e., the core receiving environment monitoring program [CREMP]).

1.3.1. 2014 Baseline Program

Preliminary baseline sampling was completed by Portt and Associates during the first week of September in 2014. The field program involved sampling for water chemistry, sediment chemistry, phytoplankton taxonomy, benthic invertebrate taxonomy, and fish community in Whale Tail Lake, Nemo Lake, and Mammoth Lake (**Table 1ï1**). The full report was submitted to AEM in January 2015 (Portt and Associates 2015a).

Water, sediment, phytoplankton, and benthic invertebrate results were provided to Azimuth by Portt and Associates and are included in this report for comparison with results from the 2015 baseline program. Sampling was conducted broadly throughout each lake, in general accordance with the standard operating procedures (SOPs) for the Meadowbank CREMP. Five replicate stations were chosen throughout each lake at a target depth of 8 m ± 1.5 m. The locations were broadly distributed throughout each of the lakes **Figure 1ï3** (Whale Tail), **Figure 1ï4** (Nemo), **Figure 1ï5** (Mammoth).

1.3.2. 2015 Baseline Program

The following sections provide an overview of the 2015 baseline monitoring studies, broken down into three components:

- Whale Tail Pit Study Area lakes (herein referred to as the "Lakes"),
- Stream locations along the proposed the proposed access road (herein referred to as the "Sentinel stations"),
- Streams within the Whale Tail Pit Study Area (herein referred to as the "Tributaries").

1.3.2.1. Whale Tail Pit Study Area Lakes

Whale Tail Lake, Nemo Lake, and Mammoth Lake were sampled by Azimuth in 2015. Whale Tail Lake was divided into two basins, the North Basin (WTN) and South Basin (WTS) to characterize the aquatic resources. WTN is located in the vicinity of the proposed mining operations (**Figure 1ï1**), and it is anticipated that this area of Whale Tail Lake will be dewatered to allow development of the Whale Tail Pit. Five additional shallow sampling stations were established in the North Basin (referred to as WTN-Ex) to document aquatic resources in support of the EIA. The following media were sampled in 2015 at the Lake stations:

- *In-situ* limnology (July, August, and September)
- Water chemistry (July, August, and September)
- Sediment chemistry (August)
- Benthic invertebrate community (August)
- Zooplankton community (July, August, and September)
- Periphyton (qualitative survey, July August, and September)

Sampling locations for the 2015 baseline program in Whale Tail, Nemo, and Mammoth Lakes are presented in **Table 1ï2** and shown in **Figure 1ï3**, **Figure 1ï4**, and **Figure 1ï5**, respectively.

The Meadowbank CREMP reference lakes Inuggugayualik Lake (INUG) and Pipedream Lake (PDL) are considered suitable reference lakes for the Whale Tail Pit Study Area Lakes, and the 2015 data are used

herein to provide a broader context where appropriate. INUG is located about 41 km southeast of the Whale Tail Pit Study Area, while PDL is located 40 km to the southeast (**Figure 1ï1**). Pipedream Lake is located northeast of INUG, and the proposed access road runs along the northeast shore of this lake. INUG and PDL satisfied the requirements of an external reference lake for the Meadowbank CREMP from a physical/chemical perspective because they are at similar latitude, have similar geology, relief and climate, do not have any significant inflows and has generally similar limnology, water chemistry and aquatic biological community structure to the project lakes (BAER, 2005). It should be noted that their proximity to the proposed access road may lead to dust deposition into each of the lakes under certain conditions. However, both lakes are quite large and the sampling locations for each are away from the road (i.e., approximately 2 km for PDL and 10 km for INUG), so while road-related trends will be tracked they are not anticipated.

It is anticipated that the baseline data collected from Whale Tail Lake, Nemo Lake, and Mammoth Lake will also be used to define pre-mining conditions for the Core Receiving Environment Monitoring Program (CREMP) designed to detect whether future development of the Whale Tail deposit is adversely affecting aquatic resources.

1.3.2.2. Sentinel Stations

Sentinel stations are defined as the monitoring locations along the route of a proposed access road between the Whale Tail Pit Study Area and the Vault Pit area at Meadowbank (**Figure 1ï1**). The baseline characterization of the Sentinel stations will support making future inferences about road-related changes to water quality once the road is built. The locations were chosen based on the fisheries and habitat surveys completed by Portt and Associates in 2014 (2015b). In general, the monitoring locations were chosen because of the presence of seasonal habitat, suitable spawning habitat, and/or potential migration route for large-bodied fish. The report identified several water bodies and watercourses that intersected the approximate route of the proposed access road, and of the locations surveyed, five were selected as long-term monitoring locations (**Table 1ï2**). Water samples (*in-situ* field parameters and water chemistry) were collected by Azimuth in July, August, and September 2015. Qualitative observations on the periphyton community were also collected during each sampling event.

1.3.2.3. Whale Tail Pit Study Area Tributaries

Several streams in the vicinity of the Whale Tail Pit Study Area were sampled by Golder in August and September 2015 to support water quality model development for the EIA. Water quality data collected from the "tributary" streams are included herein for completeness.

The Tributary locations were named according to a hydrology naming convention established prior to the August sampling event. Lakes within the local watershed boundaries were given alphanumeric names based on the watershed they were located in, termed A, B, or C. Tributaries were defined based on their upstream and downstream lakes. For example, Tributary station A17-A16 is located downstream of Lake A17 and upstream of lake A16. The naming convention was revised after sampling was completed in September, which required updating and cross-referencing the old tributary names with the new naming convention. Table 1 in **Appendix D** provides the new and old tributary names to assist interpreting the original laboratory data reports submitted using the original naming convention. Labels shown in the figures reflect the current, updated naming convention.

Table 1-1. Sampling location coordinates (GPS, UTM, NAD83), Whale Tail Pit Baseline, 2014.

							Sampling Program				
Lake	Date	Location	Zone	Easting	Northing	Station Depth (m)	*In-situ* Water Quality	Water Chemistry	Sediment Chemistry	Phytoplankton Taxonomy	Benthic Invertebrate Taxonomy
Mammoth Lake	04-Sep-14	1	14W	605074	7254893	8.1	✓	✓	✓	✓	✓
		2	14W	604486	7254566	7.3	✓				✓
		3	14W	604398	7254336	8.3	✓	✓	✓	✓	✓
		4	14W	603925	7254200	7.4	✓				✓
		5	14W	604191	7253847	7.3	✓	✓	✓	✓	✓
Whale Tail Lake	05-Sep-14	1	14W	607005	7255983	8.5	✓	✓	✓	✓	✓
		2	14W	607431	7255251	7.8	✓				✓
		3	14W	607538	7254596	8.0	✓	✓	✓	✓	✓
		4	14W	607230	7253781	7.8	✓				✓
		5	14W	607120	7253603	8.0	✓	✓	✓	✓	✓
Nemo Lake	06-Sep-14	1	14W	606358	7257042	7.6	✓	✓	✓	✓	✓
		2	14W	606040	7257418	7.4	✓				✓
		3	14W	606048	7257571	8.3	✓	✓	✓	✓	✓
		4	14W	606963	7257756	8.5	✓				✓
		5	14W	606740	7257566	8.7	✓	✓	✓	✓	✓

Notes:
Baseline 2014 sampling was completed by Portt and Associates (2015b).

Table 1-2. Sampling location coordinates (GPS, UTM, NAD83), Whale Tail Pit Baseline, 2015.

		Water & Phytoplankton (monthly)[1]				**Zooplankton** (monthly)				**Benthos & Sediment Grabs** (August)				
		Area-	**Depth**	**Coordinates (zone 14W)**		**Area-**	**Depth**	**Coordinates (zone 14W)**		**Area-**	**Sample**	**Depth**	**Coordinates (zone 14W)**	
Lake	**Month**	**Replicate**	**(m)**	**Easting**	**Northing**	**Replicate**	**(m)**	**Easting**	**Northing**	**Replicate**[2]	**Type**[3]	**(m)**	**Easting**	**Northing**
Whale Tail (North Basin)	July	WTN-1	7.4	607207	7254975	WTN-1	7.4	607207	7254975	WTN-1	B & C	8.0	606929	7255745
	July	WTN-2	6.7	607252	7254613	WTN-2	6.4	607252	7254613	WTN-2	B & C	8.4	606930	7255703
	August	WTN-3	6.8	607387	7254563	WTN-3	8.6	607393	7254558	WTN-3	B & C	7.9	606922	7255641
	August	WTN-4	7.9	607221	7254980	WTN-4	6.4	607221	7254988	WTN-4	B & C	9.1	606883	7255744
	September	WTN-5	6.7	607244	7255025	WTN-5	6.7	607244	7255025	WTN-5	B & C	7.5	606944	7255763
	September	WTN-6	10.9	607329	7254542	WTN-6	10.9	607329	7254542	WTN-COMP	C			
										WTN-Ex-1	B & C	5.0	607063	7255973
										WTN-Ex-2	B & C	5.4	607048	7256005
										WTN-Ex-3	B & C	5.7	607042	7255883
										WTN-Ex-4	B & C	6.1	607062	7255952
										WTN-Ex-5	B & C	5.4	607071	7255991
Whale Tail (South Basin)	July	WTS-1	9.5	607450	7253884	WTS-1	9.5	607450	7253884	WTS-1	B & C	7.2	607152	7253537
	July	WTS-2	5.1	607621	7254253	WTS-2	5.1	607621	7254253	WTS-2	B & C	7.1	607179	7253534
	August	WTS-3	8.5	607173	7253550	WTS-3	7.8	607155	7253550	WTS-3	B & C	7.8	607110	7253570
	August	WTS-4	7.5	607571	7254138	WTS-4	7.5	607571	7254138	WTS-4	B & C	7.4	607099	7253641
	September	WTS-5	6.5	607612	7253907	WTS-5	6.5	607612	7253907	WTS-5	B & C	7.8	607160	7253639
	September	WTS-6	7.8	607568	7254259	WTS-6	7.8	607568	7254259	WTS-COMP	C			
Nemo	July	NEM-1	10.5	606604	7257508	NEM-1	10.5	606604	7254415	NEM-1	B & C	8.0	606553	7257356
	July	NEM-2	11.1	606454	7257135	NEM-2	11.9	606454	7257135	NEM-2	B & C	9.0	606528	7257358
	August	NEM-3	8.0	606553	7257360	NEM-3	8.0	606553	7257360	NEM-3	B & C	8.9	606534	7257302
	August	NEM-4	11.8	606378	7257257	NEM-4	10.2	606370	7257235	NEM-4	B & C	8.0	606572	7257370
	September	NEM-5	10.5	606288	7257418	NEM-5	10.5	606289	7257418	NEM-5	B & C	8.5	606544	7257328
	September	NEM-6	15.2	606611	7257938	NEM-6	15.2	606611	7257938	NEM-COMP	C			
Mammoth	July	MAM-1	5.1	604278	7254163	MAM-1	7.8	604145	7254415	MAM-1	B & C	8.0	605073	7254864
	July	MAM-2	7.8	604145	7254415	MAM-2	5.1	604278	7254163	MAM-2	B & C	8.1	605056	7254887
	August	MAM-3	7.2	604273	7254244	MAM-3	7.4	604273	7254244	MAM-3	B & C	7.5	605033	7254895
	August	MAM-4	7.8	604239	7253860	MAM-4	7.8	604239	7253860	MAM-4	B & C	8.1	605001	7254886
	September	MAM-5	8.9	604357	7254348	MAM-5	8.9	604357	7254348	MAM-5	B & C	8.8	605010	7254862
	September	MAM-6	6.4	604228	7253834	MAM-6	6.4	604228	7253834	MAM-COMP	C			
Sentinel Stations	July, August, September[5]	C2	-	638199	7221598									
		C14	-	632916	7232202									
		C17	-	630583	7234684									
		C20	-	627265	7236464									
		C41	-	620607	7244690									

Notes:

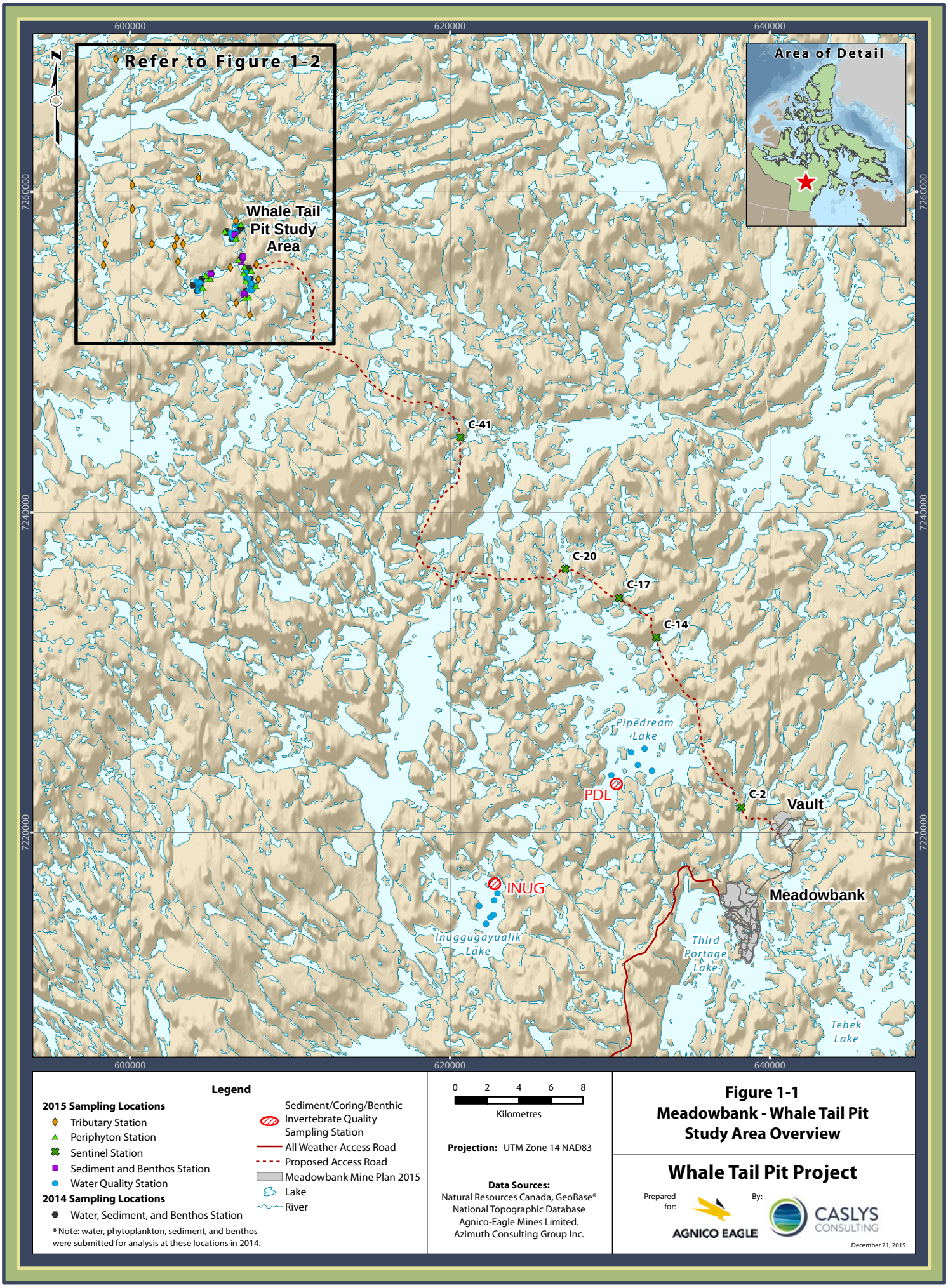
[1] Water and phytoplankton from the Lake stations were collected 3 m below the surface. Phytoplankton was not collected at the Sentinel stations.

[2] Area IDs are as follows: WTN = Whale Tail Lake North Basin; WTN-Ex = Whale Tail Lake North Basin (shallow); WTS = Whale Tail Lake South Basin.

[3] Sample types: B = Benthos; C = chemistry.

[4] COMP = composite sample of all 5 replicate samples from each area. COMP samples are analzyed for Mineral oil and grease, PAHs,

[5] Water sampling at the Sentinel stations was conducted in the same general location during each event (month).



Legend

2015 Sampling Locations
- Tributary Station
- Periphyton Station
- Sentinel Station
- Sediment and Benthos Station
- Water Quality Station

2014 Sampling Locations
- Water, Sediment, and Benthos Station

* Note: water, phytoplankton, sediment, and benthos were submitted for analysis at these locations in 2014.

- Sediment/Coring/Benthic Invertebrate Quality Sampling Station
- All Weather Access Road
- Proposed Access Road
- Meadowbank Mine Plan 2015
- Lake
- River

0 2 4 6 8
Kilometres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

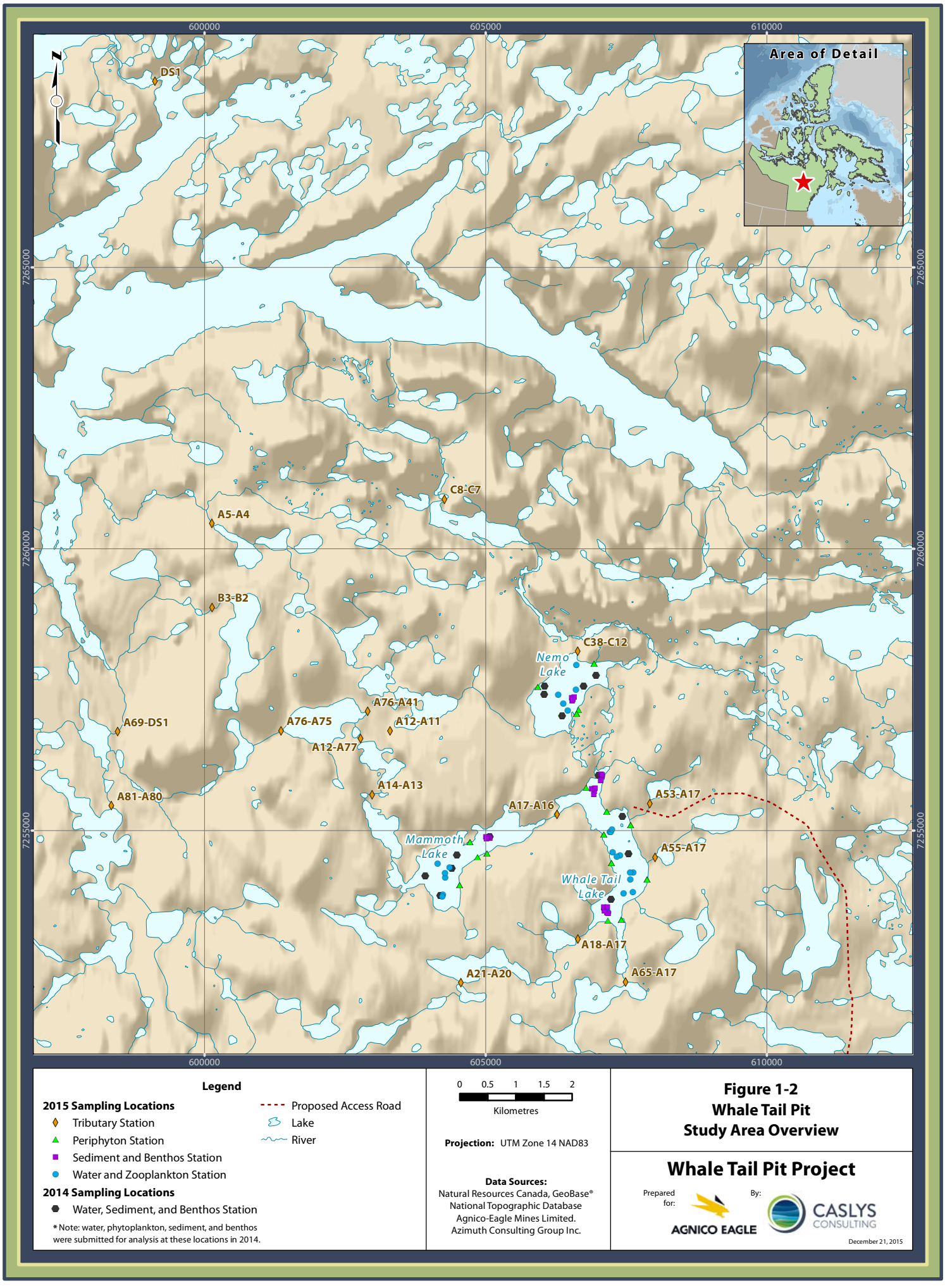
Figure 1-1
Meadowbank - Whale Tail Pit Study Area Overview

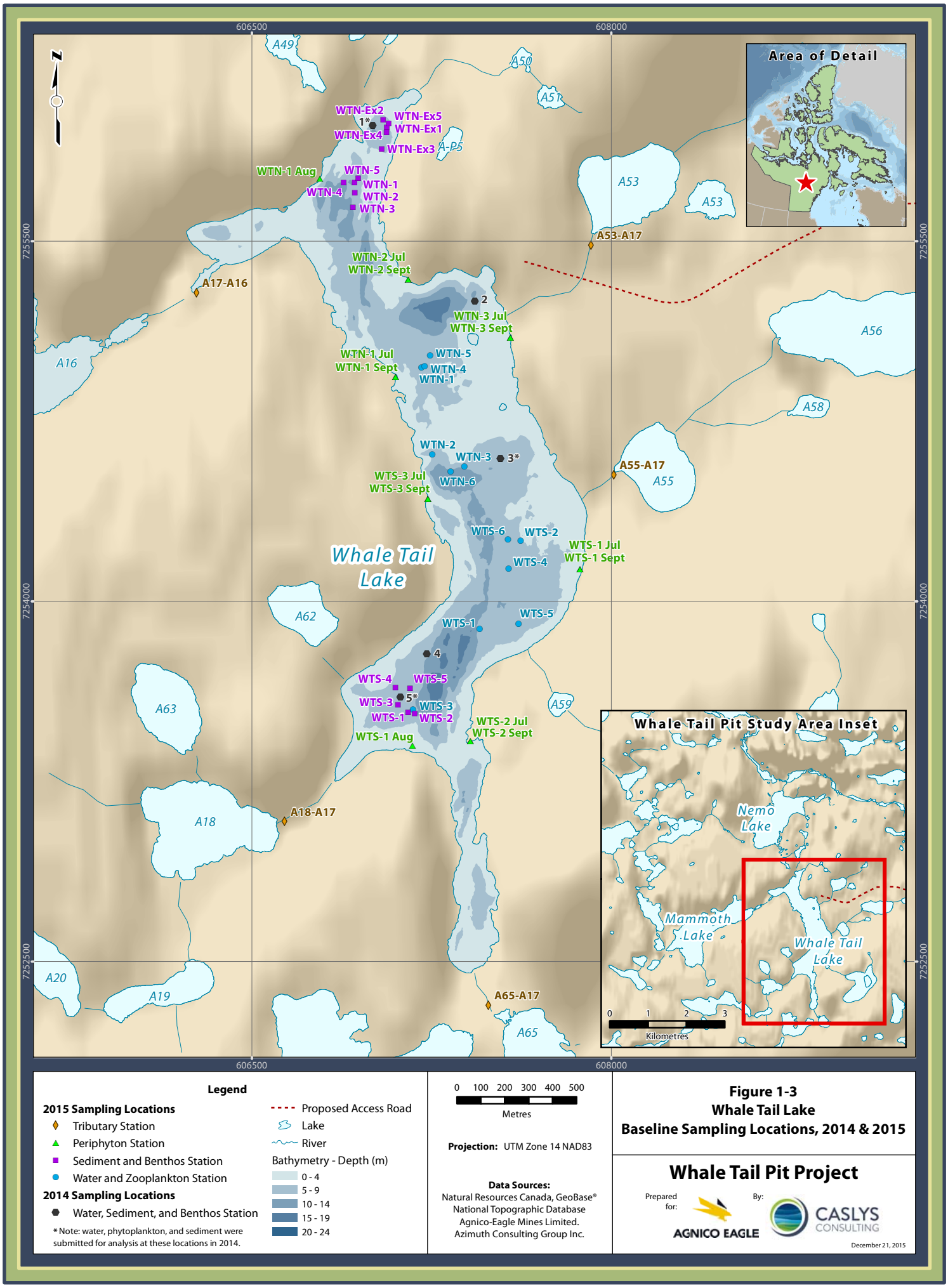
Whale Tail Pit Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

December 21, 2015


600000
605000
610000
7265000
7260000
7255000
N
DS1
Area of Detail
C8-C7
A5-A4
B3-B2
C38-C12
Nemo Lake
A76-A41
A69-DS1
A76-A75
A12-A11
A12-A77
A14-A13
A81-A80
A17-A16
A53-A17
Mammoth Lake
A55-A17
Whale Tail Lake
A18-A17
A21-A20
A65-A17
Legend
2015 Sampling Locations
Tributary Station
Periphyton Station
Sediment and Benthos Station
Water and Zooplankton Station
2014 Sampling Locations
Water, Sediment, and Benthos Station
* Note: water, phytoplankton, sediment, and benthos were submitted for analysis at these locations in 2014.
Proposed Access Road
Lake
River
0 0.5 1 1.5 2
Kilometres
Projection: UTM Zone 14 NAD83
Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.
Figure 1-2
Whale Tail Pit
Study Area Overview
Whale Tail Pit Project
Prepared for:
AGNICO EAGLE
By:
CASLYS CONSULTING
December 21, 2015



Legend

2015 Sampling Locations
- Tributary Station
- Periphyton Station
- Sediment and Benthos Station
- Water and Zooplankton Station

2014 Sampling Locations
- Water, Sediment, and Benthos Station

* Note: water, phytoplankton, and sediment were submitted for analysis at these locations in 2014.

- Proposed Access Road
- Lake
- River

Bathymetry - Depth (m)
- 0 - 4
- 5 - 9
- 10 - 14
- 15 - 19
- 20 - 24

0 100 200 300 400 500
Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

Figure 1-3
Whale Tail Lake
Baseline Sampling Locations, 2014 & 2015

Whale Tail Pit Project

Prepared for: AGNICO EAGLE

By: CASLYS CONSULTING

December 21, 2015