APPENDIX 24

Conceptual Closure and Reclamation Plan

EAGLE GOLD PROJECT

Conceptual Closure and Reclamation Plan

Prepared for:

Victoria Gold Corp
680 – 1066 West Hastings Street
Vancouver, BC
V6E 3X2

Prepared by:

Stantec
4370 Dominion Street, Suite 500
Burnaby, BC
V5G 4L7
Tel: (604) 436-3014 Fax: (604) 436-3752

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Victoria GOLD CORP

Stantec

Victoria GOLD CORP

Stantec

AUTHORSHIP

Natalie Tashe, M.Sc., P.Ag. .... Author
Carol Jones, M.Sc., P.Ag. .... Senior Review

ACRONYMS AND ABBREVIATIONS

AAFRD	Alberta Agriculture, Food and Rural Development
BMP	Best Management Practice
CCME	Canadian Council of Ministers of the Environment
CCRP	Conceptual Closure and Reclamation Plan
cm	centimetres
CNTOT	total cyanide
CNWAD	weak acid dissociable cyanide
DG	Dublin Gulch
DGDC	Dublin Gulch diversion channel
EDRR	Early Detection and Rapid Response
EP	Eagle Pup
ETT	Emergency Trauma Technician
EY	Environment Yukon or Department of Environment, Yukon Government
FNNND	First Nation of Na-Cho Nyäk Dun
ha	hectares
HCR	Haggart Creek Road
HLF	heap leach facility
HPGR	high pressure grinding rolls
ICP-MS	inductively coupled plasma mass spectrophotometry
kV	kilovolt
LAA	local assessment area
m	metres
m^2	square metres
m^3	cubic metres
m^3/hr	cubic metres per hour
MEMPR	Ministry of Energy, Mines, and Petroleum Resources
Mt	megatonnes (million tones)

Mt/y	megatonnes per year
MWTP	mine water treatment plant
PG	Platinum Gulch
pH	potential of hydrogen (measure of acidity)
Project	Eagle Gold Project
QA/QC	quality assurance/quality control
QMA	*Quartz Mining Act*
QML	quartz mining license
RoW	right of way
SCP	sediment collection pond
SS	soil stockpile
spp	species
SWBM	surface water balance model
TKN	Total Kjeldahl Nitrogen
TOC	total organic carbon
VC	valued component
VIT	Victoria Gold Corp.
WA	*Water Act*
WL	water license
WMP	Water Management Plan
WQM	water quality model
WRSA	waste rock storage area
YEC	Yukon Energy Corporation
YESAA	*Yukon Environmental and Socio-economic Assessment Act*
YESAB	Yukon Environmental and Socio-economic Assessment Board
YISC	Yukon Invasive Species Council

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1 INTRODUCTION

This Conceptual Closure and Reclamation Plan (CCRP) has been developed for the Project Proposal, based on the YESAB "Proponents Guide to Information Requirements for Executive Committee Project Proposal Submissions" and in consideration of the Yukon Government "Reclamation and Closure Policy". The CCRP outlines the closure and reclamation methods, criteria and objectives proposed for the Project.

The CCRP describes key mitigation measures for many environmental valued components (VCs), including surficial geology, terrain and soils, vegetation, wildlife, and water quality and aquatic biota. The CCRP has been developed to provide the level of detail necessary for the assessment stage. A comprehensive and detailed Closure and Reclamation Plan will be prepared as required to meet all Yukon regulatory, licensing and policy requirements, including determination of security.

The CCRP is comprised of the following components:

- Project facilities that will require decommissioning and reclamation
- Yukon regulatory context
- Land use objectives for reclamation
- Prediction of wildlife habitat quality of reclaimed facilities
- Description of candidate vegetation species for revegetation
- Prediction of post-closure ecosystems
- Soil handling plan
- Invasive plant management plan
- Conceptual plan for temporary, seasonal and premature closure of the mine
- Summary of post-closure water management
- Post-closure environmental monitoring
- Baseline metal and non-metal concentrations in vegetation for future monitoring
- Reclamation schedule and security cost estimate.

1.1 Project Overview

Victoria Gold Corp. (VIT) proposes to develop a bulk tonnage, low grade, heap leachable gold deposit on its Eagle Gold property (the Project) (Figure 1.1-1). The Project is comprised of an open pit mine and associated mine features, improvements to the Haggart Creek road and a 45 km, 69 kV transmission line (Figure 1.1-2).

At a 7.3 year mine life, the Project will involve open pit mining at a production rate of approximately 9 million tonnes per year (Mt/y) ore and a waste to ore strip ratio of 1.04:1. The open pit will be developed using standard drill and blast technology. Ore and waste rock will be removed from the open pit by haul truck. Ore will be delivered to the primary crusher, while waste rock will be delivered to one of two Waste Rock Storage Areas (WRSAs) (Platinum Gulch or Eagle Pup) or used as haul road and infrastructure construction fills.

Ore will be crushed by a primary, secondary and tertiary crusher at three separate locations during a 3-stage process at a rate of 26,000 tonnes per day. The first two crushing stages are located on the north rim of the open pit, while the third crushing stage (high pressure grinding rolls [HPGR]) is located closer to the heap leach facility (HLF) embankment. During this process ore will be transported by a covered conveyor from crusher to crusher until it reaches the HLF area where it is stacked on a lined solution collection pad (details on the HLF liner design can be found in Section 5.1.1.1). Sodium-cyanide solution will be applied to the ore to extract gold, and then collected by the pad leachate collection and recovery system (LCRS). Gold bearing solution will be processed via conventional gold recovery methods at an onsite adsorption, desorption and recovery facility. Process solution can be temporarily stored in two lined ponds (Events Ponds) with a leak detection and recovery system (LDRS). The main site will include office and camp facilities for 190 persons outfitted with appropriate potable water, wastewater treatment and fire suppression systems. A site mine water treatment plant (MWTP) will be constructed to treat contact[1] water to meet water quality criteria for discharged to Haggart Creek. Any excess process water (e.g., produced during drain-down of the HLF as part of the closure activities of the HLF) would be conveyed to the cyanide detoxification facility prior to treatment in the mine water treatment plant. Fuel Storage facilities will be constructed to allow for full operation for 30 days without refuelling.

In addition, the Project includes minor upgrades of the existing access road (Figure 1.1-2) and a new 45 km, 69 kV transmission line routed along the existing South McQuesten and Haggart Creek Roads to connect the Project to the Yukon Energy Corporation (YEC) grid (details on these activities can be found in Section 5 of the Project Proposal).

1.2 Regulatory Context, Yukon Policy, and Guidelines

The Project CCRP has been developed to reflect industry best practices and meet Yukon-specific information, regulatory and policy requirements. The Project is subject to assessment by the Executive Committee of the Yukon Environmental and Socio-economic Assessment Board (YESAB) under the Yukon *Environmental and Socio-economic Assessment Act* (YESAA), and will be subject to license approvals under the Yukon *Quartz Mining Act* (QMA) and Yukon *Waters Act* (WA).

This CCRP has been developed as part of the Project Proposal to meet the information requirements and regulatory expectations for assessment under YESAA, and looking ahead to license applications and regulatory approvals under the QMA and WA. As such, the CCRP has been developed in accordance with the YESAB *Proponent's Guide to Information Requirements for Executive Committee Project Proposal Submissions*.

Consistent with Yukon regulatory and policy requirements, a more detailed Reclamation and Closure plan will be submitted as part of the application for the issuance of Water and Quartz Mining

[1] Contact water is defined as runoff or groundwater derived from areas or facilities developed for the project.

Licenses. This CCRP, therefore, has also been developed in consideration of key elements required under the *Yukon Mine Reclamation and Closure Policy* and related Technical Guidelines.

1.2.1 Plan Development

Engaging the local community, First Nation, stakeholders, and relevant regulatory agencies is critical in developing agreed upon closure objectives and responsibilities for the closure planning process. In addition to a review of applicable guidelines and Yukon policy, work to date to develop the CCRP has included consultation with the First Nation of Na-Cho Nyäk Dun (FNNND) and the community of Mayo on key closure and reclamation objectives, strategies and CCRP elements.

Consultation has occurred concurrently with the development of the Project Proposal and the CCRP. Closure and reclamation information was presented and discussed at Project open houses, and community meetings. A specially focused Conceptual Closure and Reclamation Plan workshop and open house was held with the FNNND and community members of Mayo on November 4, 2010. Feedback from these meetings and open houses has been incorporated into this CCRP. Information on these meetings is further detailed in the summary of Consultations and Engagements included in the Project Proposal (Section 2).

As the Project proceeds through the YESAA assessment, and towards the licensing application processes, reclamation and closure planning and consultations will be iterative and ongoing. This will involve working with relevant Yukon and federal government agencies, the FNNND, local communities and stakeholder groups.

A detailed and comprehensive CCRP, required for license applications under the QMA and the WA will be developed to reflect YESAB assessment recommendations and government Decision Documents, specific regulatory and license requirements and feedback received through agency and stakeholder consultations.

1.3 Reclamation Strategy and Objectives

VIT's overall strategy for the CCRP is to provide for an eventual ―walk-away" closure condition with mine features decommissioned and reclaimed, and monitoring conducted until it is demonstrated that mitigation measures have achieved the required outcomes. The main focus of the reclamation program is to foster the return of the site to appropriate and functional ecosystems, similar to pre-development, and meet the key end-land use objective of wildlife and vegetation resources.

Closure and reclamation has been considered from the early planning and design stages of the Project. CCRP objectives have been developed to address the following main issues:

- Geochemical stability
- Water quality
- Physical stability (stable land forms)
- Land use, aesthetics and public health and safety.

Key objectives of the CCRP include:

- Prevent, minimize or mitigate adverse environmental impacts during closure and reclamation
- Reflect and address FNNND and stakeholder priorities and concerns
- Protect aquatic resources and prevent invasive plant establishment
- Reclaim land to the point that is can become, over time, comparable both visually and in land use to the undisturbed surrounding land
- Re-establish a productive land use that is of value for wildlife and mitigates the residual effects of mining on wildlife habitat, at-risk plant communities and the habitat of species at risk
- Ensure long term physical stability of the mine facilities (HLF and waste rock storage areas)
- Protect site water quality during and after closure
- Ensure that the site poses minimal risk to the public and native fauna
- Demonstrate that future risks and liabilities associated with the post-closure site have been eliminated or controlled to an acceptable level.

The following sections of the CCRP describe criteria, methods, strategies and plans to meet closure and reclamation objectives.

1.4 Reclamation and Closure Criteria

The closure criteria are primarily based on the post operational land use objectives following consultation with FNNND and stakeholders. The current criteria proposed for measuring progress and success of closure are noted in Table 1.4-1.

Table 1.4-1: Summary of Closure Objectives and Criteria

Receptor	Objective	Measure
Mine Safety	Restore landscapes that are safely accessible to wildlife and the public. demonstrate that future risks and liabilities associated with the post-closure site have been eliminated or controlled to an acceptable level	Secure areas from public and wildlife until safely reclaimed (e.g., limit access to ponds until suitably reclaimed, stabilize open pit walls)
Landform stability	ensure long term physical stability of the mine facilities (HLF and waste rock storage areas)	Reslope WRSAs and HLF and revegetate to control drainage and erosion Limit steep slopes, break up long uniform slopes through microtopography. Conduct progressive reclamation to stabilize the waste rock storage area facilities
Soil	Ensure sufficient capping to restore land capability	Soil salvage of sufficient quality and quantity, to restore soil depths

Receptor	Objective	Measure
Ecology	re-establish a productive land use that is of value for wildlife and mitigates the residual effects of mining on wildlife habitat, at-risk plant communities and the habitat of species at risk	Revegetate ecosystems with a selection of plantings suitable to new terrain and soil conditions
Water	protect site water quality during and after closure	Mine Water Treatment Plant will be maintained until water quality criteria/guidelines in Haggart Creek can be met without active treatment
Visual Amenity	reclaim land to the point that is can become, over time, comparable both visually and in land use to the undisturbed surrounding land	Reslope WRSAs and HLF and remove benches
Air Quality–Dust	Protect long term air quality by reducing dust from closed facilities	Revegetation of the site

2 RECLAMATION PLANNING

The reclamation approach for the Project includes techniques to meet the primary end land use objective of wildlife habitat. The primary focus of the reclamation program is to foster a return to appropriate and functional ecosystems, supported by soil replacement strategies that will facilitate the establishment of self-sustaining vegetation communities.

Table 2.0-1 summarizes the mine feature areas and the relative size in hectares. The entire mine footprint covers a total of 585 ha; 457.5 ha will be disturbed (including clearing, grubbing and excavating) and an additional 127.4 ha will be cleared of vegetation/forest cover only. Most of the disturbed areas (378.9 ha) will be reclaimed; the remaining 78.8 ha, composed of Dublin Gulch Diversion Channel and the open pit will include water features but will not be revegetated in the post-closure landscape.

Table 2.0-1: Mine Feature Areas

Mine Feature	Area (ha)
Open Pit[a]	65.4
Waste Rock Storage Areas (Eagle Pup 96.3 ha and Platinum Gulch 30 ha)	126.3
Heap Leach Facility	91.2
Conveyor Area	2.5
Plant and Ancillary Facilities	15.4
Site Access Roads	12.3
Surface Water Diversions[a]	18.3
Sediment Control/Event Polish Ponds	18.8

Mine Feature	Area (ha)
Silt Borrow Area	10.4
Salvage Areas 1,2,3,4	40.0
Soil Stockpile Sites	54.4
Windrow soil stockpile sites	2.5
Total Estimated Disturbed Area[a] (to be reclaimed):	**457.5**
Vegetation Cleared/Ground Undisturbed Areas (Clearing Boundary)	127.4
Total Estimated Area	**585**

NOTE:
[a] Mine disturbance areas that will be permanent features and will not be soil capped or revegetated: Open pit (65.4 ha); Diversion Channel (4.5 ha) and velocity pond (1.7 ha) The transmission line is not considered as part of the mine feature areas as the soil will remain relatively undisturbed and natural revegetation is currently planned. The width of the road and transmission line corridor is 50 m.

The CCRP is based on the *Yukon Mine Site Reclamation and Closure Policy for New Mines* (Yukon Government 2006). The policy provides guidance on planning, implementing, monitoring and funding of reclamation operations for the Project. The CCRP incorporates strategies outlined in the policy, including such measures such as progressive reclamation and adaptive management strategies.

2.1 Post-closure Ecosystem Reclamation and Wildlife Capability

2.1.1 Post-closure Ecosystems

Reclamation will be conducted with the goal of establishing post-mine wildlife capability on an average site-wide basis equivalent to pre-mining capability. In general, the target ecosystem units for the post-closure landscape are expected to be similar to those present in the pre-mining landscape (Figure 2.1-1).

At closure, the HLF will consist of moderately to gently sloping areas on south to south-east facing slopes consistent with conditions in Ann Gulch prior to development. Soil capping is predicted to result in soil moisture conditions that will allow the establishment of forested ecosystems that are similar to those found on south facing slopes in the vicinity of the Project. Topography on Eagle Pup and Platinum Gulch WRSAs will contain gentle to moderately steep slopes generally consistent with pre-mining conditions on north and north-west facing aspects. Soil capping on all but 12 ha of steep slopes in the Eagle Pup WRSA and 5 ha in the Platinum Gulch WRSA is expected to result in soil conditions that will support coniferous dominated ecosystems typical of north slopes (without permafrost).

Treatment (i.e., removal of buildings and structural components, ripping and placement of topsoil) in the location of site infrastructure is expected to create conditions suitable for the establishment of forests similar to those found in the vicinity of the Project prior to mining. Where clearing has been the only disturbance associated with Project operations, post-closure ecosystem units are predicted to be the same as occurred in the area prior to development.

A summary of the distribution of ecosystems in the pre-mining and post-closure landscape within the clearing boundaries of the Project is provided in Table 2.1-1.

Table 2.1-1: Ecosystem Distribution between the Pre-mining and Post-closure Landscape

Ecosystem Unit		Baseline		Post-closure		Change	
Map Code	Name	ha	%	ha	%	ha	%
Forested Zone							
AC	Armoured Channel	0	0	1.6	0.3	1.6	0.3
AK	Aspen–Kinnikinnick	8.7	1.5	6.6	1.1	-2.1	-0.4
AW	Alaska birch–White spruce–Willow	18.0	3.1	71.1	12.2	53.1	9.1
BL	Dwarf birch–Lichen	1.9	0.3	0.8	0.1	-1.1	-0.2
DC	Diversion Channel (non-vegetated component)	0	0	3.4	0.6	3.4	0.6
ES	Exposed Soil	0.4	0.1	0	0	-0.4	-0.1
FC	Subalpine fir–Cladina	148.3	25.4	152.5	26.1	4.2	0.7
FF	Subalpine fir–Feathermoss	49.3	8.4	63.5	10.9	14.2	2.5
FM	Subalpine Fir–Labrador tea	29.4	5.0	16.8	2.9	-12.6	-2.1
FP	Subalpine fir–Dwarf birch–Crowberry	5.6	1.0	7.9	1.3	2.3	0.3
GB	Gravel Bar	<0.1	<0.1	0	0	<-0.1	<-0.1
GH	Graminoid–Herb	0	0	85.2	14.6	85.2	14.6
LA	Pit Lake	0	0	2.2	0.4	2.2	0.4
PM	Placer Mining	3.9	0.7	0	0	-3.9	-0.7
RI	River (Creek)	<0.1	<0.1	<0.1	<0.1	0	0
RO	Rock Outcrop	0	0	65.9	11.3	65.9	11.3
SA	Dwarf birch–Northern rough fescue	7.5	1.3	5.4	0.9	-2.1	-0.4
SH	White spruce–Horsetail	8.6	1.5	1.3	0.2	-7.3	-1.3
SL	Black spruce–Labrador Tea–Feathermoss	123.5	21.1	53.6	9.2	-69.9	-11.9
TA	Talus	4.4	0.7	0	0	-4.4	-0.7
WG	Willow–Groundsel	7.6	1.3	21.9	3.7	14.3	2.4
WM	Willow–Mountain sagewort	1.2	0.2	0.4	0.1	-0.8	-0.1
WS	Willow–Sedge	<0.1	<0.1	0	0	<-0.1	<-0.1
Subalpine Zone							
BL	Dwarf birch–Lichen	9.2	1.6	2.6	0.4	-6.6	-1.2
FP	Subalpine fir–Dwarf birch–Crowberry	4.1	0.7	8.4	1.4	4.3	0.7
MM	Mountain heather meadow	2.7	0.5	0.7	<0.1	-2	-0.4
MW	Willow–Mountain sagewort	0.1	<0.1	0.1	<0.1	0	0

Ecosystem Unit		Baseline		Post-closure		Change	
Map Code	Name	ha	%	ha	%	ha	%
RO	Rock Outcrop	0	0	7.5	1.3	7.5	1.3
SA	Dwarf birch–Northern rough fescue	6.8	1.2	4.1	0.7	-2.7	-0.5
Disturbances							
Disturbances		143.4	24.5	0	0		
Totals		**585**	**100**	**585**	**100**		

NOTE:
The values used for pre-mining include existing disturbances including placer mining, exploration roads and drill pads.
The value presented in the % change column equals the difference between the % cover at closure versus the % cover at baseline.

A summary of the predicted post-closure ecosystems present in the various mine features is provided in Table 2.1-2. Reclamation activities in the various mine features will focus on the re-establishment of similar landscape positions and soil moisture conditions of the predicted post-closure ecosystems and planting candidate vegetation species that are typical of those ecosystems (refer to Table 2.3-1).

Table 2.1-2: Post-closure Ecosystem Units within Mine Features

Mine Feature	Forested Zone Units (areas occupied in ha)																		Subalpine Zone Units (areas occupied in ha)						Grand Total (ha)
	AC	AK	AW	BL	DC	FC	FF	FM	FP	GH	LA	PD	RO	SA	SH	SL	WG	WM	BL	FP	MM	MW	RO	SA	
Mine Operations Areas																									
Heap Leach Facility		6.4	20.1			26.5	1.6			36.1						0.5									91.2
Platinum Gulch WRSA			11.8			8.4	0.7			5.7										3.3					30.0
Eagle Pup WRSA			7.4			42.4			1.1	42.8			<.05	<.05						2.6					96.3
Open Pit											2.2		55.6										7.6		65.4
Conveyor			<.05			0.8							1.0			0.7									2.5
Subtotals (ha):	**0.0**	**6.4**	**39.3**	**0.0**	**0.0**	**78.1**	**2.3**	**0.0**	**1.1**	**84.6**	**2.2**	**0.0**	**56.6**	**0.0**	**0.0**	**1.2**	**0.0**	**0.0**	**0.0**	**5.9**	**0.0**	**0.0**	**7.6**	**0.0**	**285.3**
Plant/Ancillary Facilities Areas																									
Camp and Administration Buildings																2.1									2.1
Explosives Magazine									1.0																1.0
Blasting Magazine									0.4																0.4
Gatehouse						<.05										0.2									0.2
Substation						<.05										0.2									0.2
Laydown Area						1.3										5.1									6.4
Process Plant Area			5.1																						5.1
Subtotals(ha):	**0.0**	**0.0**	**5.1**	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**1.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**7.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**15.4**
Water Management Areas																									
Events Pond 1							3.6										6.6								10.2
Events Pond 2							1.2										1.6								2.8
Diversion – Wet 1					1.3												3.1								4.4
Diversion – Wet 2												1.7													1.7
Diversion – Banks					2.0					0.5							4.7								7.2
Surface Water Diversion – HLF 2								<.05																	0.0
Surface Water Diversion – HLF 3						0.1	0.4	0.1																	0.6
Surface Water Diversion – HLF 4			0.2			1.3	0.5	0.6																	2.6
Surface Water SCP 1							0.2																		0.2
Platinum Gulch WRSA LSGP	0.3		0.2				0.1									0.15	0.3								1.0
Platinum Gulch WRSA SCP	0.7		0.4				1.3										1.0								3.4
Surface Water Diversion – Dump 1	<.05	<.05	<.05			<.05	0.7	0.2	0.2							0.2	<.05		0.2	<.05	<.05			0.2	1.7
Surface Water Diversion – Dump 2	<.05		<.05														<.05								0.0
Drainage Collection Pond	<.05		<.05														<.05								0.0
Eagle Pup WRSA SCP	0.2		0.1			0.4										0.3	0.4								1.4
Subtotals (ha):	**1.2**	**0.0**	**0.9**	**0.0**	**3.3**	**1.8**	**8.0**	**0.9**	**0.2**	**0.5**	**0.0**	**1.7**	**0.0**	**0.0**	**0.0**	**0.6**	**17.7**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**		**0.2**	**37.2**

Mine Feature	Forested Zone Units (areas occupied in ha)																		Subalpine Zone Units (areas occupied in ha)						Grand Total (ha)
	AC	AK	AW	BL	DC	FC	FF	FM	FP	GH	LA	PD	RO	SA	SH	SL	WG	WM	BL	FP	MM	MW	RO	SA	
Road Areas:																									
Roads – Camp			<.05				0.4																		0.4
Roads – HLF			0.3			0.7	0.1	0.6																	1.7
Roads – Main			<.05			2.3	1.0	0.6	<.05					0.1	0.1	2.5	0.1	<.05							6.7
Roads – Dump			0.2			0.2	<.05																		0.4
Cleared Area 1 (Turn around Area)			0.8			0.8																			1.6
Cleared Area 2 (Runaway Lane)						1.5																			1.5
Subtotals (ha):	**0.0**	**0.0**	**1.3**	**0.0**	**0.0**	**5.5**	**1.5**	**1.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**2.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**12.3**
Material Salvage Areas																									
Silt Borrow Area						10.4																			10.4
Salvage Areas 1, 2, 3, 4			3.0			10.6	2.2						9.4		0.4	12.7	1.8								40.1
Subtotals (ha):	**0.0**	**0.0**	**3.0**	**0.0**	**0.0**	**21.0**	**2.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**9.4**	**0.0**	**0.4**	**12.7**	**1.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**50.5**
Material Stockpile Areas																									
Soil Stockpiles 1, 2, 3, 4			13.8			10.4	24.5	4.4								1.3									54.4
Windrows 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12			0.1			0.2	0.5	<.05	<.05					<.05		1.6	0.1								2.5
Subtotals (ha):	**0.0**	**0.0**	**13.9**	**0.0**	**0.0**	**10.6**	**25.0**	**4.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.9**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**56.9**
Project Footprint Totals (ha):	**1.2**	**6.4**	**63.5**	**0.0**	**3.3**	**118.3**	**39.0**	**6.5**	**2.7**	**85.1**	**2.2**	**1.7**	**66.0**	**0.1**	**0.5**	**27.5**	**19.7**	**0.0**	**0.2**	**5.9**	**0.0**	**0.00**	**7.6**	**0.2**	**457.6**
Cleared/Undisturbed Areas (ha):	**0.4**	**0.1**	**7.4**	**0.8**	**0.0**	**34.1**	**24.6**	**10.4**	**5.2**	**0.0**				**5.2**	**0.9**	**26.2**	**2.2**	**0.4**	**2.4**	**2.4**	**0.7**	**0.1**		**3.9**	**127.4**
Total Area (ha):	**1.6**	**6.5**	**70.9**	**0.8**	**3.3**	**152.4**	**63.6**	**16.9**	**7.9**	**85.1**	**2.2**	**1.7**	**66.0**	**5.3**	**1.4**	**53.7**	**21.9**	**0.4**	**2.6**	**8.3**	**0.7**	**0.1**	**7.6**	**4.1**	**585.0**

2.1.2 Wildlife Capability of Reclamation Ecosystems

Consistent with existing land use conditions, wildlife habitat was identified as the primary end land use objective for the Project. Wildlife use of the study area was established at baseline, and the proposed development will affect habitat recognized as regionally important, particularly for moose and grizzly bear, by regulatory agencies, local stakeholders and the FNNND. The selection of wildlife habitat as the end land use objective for the conceptual reclamation plan does not, however, preclude other concurrent land uses (e.g. trapping, hunting and fishing). The ecosystem diversity and vegetation dynamics important to developing productive wildlife habitat capability are also supportive of these other land uses.

To support the wildlife habitat end land use objective the plant species selected for reclamation target preferred wildlife forage species (Section 2.3.1). The reforestation plan incorporates ―patch" plantings to re-create a more heterogeneous forested landscape (rather than the plantation-style plantings that would be more supportive of a commercial forestry objective), and a variety of wildlife-specific features will be added to the reclamation landscape (e.g. rock piles, see Section 2.2).

Wildlife habitat capability values were used to identify the end land use objective for each post-closure reclamation polygon in the CCRP (Figure 2.1-1). Habitat capability values were derived from the habitat ratings developed for grizzly bear and moose as part of the wildlife effects assessment (Section 6.9 of the Project Proposal). The rationale for the selection of these species is presented in the wildlife assessment and a detailed description of the methods for the development of the ratings is provided in the wildlife assessment. Two life requisites/seasons were rated for each species (i.e., winter feeding and winter shelter for moose and spring and fall feeding for grizzly bear). The habitat capability values used for the conceptual reclamation plan took the higher value of the two for each species. Also, in the case of complex reclamation polygons, the dominant post-mine ecosystem unit[2] dictated the habitat capability value for the polygon as a whole.

There are 85 reclamation polygons with a total area of 458 ha for areas that had soil disturbance. The objective for the post-mine reclaimed landscape is a combination of coniferous, mixed wood and deciduous forest, open subalpine forest, shrub-dominated areas, and grass-herb areas localized on moderately steep slopes that varies from level to gently sloping to warm and cool aspects on moderate to moderately steep slopes to steep rocky outcrop (open pit walls). Based on the final moose and grizzly bear habitat capability value for each of the reclamation polygons, eight end land use categories were identified for objectives. The distribution and relative abundance of these end land use categories is presented in the CCRP (Figure 2.1-1). An area summary by end land use objective category is presented in Table 2.1-3.

[2] Section 2.1.1.1 describes the methods used to identify post-mine ecosystem units

Table 2.1-3: Wildlife Habitat End Land Use Objective Categories

End Land Use Objective Category	Area (ha)	Area as Percentage of Total Reclaimed Area	Dominant Post-mine Ecosystem Units[a]	Other Post-mine Ecosystem Units[b]
Moderately high moose habitat capability, moderately high grizzly bear habitat capability	90.2	19.7	FCw, FF, FFk, FM, FMk, FP, FFw, WM	AW, FC, SA, SL, FF, AWw, FMk, FP, SAw, FCw, WG, SH
Moderately high grizzly bear habitat capability, moderate moose habitat capability	101.7	22.2	FC, FPk, WG, FP (subalpine)	AC, WG, AWw, FCh, FC, GH, AW, FPk, SAk, WM
Moderately high moose habitat capability, moderate grizzly bear habitat capability	32.9	7.2	AW, SL, SA	–
Moderate grizzly bear habitat capability, moderate moose habitat capability	43.2	9.4	AWw, FCk, FCr	AWw, FC, GHk
Moderately high grizzly bear habitat capability, very low moose habitat capability	55.1	12.0	GHw	SA (subalpine), BL (subalpine)
Moderate grizzly bear habitat capability, very low moose habitat capability	63.3	13.8	GH, GHk, FPk (subalpine)	–
Nil moose and grizzly bear habitat value (open pit)	62.9	13.7	RO, DC	–
Nil moose and grizzly bear habitat value (water features)	8.7	1.9	LA, PD	–
Total area of reclamation polygons	457.9	100.0	–	–

NOTES:

[a] Dominant post-mine ecosystem unit is an ecosystem unit that comprise >50% of the reclamation polygon

[b] —Other" post-mine ecosystem units are those that form part of a complex reclamation polygon in which no ecosystem unit comprises >50% of the polygon

[c] Total represents areas of mine disturbance. Cleared areas are 127.4 ha and that brings the total to 585 ha of the Project fooptirnt.

It is predicted that up to eighty-four percent of the reclaimed area has moderate or better capability for grizzly bear and 58% has moderate or better capability for moose (Figure 2.1-1). Post-closure it is predicted that up to 71.6 ha will possess nil habitat value due to the presence of remnant open pit walls, pit lake, and armoured water management structures. This permanent loss of wildlife habitat is discussed in the wildlife assessment (Section 6.9 of the Project Proposal).

While the focal species of the reclamation plan are grizzly bear and moose; an objective of the post-mine landscape will be to support a wide variety of other species. Species diversity and abundance are expected to vary over time as succession progresses and natural disturbance processes (e.g. fire) occur. For example, species (e.g. snowshoe hare) that prefer seral habitats are expected to be present in the early stages following mine closure and will over time be replaced by species that prefer mature forest (e.g. marten). Section 2.2 describes a variety of measures that will be used to enhance diversity of wildlife habitat on the mine site (e.g. rock piles for small mammals, artificial snags for birds, vegetation screens for wildlife cover).

2.2 Reclamation Measures and Practices

A number of reclamation practices may be carried out during the life of the Project to promote the return of self-sustaining vegetation communities and specific habitat features to the reclaimed mine site. A summary of the potential reclamation activities include:

During Construction:

- The salvage and stockpile of sufficient quantity and quality of soil materials for reclamation.

During Operations:

- Progressive reclamation of the PG WRSA
- Reclamation of disturbed sites to prevent erosion and control sediment from entering watercourses.

At Closure:

- Decommissioning of mine infrastructure and ancillary facilities, removal of structures from site
- Conducting soil, surface water and groundwater assessments to evaluate the potential for contamination, and remediation as required
- Demolition and burial of remaining foundation structures
- Recontouring of surfaces where appropriate to facilitate optimum plant production, appropriate site drainage, and animal access
- Site preparation activities such as scarification and ripping where required to alleviate compaction to allow for better plant root establishment/growth and facilitate water drainage
- Replacing topsoil onto reclamation sites to stimulate plant establishment and long-term sustainable ecosystem function
- The seeding of areas susceptible to surface erosion as soon as possible after placement of soil with a grass-legume erosion control seed mix. In some areas a compromise may be necessary to balance the use of agronomic species required for erosion control and native species required to provide wildlife habitat
- Seeding and/or planting on exposed soils and disturbed ground as soon as possible to control establishment of invasive plants
- Planting sites (planned as forested areas) to achieve a diversity of native tree and shrub species, focusing replanting programs on a mix of coniferous and broadleaf species, linking species selection to post-closure ecosystem properties

- Planting native coniferous and deciduous plants in dense patches or islands interspersed with open herbaceous cover areas to provide visual breaks for wildlife, and diversity in habitat structure
- Maintaining forested connections to connect habitat patches within the mine footprint with surrounding forest to enable movement and dispersal of animals and plants (where feasible)
- Retaining, when possible, areas of forest, small patches or individual trees in order to provide wildlife populations connections to enable movement.
- Add structural diversity to future stands.
- Providing visual breaks for wildlife along road edges through a combination of topographic features (berms) and dense plantings of conifers and large deciduous shrubs
- Installing rock piles, large logs, stumps and other coarse woody debris in specific reclamation areas to: provide micro-habitats for small mammals and insects, visual breaks for large animals moving across reclaimed sites, wind protection and snow capture to assist in the establishment of vegetation, and potential animal denning sites
- Installing artificial snags to provide wildlife tree habitat for cavity-nesters, and feeding habitat for birds such as woodpeckers and raptor perches.

Revegetation of mine disturbance areas will be based on candidate plant species best suited to re-establish post-closure ecosystems. This will consist of a combination of native grasses, forbs, shrubs, and trees. VIT will utilize *Guidelines for Reclamation/Revegetation in Yukon* (Kennedy 1993) as a guide for selecting appropriate candidate reclamation species to be assessed by seeding/planting trials. Candidate reclamation plant species are discussed in greater detail in Section 2.3.1.

2.3 Ecosystem Reclamation

2.3.1 Reclamation Species

Disturbed areas will be revegetated using plant species suitable for the predicted soil moisture and nutrient conditions. Candidate plant species for use in reclamation programs are provided in Table 2.3-1. The candidate species include those that could be used for interim reclamation, erosion control and invasive plant control; and the species used for final reclamation of the Project.

Interim Reclamation, Erosion/Invasive Plant Control

Candidate grass/legume/forb plant species will be used for revegetating soil and suitable overburden stockpiles, soil windrows, diversions channels and mine features, particularly sloping sites as they become temporarily or permanently inactive, to control the establishment of invasive plants and to control surface erosion. These establish more quickly than a tree and shrub cover and often have fibrous roots that protect the surface soil materials from erosion. Native grasses and legumes are preferred but non-invasive agronomic species may be utilized if native species are not commercially available.

Once mine disturbance areas become available for permanent reclamation, they will be revegetated with plant species that are typical of the projected post-closure ecosystems, generally native trees and shrubs. Table 2.3-1 provides an extensive listing of potential grass, legume, and forb species for use in interim reclamation, weed control and surface erosion control for all site types and conditions in the Project footprint.

Table 2.3-2 and Table 2.3-3 list more specific candidate species for revegetation of south facing mesic sites and north facing mesic sites. These vegetation candidate species considered what species occurred at baseline, can have seed easily collected and/or are commercially available.

Table 2.3-1: Candidate Native Plant Species for Interim Reclamation

Scientific Name	Common Name
Grasses	
Agropyron macrourum	Macrourum wheatgrass
Agropyron trachycaulum	slender wheatgrass
Agropyron subsecundum	bearded wheatgrass
Agropyron violaceum	violet wheatgrass
Agropyron yukonense	Yukon wheatgrass
Agrostis gigantean	red top
Agrostis scabra	ticklegrass
Alopecurus pratensis	meadow foxtail
Arctagrostis latifolia	polargrass
Bromus pumpellianus	northern brome
Calamagrostis canadensis	bluejoint reedgrass
Deschampsia caespitosa	tufted hairgrass
Festuca altaica	altai fescue
Festuca ovina	sheep fescue
Festuca saximontana	northern fescue
Phleum commutatum	mountain timothy
Poa alpigena	northern bluegrass
Poa alpine	alpine bluegrass
Poa ampla	big bluegrass
Poa compressa	Canada bluegrass
Poa glauca	glaucous bluegrass
Poa palustris	fowl bluegrass
Poa pratensis	Kentucky bluegrass

Scientific Name	Common Name
Puccinellia sp.	alkaligrass
Legumes	
Hedysarum alpinum	bear root
Hedysarum mackenzii	Mackenzie's hedysarum
Lupinus arcticus	arctic lupine
Oxytropis campestris	late yellow locoweed
Oxytropis splendens	showy locoweed
Forbs	
Artemisia frigida	pasture sagewort
Epilobium angustifolium	fireweed

Table 2.3-2: Candidate Plant Species for Revegetation of Dry, South Aspects

Scientific Name	Common Name
Grasses	
Agropyron trachycaulum	slender wheatgrass
Agropyron violaceum	violet wheatgrass
Agropyron yukonense	Yukon wheatgrass
Festuca ovina	sheep fescue
Festuca saximontana	northern fescue
Poa compressa	Canada bluegrass
Poa glauca	glaucous bluegrass
Poa pratensis	Kentucky bluegrass
Legumes	
Lupinus arcticus	arctic lupine
Oxytropis campestris	late yellow locoweed
Forbs	
Artemisia frigida	pasture sagewort
Epilobium angustifolium	fireweed

Table 2.3-3: Candidate Native Plant Species for Revegetation of Mesic North Aspects

Scientific Name	Common Name
Grasses	
Agropyron trachycaulum	slender wheatgrass
Agropyron subsecundum	bearded wheatgrass
Agrostis gigantean	red top
Agrostis scabra	ticklegrass
Alopecurus pratensis	meadow foxtail
Deschampsia caespitose	tufted hairgrass
Festuca altaica	altai fescue
Poa palustris	fowl bluegrass
Legumes	
Hedysarum alpinum	bear root
Lupinus arcticus	arctic lupine
Forbs	
Epilobium angustifolium	fireweed

Final Reclamation

All mine site disturbance areas will be reclaimed using planting treatments designed to promote ecosystems with wildlife habitat values. Such treatments will include varied combinations of planting of native coniferous and deciduous tree seedlings, and understory shrub species to provide stand diversity. Table 2.3-4 lists vegetation species that potentially could be used for final reclamation of the Project footprint based on the post-closure ecosystem units that are proposed for the various reclaimed mine disturbances (as detailed in Table 2.1-1). These species are typical species of the ecosystem units that are predicted to develop on the post-closure sites. Commercially available native species including plants traditionally used for country foods will be used in the final revegetation programs.

Plant species will likely be sourced from locally collected seed propagated at native plant nurseries. These seedlings will be planted on the prepared reclamation sites, either in the spring or fall. The use of local seed sources will ensure that the propagated seedlings are adapted to the growing and climatic conditions that occur in the vicinity of the Dublin Gulch watershed. Some collected seed can also be incorporated into the grass/legume/forb seed mixes and sown along with those species; or can be direct seeded onto reclamation sites. Results from the initial sites reclaimed through the progressive reclamation of the Project will inform subsequent reclamation activities.

Table 2.3-4: Candidate Plant Species for Final Reclamation

		Tree Species						Shrub Species												Herb/Forb Species						
Post-mine Ecosystem Map Code	**Post-mine Ecosystem Unit Name**	**Subalpine Fir**	**White Spruce**	**Trembling Aspen**	**Alaska Birch**	**Black Spruce**	**Balsam Poplar**	**Bog Birch**	**Water Birch**	**Soopolallie**	**Green Alder**	**Mountain Alder**	**Prickly Rose**	**Willow sp.**	**high Bush Cranberry**	**Bog Blueberry**	**Crowberry**	**Lingonberry**	**Kinnikinnick**	**Fireweed**	**Arctic Lupine**	**Tall Lungwort**	**Mountain Sagewort**	**fescUe sp.**	**BLUEGRASS sp.**	**Reedgrass sp.**
Subalpine Zone																										
BL	Dwarf birch–Lichen (low shrub)							x						x		x	x	x		x	x			x	x	
FP	Subalpine fir–Dwarf birch–Crowberry	x						x						x		x	x	x		x			x	x		x
SA	Dwarf birch–Northern rough fescue (tall shrub)	x						x						x		x	x	x		x			x	x		x
MM	Mountain heather meadow													x		x	x			x				x		
WG	Willow–Groundsel		x									x	x	x						x		x			x	x
Forested Zone																										
AK	Trembling Aspen–Kinnikinnick		x	x	x		x			x			x					x	x	x				x	x	x
AW	Alaska Birch–White Spruce–Willow	x	x		x		x		x		x		x	x	x			x		x		x				
FC	Subalpine fir–Crowberry–Lichens	x						x			x			x		x	x	x		x			x	x		
FF	Subalpine fir–Feathermoss	x	x		x						x		x					x		x				x	x	
FM	Subalpine fir–Labrador tea	x						x						x			x	x		x						
FP	Subalpine fir–Dwarf birch–Crowberry–Lichens	x						x						x		x	x			x			x	x		x
SH	White spruce–Horsetail		x									x	x	x						x		x		x		x
SL	Black spruce–Labrador tea–Feathermoss	x				x		x						x			x	x		x						x
WG	Willow–Groundsel		x									x	x	x						x		x			x	x
WM	Willow–Mountain sagewort	x	x					x				x		x				x		x	x	x	x		x	x

2.4 Soil Material and Handling Plan

The following soil material handling plan is for the mine site. The road and transmission line are assumed to have limited to no soil disturbance and are not included. The soil handling plan is derived from baseline soils information (Stantec 2010g). The selection of suitable salvage material was based on reclamation suitability (e.g. soils without large boulders), and terrain conditions (stability and steepness of slopes for safety during salvage). Overburden material that is greater than 1 m depth below the soil was also used for reclamation and had the same criteria applied as soils to determine the suitability of the material as a growth medium.

2.4.1 Soil Suitability for Reclamation

Reclamation suitability is an assessment of the value of soil materials and overburden for salvage prior to disturbance and replacement as growth media in the post-disturbance landscape. The availability of suitable reclamation material is an important factor affecting the capability of a site to return to its former productivity following disturbance. Reclamation suitability ratings are used in conjunction with soil-pit and trench-log depth data to provide an estimate of suitable materials available for soil salvage and replacement.

Reclamation suitability ratings of “good” or “fair” indicate materials that can be used for reclamation with minimal preparation (e.g. good moisture retention properties). Soils rated as “poor” can be used for reclamation only after more intensive management, or possibly as a supplement if sufficient volumes of better quality soils are not available to meet reclamation specifications (e.g., stony soils).

The reclamation suitability rating system was modified from a system used in both British Columbia and Alberta. The unmodified rating system was originally developed by Alberta Agriculture, Food and Rural Development (AAFRD) in the Soil Quality Criteria Relative to Disturbance and Reclamation document for Alberta’s Eastern Slopes (AAFRD 1987—see also *Guide to Preparing a Mine Permit Application under the British Columbia Mines Act* [MEMPR 2006]). This rating system indexes many characteristics that affect soil suitability for reclamation purposes, including texture, structure, coarse-fragment content, available water storage capacity, nutrient-holding capacity, salt and sodium content. Modifications were necessary as large stones and boulders are not accounted for in the Alberta rating system, but need to be accounted for the Project (refer to Table 2.4-1). In addition, the steep slopes or unstable slopes had to be considered for safety.

Table 2.4-1: Soil Reclamation Suitability in the Local Study Area

Rating/Property	Good	Fair	Poor	Unsuitable
Coarse Fragments[a] (percent volume)	<30[b]; <15[c]	30 – 50[b]; 15 – 30[c]	50 – 70[b]; 30 – 50[c]	>70[b]; >50[c]
Stoniness (percent volume)[d]	<15[e]	<15[f]	15 – 30	>30
Matrix Texture	Loam, silty clay loam, sandy clay loam and sandy loam	Clay loam, silty clay, silty loam, sandy clay, silty clay, loamy sand, sand	Fractured bedrock	Consolidated bedrock

NOTES:

Adapted from: Criteria for Evaluating the Suitability of Root Zone Material in the Eastern Slopes Region of Alberta (Soil quality criteria relative to disturbance and reclamation (revised), 2004, Alberta Soils Advisory Committee, AAFRD, Edmonton, Alberta)

[a] >0.2 to 25 cm diameter fragments in the soil material

[b] Matrix texture finer than sandy loam

[c] Matrix texture sandy loam and coarser

[d] Fragments of cobble size or greater (>8 cm in diameter)

[e] Fragments 8–25 cm in diameter

[f] Fragments >25 cm in diameter

Site-specific reclamation suitability ratings were created to account for the soil and overburden quality within the Local Assessment Area (LAA), based on soil profile information collected in July and August 2009 by Stantec and overburden collected by BGC Engineering Inc.

The primary limitation for reclamation suitability for the Project footprint soils and overburden is coarse-fragment content: many of the soils present have high cobble and boulder contents and, while these soils have the capability to support sparse spruce and scrub brush vegetation communities, they are not suitable for salvage due to the mechanical difficulty they present, nor are they appreciably different from projected properties of mine waste materials.

Chemical properties such as reaction (pH), salinity, sodicity, and calcium carbonate ($CaCO_3$) were not considered as affecting reclamation suitability ratings for soils in the Project footprint, because the parent material and site-use history do not suggest they would be limiting factors (i.e., salinity tests on soils in 1996 did not show limitations to vegetation growth). Field testing for carbonates in soil showed absent to weak reaction in the surface soil (one strong reaction was recorded in till beneath permafrost at one trench site), and pH was found to be within normal forest soil range (tending toward neutral).

Moisture and nutrient-holding capacities, and soil consistency were also not considered explicitly in the suitability ratings, because each of those properties is subject to substantial changes from salvage and handling procedures, and can be qualitatively approximated by soil texture and amount of organic matter in the salvaged materials.

As chemical properties were not deemed to be the most limiting factors, the reclamation suitability for Project soils was based on the most limiting soil physical properties of soil texture, coarse-fragment content, and stoniness.

Soils rated ―good" or ―fair" for reclamation are those soils present on the site that contain less than 15% by volume cobbles or boulders (but may have up to 50% total coarse-fragment content where gravel is the remainder of the fragment volume). Soils were given ratings of ―poor" or ―unsuitable" based primarily on stoniness. Organic materials overlying mineral materials were not rated for suitability, but were occasionally classified as ―unsuitable" for salvage where boulders were present at the surface.

2.4.2 Soil Material Salvage, Stockpiling, and Replacement Strategy

The reclamation program for the Project is based on the plan that soils will be salvaged prior to mining and replaced at closure in order to facilitate the development of post mine ecosystems similar to those that existed prior to mining. Two types of salvage will occur. The first will be to salvage soil and transport it to stockpiles at a sufficient distance from operations activities so it will not be moved once stockpiled. These areas include the HLF, WRSA and Open Pit which require removal and storage of material. Removing the stockpile from operations activities helps protect the stockpiles from dusting and contamination. The second type of salvage is where soil is pushed and stockpiled in windrows adjacent to a feature and is not trucked to a storage facility. The advantage of windrow salvage is that it usually results in less soil loss as it is handled less. This type of salvage is ideal for ditches, ponds, or road construction where there are only small amounts of soil salvage.

The mine plan currently has 5 ha in the Platinum Gulch WRSA and almost 12 ha in the Eagle Pup WRSA where slopes are too steep for soil replacement. The salvage plan has assumed that these steep areas will be capped, in case mine plans are altered or new techniques are developed that allow for soil capping. The vegetation communities in these steep areas are based on the assumption of no soil capping; however, enough salvaged soil has been accounted for to allow 50 cm soil replacement in these areas.

The use of suitable overburden is necessary as part of the soil handling plan. Portions of the Project footprint have no topsoil due to historical disturbance (e.g., placer tailings, exploration trails or drill pads). There are also naturally unsuitable soils that will not be salvaged on the proposed HLF and WRSAs. Drill logs were reviewed for suitable reclamation material and thicker salvage depths of over 1 m have been identified to account for soil replacement volumes. Approximately 1.2 million m^3 of overburden will be used in the plan (Table 2.4-2). Figure 2.4-1 shows the locations of soil salvage areas as well as the soil stockpile locations listed in Table 2.4-2.

Table 2.4-2: Soil Salvage, Stockpile and Replacement Areas and Volumes Required for Reclamation

Map ID #	Mine Feature	Disturbance Area (ha)	Salvage/Stockpiling						Replacement/Reclamation		
			Salvage Type	Topsoil Salvage Volume (m^3)	Overburden Salvage Volume (m^3)	Total Salvage Volume (m^3)	Stockpile Location	Stockpile Volume (m^3)	Soil Material Replacement Depth (m)	Soil Material Replacement Volume Required (m^3)	Year to Reclaim
Mine Operations Areas											
22	Heap Leach Facility	91.2	Salvage	170,489.4	742,727.8	913,217.2	Soil Stockpile 4		1.0	911,921.7	Year 12 (4 years after closure).
29	Platinum Gulch WRSA	30.0	Salvage	48,796.7	101,761.8	150,558.5	Soil Stockpile 3		0.5	149,979.8	Year 4
10	Eagle Pup WRSA	96.3	Salvage	97,472.0	382,709.7	480,181.6	Soil Stockpile 2		0.5	481,543.3	Year 10
23	Open Pit	65.4	Salvage	3,884.3	0.0	3,884.3	Soil Stockpile 3		0.0	0.0	Exempt. Permanent Disturbance
5	Conveyor	2.5	Salvage	7,390.3	19,342.8	26,396.0	Soil Stockpile 3		1.0	25,089.1	Year 9
	Subtotals:	**285.4**		**328,032.7**	**1,246,542.1**	**1,574,237.7**				**1,568,534.0**	
Plant/Ancillary Facilities Areas											
2	Camp and Administration Buildings	2.1	Windrow	4,301.4	0.0	4,301.4	Windrow 5		0.2	4,301.4	Year 24
20	Explosives Magazine	1.0	Windrow	978.3	0.0	978.3	Windrow 3		0.1	978.3	Year 9
1	Blasting Magazine	0.4	Windrow	578.9	0.0	578.9	Windrow 2		0.1	578.9	Year 9
21	Gatehouse	0.2	Windrow	766.7	0.0	766.7	Windrow 4		0.4	766.7	Year 24
42	Substation	0.2	Windrow	840.0	0.0	840.0	Windrow 12		0.4	840.0	Year 24
55	Laydown Area	6.4	Windrow	17,402.0	0.0	17,402.0	Windrow 6		0.3	17,402.0	Year 9

Map ID #	Mine Feature	Disturbance Area (ha)	Salvage/Stockpiling							Replacement/Reclamation		
			Salvage Type	Topsoil Salvage Volume (m^3)	Overburden Salvage Volume (m^3)	Total Salvage Volume (m^3)	Stockpile Location	Stockpile Volume (m^3)	Soil Material Replacement Depth (m)	Soil Material Replacement Volume Required (m^3)	Year to Reclaim
30	Process Plant Area	5.1	Salvage	9,584.4	0.0	9,584.4	Soil Stockpile 3		0.2	9,584.4	Year 16
	Subtotals:	**15.3**		**34,451.6**	**0.0**	**34,451.6**				**34,451.6**	
Water Management Areas											
13-17	Event Polish Pond 1/EPP 1 – Wet 1, 2, 3 and 4	10.2	Salvage	15,715.6	0.0	15,715.6	Soil Stockpile 3		0.2	15,715.6	Year 18
18-19	Event Polish Pond 2 – Wet 5	2.7	Salvage	2,729.1	0.0	2,729.1	Soil Stockpile 3		0.1	2,729.1	Year 18
7	Diversion – Wet 1	4.5	Windrow	880.6	0.0	880.6	Windrows adjacent to diversion		0.0	0.0	Permanent Disturbance
8	Diversion – Wet 2	1.7	Windrow	1,737.9	0.0	1,737.9	Windrows adjacent to diversion		0.0	0.0	Permanent Disturbance
6	Diversion – Banks	7.2	Windrow	8,628.1	0.0	8,628.1	Windrows adjacent to diversion		0.0	0.0	Permanent Disturbance
63	Surface Water Diversion – HLF 2	0.02	Windrow	0.4	0.0	0.4	Windrows adjacent to SWD		0.0	0.4	Year 16
64	Surface Water Diversion – HLF 3	0.6	Windrow	1,549.8	0.0	1,549.8	Windrows adjacent to SWD		0.3	1,549.8	Year 16
65	Surface Water Diversion – HLF 4	2.6	Windrow	3,081.2	0.0	3,081.2	Windrows adjacent to SWD		0.1	3,081.2	Year 16

Map ID #	Mine Feature	Disturbance Area (ha)	Salvage/Stockpiling							Replacement/Reclamation		
			Salvage Type	Topsoil Salvage Volume (m^3)	Overburden Salvage Volume (m^3)	Total Salvage Volume (m^3)	Stockpile Location	Stockpile Volume (m^3)	Soil Material Replacement Depth (m)	Soil Material Replacement Volume Required (m^3)	Year to Reclaim
60	Surface Water SCP 1	0.2	Windrow	302.6	0.0	302.6	Windrow 1		0.1	302.6	Year 16
26	Platinum Gulch WRSA SCP 1	1.0	Windrow	1,099.8	0.0	1,099.8	Windrow 11		0.1	1,099.8	Year 15
27-28	Platinum Gulch WRSA SCP 2 and SCP 2 – Wet	3.3	Windrow	5,308.0	0.0	5,308.0	Windrow 10		0.2	5,308.0	Year 15
61	Surface Water Diversion – Dump 1	1.6	Windrow	2,485.9	0.0	2,485.9	Windrows adjacent to SWD		0.2	2,485.9	Year 15
62	Surface Water Diversion – Dump 2	0.1	Windrow	168.9	0.0	168.9	Windrows adjacent to SWD		0.2	168.9	Year 15
9	Drainage Collection Pond	0.1	Windrow	165.8	0.0	165.8	Windrow 11		0.2	165.8	Year 15
11-12	Eagle Pup WRSA SCP and SCP – Wet	1.3	Windrow	2,063.0	0.0	2,063.0	Windrow 9		0.2	2,063.0	Year 16
	Subtotals:	**37.1**		**45,916.6**	**0.0**	**45,916.6**				**34,670.1**	
Road Areas											
56	Roads – Camp	0.4	Windrow	652.5	0.0	652.5	Windrows adjacent to Roads		0.2	652.5	Year 24
58	Roads – HLF	1.6	Windrow	1,751.2	0.0	1,751.2	Windrows adjacent to Roads		0.1	1,751.2	Year 24
59	Roads – Main	6.8	Windrow	18,495.5	0.0	18,495.5	Windrows adjacent to Roads		0.3	18,495.5	Year 24

Map ID #	Mine Feature	Disturbance Area (ha)	Salvage/Stockpiling							Replacement/Reclamation		
			Salvage Type	Topsoil Salvage Volume (m^3)	Overburden Salvage Volume (m^3)	Total Salvage Volume (m^3)	Stockpile Location	Stockpile Volume (m^3)	Soil Material Replacement Depth (m)	Soil Material Replacement Volume Required (m^3)	Year to Reclaim
57	Roads – Dump	0.5	Windrow	517.7	0.0	517.7	Windrows adjacent to Roads		0.1	517.7	Year 24
3	Cleared Area 1 (Turn around Area)	1.5	Salvage	1,269.1	0.0	1,269.1	Soil Stockpile 3		0.1	1,269.1	Year 9
4	Cleared Area 2 (Runaway Lane)	1.5	Windrow	3,037.9	0.0	3,037.9	Windrow 7		0.2	3,037.9	Year 9
	Subtotals:	**12.3**		**25,724.1**	**0.0**	**25,724.1**				**25,724.1**	
Material Salvage Areas											
37	Silt Borrow Area	10.4	Windrow	27,769.5	0.0	27,769.5	Windrow 6		0.3	27,769.5	Year 9
33	Salvage 1	2.5	Salvage	3,260.1	0.0	3,260.1	Soil Stockpile 3		0.1	3,260.1	Year 9
34	Salvage 2	11.8	Salvage	18,083.6	0.0	18,083.6	Soil Stockpile 3		0.2	18,083.6	Year 9
35	Salvage 3	16.4	Salvage	38,379.0	0.0	38,379.0	Soil Stockpile 3		0.2	38,379.0	Year 9
36	Salvage 4	9.3	Salvage	7,439.7	0.0	10,567.6	Soil Stockpile 3		0.1	10,567.6	Year 9
	Subtotals:	**50.4**		**94,931.8**	**0.0**	**98,059.7**				**98,059.7**	

Map ID #	Mine Feature	Disturbance Area (ha)	Salvage/Stockpiling						Replacement/Reclamation		
			Salvage Type	Topsoil Salvage Volume (m^3)	Overburden Salvage Volume (m^3)	Total Salvage Volume (m^3)	Stockpile Location	Stockpile Volume (m^3)	Soil Material Replacement Depth (m)	Soil Material Replacement Volume Required (m^3)	Year to Reclaim
Material Stockpile Areas											
38	Soil Stockpile 1 (alternate/contingency site)	34.5	N/A	0.0	0.0	0.0	N/A	0.0	0.0	0.0	Year 9. Soil capping not req'd.
39	Soil Stockpile 2	5.6	N/A	0.0	0.0	0.0	N/A	480,181.6	0.0	0.0	Year 10. Soil capping not req'd.
40	Soil Stockpile 3	3.4	N/A	0.0	0.0	0.0	N/A	280,427.4	0.0	0.0	Year 18. Soil capping not req'd.
41	Soil Stockpile 4	10.9	N/A	0.0	0.0	0.0	N/A	913,217.2	0.0	0.0	Year 12. Soil capping not req'd.
43	Windrow 1	0.01	N/A	0.0	0.0	0.0	N/A	302.6	0.0	0.0	Year 16. Soil capping not req'd.
47	Windrow 2	0.01	N/A	0.0	0.0	0.0	N/A	578.9	0.0	0.0	Year 9. Soil capping not req'd.
48	Windrow 3	0.03	N/A	0.0	0.0	0.0	N/A	978.3	0.0	0.0	Year 24. Soil capping not req'd.
49	Windrow 4	0.04	N/A	0.0	0.0	0.0	N/A	766.7	0.0	0.0	Year 24. Soil capping not req'd.

Map ID #	Mine Feature	Disturbance Area (ha)	Salvage/Stockpiling						Replacement/Reclamation		
			Salvage Type	Topsoil Salvage Volume (m^3)	Overburden Salvage Volume (m^3)	Total Salvage Volume (m^3)	Stockpile Location	Stockpile Volume (m^3)	Soil Material Replacement Depth (m)	Soil Material Replacement Volume Required (m^3)	Year to Reclaim
50	Windrow 5	0.2	N/A	0.0	0.0	0.0	N/A	4,301.4	0.0	0.0	Year 24. Soil capping not req'd.
51	Windrow 6	1.4	N/A	0.0	0.0	0.0	N/A	45,171.5	0.0	0.0	Year 9. Soil capping not req'd.
52	Windrow 7	0.2	N/A	0.0	0.0	0.0	N/A	3,037.9	0.0	0.0	Year 9. Soil capping not req'd.
54	Windrow 9	0.2	N/A	0.0	0.0	0.0	N/A	2,063.0	0.0	0.0	Year 16. Soil capping not req'd.
44	Windrow 10	0.2	N/A	0.0	0.0	0.0	N/A	5,308.0	0.0	0.0	Year 15. Soil capping not req'd.
45	Windrow 11	0.1	N/A	0.0	0.0	0.0	N/A	1,265.6	0.0	0.0	Year 15. Soil capping not req'd.
46	Windrow 12	0.01	N/A	0.0	0.0	0.0	N/A	840.0	0.0	0.0	Year 24. Soil capping not req'd.
	Windrows adjacent to Diversion, Roads, SWD		N/A				N/A	39,949.7	0.0	0.0	Years 15,16,24. Soil cap. not req'd.

Soil Material Salvage and Stockpiling Strategy

All soils for use in the reclamation programs will be salvaged from areas to be disturbed by mining. During mine life, salvaged soil will be placed in either windrow stockpiles or in long-term storage stockpiles located as close as possible to where the soil will be used for capping but in a secure location outside of the operations area. Direct placement of soils from salvage areas to reclamation sites will be considered wherever and whenever feasible. The advantage of direct placement of salvaged soil materials is that it will minimize soil mixing associated with stockpiling, while providing native plant seeds and rootstock, and preserving the active biological component of newly salvaged soil.

Soils will be stripped in a single lift, resulting in a mixture of organic surface litter materials and other vegetative materials, organic enriched mineral soil horizons, and underlying parent material.

During long term storage of soil (i.e., greater than two years) much of the nutrient content in the soil becomes depleted. Soil nutrient conditions will initially be poorer due to disturbance of the nutrient-rich litter layers. However, this situation will be ameliorated through fertilizer application and use of nitrogen fixing plant species in the revegetation prescriptions.

The type of soil salvage will occur during the Project and the type selected is dependent on the mine feature being developed.

1. Soil stripping and storage in stockpiles (Salvage)

Soil salvage is the removal of soil after vegetation has been cleared and transporting of the soil material by haul trucks to designated long-term storage sites. Sites proposed for this type of soil salvage include areas that will be covered by mine features such as the WRSA, HLF, Open Pit and Conveyor. The Conveyor and areas surrounding it have been included as a precaution against metal and non-metal loading from dust during operations. The storage locations are sufficient in size to contain the soil volumes required for reclamation of the Project footprint. Sufficient soils will be salvaged to provide a replacement depth of 50 cm for the Platinum Gulch and Eagle Pup WRSA and 1 m for the HLF and Conveyor area. The soil cap will be replaced in one lift. A total of four stockpiles have been selected for soil storage (Table 2.4-2, Figure 2.4-1). Selection of the stockpile locations has taken into account:

- Volume of soil that must be stored
- Topography (in some instances site preparation to level the area, or to stabilize it in areas of permafrost will need to be completed)
- Avoidance of natural drainages
- Travel distances
- Sufficient distance from mine Project activities to avoid dust contamination.

Soil stockpile storage volumes are based on stockpile heights between 8 to 10 m and slopes of 2:1 to 3:1. It should be noted that Soil Stockpile (SS) 1 is located in a permafrost area which will have unstable ground conditions. The area will require site preparation which will stabilize the ground conditions prior to soil stockpiling. Due to stability issues with this permafrost site, SS1 will have the lowest preference as a stockpile site and will be used only as a contingency if the other stockpiles reach capacity prematurely or become unsuitable. SS1 can also be used as contingency silt borrow.

2. Windrowed soils (Windrow)

For features such as access roads, ancillary facilities, silt borrow areas, Sediment Control Ponds (SCPs) and surface water diversion channels, soil will be excavated and placed in linear piles or berms along the features. The depths of soil replaced for reclamation will be dependent on the amount of soil that is available for salvage from the sites. All of the aforementioned mine features will have soil windrowed unless they are at risk of dust deposition which may impact soil quality. Also, if mine feature sites lack sufficient room for setting up windrows, then the soil will be hauled to a designated soil stockpile site (e.g. Process Plant Area).

A two-lift soil handling can be used in windrow areas where ditching is required in excessively stony soils (greater than 50% coarse fragments). The first lift would be for the soil and the second lift for the stony subsoil or overburden. When soil is placed back in a trench it is done in the reverse order thereby preventing admixing of lower quality material with soil that is used as a plant growth medium.

For the soil salvaging and stockpiling operations, VIT will developed a variety of Best Management Practices (BMPs) to ensure that soils are handled and stored properly during all phases of the mine development. BMPs proposed to be carried out include:

- BMPs for Soil Stripping and Salvage:
    - Wet conditions will be avoided whenever feasible during soil salvage operations
    - Excessive traffic will be avoided during the salvage process to minimize admixing, compaction and rutting
    - Traffic will be confined to established routes to avoid unnecessary compaction of soil in undisturbed areas
    - Erosion control measures will be implemented to prevent soil loss and siltation of watercourses (see Section 2.5).
- BMPs for Soil Stockpiles:
    - Soil will be stockpiled in suitable locations where it will not be moved or subject to further disturbance to minimize admixing and physical deterioration
    - Stockpile locations will be a sufficient distance away from operations to protect soils from contamination from risk of spills or metal and non-metal deposition
    - Protective ditches will be constructed around stockpiles to prevent any spill reaching stockpiles and prevent any erosion from stockpiles from escaping offsite
    - Erosion will be managed by limiting the height and slope of stockpiles. Where possible, slopes will be between 2:1 to 3:1 and heights will not exceed 10 m
    - Stockpiles will be oriented to reduce wind erosion and stockpiles will not be stored at heights of land to reduce wind exposure

- Where appropriate, erosion control measures will be implemented
- Any vegetation slash that is not cleared from the site will be incorporated into soil stockpiles
- Soil stockpile locations will be identified by signage to prevent removal of material from the site or contamination with other materials
- Vegetation will promptly be established on stockpiles to reduce exposure of bare soil to wind and water erosion forces and control the establishment of invasive plants
- Invasive plant prevention will be followed as outlined in Section 2.6 (Invasive Plant Management Plan).

Material Replacement Strategy

Soil capping material for the Eagle Pup and Platinum Gulch WRSAs, HLF and Conveyor will be replaced using a one-lift layer of salvaged materials from the soil stockpiles. Soil replacement depths have been developed based on pre-mining rooting depth information, including baseline soils and vegetation surveys and geotechnical trenching data.

Rooting depths in the Project footprint were found to range from approximately 0 to 120 cm, with average depths ranging from 45 to 54 cm which led to the development of a soil replacement depth of 50 cm for the WRSAs. The replacement soil depth was increased to 1.0 meter for the HLF and Conveyor accounted for the potential of elevated metal and non-metal concentrations in soils from mining activities. The 1 m depth for the HLF was also selected to address soil moisture limitations due to a warm south aspect and the HLF being a height of land and sloped to result in well drained conditions. The specified soil replacement depths are anticipated to meet equivalent capability obligations and to be conducive for plant uptake of metal and non-metals from the rooting material.

The access roads, ancillary facilities, silt borrow areas, SCP and surface water diversion channels will be capped with the soils stockpiled in the windrows adjacent to these sites. The volume of soils replaced will be dependent on the amount of material available for salvage during construction.

Table 2.4-2 details the areas and volumes of soil required for reclamation capping of the various mine features. A summary of the areas is as follows:

- 585 ha of mine features including cleared/undisturbed within the Project footprint
- Total ground disturbance area is 457.5 ha; total cleared/undisturbed area is 127.4 ha
- 78.8 ha will remain permanently disturbed and will not require soil capping (open pit walls/pit pond, permanent diversion channel and banks)
- 56.9 ha will require reclamation but will not require soil capping (soil stockpile/windrow sites)
- Remaining disturbance area of 321.8 ha will require both soil capping and reclamation.

A volume of 1,761,440 m^3 of soil will be required to meet the specified capping depths of 50 cm and 1 m for the Eagle Pup and Platinum Gulch WRSAs, HLF and Conveyor; and the various depths for the windrowed sites such as the access roads, plant/ancillary facilities, silt borrow areas, SCP and surface water diversion channels.

Based on material balance calculations, a total of 1,778,390 m^3 will be salvaged which will result in a surplus of 16,950 m^3. This surplus is a result of soils salvaged from the Open pit and Dublin Gulch Diversion Channel that will not be replaced into these disturbances at closure. These disturbances will be permanent and will not be capped with soil and revegetated. The surplus soil will be utilized if there are any shortfalls in soil supply or if more material is required. Any surplus soil remaining in the stockpiles at mine closure will be contoured and reclaimed in place.

2.5 Reclamation Erosion and Sediment Control Plan

Conservation of topsoil is very important and the erosion control measures will focus on preventing soil loss from wind, water, and gravity forces. Temporary reclamation ditches, road cuts and embankments will begin during construction and continue throughout the operations, involving seeding exposed soils with an erosion control seed mix and may include hydroseeding with a mulch and tackifier. If required, additional soil erosion control measures such as erosion control blankets or the application of a bonded fibre matrix onto the soil surface could be employed. Silt fences may also be installed to contain sediments eroding off disturbed sites and into surrounding water bodies and watercourses. Slope stabilization techniques such as terracing or installation of bioengineering structures, and wattle fences or modified brush layers, could also be used on highly erodible soils on slopes.

Soil stockpiles will be seeded with erosion control seed mixes as soil is added or removed, and will be placed within the runoff diversion and collection ditch catchment areas. As portions of the stockpiles are completed, the slopes will be resloped to a shallower 2:1 or 3:1 grade in order to minimize erosion of the slope and aid in vegetation establishment. Soil windrows will be constructed with shallow slopes to minimize erosion. Completed portions of soil windrows and soil stockpile slopes and platforms will be seeded with an erosion control seed mix to establish a protective vegetative cover.

2.6 Invasive Plant Management Plan

Invasive plants can negatively impact revegetation ecosystems. These potential impacts could include:

- Reducing the quality and quantity of forage plants
- Competition with tree seedlings for light, nutrients, and water
- Reducing water quality by increased erosion and sedimentation (from YISC 2010).

VIT will take measures that will reduce the likelihood of plant infestations from occurring and will actively manage infestations that may become established on mine operations areas.

2.6.1 Overview

The development of an Invasive Plant Management Program is necessary to prevent invasive species and noxious weeds from becoming a management problem on the mine site and associated disturbances.

Mining activities that will facilitate the introduction or spread of invasive plants include:

- Removal of native vegetation during clearing operations in a manner that exposes soil and thereby removes competition for invasive plants, and creates a seed bed which will allow invasive plant seed to establish on
- Topsoil salvage and stockpiling which results in exposed soils at both the stockpiles and the salvage areas
- Road and transmission line construction and maintenance activities that disturb sites and create exposed soil
- Movement of machinery related to the above activities that may be carrying invasive plant seeds thereby spreading seed between disturbance sites
- Long-term exposure of disturbed ground (e.g. inactive waste rock storage areas, exposed ground in plant site areas).

Yukon Invasive Species Council (YISC) defines invasive species as:

> *"…an organism (plant, animal, fungus, or bacterium) that is introduced and has negative effects on our economy, our environment, or our health. Not all introduced species are invasive. The term "invasive" is reserved for the most aggressive species that reproduce rapidly and cause major changes to the areas where they become established."*

VIT will address invasive plant establishment through the development and implementation of an Invasive Plant Management Program during all Project phases.

2.6.2 Prevention

The primary goal involved in managing invasive plant infestations on the Project footprint is to carry out mining activities in a manner that prevents the introduction or spread of invasive plants.

VIT will develop BMPs for preventing invasive plant establishment on mine disturbed ground, and will include actions to:

1. Minimize soil disturbance during all phases of the mining operations in order to limit the availability of exposed soil to invasive plant seed deposition
2. Establish a vegetation cover as soon as possible after ground disturbance
3. Seed areas that will be inactive for some time with interim reclamation grass seed mixtures (e.g. soil stockpiles):

- Use high quality grade grass and legume seed in any seed mix that is used for erosion/weed control; temporary reclamation or final reclamation.

4. Minimize invasive plant seed delivery to disturbance sites by:
   - Inspecting equipment or vehicles undercarriage and remove attached plants or wash the undercarriage to dislodge any mud, dirt or plant parts prior to leaving any infested area
   - Where possible, limit road maintenance to the road surface to retain the vegetated areas along roads
   - Confirm ground materials used for construction (e.g. gravel for road construction) contains no invasive plant seed or rhizomatous plant parts
   - Keep equipment yards and vehicle storage facilities free of invasive plants
   - Train personnel on preventing the spread of invasive plants by checking and removing seeds and plant parts from clothing and equipment.

2.6.3 Control

If prevention measures fail and invasive plants establish on disturbance sites, physical, chemical and biological methods will be utilized to control or eradicate the infestations.

The strategies for managing invasive plants include:

- Pulling
- Mowing or cutting
- Burning
- Herbicide spraying
- Biological control.

Biological control agents are natural organisms that can be used to reduce weed populations. Typically they are insects, nematodes, fungi or viruses that infect and weaken the target weed by decreasing seed production and reducing weed density.

2.6.4 Assessment and Monitoring

Disturbed lands in the Project footprint will be monitored to detect the establishment of invasive plant and noxious weed species on both revegetated and unvegetated areas. The surveys will be conducted in late spring/early summer so that plant control measures can be undertaken prior to seed dispersal in late summer/early fall.

In the event that invasive plant populations do become established on the mine site or associated disturbances, VIT will utilize one or a combination of the listed methods to control these infestations. VIT will undertake control efforts on species that are listed for Yukon as noxious weeds or invasive plant species that pose a threat to humans, animals or ecosystems. In addition, VIT will liaise with

YISC, Environment Yukon (EY) and other proponents to keep informed of invasive plant species and management strategies in the region. The YISC promotes prevention and Early Detection and Rapid Response (EDRR) in controlling invasive species in Yukon; VIT will adopt a similar strategy in conjunction with the strategies detailed.

VIT will focus its invasive plant management activities on species that have been categorized by the YISC and EY as species of concern. In Yukon, there are approximately 160 introduced plant species (YISC 2010). These introduced species have been ranked based on their degree of invasiveness; out of the total introduced species, 20 have been ranked as highly invasive. This categorization of the plants will be used as a guide by VIT in prioritizing its management efforts of invasive plants on its properties. Management activities will focus on the 20 highest ranked plant species; however, activities will be implemented on other species if they become established on the Project footprint.

2.7 Environmental Monitoring and Surveillance Plan

VIT will maintain responsibility for the operation of the Project and all environmental programs and reclamation activities on site.

During construction, an environmental monitor will be assigned to monitor activities and to verify compliance with the provisions of all applicable permits, licenses and approvals. The environmental monitor will:

- Conduct monitoring programs as required under the respective permits, licenses and approvals and report the results of such programs, as required
- Ensure that soil salvage and replacement activities are completed appropriately to meet reclamation objectives
- Ensure that vegetative erosion control cover is established on soil stockpiles and on any other areas of disturbance, as appropriate
- Provide direction and recommend implementation measures aimed at avoiding or minimizing adverse environmental effects
- Implement erosion control measures such as installation of riprap, erosion control blankets, silt fences and filter fabrics.

2.8 Reclamation and Adaptive Management Plan

Adaptive management will ensure that reclamation measures can be adapted to changing conditions during mine operational life and post-closure in order to achieve the desired performance for reclamation. Adaptive management during operations will be based on the results of reclamation vegetation trials and annual reclamation monitoring programs.

VIT will seek to implement pilot tests and monitoring programs as soon as areas become available and as funds and resources allow. The Platinum Gulch WRSA reaches its ultimate footprint at the end of Year 3 of mining and becomes available for reclamation activities including trials and monitoring programs. VIT could establish trials for testing plant species suitable for reclamation and for testing vegetation establishment/growth on various topsoil depths and waste rock material. Information obtained from the trials/monitoring programs would then be used to adjust reclamation activities or methods that would be best suited for reclaiming remaining mine disturbance areas.

As part of adaptive management a number of measures may be undertaken to mitigate the predicted concentrations of arsenic in seepage leaving the WRSAs and/or the HLF (Stantec 2010e). Wetland treatment can be incorporated at the base of the WRSAs and the HLF to retain metal and non-metals and nutrients, and to even out peak flows. The use of engineered wetlands is a common mitigation method for mine sites to help remove metals, sulphate and nutrients. Stantec (2010h) describes the use of engineered wetlands at the Teck Cominco Smelter and Yankee Girl Mine in BC, the Park City Mine in Utah, and Newmont's Golden Giant Mine in Ontario.

A typical dry surface engineered wetland, as described in Stantec (2010h) usually consists of a basin surrounded by berms comprised of earth or rock and covered. The need for treatment wetlands and the applicable design features will be assessed based on monitoring of runoff quality during operations. These features, if constructed would remain at post closure and would be designed to be sustainable over the long term. Appropriate plant species would be selected for revegetation of these constructed wetlands. Although wetland vegetation may be planted in some areas, these wetlands usually have a dry surface and the current predicted post closure ecosystems would only slightly be modified. For further discussion on reclamation of engineered wetlands please refer to Stantec (2010h): Technical memorandum on Engineered Wetlands as a Mitigation Method for Project Closure Plan.

Another option for water quality control measures can be to use a portion of the HLF treated water to irrigate reclaimed areas to provide needed moisture and nutrients and lowering the nitrate and ammonia levels in waterways. The Project Water Management Plan (Stantec 2010f) provides further discussion on water management concepts during closure.

2.9 Closure Schedule

The reclamation phase of the Project is conservatively assumed to occur over a 10-year period from January of 2021 to December of 2030. The 10-year length of time is principally a result of the required time to close the HLF, whereas most of the other facilities are less constrained and are likely to be closed and reclaimed in a shorter time period. During this time, the closure of the HLF will have three successive periods: a) a one year supplemental gold recovery period; b) a 2.5 year rinse period (Years 2, 3 and part of 4 following operations); and c) the drain-down period (beginning after the rinse period), followed by post-closure monitoring. The overall Project design objective is a ―walk-away" closure condition, with limited post-closure water quality monitoring until it is demonstrated the remediation measures have achieved the required out-comes.

During the closure and reclamation phase, all facilities will be decommissioned with the exception of some of the drainage ditches and portions of the DGDC, some of which will be enhanced for aquatic habitat and all of which will be stabilized for the long-term. Progressive reclamation will begin during operations to promote slope stabilization and reduce erosion during the life of the mine. Disturbed slopes will be stabilized and revegetated. Equipment and infrastructure will gradually be removed upon closure. Effluent monitoring, bio-monitoring and geotechnical assessment will occur annually for a minimum of 15 years to ensure that revegetation is successful, that slopes are stable, and HLF chemistry is assured.

The schedule assumes that the Project will have a 20-month construction stage, a 7.3 year operations phase, a closure and reclamation stage which will vary in time for each facility, and an approximate five year post-closure environmental monitoring stage. Table 2.9-1 provides a schedule summary of the reclamation activities.

Table 2.9-1: Reclamation Project Timeline

Phase	Period*	Reclamation Activities
Construction	Q1 2012 to Q3 2013 (Year 1 to Year 2)	Soil salvage of reclamation material, construction of water structures (ditches and ponds), water diversion channels, and mine infrastructure, sediment and erosion control structures in place, revegetation of soil stockpiles and reclamation of construction laydown areas
Operations	Q4 2013 to Q4 2020 (Year 3 to Year 9)	Reclamation of Platinum Gulch WRSA, vegetation trials set up in the WRSA, operations, maintenance and monitoring of all structures associated with water management and maintenance of erosion and sediment control structures
Closure and Reclamation	Varies from Q1 2021 up to Q4 2030 (Year 10 to Year 19)	Supplemental gold recovery, rinse-detoxify HLF, HLF drain-down, site reclamation
	Varies from Q1 2021 up to Q4 2030 (Year 10 to Year 19)	Vegetation and Soil monitoring
	As early as Q4 2025 to Q4 2035 (Year 15 to Year 25)	Stream, groundwater and seep water quality monitoring

2.9.1 Estimated Costs

VIT's philosophy for closure and reclamation security is to:

- Undertake progressive closure and reclamation during operations to offset post-closure costs
- Develop and prepare a final mine closure and reclamation plan that meets closure objectives
- Post security for Project closure in accordance with applicable Yukon regulations (Yukon *Waters Act and Regulations* and Yukon *Quartz Mining Act*), including Yukon Government's mine reclamation policy
- Ensure that security provisions are adequate and available to fund closure activities at any time during the operation.

Preliminary closure and reclamation cost estimates were provided in the Project prefeasibility study (URS/Scott Wilson 2010). For the purposes of this document these costs are used as a conceptual estimate for the purposes of the Plan. The costs are based on prefeasibility level engineering design.

As noted a comprehensive reclamation and closure plan will be required for the Yukon Quartz Mining License (QML) application and with respect to the Water License application. A revised reclamation cost estimate based on feasibility study level engineering design will be provided as part of the QML and WL applications. The estimates in licensing applications will likely differ from the estimate provided in the prefeasibility study and the conceptual closure plan due to engineering design refinements. At that time, refined engineering designs will be available and will support the estimation of more precise costs for:

- Decommissioning and closure of mine infrastructure and facilities
- Site preparation for reclamation such as resloping, ripping and soil replacement
- Revegetation treatments
- Reclamation monitoring
- Long-term water treatment and monitoring.

Closure and reclamation costs including environmental bonding start in Year 2012 and continue to Year 2020 when mine operations are completed. Annual reclamation costs are detailed in Table 2.9-2. These costs estimates include progressive reclamation activities, erosion and sediment control measures, invasive plant management and ongoing reclamation research trials. Mine closure is estimated to be in 2021, after eight years of operation. A lump sum of $15 million is currently allocated to cover closure and reclamation costs after mine operations cease. This amount has been estimated to cover costs for final infrastructure/facilities decommissioning, site preparation, soil hauling and replacement, revegetation treatments, reclamation monitoring and water treatment/monitoring.

Table 2.9-2: Prefeasibility Study Estimated Closure and Reclamation Costs

Mine Year	Closure and Reclamation Cost ($)
Construction	$105,000
2012	$105,000
2013	$105,000
2014	$105,000
2015	$105,000
2016	$105,000
2017	$105,000
2018	$105,000
2019	$105,000
2020	$105,000
2021	$15,000,000
Total:	**$16,050,000**

2.10 Temporary, Seasonal, or Premature Closure

Temporary, seasonal and premature closure involves slightly different timelines and procedures. Closure in general is when mine operations cease. Temporary closure is defined in the Yukon Mine Site Reclamation and Closure Policy (Financial andTechnical Guidelines) as one that –*exceeds six* *months and is not expected to last longer than five years*" and can include both planned and unplanned closure (Yukon Government 2006).

For purposes of this section and the CCRP, specific timelines and schedules have been used as follows:

- **Temporary closure** refers to a suspension of mining and/or milling activities for more than 90 days but less than three years.
- **Seasonal closure** refers to a ceasing of operations in a season (e.g. winter season).
- **Premature closure** refers to a permanent closure before the end of mine life due to some unexpected conditions such as uneconomical geology, drop in commodity price, or change in market.

If premature closure occurs the plan would follow the conceptual closure and reclamation plan with modifications made to the current state of operations. Seasonal closure would follow the steps outlined in the transition period between operations and temporary closure (Section 2.10.1).

This section focuses on temporary closure after project start-up. The main emphasis during this time period would be to maintain the site so it remains physically and chemically stable, secure and safe and in compliance with all regulatory and licensing requirements. The main activities would focus on site stabilization and safety, followed by care and maintenance of all site facilities and routine monitoring until production recommences or full closure is implemented.

Depending on the reasons for a temporary cessation of operations, the process facilities would continue to recirculate solutions and recover gold until all economically recoverable gold is processed. This recovery of gold is anticipated to take up to nine months and require a crew of six to eight personnel to manage pumps, piping, power (including the emergency back-up power plant) and process equipment.

Table 2.10-1 presents a summary of the care, maintenance and monitoring activities of the various project components which would occur in the case of a temporary closure. A more detailed Temporary Closure Plan will be developed as required for licensing in the Closure and Reclamation Plan.

Table 2.10-1: Summary of Care and Maintenance Activities and Monitoring During Temporary Closure

Facility	Area	Care and Maintenance Activities	Monitoring Activities	Monitoring Responsibility	Monitoring Frequency
Open Pit	Water Management	Restrict access to Open pit and Waste Rock Storage Areas, manage water diversions, sediment ponds	Visual inspections based on monitoring activities outlined as required by regulatory authorities	Geotechnical Engineer	As required
	Physical Stability	Site inspection for stability			
Waste Rock Storage Areas	Physical Stability	Site inspection for stability			
	Chemical Stability	Monitor for seepage and water quality		Sr. Operator	
Heap Leach Facility and Process Ponds	Physical Stability	Dublin Gulch waterway diversion structure repair and maintenance as required	Visual inspections based on monitoring activities outlined as required by regulatory authorities	Caretaker	As required
		Upslope surface water diversion structure repair and maintenance as required			
		Runoff, erosion and sediment control as required			
		Dust control as required			
	Leaching	Maintain HLF pumping, HLF irrigation, solution collection and storage, reagent addition and gold recovery facilities	Water quality and systems monitoring as outlined in licenses	Sr. Operator	Ongoing (for up to 9 months)
	Water Management	Maintain HLF pumping, HLF irrigation, solution collection and storage facilities		Caretaker	On going
	Chemical Stability	Check all HLF/pond LDRS, empty leak collection sumps as required		Caretaker	Weekly
		Monitor for seepage and water quality		Caretaker	As required

Facility	Area	Care and Maintenance Activities	Monitoring Activities	Monitoring Responsibility	Monitoring Frequency
Process Plant and Other Infrastructure	Buildings, Equipment and Associated Infrastructure	Remove non-essential chemicals from site. Remove all gold from site. Safely store in secure double containment area all essential chemicals.	Periodic visual inspections	Caretaker	Weekly
		Secure buildings and maintain equipment for solution recirculation and treatment			
	Physical Stability	Site inspection for stability	Structural Inspection	Caretaker	Quarterly
	Solution Treatment Plant	Maintain plant and required chemicals	Water quality and systems monitoring as outlined in licenses	Caretaker	On going
Explosives Facility	Physical Stability	Maintain site and secure access to site	Periodic visual inspections	Sr. Operator	Ongoing
Access Road and Surface Drainage	Entire Route	Maintain surface drainage, culvert repair, road grading	Periodic visual inspections	Private contractor	As required
Entire Site	Physical Stability	Site inspection for stability	Periodic visual inspections	Geotechnical Engineer	Ongoing
	Water Quality	Monitor for seepage and water quality	Water quality and systems monitoring as outlined in licenses	Sr. Operator	Ongoing
	Security	Secure buildings and provide maintenance	Restrict access to site	Caretaker	Ongoing
	Miscellaneous Infrastructure		Structural Inspection	Caretaker	As required
	Reporting			Sr. Operator	Quarterly

2.10.1 Care and Maintenance

The Care and Maintenance Program is the program where a reduced workforce will inspect and maintain property assets, restrict access to mine site locations, manage site chemical and explosive storage, and the site WMP (Stantec 2010f) continues to be implemented. The Care and Maintenance Program will be implemented once the transition period from the operating mine to the suspended activities is achieved. Transition activities before the Care and Maintenance Program is initiated will include:

- Complete all necessary outstanding repairs
- Winterize seepage collection systems and mobile equipment, buildings and other site infrastructure.

The temporary decommissioning and closure activities will only be conducted to a level such that all infrastructure, process and mining facilities are stable for a period of up to three years and such that full operations can be resumed in a timely manner should the decision be made to resume production. To meet these objectives of temporary closure, the essential equipment and assets will remain onsite to maintain infrastructure and facilities and all hazardous materials will either be removed from site and/or stored in a safe and secure manner with primary and secondary containments as required to ensure compliance with applicable regulations.

2.10.1.1 Water Management Plan

Water management during the Care and Maintenance phase will consist of managing five sources:

- Waters collected in sediment control ponds and lined seepage collection ponds associated with the WRSAs
- Rain and snowmelt generated runoff falling on areas which result in "contact water" and then drain to a sediment control pond
- Flow in the DGDC and smaller diversion ditches channels
- Runoff and groundwater collected in the open pit sump
- Water stored within the HLF.

All water from the HLF and the WRSA will be treated to meet required water quality guidelines prior to discharge. Details of the quantities of water generated by natural processes expected during a temporary closure are no different than that during operations. The surface water balance model (Stantec 2010a) addresses large ranges in hydroclimatic conditions including average, wet and dry years in addition to hydroclimatic events such as storms and droughts. All water management faculties, including the use of the mine water treatment plant, will be managed as if operations were still on-going. Detailed descriptions of the management of water during closure and operations can be found in Stantec (2010f).

Water management structures will be maintained and include maintenance of the Dublin Gulch Diversion Channel, ditches and sediment ponds. Storm water sampling will occur as necessary during open flow at identified storm water sampling stations.

2.10.1.2 Physical Stability Measures

Visual monitoring of the Open pit, WRSAs, HLF, diversion and water erosion control structures will continue on a daily, weekly, monthly, and semi-annual basis as specified in Table 2.10-1. A geotechnical engineer will verify stability and address any areas of instability or where public access needs to be restricted by berms or other means of blocking access.

2.10.1.3 Chemical Stability Measures

The chemical stability of the site pertains to the HLF, WRSA's, the explosives stored on site, plus any hazardous material stored on site (Table 2.10-1).

The HLF will operate for up to 9 months after temporary closure. After all the economical gold has been recovered, reagents required for gold recovery will be properly secured and stored onsite. Reagents required for the solution treatment facilities will also be properly stored but will be made readily available as required. Process solutions will be recirculated onto the HLF to maintain water balance. The MWTP will be operated as required to maintain water balance and to insure that any solutions discharged to the environment meet required standards. It is estimated that a crew of four to five personnel will be required for these activities.

The water from the WRSA's rock drains will be treated by either the MWTP, and/or a passive wetland treatment system, if one is in place. Treatment of neutral metal and non-metal leaching from the WRSAs, if found to occur, will be maintained during temporary closure.

The hazardous materials that will be removed from the site are explosives inventory and some hazardous wastes. The explosives inventory will be removed from site and the explosives storage facilities will be kept secure and regularly inspected. Hazardous wastes that will be removed from site include waste hydrocarbons, coolants and lubricants. All hazardous fluids will be drained from non-essential machinery and mining equipment based on recommendations from mechanical and chemical suppliers, contractors and engineers.

2.10.2 Security, Safety, and Monitoring

Full-time care and maintenance staff will be housed onsite in the man camp to provide security, control site access and monitor site activities. Access to the site will be restricted and enforced on a 24 hour per day basis. Restricted access consists of a vehicle gate at the entrance to the property.

Two caretakers will work different rotations to provide site security and monitoring. These two individuals are in addition to the reduced operations staff. Site equipment and vehicles will be kept onsite for the use of both the operations staff and caretakers. Contingency equipment (dozer/loader) will also remain onsite should earthworks be required during the temporary closure phase.

During temporary closure, the security gates on the access road will be locked with warning signs clearly posted at the gates and at key locations around the property indicating risk of entry. All site buildings will be kept locked and secured. The main access road will be maintained for access by the caretakers and operations staff with equipment retained onsite (grader/loader).

The caretakers and operations staff will be responsible for a variety of security measures including the following examples:

- Assign a Care and Maintenance Coordinator for continued direction and management of all activities
- Safety, Security and First responders to support site inspections, security controls first aid and emergency response and Communications
- Process Operators to support Water Management and any MWTP operations, sample collection and support site monitoring
- Environmental Technicians to support site monitoring and sample collection and ensure compliance to ongoing regulatory requirements
- Adequate maintenance staff to ensure critical process equipment such as pumps and generators, and some mobile equipment are maintained in operating condition
- Some C&M personnel will also be trained in operating equipment required for snow removal and road access
- Additional support from VIT's corporate office for IT and administration.

It is currently planned that staff will work in 8 to 12 hour shifts with coverage day and night for safety, security and water. Management and maintenance (caretakers) and environmental personnel will work 8 to 12 hour day shifts only.

Monitoring activities for the site may include the following:

- Regular inspections of the site to observe and document the condition of any changes to site security, public safety measures, and mine infrastructure
- Documentation of potential environmental or public health and safety issues
- Routine physical stability monitoring
- Routine chemical stability monitoring
- Regular water quality and flow monitoring
- Monitoring of existing climatic conditions will continue with operation of the onsite weather station
- No regular air monitoring is planned; however, visual monitoring of the crushing facility, waste rock storage areas, open pit and HLF conducted daily and weekly.
- Regular inspections of all HLF/pond LDRS and emptying of leak collection sumps, as applicable
- Submittals of inspection and monitoring reports on a regular basis as required
- Response to any security/safety breaches as required.

Site inspections and monitoring will likely be conducted by vehicle when seasonally possible. Some areas of the site may be inaccessible in winter as snow removal will not be reasonable in some locations. Inspection results will be documented and submitted on a regular basis, or as required. Reports of changes to the physical status of any part of the site may warrant a follow-up investigation by the appropriate personnel. Some elements of the monitoring program such as geotechnical and structure inspections and non-routine water quality and biological monitoring, will be conducted by appropriate professionals. The results of these inspections will be included in annual reports and other required submittals.

2.10.3 Reporting and Costing

If a temporary closure is required, a notice will be provided within ten days to the appropriate authorities stating the following:

1. The nature and reason for the temporary closure
2. The anticipated duration of the temporary closure
3. Actions taken to maintain compliance with project permits and plan approvals
4. Any event which would reasonably be anticipated to result in the resumption of mining or the permanent closure of the mine.

VIT shall submit a temporary closure plan to the appropriate authorities within ten days after a temporary closure has been initiated. The terms of the temporary closure plan will address the following:

1. The procedures, methods, and schedule to be implemented for the treatment, and/or storage of water
2. The control of surface and groundwater
3. Drainage to and from the facility and the surrounding area
4. Control of erosion from the site
5. The management of chemicals on the site including secure storage for chemicals that will remain on site
6. Chemical stability of the HLF during the period of closure.

Once the temporary closure plan is implemented, monitoring and inspection data and reports will be compiled and submitted according to the applicable annual reporting requirements of the applicable licenses. Costs associated with temporary, seasonal or premature closure will be developed at the mine feasibility stage of the Project. VIT will maintain financial security acceptable to Yukon Government during temporary closure.

3 CONCEPTUAL CLOSURE AND RECLAMATION OF MINE FEATURES

This section outlines the conceptual closure and reclamation of the mine features including temporary construction areas. This section outlines the general description of the features, the closure procedures and revegetation of the features and the remaining issues and investigations, as required.

3.1 Construction Activities

The construction phase of the Project will commence in the first quarter of 2012 and will be completed by the third quarter of 2013, when the operations phase begins. The time required for construction is forecast at approximately 69 weeks with primary work being conducted over two summer construction phases. During this time, a number of support features and areas will be cleared, and soil will be stripped and windrowed to support construction of mine features. As they are only temporary features they are often reclaimed within a relatively short time period and may receive temporary reclamation (grass seeding rather than tree plantings), if the areas may be reactivated at a future date (e.g. soil stockpiles). This section collectively discusses a number of different features that are reclaimed after construction activities are complete.

3.1.1 Description

The construction areas are the first features to undergo reclamation. Reclamation may be permanent, which involves replacement of reclamation material and planting and/or seeding of areas. If the features may be required for other future activities a temporary seeding will occur to reduce erosion. The construction features such as laydown areas, or cleared areas that allow for large equipment to manoeuvre are primarily temporary (required for less than two years), with the exception of soil stockpiles and quarries. These areas are the first to receive reclamation.

3.1.2 Closure Measures

Site preparation closure measures are similar for the following facilities and will be discussed together:

- Temporary Laydown Areas
- Silt Borrow Area(s) and Quarries
- Construction Roads
- Construction Camp.

Prior to the development of these sites, topsoil material will be salvaged and stockpiled locally in windrows adjacent to the disturbance site or in designated soil stockpile areas.

Once the site is no longer required for mine operations, all equipment and structures will be removed; the area will be re-contoured to original grades and topography and pre-mining drainage patterns will be restored. The salvaged soil material will be spread directly by dozer pushing from the windrow berms. Soil that was salvaged and stored in designated stockpiles will be hauled by dump trucks and placed at the disturbance sites; the soil will then be spread by dozer. Soil replacement will be to the same depth that was originally salvaged from the disturbance site. The soil will require scarification prior to revegetation if the surface becomes compacted due to truck or equipment traffic.

Final revegetation of the site will be carried out once soil replacement is completed.

3.1.2.1 Soil Stockpiles

Soil stockpiles will be located on mine site areas that have been cleared of vegetation cover, but where no topsoil/overburden disturbance has occurred. The function of post-closure ecosystems that develop on these sites is anticipated to be the same as pre-mine conditions. Soil stockpile sites will cover approximately 54 ha within the mine footprint area.

Once the stockpiled topsoil materials have been removed from the site, final revegetation activities will be carried out. Any remaining topsoil material that has not been used for reclamation will be spread and recontoured over the site and revegetated.

During the construction phase of the Project, interim reclamation treatments will be carried out on the stockpiles to fulfill BMPs for soil stockpiles. These BMP's will include: prompt establishment of a grass/legume/forbs cover to reduce exposure of bare soil to wind, water and invasive plants; limiting the height (10 m) and slopes (3H:1V) of stockpiles; and orienting stockpiles perpendicular to the dominant wind direction to reduce erosion.

3.1.3 Revegetation

Once the sites have been capped with topsoil, they will be revegetated with plant species that are suitable for reclamation and will develop the predicted post-closure ecosystems. Predicted post-closure ecosystem units include a mix of aspen dominant forest on south and western facing slopes (warm aspects), coniferous forest and grass and forb dominant ecosystems. Sections 2.1, 2.2 and 2.3 provide greater details on the predicted post-closure ecosystem units, candidate reclamation species and reclamation treatments proposed for the sites.

Progressive reclamation of the sites will be conducted whenever feasible. Interim reclamation measures will be implemented on all sites in order to control soil erosion and prevent invasive plant establishment.

3.2 Mine Workings

Mine workings in this section refers to the open pit, benches above the open pit and road access areas into the open pit. Not all areas of the mine workings will undergo reclamation. The main concern for closure of the open pit is to make sure open pit walls are stable and pose no danger to the general public.

3.2.1 Description

After mining ceases approximately 30,000 m^3 of waste rock may be left in the open pit. The open pit is expected to flood to the level of the west side of the open pit. The open pit perimeter and upper benches within the overburden layer will be resloped down to the first rock bench and revegetated at the time of final reclamation. Areas of particular concern for the public, if any, will be bermed or fenced and posted with warning signs. The area below the open pit rim will not be revegetated.

3.2.2 Closure Measures

At closure, the open pit walls will be comprised of exposed meta-sedimentary rock and granodiorite rock. Geochemical characterization of the lithology to date has indicated that the geologic units will not be potentially acid generating. With no acid generation, the pH of the water in contact with the open pit walls (i.e., open pit wall run-off) is anticipated to be near neutral.

Although pH conditions are expected to be neutral, moderately elevated concentrations of some trace elements are likely to be present in seepage from the waste rock storage areas and pit walls Concentrations within the pit lake, are anticipated to be diluted by precipitation, which will result in an open pit water quality that will meet the appropriate guidelines. Refer to the Water Quality and Aquatic Biota Assessment, Section 6.5 for more details on open pit water quality and to the Water Management Plan (Section 5, Section 5.4.3.6) for further discussions on water balance during closure.

3.2.3 Revegetation

At mine closure, the open pit floor area will be allowed to flood with water; the open pit is expected to flood to the level of the west side of the open pit. A portion of the open pit will remain inundated and will be a permanent water feature within the open pit and will not be reclaimed. The remainder of the open pit disturbance area will consist of open pit walls and benches which will not be reclaimed. The total area of disturbance will be 65.4 ha.

After mine closure, the open pit perimeter and upper benches within the overburden layer will be resloped down to the first rock bench and revegetated with suitable candidate vegetation species that will provide erosion and invasive plant control and are appropriate for the predicted post-closure ecosystem. Refer to Sections 2.2 and 2.3 for details on candidate reclamation species and reclamation treatments.

Prior to development of the open pit, the area will be cleared of forest cover and the topsoil will be salvaged and placed in local stockpiles for use in reclamation at other mine disturbance areas.

3.3 Heap Leach Facility

The HLF will be the last feature to be reclaimed as it requires detoxification and rinsing prior to soil capping which results in a lag time between when the mine ceases operations and when reclamation can begin. Assuming 2.5 years of rinsing, construction of a soil cover on the HLF can begin in the middle of the fourth year of closure and reclamation. The surface water model assumed the cap would be in place by October 2024 (Stantec 2010a).

3.3.1 Description

The post-closure HLF will remain as a permanent land feature, resembling a large interfluve (or a height of land between two drainages—Dublin Gulch and Haggart Creek) with vegetation cover and no restrictions of access to public and wildlife.

To satisfy closure objectives the facility will be designed to:

- Protect both the surface water and regional groundwater during operations and in the long term
- Provide a stable facility during extreme precipitation events and design seismic events during operations and after closure.

At closure the HLF is a completed valley-fill structure constructed by placement of ore on a pad behind a confining embankment. The HLF holds 66 Mt of crushed ore and the heap leach facility covers an area of 870,000 m^2.

Runoff around the facility is diverted in ditches and routed to a SCP. The facility also includes a foundation drainage system installed beneath the HLP to intercept and remove potential shallow groundwater flow.

Drainage from the HLF will be collected and treated to reduce solution inventories. The HLF will be detoxified and rinsed and a cover placed over the pile. Detoxification and rinsing of the HLF is discussed in greater detailed in the Water Management Plan and Section 5 of the Project Proposal.

3.3.2 Closure Measures

The proposed conceptual closure measures for the HLF comprise:

- HLF Detoxification and Rinsing
- HLF Draindown
- HLF Contouring and the Construction of a Soil Cover.

The following sections provide a short overview of the conceptual closure measures for the HLF. Greater detail and explanation can be found in the Water Management Plan.

HLF Detoxification and Rinsing

The objective of rinsing the HLF is to reduce the residual cyanide and dissolved metals that could migrate from the HLF after the HLF has been decommissioned. Initially, process solution will be recycled to the HLF without any new reagent additions until supplemental gold recovery is no longer economic. Once any remaining economic precious metal values have been removed from the HLF leach solution through the ADR process and the majority of residual cyanide has been consumed through solution recirculation, the operation will be converted to a rinsing and neutralization phase.

The rinse solution will include a combination of neutralized solutions and fresh water. When the average concentration of cyanide in the HLF leach effluent solution has been reduced to sufficiently low levels, the process plant barren solution will be treated with hydrogen peroxide and copper sulfate (if required) in a series of two, agitated tanks until the cyanide concentration drops to 0.2 mg/L Cyanide Weak Acid Dissociable (CNWAD) and 2 mg/L total cyanide (CNTOT). Neutralized solution will be recycled to the HLF. The cyanide detoxification plant will be instrumented and controlled automatically. Additional manual analyzers will be used to monitor inflows and outflows. Monitoring will confirm HLF effluent quality to ensure water quality guidelines and criteria are met.

Heap Leach Facility Draindown

Following rinsing, the HLF is assumed to start draining in July 2024. The surface water balance model (Stantec 2010a) assumes the draindown period will last approximately 6.5 years and be essentially complete by December 2030. About 40 to 50% of the total drain-down is expected in the first month. Within the first year about 88% is expected to drain, while another 10 to 12% is assumed to take another five to six years to drain. There will likely be a residual amount that will continue to drain for a longer period of time, while infiltration will still occur through the cover.

After drain-down is essentially complete, the MWTP will be decommissioned and based on the results of the geochemical characterization (SRK 2010), the water quality model (Stantec 2010e), and the surface water balance model (Stantec 2010a), a passive engineered wetlands treatment system (approximately 1 km long) may be required and constructed between the HLF and Haggart Creek to mitigate the potential effects of metal and non-metals in the HLF seepage that may still be elevated above site-specific water quality criteria. Descriptions of alternative types of engineered wetlands to mitigate the predicted effects are found in Stantec (2010h). If constructed, the wetlands would be constructed in the location of the proposed ponds (Events Ponds, Feed Pond, Product Pond and the Lower Dublin Gulch Sediment Control Pond).The groundwater drainage system and LDRS will remain in place post-closure and will be routed through the wetlands during the reclamation phase.

Contouring and Soil Cover

Following rinsing, the top surface of the HLF will be re-graded to promote the controlled runoff of precipitation, eliminate areas where ponding of water may occur and to minimize seepage. Approximately 75% of the surface area will have an average slope of 40% or steeper and 25% of the surface area is at 7% or steeper. These types of slopes are consistent with the topography of the undisturbed area adjacent to the HLF.

Based on the results of the Water Quality Model (Stantec 2010e) it is assumed that a cover system with an infiltration rate of approximately 10% of net precipitation may be required to meet water quality discharge criteria. Recent cover design concepts have favoured a store and release cover system over a traditional compacted cap design due to concerns with freeze/thaw processes. The advantage of a store and release cover is that they do not require the construction of a low permeability compacted layer, which are material specific and may be costly. Store and release covers reduce infiltration into the HLF by storing precipitation (similar to a sponge) in the rooting zone of the cover material and then releasing some of the water back to the atmosphere through evapo-transpiration of plants.

The cover comprises a thick layer of material placed in a loose state and revegetated with selected local species that have high moisture uptake characteristics. A similar recent store and release cover system was constructed at the Brewery Creek Project, a closed open pit gold mine that utilized a sodium cyanide heap leach extraction process.

3.3.3 Revegetation

The final configuration of the HLF will consist of a large platform area at the top of the facility bounded by slopes to the north and south; with a total area of approximately 91 ha. The surface of the HLF will be re-contoured to promote the controlled runoff of precipitation, eliminate areas where ponding of water may occur and to minimize seepage. Approximately three quarters of the surface area will have an average slope gradient of 22° (40%) and the remainder will have an average slope gradient of 4° (7%). The recontoured areas will be capped with materials suitable for achieving the desired infiltration rate, and likely comprise a minimum of 1 m of salvaged soil material. Soil material will be supplied from soil stockpiles. Soil will be hauled by dump trucks to the HLF and spread by dozer. Soils may require scarification before conducting revegetation treatments if the surface becomes compacted due to truck or equipment traffic.

Once the sites have been capped they will be planted with vegetation that is suitable for the predicted post-closure ecosystems to establish a long-term self-sustaining vegetation cover and steward the establishment of productive ecosystems. Predicted post-closure ecosystem units include: aspen dominant forests on warm south aspects, subalpine fir forest on the top portion of the HLF and some areas of grassy dry, slopes with Alaska birch shrubs. Refer to Sections 2.1, 2.2, and 2.3 for details on the predicted post-closure ecosystem units, candidate reclamation species and reclamation treatments.

The slopes of the toe dyke may require interim reclamation treatments such as grass seeding during the operational mine life in order to provide soil stabilization for erosion control and invasive plant control.

On the slope sections of the HLF, and as feasible the prescribed soil cover, selected tree/shrub species for final reclamation could be planted in distinct patches or islands across the slopes interspersed between areas of grass/legume/forb cover. The initial target vegetation cover ratio is approximately 60% grass/legume/forb cover to 40% tree/shrub cover, but this may need to be modified depending on the soil characteristics necessary to achieve the 10% infiltration rate. The concept of this revegetation technique is to allow the establishment of tree/shrub cover on the slopes which will provide visual breaks and cover for wildlife and diversity in habitat structure, and still provide control of surface erosion by the grass/legume/forb strips. In addition, any benches present on the HLF slopes could be planted with a tree/shrub cover. Estimated evapotranspiration rates of these plant species will be considered to ensure that the store and release cover will function effectively.

If required, stabilization measures will be implemented on the sloped sections of the HLF to prevent erosion and maintain the soil capping material and thereby stabilizing the ground material to facilitate vegetation establishment and growth. Measures such as installation of erosion control blankets; application of a bonded fibre matrix; installation of bioengineering structures such as wattle fences and modified brush layers will be undertaken in conjunction with revegetation of candidate reclamation species.

3.3.4 Remaining Issues and Investigations

HLF rinsing, neutralization, nutrient addition, and passive treatment requirements in the long-term are the main issues to be further optimized for HLF closure. Laboratory testing continues and will be done to:

- Develop representative spent ore samples
- Optimize rinse and rest cycles
- Conduct passive wetland water treatment trials.

3.4 Mine and Process Plant Facilities

Mine and Process Plant facilities will be decommissioned and removed from the site when they are no longer needed prior to and during the reclamation process. At the end of operations, equipment and dismantled facilities will be reused, sold, or recycled offsite. The closure and removal of facilities will be phased and as a result reclamation will occur as the sites are decommissioned.

3.4.1 Description

Structures and facilities at the Project will consist of:

- Process offices
- Lab
- Shops and warehouse
- Process plant site
- Primary, secondary and HPGR crusher facilities
- Laydown area
- Gatehouse
- Main sub-station
- Camp/recreation area
- Water treatment plant and water tanks
- Overland conveyors.

Approximately 16 ha of disturbance are associated with the plant site and ancillary facilities.

Some of the facilities at the site will be required past the end of the mining process. A portion of the process plant will be operational for at least several years past mine closure in order to recover residual metals during the HLF detoxification process. However, the plant facilities that are not required for future use will be dismantled.

3.4.2 Closure Measures

Prior to construction of the plant site infrastructure, soils will be salvaged and stockpiled locally in windrows adjacent to the disturbance sites or in designated soil stockpile areas.

All structures and equipment will be removed in the decommissioning and closure phase. The only features that will be permanently retained are key diversion channels and structures required to meet long-term water management objectives. Concrete building/structure foundations (i.e., slabs, footings and foundation walls) will be left in place if the concrete is steel-reinforced, otherwise they will be broken apart. Any foundation walls that have the potential to pond water will be breached or capped with additional overburden material before the final sol capping to eliminate the problem of shallow saturated soils. Non-salvageable materials will be buried within the WRSA and/or disposed of according to the site waste management plan.

Prior to soil replacement, the disturbed sites will be re-contoured to original grades and topography and pre-mining drainage patterns will be restored. Salvaged soil material that was windrowed adjacent to the disturbance sites will be spread directly by dozer pushing from the windrow berms. Soil that was salvaged and stored in designated stockpiles will be hauled by dump trucks and placed at the disturbance sites; the soil will then be spread by dozer. Soil replacement will be to the same depth that was originally salvaged from the disturbance site with the exception of the conveyor area. This disturbance will be capped with a minimum of 1 m of soil material in order to adequately cover materials contaminated by dust deposited from the conveyor system. Replaced soil will require scarification prior to revegetation if the surface becomes compacted due to truck or equipment traffic.

The process plant will remain operational for several years past the operations phase to recover residual metals during the HLF detoxification process. Once the detoxification of the HLF is complete, the plant infrastructure will be decommissioned and the site reclaimed. Additionally, the mine water treatment plant and associated facilities will remain intact until the HLF has been detoxified and seepage quality is certified suitable for direct release to Haggart Creek.

3.4.3 Revegetation

Once the sites have been topsoil capped they will be revegetated using plants suitable for the predicted post-closure ecosystems in order to establish a long-term self-sustaining vegetation cover. That cover will provide erosion and weed control and steward the establishment of productive ecosystems.

Predicted post-closure ecosystem units include: Alaska birch and willow shrubs, some areas of subalpine fir forests and black spruce forest. Refer to Sections 2.1, 2.2 and 2.3 for details on the predicted post-closure ecosystem units, candidate reclamation species and reclamation treatments.

As areas of the plant and ancillary facilities become available, progressive final reclamation will be carried out wherever feasible. Interim reclamation treatments such as grass seeding will be carried out during operational mine life on any available areas to provide soil stabilization for erosion control and invasive plant control.

3.5 Waste Rock Storage Areas

There are two WRSAs for the Project. Platinum Gulch WRSA is anticipated to be used until Year 3 of operations and Eagle Pup WRSA will be used until Year 8 of operations. Progressive reclamation will be done in the Platinum Gulch WRSA and will be an area of vegetation trials to test the success of various plant species and water infiltration in soil covers to aid in cover designs for the HLF and Eagle Pup WRSA. This section outlines the details the closure and reclamation of the two WRSAs.

3.5.1 Description

Life-of-mine waste production is 31.5 million loose m^3 (66 Mt) including overburden. During the life-of-mine plan, waste rock is scheduled to go to one of five areas:

- Fill material for haul road development
- Fill material for the HLF embankment rockfill
- Platinum Gulch WRSA
- Eagle Pup WRSA
- Partial open pit backfilling.

The following table presents the split of waste rock to either the Platinum Gulch or Eagle Pup WRSAs. The table also presents the cumulative area of waste rock on each of those WRSAs. The Platinum Gulch WRSA reaches its ultimate footprint of approximately 33 ha at the end of Year 3 (2015). The Eagle Pup WRSA reaches its ultimate footprint of approximately 80 ha at the end of Year 8 (2020), immediately prior to closure.

Table 3.5-1: Annual Waste Rock Production and Storage Area

	2013		2014		2015		2016		2017		2018		2019		2020	
	Mt	ha	Mt	ha	Mt	ha	Mt	ha	Mt	Ha	Mt	ha	Mt	ha	Mt	ha
Platinum Gulch	1	6	2.8	25	5.8	33	0	33	0	33	0	33	0	33	0	33
Eagle Pup	2	12	2.8	25	7.9	45	8.8	53	12.8	62	9.5	68	4	74	3.4	80
TOTAL	3	18	5.6	50	13.7	78	8.8	86	12.8	95	9.5	101	4	107	3.4	113

The civil, hydrological and geotechnical engineering design parameters used for the design of both the Platinum Gulch and Eagle Pup WRSAs are based on the following relevant standards:

- Regulatory Requirements of Yukon and Canada

- Dump Stability Performance Objectives and Evaluation Standards
- British Columbia Mine Waste Rock Pile Research Committee Investigation and Design Manual Interim Guidelines May 1991.

3.5.2 Closure Measures

Reclamation of the Platinum Gulch WRSA will be initiated during the early stages of production as this will lower final reclamation costs, improve short term stability, and reduce surface erosion and sedimentation. The following are preliminary recommendations for progressive reclamation and final closure of the WRSAs:

- Maintain sloped grading of bench surfaces to minimize surface water infiltration and erosion of downstream slopes
- Maintain surface water collection ditches and the SCP to control surface drainage during operations and reclamation
- Surface runoff collection ditches and the sediment controls ponds that are diverting water away from WRSAs will remain operational until vegetation on the WRSAs has reached a self sustaining growth.

When monitoring results have indicated that the WRSA runoff and seepage are of suitable quality for direct release to the environment the surface runoff collection ditches will be backfilled with waste rock and the SCP embankment will be breached.

3.5.2.1 Contouring and Soil Cover

The Platinum Gulch WRSA will be resloped to an angle of 2H:1V where feasible soon after it is inactive at Year 3 of operations. At post-closure the Eagle Pup WRSA will also be resloped to 2H:1V, where feasible. Seventeen hectares of the WRSAs cannot be resloped due to natural bedrock controlled steep slopes having insufficient waste rock material thickness to allow for resloping.

After completion of resloping activities, WRSAs will be capped with a minimum of 50 cm of salvaged soil material. Soil material will be supplied from soil stockpiles. Soil will be hauled by dump trucks to the WRSA platforms and spread by dozer down the resloped dump face and across the platforms. The resloped 2H:1V WRSA slopes are at a gradient that will allow the dozer to operate effectively to spread overburden. Soil placed on the platform will require ripping before revegetation due to compaction from equipment traffic.

3.5.3 Revegetation

The Platinum Gulch and Eagle Pup WRSAs together will cover approximately 113 ha at closure. Once the sites have been soil capped they will be revegetated using plants that are suitable for the predicted post-closure ecosystems. Predicted post-closure ecosystem units include: AW, FC, FF, FP, GH and RO. Refer to Sections 2.1, 2.2 and 2.3 for details on the predicted post-closure ecosystem units, candidate reclamation species and reclamation treatments. As areas of the WRSA become available, progressive final reclamation will be carried out wherever feasible beginning in

Year 4. This progressive reclamation will allow proposed reclamation techniques to be tested for six years prior to the closure of the Eagle Pup Gulch WRSA. Interim reclamation treatments such as grass seeding will be carried out during operational mine life as necessary to provide soil stabilization for erosion control and invasive plant control.

On the WRSA slopes, the candidate tree/shrub species for final reclamation will be planted on flat benches and slopes less than 51%. Steeper slopes will be seeded with grass. In areas with long and uniform slopes, 20 to 30 m bands of tree/shrub plantings interspersed with areas of grass seeding will control water surface flow velocities.

The Platinum Gulch WRSA reaches its ultimate footprint at the end of Year 3 of mining and becomes available for reclamation.

In some sections of the WRSAs, particularly at the Eagle Pup WRSA, full resloping may not be feasible due to space constraints. Cover soil will be dumped over the crests of slopes too steep for dozers to spread soil. On steep slopes, soil erosion may be a concern and stabilization techniques will be implemented to prevent erosion and maintain the soil capping material. These measures could include erosion control blankets; application of a bonded fibre matrix; installation of bioengineering structures such as wattle fences and modified brush layers; and dense seeding/planting rates.

3.5.4 Remaining Issues and Investigations

Adaptive management will be used to address covers on the WRSAs and HLF. The current focus of the covers is to optimize reclamation and re-vegetation objectives. The soil capping can also be beneficial for water quality and act as a store and release cover. Depending on soil capping characteristics, including hydraulic conductivity, some of the precipitation will be taken up by plants (evapo-transpiration), some will run off the reclaimed surface and some will infiltrate the underlying facilities, where it will mobilize metals and affect water quality. As a result a review of performance of the Platinum Gulch WRSA soil cover in relation to water will measure infiltration rates.

Monitoring during operations will be performed on an ongoing basis to evaluate long-term drainage water chemistry and revegetation success.

3.6 Infrastructure

This section refers to infrastructure, which is not addressed in mine facilities and ancillary facilities that is within the mine footprint, but also outside the mine footprint (e.g., transmission line and access road upgrades). Infrastructure is a number of features that require decommissioning prior to reclamation.

3.6.1 Description

Infrastructure at the Project will consist of: the access roads, transmission line corridors, fuel storage facilities/tanks and Blasting/Explosives Magazines. Approximately 14 ha of disturbance are associated with these facilities.

3.6.1.1 Roads

The HCR will remain in place at closure. Following closure of the HLF and site facilities, the main access road within the Project footprint will be permanently closed and reclaimed. However, it is proposed that a single lane road will remain to provide access to the Potato Hills. The road will be left in a semi-permanent, deactivated condition which will allow the road to remain passable and be environmentally stable.

Prior to soil placement on any road ways that are to be reclaimed, the following permanent deactivation activities will be carried out:

- Removal of all culverts, bridges, and approaches
- Scarification of road beds
- Scarification of borrow pit floors and re-contouring of cutbanks to stable grades
- Deactivation of construction staging/laydown areas by removal of all equipment/materials, scarification of compacted ground, and recontouring of sites to original contours
- Re-establishment of drainages across the former road corridor, stabilized with rock material
- Pullback of road side cast material and backfilling of cutbanks to re-establish the original ground contours.

Road disturbances such as exploration roads, tote roads, trenches and drill sites will be progressively reclaimed during mine life as they become available, utilizing the above listed permanent deactivation methods.

Soil replacement for these disturbances will be to the same depth that was originally salvaged from the disturbance site; the material will be sourced from adjacent windrows, soil stockpiles and road fill slopes.

Three sections of the HCR have been identified as areas where horizontal and vertical alignment requires revision. The old alignments will be decommissioned (gravel recycled for the existing road), decompacted and reclaimed with appropriate vegetation. The three construction laydown areas along the HCR will have soil windrowed prior to development, erosion control measures put in place and when no longer required, will be checked for contamination and remediated as necessary. Prior to topsoil replacement the site will be decompacted and recontoured to restore drainage.

3.6.1.2 Transmission Line

Currently it is estimated that existing reserves will facilitate economic mine operations 8 years. The design life of the transmission line is assumed to be 50 years. The anticipated decommissioning activities for High Voltage Transmission Facilities for the Project are outlined below.

Decommissioning shall include safe dismantling and the removal from the site and salvage or disposal of all line components. The transmission line RoW will be cleared of vegetation but will not require the significant removal or disturbance of soil. For this reason, post-closure ecosystems are predicted to be the same as those that existed prior to the Project.

Due to its proximity to the HCR, ground disturbance from transmission line construction will be minimized as the HCR will be used for construction vehicle and machinery access. Disturbance areas anticipated for the transmission line ROW include; power pole locations, access trails to pole locations and construction equipment/material staging/laydown areas.

To ensure that the ROW is left in a state that will allow for future land use or natural re-growth of the indigenous vegetation the transmission line decommissioning will be done in accordance with the following procedure:

- The line will be de-energized and grounded in accordance with the safety rules
- Crossing of transmission lines, roads, and other objects shall be secured
- The conductors will be disconnected from the insulators, winded on conductor reels and transported to designated storage
- The structures will be removed from the foundations and disassembled
- Crossarms, conductor fittings, insulators, pole hardware, and guys shall be dismantled, sorted, counted and packed separately
- All guy anchors, the structure foundations grounding wires and grounding rods will be removed from the ground
- The foundation and anchor holes shall be backfilled. In agricultural land, at least 0.3 m of topsoil shall be spread on any excavation site
- All materials shall be removed from site. Materials that cannot be salvaged shall be transported to an approved landfill site
- The RoW shall be inspected to ensure that the site is cleared of all transmission line materials.

Disturbance areas that are created during construction, operations or closure phases will be re-contoured and scarified. The areas will also be seeded with a natural grass/legume cover to prevent erosion and invasive plant establishment. At closure, the RoW will be naturally vegetated and will not require additional revegetation treatments to meet reclamation objectives. Transmission line decommissioning will not significantly disturb soil or the established vegetation if proper erosion control and limited new ground disturbance occur.

3.6.1.3 Fuel and Explosives Facilities

Prior to construction of the fuel and explosives magazine facilities, soils will be salvaged and stockpiled locally in windrows adjacent to the disturbance sites or in designated soil stockpile areas.

At closure, all tanks and fuel storage facilities will be emptied of their contents before they are removed from their foundations. Tank residues will be disposed of as outlined in the Waste Management Plan.

Foundations and confining bunds/walls will be broken down and covered with overburden, pre-mining drainage patterns will be restored and re-enforced as required with rip-rap.

Prior to soil replacement, the sites will be tested and remediated as necessary. The site if/when free of possible contamination will be re-contoured to original grades and topography and pre-mining drainage patterns will be restored. Salvaged soil material that was windrowed adjacent to the sites will be spread directly by dozer pushing from the windrow berms. Soil that was salvaged and stored in designated stockpiles will be hauled by dump trucks and placed at the disturbance sites; the soil will then be spread by dozer. Soil replacement will be to the same depth that was originally salvaged from the site. Placed soil will require scarification prior to revegetation if the surface becomes compacted due to truck or equipment traffic.

3.6.2 Revegetation

Only roads constructed outside of the larger disturbance areas, the transmission line and fuel/explosives facilities are addressed in this section. Project roads that are constructed within the WRSAs, HLF, Silt Borrow Area, Plant Site, Salvage Areas and Soil Stockpiles will be reclaimed as part of the that disturbance type and undergo the same reclamation treatments.

Once the sites have been capped with soil, they will be revegetated with plant species that are suitable for the post-closure ecosystems that are predicted to establish. These species will establish a long-term self-sustaining vegetation cover that will provide erosion and invasive plant control and steward the establishment of productive ecosystems. Predicted post-closure ecosystem units include Alaska birch willow shrub areas, subalpine fire forests, willow grass areas and spruce forests. Refer to Sections 2.1, 2.2, and 2.3 for details on the predicted post-closure ecosystem units, candidate reclamation species and reclamation treatments. As areas become available, progressive final reclamation will be carried out wherever feasible.

During the operational phase of the Project, interim reclamation measures, such as establishing a grass cover, will prevent erosion and invasive plant establishment. If required, slope stabilization techniques will be implemented on road cutbanks and fill slopes during the operational and closure phases. These would include techniques such as installation of erosion control blankets, application of a bonded fibre matrix, or installation of bioengineering structures such as wattle fences, and modified brush layers.

3.7 Dublin Gulch Diversion Channel and Water Management Structures

The DGDC and SCP 1, a velocity pond, will remain as permanent structures and will not undergo final reclamation. All other water management structures will undergo closure and reclamation. This section outlines the description of these features, closure measures and revegetation.

3.7.1 Dublin Gulch Diversion Channel Description

The lower Dublin Gulch valley currently drains into Haggart Creek via Dublin Gulch and the smaller Eagle Creek (fed by Eagle Pup). The proposed HLF will extend into the Dublin Gulch valley, and the majority of mine site water management facilities will be located in the lower Dublin Gulch valley. Therefore, both Eagle Creek and Dublin Gulch will require re-alignment around the proposed mine site infrastructure. This re-alignment is referred to as the Dublin Gulch diversion channel (DGDC) (Figure 3.7-1).

The relocation of Dublin Gulch is designed to convey stream flow safely past the HLF and divert the water to the Eagle Creek drainage downstream of the Project site facilities. The DGDC will be completed during Year 2 of the Construction phase (2013) and will remain in place indefinitely. The diversion channel will be designed to include riffle and pool sequences to emulate naturally occurring fish habitat features, while maintaining a stable geometry and platform which will be achieved by keeping rock-fill armoring and channel training structures in place post-closure.

The DGDC will be approximately 2.6 km long and will transport flows from upland (non-contact water) of the mine site infrastructure for eventual discharge to Haggart Creek. The upstream end of the DGDC will intercept flow from the existing Dublin Gulch channel midway between the existing confluences of Eagle Pup and Stewart Gulch, then cross the Eagle Pup and Stuttle Gulch basins while passing the HLF and WRSA Facilities. The DGDC will flow into the existing Eagle Creek channel downstream of the water management facilities near the location where the channel turns south within the Haggart Creek valley. Although much greater flow rates will be conveyed down Eagle Creek than currently, these increased flows from the DGDC will provide an opportunity to re-habilitate and enhance the lower Eagle Creek channel which currently has reaches with high rates of erosion and sedimentation. These enhancements to Eagle Creek and specific habitat features of the DGDC are described in the Fish Habitat Compensation Plan in Section 6 of the Project Proposal and in Stantec (2010d). The DGDC results in the alteration of approximately 12,528 m^2 of the existing Dublin Gulch channel.

The DGDC will consist of a low-gradient upper reach, an energy dissipater (steeper middle reach) and a moderate-gradient lower reach. The upper reach will be 5 m wide and 3 m deep with a 1% slope over 900 m along the valley contour. The upper reach will be constructed of earth-fill, HDPE liner, and rock-fill erosion protection. Flows will be routed down the energy dissipater within the current Stuttle Gulch drainage at approximately 15% gradient where stream energy is decreased through in-channel energy dissipation structures. In-stream erosion control structures for this section of the DGDC will include large size rockfill placed on a gravel bed on a heavy duty geotextile. The energy dissipater will discharge to a velocity reduction pond at the upstream end of the lower reach and will permit fish passage to the upper reach. The lower reach of the DGDC will consist of a channel that is 5 m wide and 3 m deep with an approximate gradient of 5% over a length of 1,160 m. The lower reach will not be lined. The channel will follow the southern boundary of the lower Dublin Gulch valley and discharge into the lower Eagle Creek drainage.

The re-alignment requires two velocity reduction ponds. The Upper Dublin Gulch Velocity Reduction Pond will be located immediately below the diversion from the existing channel into the DGDC. The objective of the pond will be to control the water supply from Dublin Gulch prior to entering the diversion channel. The Lower Dublin Gulch Velocity Reduction Pond will be located below the energy dissipater (along the existing Stuttle Gulch channel) located in the DGDC. The purpose of the pond will be to control water velocity entering the lower section of the diversion channel. The DGDC and both ponds will be designed to accommodate a 1:100 year 24-hour event. Currently fish bearing habitat in Dublin Gulch is extensively degraded by placer mining operations over the last several decades. Two large cascades located approximately 1.5 and 2 km upstream in Dublin Gulch currently prohibit upstream passage of fish. The DGDC will route flows around these two barriers and open upstream areas of Dublin Gulch for fish use. The DGDC will be designed to enhance fish habitat to increase productivity of the sub-basin. Enhancement prescriptions will include in stream complexing (addition of large woody debris, boulders and pools) and riparian planting to increase stability of the banks, decrease erosion and sedimentation, reduce temperature fluctuations, and provide allochthonous (transported from another ecosystem) food sources—plants and insects from riparian vegetation.

3.7.2 Water Management Structure Closure Measures

Water management structures will consist of events ponds associated with the HLF, feed and polishing ponds associated with the mine water treatment plant, sediment and seepage collection ponds, and surface water diversion and collection ditches covering approximately 37 ha. These structures will remain in place until the reclamation earthwork activities, such as resloping the WRSAs slopes have been completed and vegetation has been established to prevent surface erosion.

Once reclamation activities have been completed and there is no longer a need for sediment control, the ditches will be backfilled to original topography and capped with windrowed topsoil.

The sediment pond containment berms will be recontoured to pond height so the pond surface will be free draining and not impound water. The captured sediment will be retained within the containment pond and the berm material will be graded over the surface to assist in dust control and revegetation. Soil replacement of constructed ditches will be to the same depth that was originally salvaged from the disturbance site; the material will be sourced from adjacent windrows or soil stockpiles.

3.7.3 Revegetation

Once the water management sites have been decommissioned, recontoured and capped with soil, they will be revegetated using vegetation suitable for the predicted post-closure ecosystems. This area will appear as large swales in the landscape with the lower areas being wetter ecosystems. Predicted post-closure ecosystem units include: shrub dominant communities of Alaska birch and willow, forested units of subalpine fir, grass/herb and willow areas and some limited black spruce Labrador tea areas. Refer to Sections 2.1, 2.2, and 2.3 for details on the predicted post-closure ecosystem units, candidate reclamation species and reclamation treatments. As areas become available, progressive final reclamation will be carried out.

During the operational phase, interim reclamation will be carried out on these disturbance features in order to prevent erosion and invasive plant establishment. If required, slope stabilization techniques will be undertaken during the operational and closure phases to stabilize pond slopes and diversion ditch banks. These would include techniques such as installation of erosion control blankets, application of a bonded fibre matrix, or installation of bioengineering structures such as wattle fences, and modified brush layers. The Dublin Gulch Diversion Channel will not be decommissioned and will remain permanently.

4 WATER MANAGEMENT FOR CLOSURE

4.1 Description

The objective of the Water Management Plan for the closure and reclamation phase will be to safely convey and/or store as necessary, all freshet and rainfall runoff through the Project site, while maintaining water quality at background levels or meet Canadian Council of Ministers of the Environment (CCME) standards (if applicable) in receiving water bodies. This objective includes minimizing total suspended sediment levels and treating contact water to achieve water quality standards. Furthermore, during the reclamation phase, most of the water-related mine facilities will be gradually decommissioned and reclaimed.

From a water management perspective, the reclamation phase of the Project is assumed to occur over a 10 year period from January of Year 10 to December of Year 19. The 10-year length of time is more a product of the required time to close the HLF, whereas most of the other facilities are less constrained and are scheduled to be closed and reclaimed in a shorter time period. During this time, the closure of the HLF will have three successive periods:

1. Supplemental gold recovery period (Year 1 following operations)
2. Rinse period (Years 2 and 3 and half of Year 4 following operations)
3. Drain down period (beginning after the rinse period), followed by post-closure monitoring.

The overall Project design objective is a ―walk-away" closure condition, with post-closure water quality monitoring at specific locations until it is demonstrated remediation measures have achieved the required out-comes.

As reclamation progresses, the routing of water among the various Project facilities will change, and the amount of water to manage will become increasingly less as longterm water routing is implemented.

The major water management actions that will occur during closure and reclamation include the following:

- During the first several years of final reclamation the open pit sump will receive inflows from the horizontal drains and open pit wall runoff, as well as contact water from the Platinum Gulch SGP. When the pit lake water quality meets discharge criteria, and after the pit lake has filled (estimated to take approximately one average water year), the pit lake will then drain toward and form a tributary to Platinum Gulch, which will be discharged to Haggart Creek downstream of the Eagle Creek/Haggart Creek confluence.

- During the first several years of final reclamation, the Eagle Pup WRSA will be capped as necessary. The resultant seepage and runoff from the Eagle Pup WRSA will continue to flow into the Eagle Pup SCP and conveyed to the feed pond until it is demonstrated that the water meets discharge criteria, after which the pond will be deactivated, and the runoff will drain to the DGDC.
- The majority of the heap is expected to drain down in Year 4 of closure and reclamation; this follows one year of supplemental gold recovery and 2.5 years of heap rinsing. Although the draindown process will likely take a number of years, a large portion (~73%) of the draindown is expected to occur in the first three months, which is scheduled to follow freshet in Year 4.
- The draindown water will be cycled to the cyanide detoxification plant, and then to the MWTP. During peak draindown, if no other measures are taken to reduce flows, the MWTP feed rate could approach 300 m^3/hr (during an average year), which is well below the design feed rate of 620 m^3/hr. This water includes the additional water piped from the open pit sump and the Eagle Pup SCP.
- Treatment feed rates are expected to decrease quickly after the first several months of draindown, and ultimately, active treatment rates would become very minimal due to the 10% net infiltration design of the HLF cap. Long-term treatment of the low volumes of HLF discharge, if still needed, could be met by a passive system, until discharge criteria are met.

4.2 HLF Water Treatment

Water treatment facilities will remain intact until the HLF has been detoxified and seepage quality is suitable for direct release to Haggart Creek. The MWTP will receive water from the HLF after the Events Ponds have been closed. The MWTP and ponds will remain intact until the HLF has been detoxified and seepage quality is suitable for release to the lower DG SCP.

The quality of detoxified water from the heap to the MWTP was predicted based on results of a standard humidity cell conducted on a composite ore sample provided by KCA (Appendix 27) and a modified humidity column of spent ore composite sample following cyanidation and detoxification in a metallurgical test column (Appendix 8 - Geochemical Characterization and Water Quality).

During draindown, heap leach solution water quality is expected to have elevated concentrations of arsenic, antimony, aluminum, copper, lead, and selenium, and will need to be treated through the MWTP prior to release to Haggart Creek, in order to maintain water quality objectives within Haggart Creek.

Physical reclamation of the surface of the HLF will include an evaporative transpiration (ET) and soil water retention cover that has been assumed to restrict the amount of rainfall infiltrating the heap to approximately 10% of net precipitation. Further discussions regarding predicted water quality during the Closure and Reclamation phase are provided in Section 6.5.2.2 of the Project Proposal.

As draindown and rinsing of the HLF progresses, water quality of the heap leach solution will improve and seepage from the HLF may be suitable for treatment through a wetlands system rather than the MWTP. A Technical Memorandum (Appendix 28 – Engineered Wetlands as a Post-closure Water Quality Mitigation Method) was prepared for the Project to describe effectiveness of semi-passive engineered wetland systems for removing metals, metalloids, sulphate and nutrients in many mining situations (e.g., at the Teck Cominco Smelter in Trail, BC, the closed Yankee Girl Mine in BC, the Park City Mine in Utah, Newmont's Golden Giant Mine in Ontario, and many others). These dry surfaced ~~–~~wetlands" have mainly subsurface flow and are considered proven technology. They involve various series of passive and semi-passive aerobic and anaerobic bioreactor and chemical unit operations in separate basins (cells), depending on the situation, and can operate effectively throughout the coldest of northern winters, regardless of ambient air temperatures. Arsenic and other metals and metalloids can be reduced from the 100s to 1,000s of mg/L range to the 0.001 to 1 mg/L range (100-fold to 1,000 fold decreases), and other metals and metalloids show similar reductions. The semi-passive systems can be modified to become fully passive over time. The need for treatment wetlands and the applicable design features will be assessed based on monitoring of runoff quality during operations, which will enable comparisons of predictions to operating conditions.

Ultimately, the seepage from the decommissioned HLF will be designed so that it is suitable for direct release to Haggart Creek.

4.3 Remaining Issues and Investigations

Further research and testing during operations is required to refine cover design for the HLF and WRSAs. The early closure of the Platinum Gulch WRSA will provide an ideal opportunity for refinement of the cover performance in terms of infiltration rates and predicted water quality discharged from the WRSA. Additional mitigations, including a cover that allows less infiltration and passive treatment (e.g., use of ponds or wetlands to even out peak flows to the streams can be pursued based on finding on the Platinum Gulch WRSA).

5 POST-CLOSURE ENVIRONMENTAL MONITORING AND SURVEILLANCE

The Proponent will conduct a range of monitoring programs to demonstrate compliance with reclamation and closure guidelines and objectives. These monitoring programs will be developed as part of the permit application process. The monitoring programs would likely collect information to document:

- Compliance with permits, licenses and approvals issued for the Project

- Compliance with applicable territorial and federal legislation relating to mine operations and environmental protection
- Success of reclamation programs
- Uptake of metal and non-metals in reclamation vegetation
- Geotechnical stability of structures, including WRSAs, diversion channels, SCP and soil stockpiles
- Results of measures to minimize effects on the environment.

5.1 Constructed Facilities Monitoring

5.1.1 Heap Leach Facility

The HLF will need to be monitored on an ongoing basis to evaluate overall performance of the facility and ensure all design objectives are satisfied during operations and closure of the facility. Various instruments will be required to monitor the facility, and this might include instruments such as: vibratory wire piezometers, survey monuments, water level monitors and flow meters.

5.1.2 Waste Rock Storage Area

The WRSAs will be monitored on an ongoing basis to evaluate overall performance of the facility and to confirm design assumptions and parameters used in the stability assessment. The monitoring program will be implemented during initial stages of production and revised as necessary to ensure design objectives are satisfied during construction and throughout the operations of the facility.

Visual inspections combined with instrumentation will be required to monitor the facility, and this might include instruments such as: vibratory wire piezometers, survey monuments, water level monitors and flow meters.

5.2 Climate Monitoring

Climate monitoring will continue at the Potato Hills station and the Camp[3] station until the end of the post-closure monitoring phase (Figure 5.2-1). Data will be downloaded quarterly and compiled into the existing database. Station maintenance will be completed as required by the Environmental Manager or designate.

5.3 Water Quality and Aquatic Biota Monitoring

This section includes surface water, groundwater and benthic invertebrate monitoring at post-closure. Water sites for monitoring are identified in waterways near the mine site and the sampling requirements are outlined.

[3] indicates new Camp station location

5.3.1 Surface Water

The Water Quality Monitoring Program will be developed for all phases of the mine life to meet permit requirements, in consultation with regulatory agencies. After closure, discharges from mine facilities will be directed to the MWTP until monitoring indicates there is no further need for treatment (i.e., that discharge of untreated mine water will result in acceptable water quality in the receiving streams). The monitoring program implemented during construction and operations will be adapted to site conditions for closure and will include all necessary QA/QC components to assess accuracy and reproducibility of the program.

The elements of the Water Quality Monitoring Program for receiving waters (streams) applicable to all Project phases are as follows:

- Measurement of metal and non-metal concentrations, cyanide, nutrient and general physical and chemical parameters, using parameters, detection limits and methods described in Section 6.5 (Water Quality and Aquatic Biota)
- Monitoring frequency to be determined through permitting (likely to be monthly during some phases and less frequently during others)
- Monitoring until it is determined that closure measures are resulting in acceptable receiving water quality under the appropriate range of flows and precipitation
- Sampling sites as follows (Figure 5.2-1), which indicate locations of monitoring areas that will be used at post-closure:
    - Platinum Gulch WRSA and open pit, which will discharge to Platinum Gulch and then Haggart Creek at closure, monitoring sites will be located in the open pit, lower Platinum Gulch (site W34) and Haggart Creek downstream of the confluence (W29).
    - Eagle Pup WRSA, which will discharge to the DGDC at closure, monitoring sites will include lower Eagle Pup (W9), and two new sites upstream and downstream of the discharge, to be established after channel construction.
    - HLF, which will discharge to Haggart Creek in the area of the MWTP discharge once water quality is acceptable, the monitoring sites will include the HLF discharge, and locations in Haggart Creek upstream (W22) and downstream (W4) of the discharge.
    - Additional sites as defined during permitting (e.g., to assess potential for seepage from WRSAs and the HLF into groundwater then discharge into area streams).
    - Additional sites in Haggart Creek to monitor conditions relevant to the discharges (e.g. W5, upstream of the Lynx Creek confluence).

The mine will also be subject to the federal Metal Mine Effluent Regulations, and will require an effluent and receiving environment program designed to determine if: a) effluent quality meets MMER requirements; and b) there is an effect of the discharge on receiving water quality (to assess biological conditions in an exposure area that receives effluent and in a reference area).

5.3.2 Groundwater

A groundwater quality monitoring program will be developed using the network of monitoring wells described in the Site Water Management Plan to assess whether predictions made in the environmental assessment about potential changes to groundwater related to seepage of mine water are correct and to develop alternative management strategies, if needed. Parameters, detection limits, and monitoring frequency will be determined in the permitting stage, and will be consistent with recently collected data. In addition, surface water sites will be monitored for changes in groundwater influences, as discussed in the Site Water Management Plan.

5.3.3 Benthic Invertebrates and Sediment

Benthic invertebrate communities and sediment quality are two important indicators of benthic conditions in streams affected by mine discharges. The aquatic environment monitoring program will be developed to meet permit requirements, in consultation with regulatory agencies. The monitoring site network will be the same as that developed for water quality (Section 6.5, Water Quality and Aquatic Biota). Sediment and benthic invertebrate samples will be collected during late summer, as has been done for recent and historic baseline programs.

5.4 Hydrology and Hydrogeology Monitoring

The objective of the hydrology monitoring program is to gauge stream flows upstream and downstream of the Project facilities to ensure stream flow conditions are similar to pre-operational conditions. The hydrometric monitoring locations will include: W1, W22, W5, W29, and a station on the lower section of Eagle Creek (Figure 5.2-1). The stations will include a stationary staff gauge and a water level data logger.

Manual stream flow measurements will be recorded at freshet, monthly during the open-water season, and bi-monthly during the winter season by the Environmental Manager or designate. The measurements will be added to the existing stage-discharge relationship developed for the stations. Stream water levels will be downloaded and converted to discharge and compiled in an existing database for each of the monitoring stations. Station maintenance will be completed as required. The stations will be surveyed to local datum each spring and prior to freeze up to ensure the stations remain stationary and the stage-discharge relationship is valid.

The objective of the hydrogeology monitoring program is to monitor groundwater levels and quality down gradient of the Project facilities during the post-closure phase to assess any changes in groundwater conditions that may be attributable to the mine operations.

The following wells will be monitored: MW09-DG4, MW09-DG5, and MW10-PT1. These wells are situated down gradient from mine Project features that may affect groundwater levels or quality. Monitoring well DH95-150 will also be monitored for baseline groundwater conditions (Figure 5.2-1). Water level recorders will be installed in the wells to monitor levels. The recorders will be checked by manual measurements and downloaded quarterly. These data will be added to an existing database for each well. Groundwater quality samples will be taken quarterly and sampled for general chemistry, metals, nutrients, total organic carbon (TOC), total nitrogen (TKN), and cyanides. Lab results will be compiled and added to an existing database and compared to water quality standards permitted for the Project. Groundwater quality results that exceed the water quality standards will be reported to the Yukon Water Board.

5.5 Vegetation Monitoring

Post-closure reclamation monitoring for the mine site will continue until a self-sustaining vegetation cover that meets end land use objectives has been established and confirmed by monitoring results.

Reclamation success will be monitored annually throughout mine life to ensure that reclamation techniques being utilized are appropriate for land capability objectives. Possible parameters that will be assessed on reclaimed mine site areas include:

- Species composition and diversity
- Vegetation cover density and productivity
- Tree/shrub seedling survival and growth
- Evidence of natural establishment of native plant species
- Wildlife use of reclaimed areas
- Nutrient and metal and non-metal uptake in reclamation vegetation.

The suitability of reclaimed sites for wildlife use will be assessed through trace metal monitoring in vegetation.

Progressive reclamation will begin early in the mine operations phase as soon as sites become available for reclamation. The Platinum Gulch WRSA will be the first major disturbance area to be reclaimed. Results of this reclamation monitoring will inform the ongoing reclamation activities, many of which will not occur until mine closure.

A baseline measure of vegetation tissue metal and non-metal composition was completed in order to evaluate pre- and post-disturbance metal and non-metal concentrations in mine site flora. It is important to determine if any potentially harmful metals and metaloids (e.g. arsenic, cadmium, selenium) are present at naturally elevated levels on the site prior to disturbance and ensure that any elevated levels following disturbance are not erroneously attributed to industrial activities, as opposed to pre-existing mineralization. Further information on baseline terrestrial vegetation metal and metaloid concentrations may be found in Section 6.8

Elemental analysis of soils (Stantec 2010g, Section 3.6.3) has indicated that baseline soil quality guidelines were exceeded for arsenic, cadmium, copper, lead, molybdenum, nickel and selenium. Arsenic is the primary element of concern in the Dublin Gulch watershed due to naturally high levels and can pose a risk to humans, plants and animals. Laboratory results indicate that these arsenic levels are natural to this area and should be considered during reclamation activities. While baseline arsenic concentrations are naturally elevated in the soil, they are not elevated in the sampled vegetation.

5.6 Wildlife Monitoring

In addition to the compliance monitoring (e.g., regarding the implementation of Project commitments), VIT will consider the implementation of the following effects monitoring program:

- Annual aerial mapping of distribution of moose in winter within 5 km of the access road and mine site and in adjacent control areas. The distribution of moose is influenced by snow depths and conditions in addition to other factors such as predation and human harvest and disturbance. Annual mapping of distribution before construction (in 2011 and 2012), during construction, and during mine operations will allow assessment of displacement and population reduction resulting from mine activities, and adaptive management measures if negative effects occur. If no effects are observed after five years of monitoring, the frequency of this monitoring could be reduced.

Proposed monitoring activities include:

- Fixed-wing aircraft surveying of moose in February or March each year, with transects spaced approximately every 1 km, roughly perpendicular to and extending at least 10 km in either direction from the access road; waypoints recorded for all observations and fresh tracks of moose
- Monitoring of volume and type of vehicle traffic along the access road
- Monitoring of wildlife usage of the access road and mine site (ongoing-all phases). Recommend keeping a log of wildlife sightings for the access road and mine site area, including description of species, activity, details of interaction
- Monitoring/reporting all wildlife mortalities associated with access road and mine site
- Monitoring of snow depths along the access route to the mine and at the mine site
- Annual monitoring of harvest of moose, recommended methods—work with Environment Yukon to summaries harvest rates of moose in Game Management Subzones adjacent to the mine site and proposed access route
- Monitoring of wildlife use/response to reclaimed areas within mine site footprint.

5.7 References

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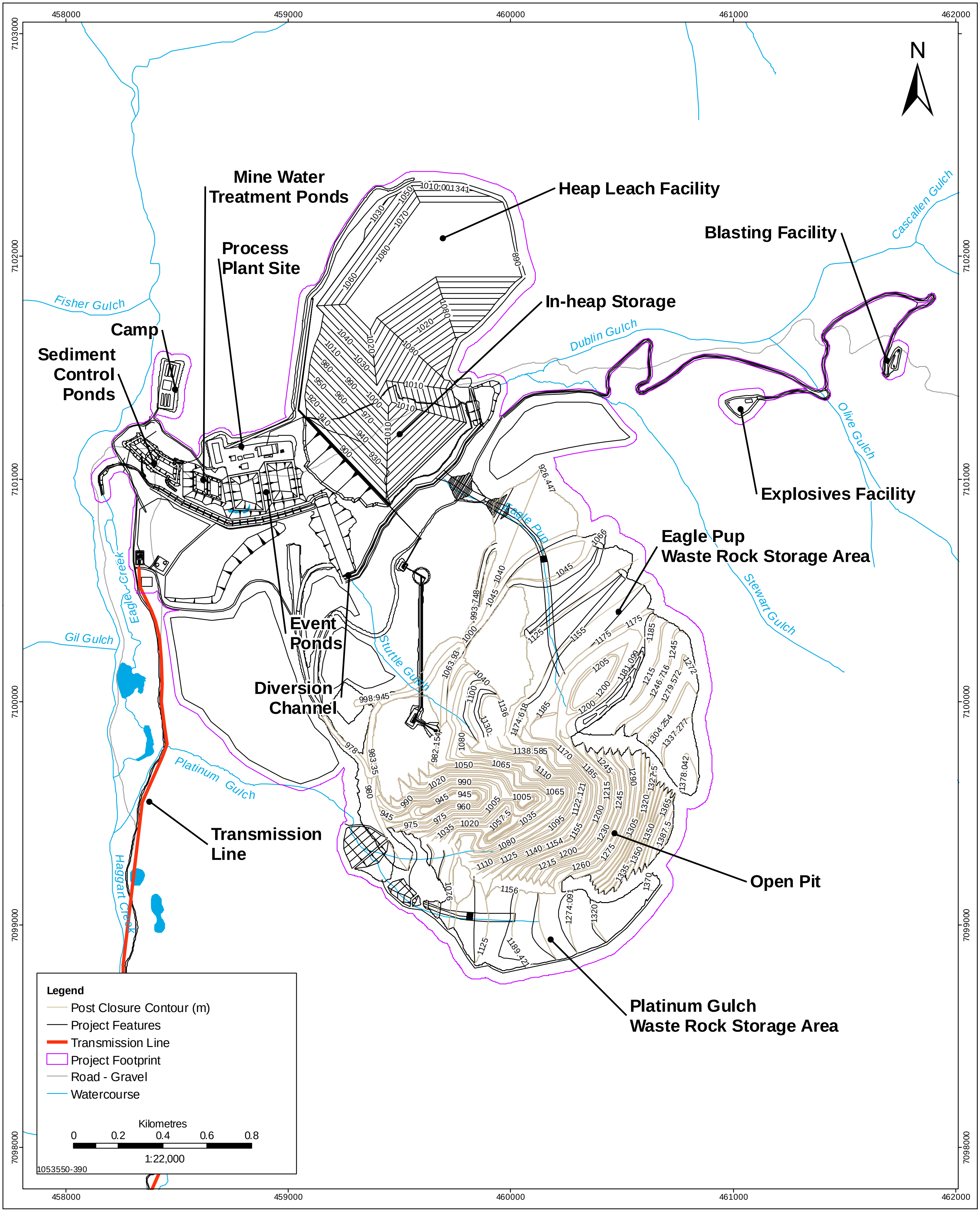
6 FIGURES

Please see the following pages.



Data Sources; Government of Canada, Victoria Gold Corp.

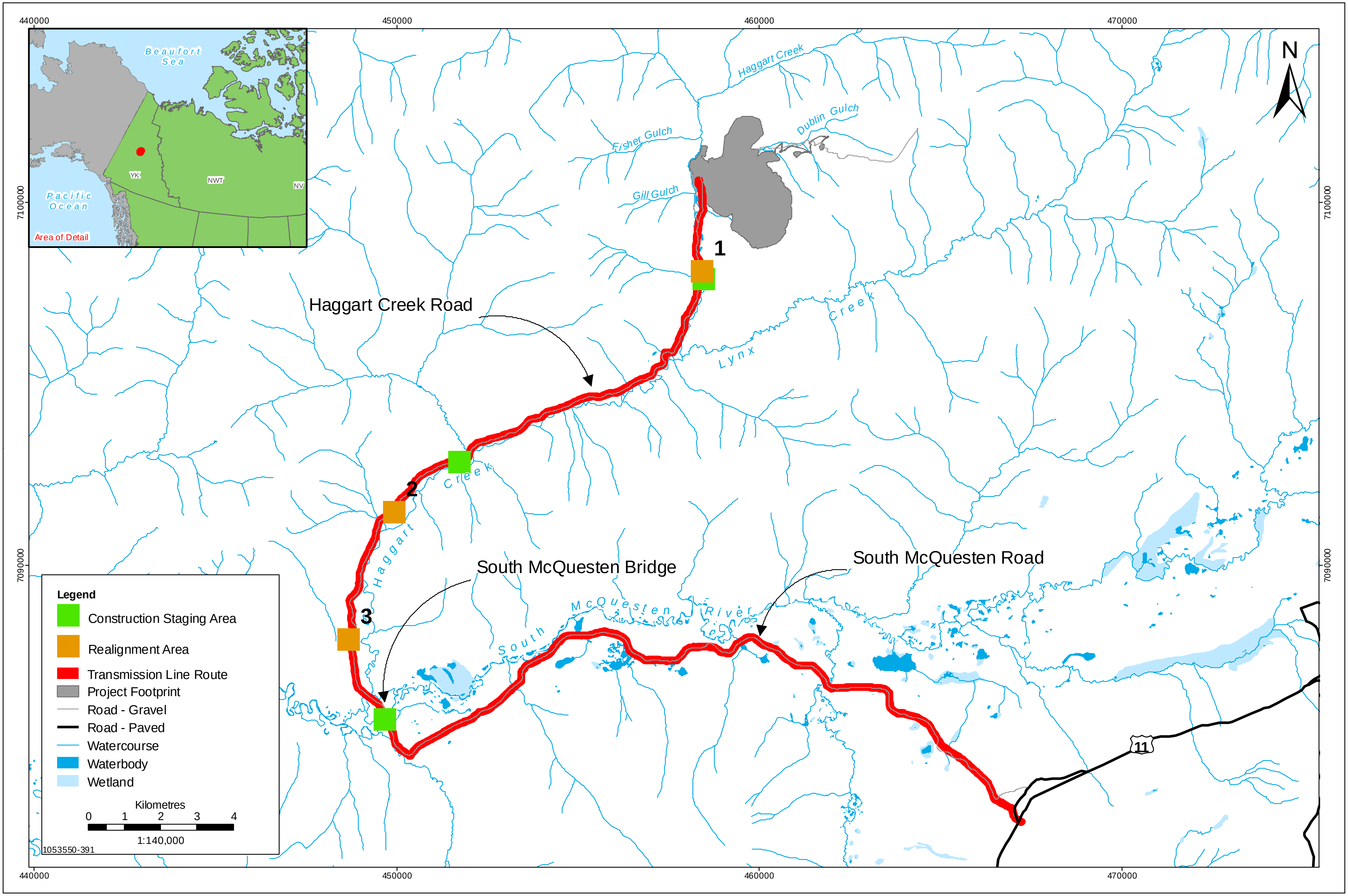
Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

Victoria GOLD CORP

EAGLE GOLD MINE PROJECT FOOTPRINT

EAGLE GOLD PROPERTY
YUKON TERRITORY

PROJECTION UTM - ZONE 8	DRAWN BY LS
DATUM NAD 83	CHECKED BY RS
DATE 30-November-2010	FIGURE NO. 1.1-1



Data Sources: Government of Canada, Victoria Gold Corp.

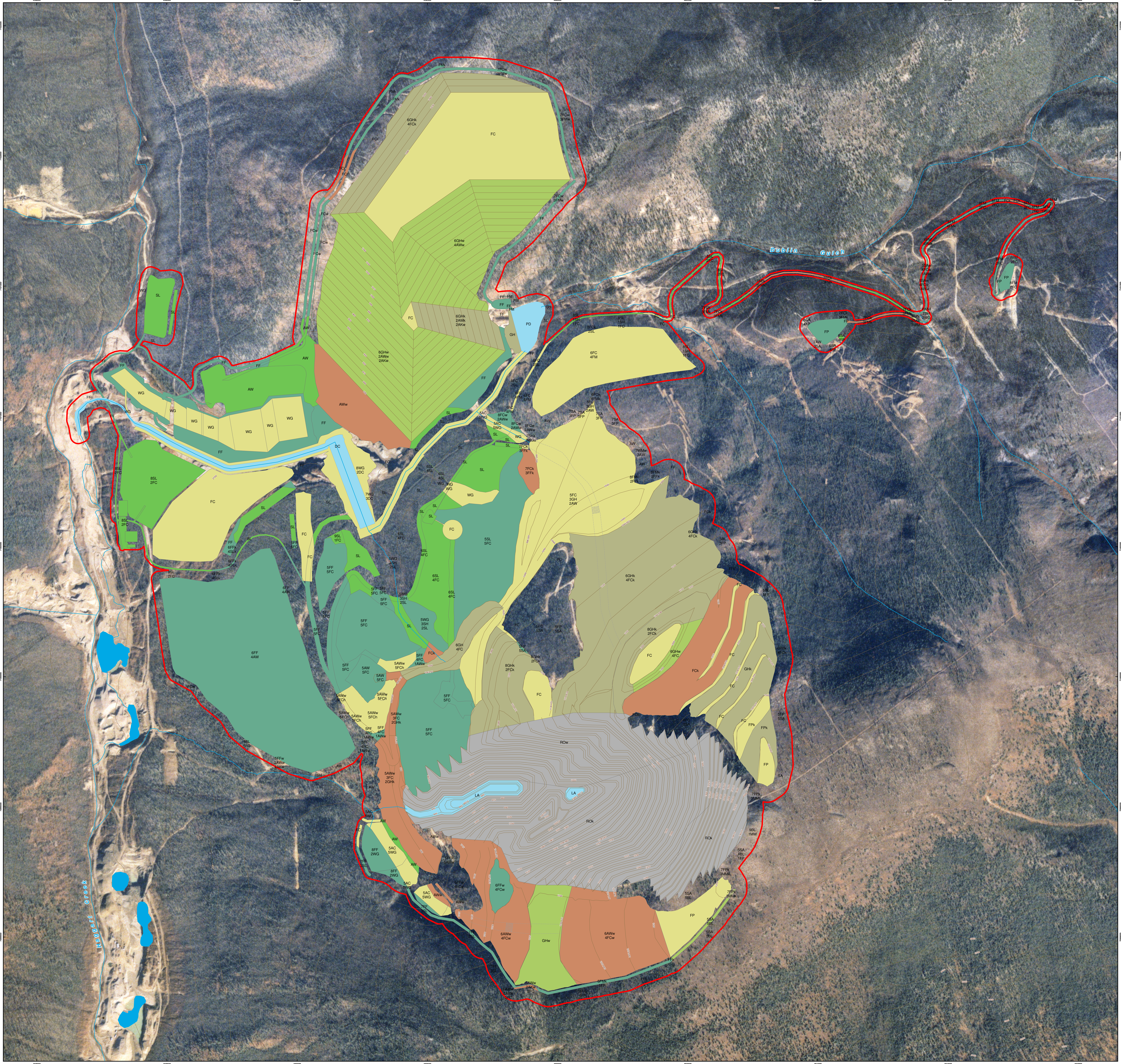
Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

Victoria GOLD CORP

EAGLE GOLD PROJECT FEATURES

EAGLE GOLD PROPERTY
YUKON TERRITORY

PROJECTION	DRAWN BY
UTM - ZONE 8	LS
DATUM	CHECKED BY
NAD 83	LS
DATE	FIGURE NO.
30-November-2010	1.1-2



LEGEND

ECOSYSTEM UNIT LABEL

6FCw – 4BLw

Component 1
6 = Decile 1
FC = Map code 1
w = Site modifier 1

Component 2
4 = Decile 2
BL = Map code 2
w = Site modifier 2

ECOZONE
Boreal Cordillera

ECOREGION
Yukon Plateau-North

ECOSYSTEM UNITS

Forested Zone

Map Code	Ecosystem Name
AK	Aspen-Kinnikinnick
AW	Alaska birch-White spruce-Willow
BL	Dwarf birch-Lichen
FC	Subalpine fir-Cladina
FF	Subalpine fir-Feathermoss
FM	Subalpine Fir-Labrador tea
FP	Subalpine fir-Dwarf birch-Crowberry
GH	Graminoid-Herb
SA	Dwarf birch-Northern rough fescue
SH	White spruce-Horsetail
SL	Black spruce-Labrador Tea-Feathermoss
WG	Willow-Groundsel
WM	Willow-Mountain sagewort

Subalpine Zone

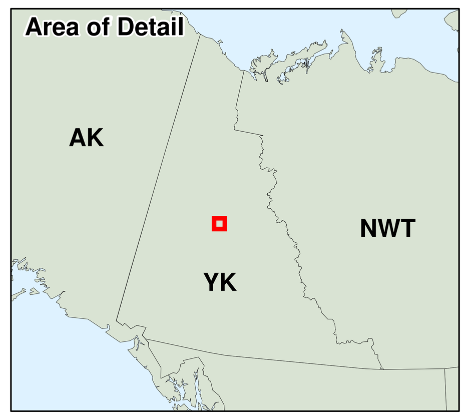
BL	Dwarf birch-Lichen
FP	Subalpine fir-Dwarf birch-Crowberry
MM	Mountain heather meadow
MW	Willow-Mountain sagewort
SA	Dwarf birch-Northern rough fescue

Non-Forested Units

AC	Armoured Channel
DC	Diversion Channel
LA	Lake
PD	Pond
RO	Rock outcrop

Site Modifiers

a	active floodplain
g	gullying occuring
h	hummocky terrain
k	cool aspect (approximately 285-135 degrees, slope >25%)
r	ridge
w	warm aspect (approximately 135-285 degrees, slope >25%)



WILDLIFE HABITAT END LAND USE OBJECTIVE CATEGORIES

- Moderately High Moose Habitat Capability, Moderately High Grizzly Bear Habitat Capability
- Moderately High Grizzly Bear Habitat Capability, Moderate Moose Habitat Capability
- Moderately High Moose Habitat Capability, Moderate Grizzly Bear Habitat Capability
- Moderate Grizzly Bear Habitat Capability, Moderate Moose Habitat Capability
- Moderately High Grizzly Bear Habitat Capability, Very Low Moose Habitat Capability
- Moderate Grizzly Bear Habitat Capability, Very Low Moose Habitat Capability
- Nil Moose and Grizzly Bear Habitat Value (pit)
- Nil Moose and Grizzly Bear Habitat Value (water features)

MAP LEGEND

- Elevation Contour (ft)
- Post Closure Contour (m)
- Rock Drain
- Watercourse
- Waterbody
- Project Footprint

N

Metres

Scale 1:5,000

Projected Ecosystem Mapping and Wildlife Habitat Ratings by Stantec

Data Sources: Province of the Yukon, Victoria Gold Corp.

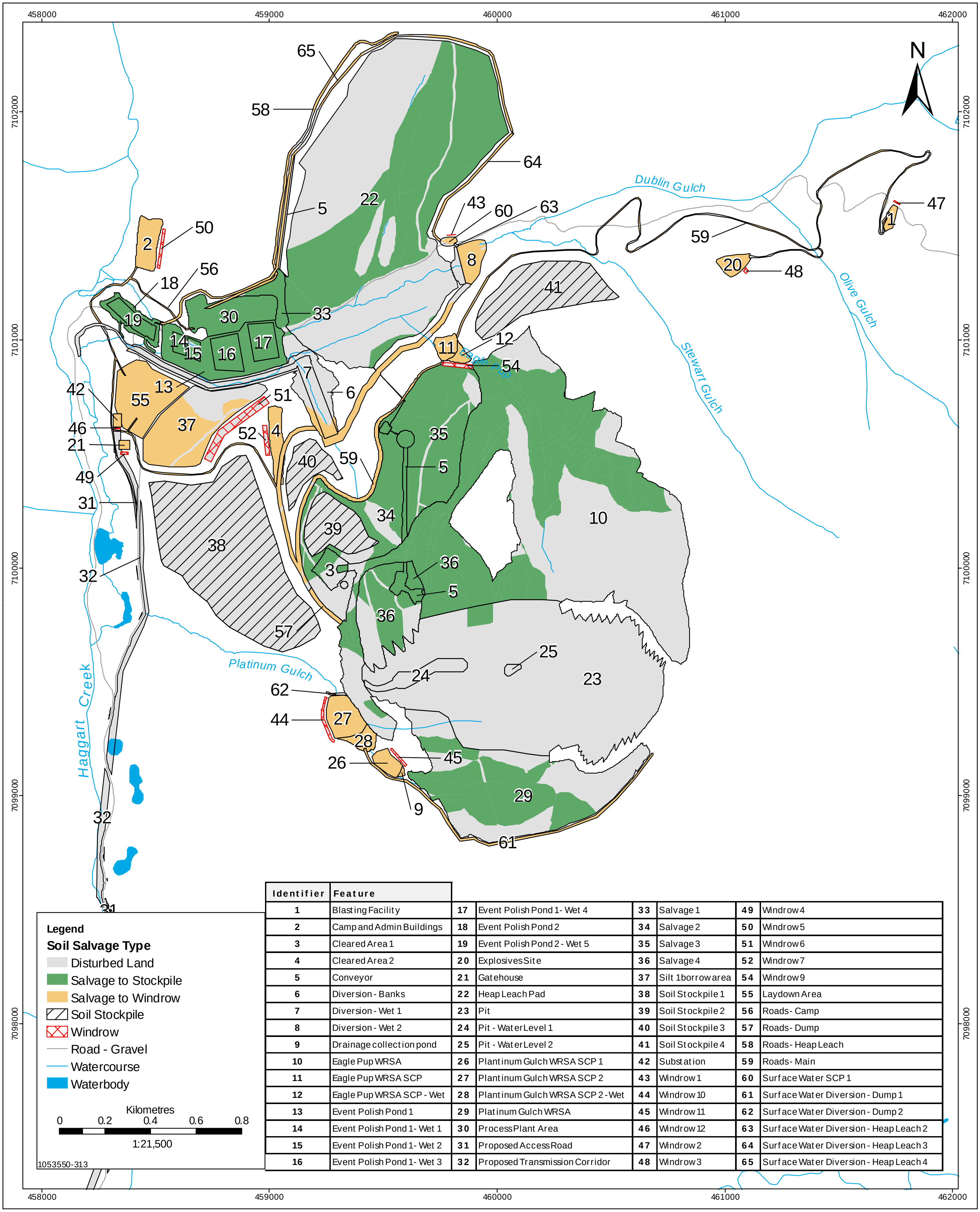
Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

Victoria GOLD CORP

FINAL CONCEPTUAL RECLAMATION PLAN

EAGLE GOLD PROPERTY
YUKON TERRITORY

PROJECTION UTM - ZONE 8	DRAWN BY L Sherman	DATE 30-November-2010
DATUM NAD 83	CHECKED BY R Stohmann	FIGURE NO. 2.1-1



Identifier	Feature						
1	Blasting Facility	17	Event Polish Pond 1 - Wet 4	33	Salvage 1	49	Windrow 4
2	Camp and Admin Buildings	18	Event Polish Pond 2	34	Salvage 2	50	Windrow 5
3	Cleared Area 1	19	Event Polish Pond 2 - Wet 5	35	Salvage 3	51	Windrow 6
4	Cleared Area 2	20	Explosives Site	36	Salvage 4	52	Windrow 7
5	Conveyor	21	Gatehouse	37	Silt 1 borrow area	54	Windrow 9
6	Diversion - Banks	22	Heap Leach Pad	38	Soil Stockpile 1	55	Laydown Area
7	Diversion - Wet 1	23	Pit	39	Soil Stockpile 2	56	Roads - Camp
8	Diversion - Wet 2	24	Pit - Water Level 1	40	Soil Stockpile 3	57	Roads - Dump
9	Drainage collection pond	25	Pit - Water Level 2	41	Soil Stockpile 4	58	Roads - Heap Leach
10	Eagle Pup WRSA	26	Plantinum Gulch WRSA SCP 1	42	Substation	59	Roads - Main
11	Eagle Pup WRSA SCP	27	Plantinum Gulch WRSA SCP 2	43	Windrow 1	60	Surface Water SCP 1
12	Eagle Pup WRSA SCP - Wet	28	Plantinum Gulch WRSA SCP 2 - Wet	44	Windrow 10	61	Surface Water Diversion - Dump 1
13	Event Polish Pond 1	29	Platinum Gulch WRSA	45	Windrow 11	62	Surface Water Diversion - Dump 2
14	Event Polish Pond 1 - Wet 1	30	Process Plant Area	46	Windrow 12	63	Surface Water Diversion - Heap Leach 2
15	Event Polish Pond 1 - Wet 2	31	Proposed Access Road	47	Windrow 2	64	Surface Water Diversion - Heap Leach 3
16	Event Polish Pond 1 - Wet 3	32	Proposed Transmission Corridor	48	Windrow 3	65	Surface Water Diversion - Heap Leach 4

Data Sources; Government of Canada, Victoria Gold Corp.

Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

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SOIL SALVAGE AREAS

EAGLE GOLD PROPERTY

YUKON TERRITORY

PROJECTION	UTM - ZONE 8	DRAWN BY	RS
DATUM	NAD 83	CHECKED BY	LS
DATE	30-November-2010	FIGURE NO.	2.4-1

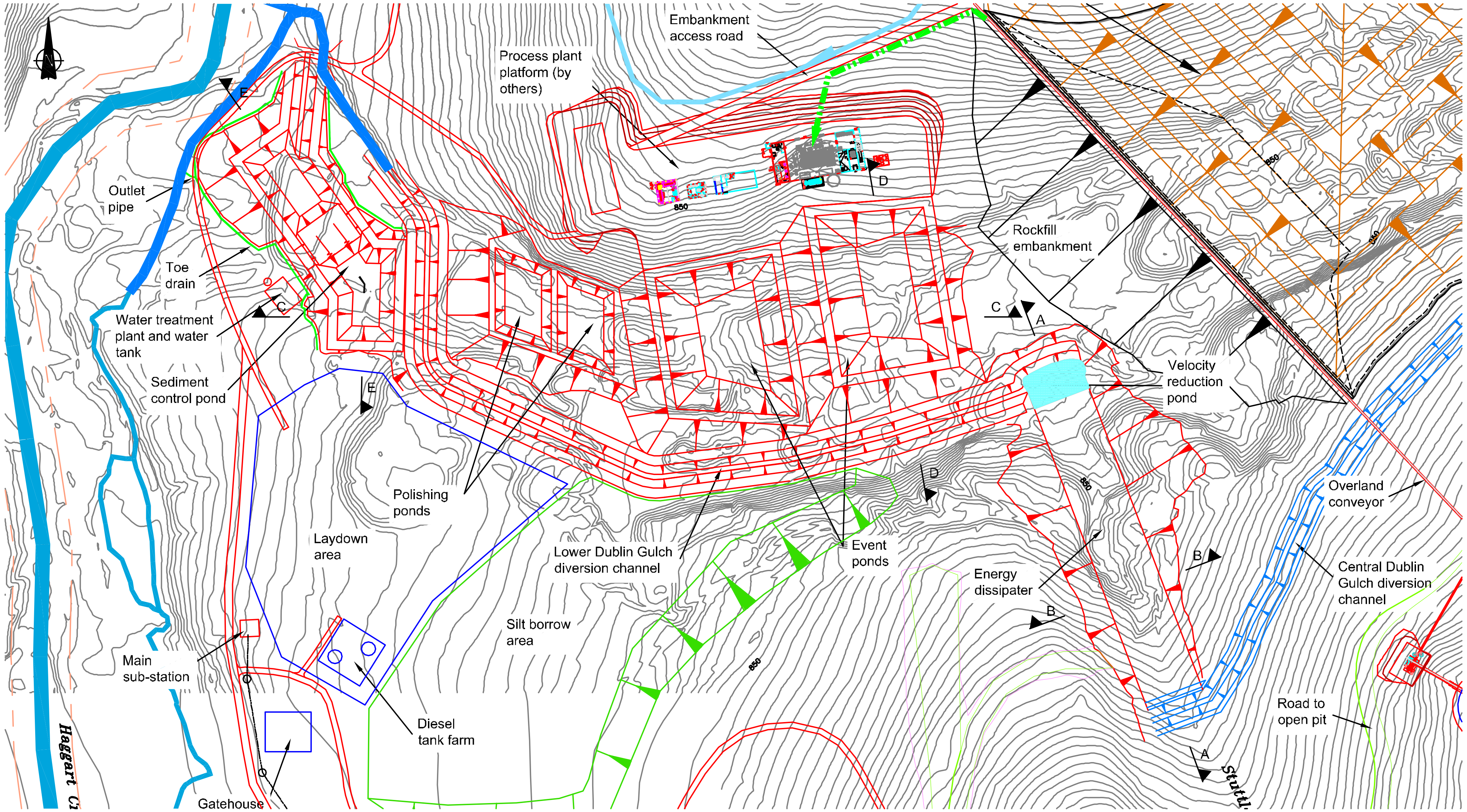
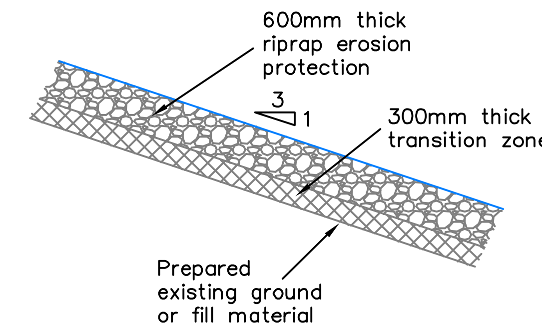


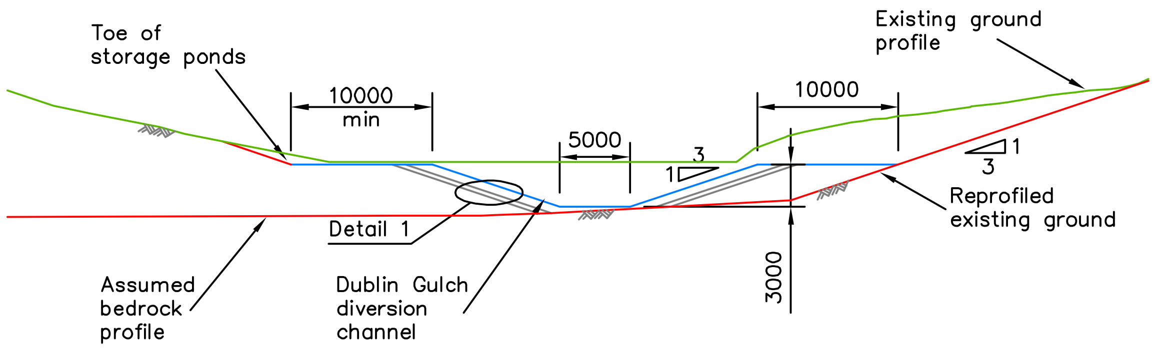
Figure No.: 3.7-1

Notes

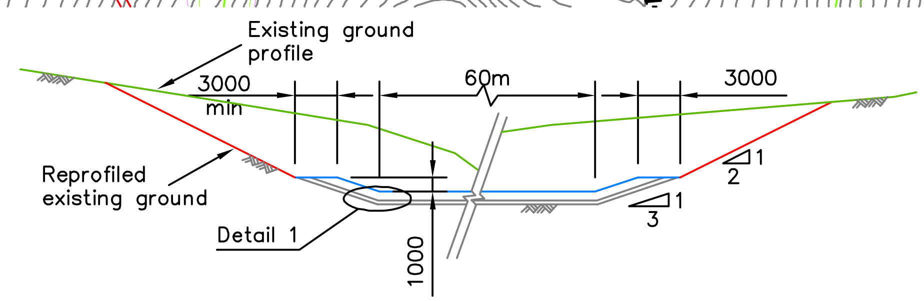
1. All dimensions are in millimetres and elevations in metres unless noted otherwise.
2. Contours are supplied by client with areas added from contours with elevations in feet converted into metres.
3. Refer to drawing D125666-101-1048 for details of sections C, D and E together with liner system and anchor trench details.



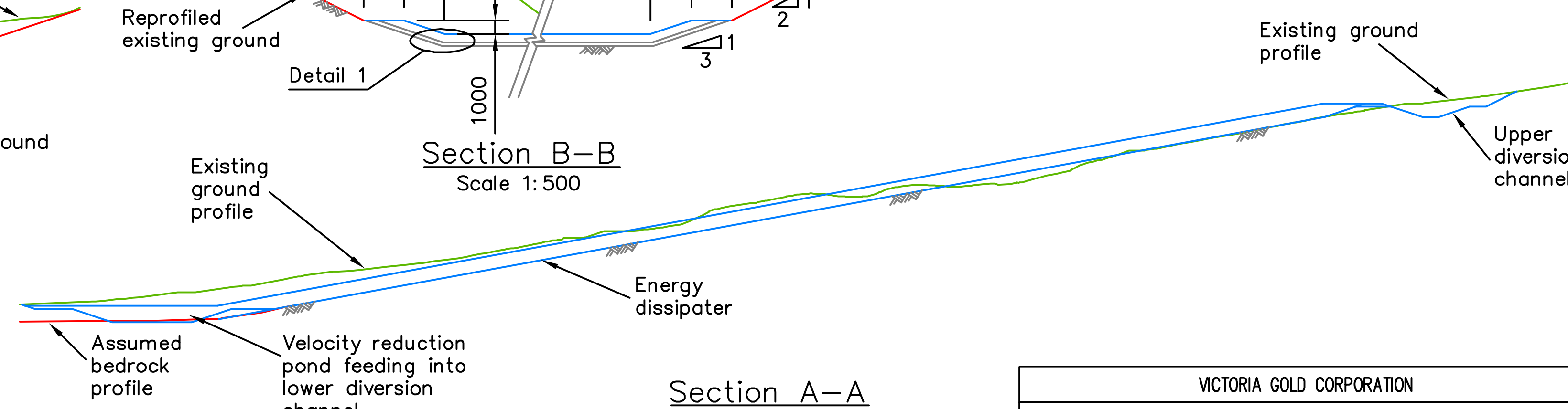
Detail 1
Scale 1:100



Typical Section of Lower Dublin Gulch Diversion Channel
Scale 1:500



Section B–B
Scale 1:500



Section A–A
Scale 1:2000

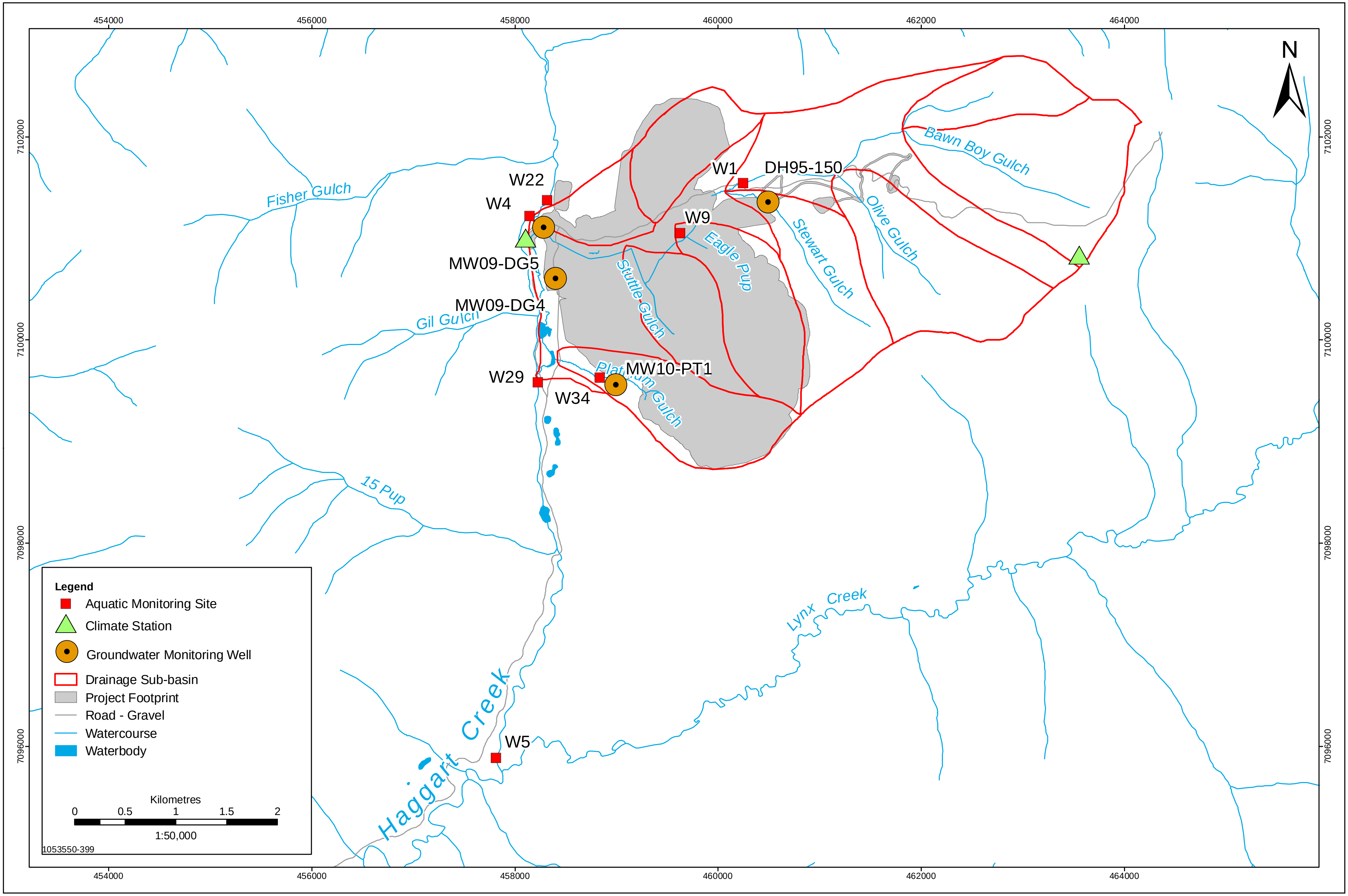
DESIGNED	SD	DEC 09	DRG. No.	REFERENCE DRAWINGS	No.	DATE	REVISION	MADE	CHKD.	SCALE UNLESS SHOWN
DRAWN	DJT	DEC 09			P2	21/12/09	Mine site area revised, annotations added	DJT	AMW	
DESIGN CHECK					P3	13/05/10	Update open pit and waste rock dump footprints. Revise crusher location. Add conveyor and plant site buildings.	DJT	DJB	1:5 000
DRAWING CHECK					P4	04/06/10	Laydown area, diesel tank farm and access roads revised, velocity reduction pond and Section B–B added	DJT	AMW	ORIGINAL SIZE A3
APPROVED	AMW	04/06/10								

VICTORIA GOLD CORPORATION

EAGLE GOLD PRE FEASIBILITY STUDY

ANN GULCH HEAP LEACH FACILITY
LOWER DUBLIN GULCH
RIVER DIVERSION CHANNEL DETAILS
AND ENERGY DISSIPATER

DRG. No. D125666-101-1034 REV. P4



Data Sources: Government of Canada, Victoria Gold Corp.

Stantec
4370 Dominion Street
Burnaby, British Columbia
V5G 4L7
Tel. (604) 436 3014
Fax. (604) 436 3752

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POST CLOSURE CLIMATE AND WATER MONITORING SITES

EAGLE GOLD PROPERTY
YUKON TERRITORY

PROJECTION	DRAWN BY
UTM - ZONE 8	LS
DATUM	CHECKED BY
NAD 83	RS
DATE	FIGURE NO.
3-November-2010	5.2-1